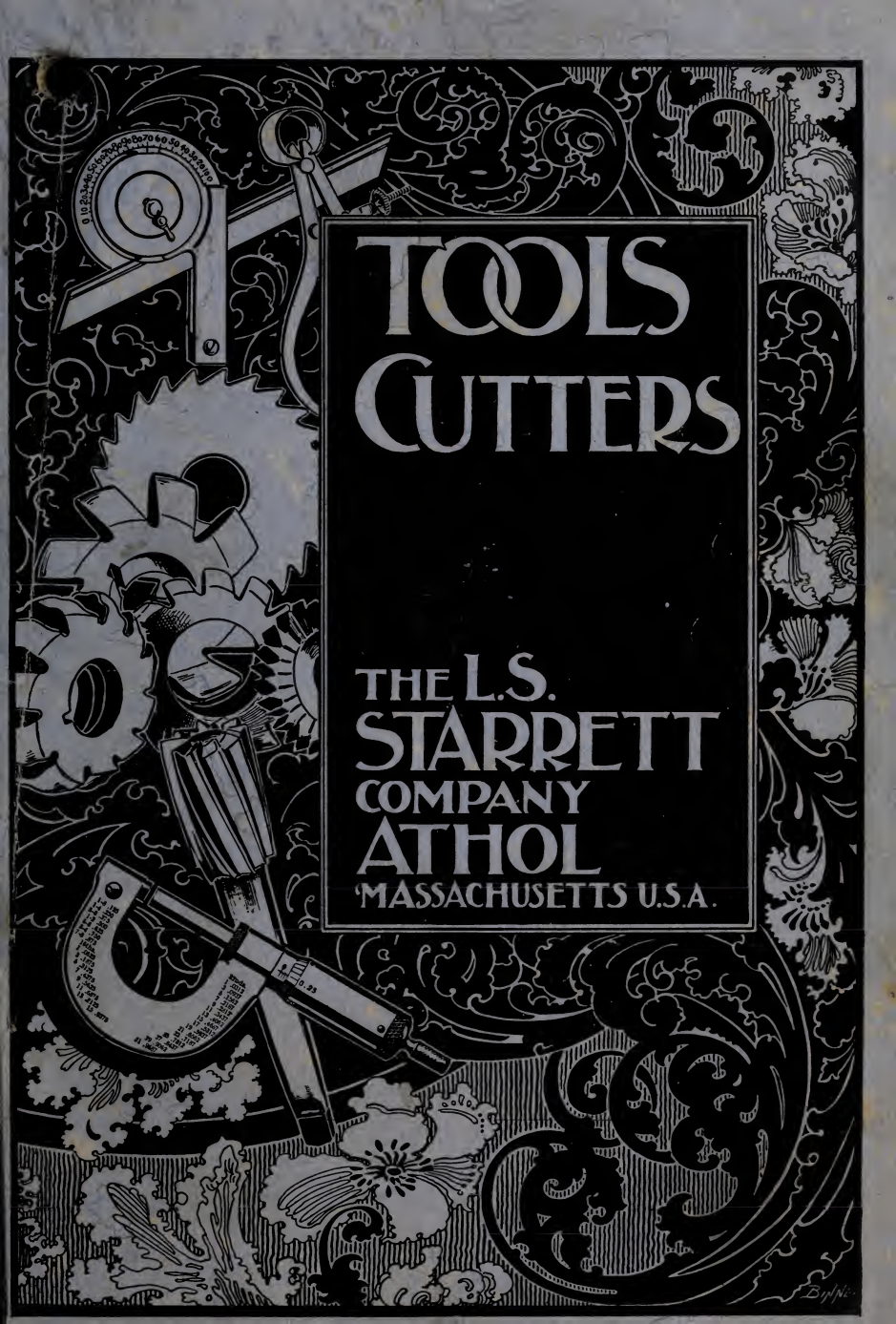

TOOLS
CUTTERS
THE L.S.
STARRETT
COMPANY
ATHOL
MASSACHUSETTS U.S.A.

To Save Time

Be careful to give with every order the **Size and Number in Catalogue** of tools wanted.

This is important, as negligence in this respect causes a delay of a number of days in executing an order, until the required information can be obtained.

Special Orders

We should be glad to accommodate customers wishing special styles or sizes of tools made for them, but cannot do so without causing so much of an interruption to regular work as to make the cost appear unreasonable; therefore, we would rather not take an order for anything not represented in this catalogue.

Special Notice

As the reputation of our tools has suffered through mechanics and the trade buying cheaply-made imitations of the same, that are unreliable for fine work, and mistaking them for our make, through the misrepresentations of unscrupulous manufacturers encroaching on our patents, and trying to profit by the enviable reputation our tools have gained, we wish it distinctly understood that *no tool not having the name* L. S. STARRETT, or THE L. S. STARRETT CO., stamped or engraved on it should be confounded with those of our manufacture.

We feel compelled to insert this notice to stop much annoying complaint and correspondence from those buying inferior tools.

THE L. S. STARRETT CO.

CATALOGUE No. 15 Established 1880

of the

FINE MECHANICAL TOOLS

and

MILLING and other CUTTERS

Manufactured by

The L. S. Starrett Company,

Athol, Mass.

U. S. A.

The Tools listed in this Catalogue can be obtained of almost any Hardware or Tool dealer. In cases where they cannot be readily obtained of dealers we will send any Tool, carriage prepaid, to any place in the United States or Canada, on receipt of List Price.

PRESS OF SPRINGFIELD PRINTING AND BINDING COMPANY, SPRINGFIELD, MASS.

GLADWIN & NOBLE BROS.
AGENTS.
WESTFIELD, - MASS.

Important!

EVERY Tool listed in this catalogue is **warranted accurate** and **satisfactory.**

Some people stamp their names on our tools, causing them to spring, and then write us that they are defective. Stamping the name on them is the cause of their being "out." We cannot replace or exchange any tool on which a name has been stamped.

The prices on tools in this catalogue are **net**; the usual discounts are allowed on Milling Cutters.

Mechanics are requested to order our tools through hardware and tool dealers, but in towns in the United States and Canada where the hardware trade do not sell our goods, we will send them, carriage prepaid, upon receipt of list prices.

When goods are ordered to be sent by express C. O. D., 20 per cent of the amount must accompany the order, and the express charge for return of money will be added. Cash with order will save this extra expense.

In ordering, do not fail to give the **size** and **number in catalogue** of each tool wanted.

We sell at a fair discount, on 30 days' time, to responsible hardware dealers.

Dealers without adequate commercial ratings must send satisfactory references.

We do not pay carriage in any case to dealers.

All goods at purchaser's risk after shipment.

In ordering, say with each order how the goods are to be shipped, whether by freight, express, or mail.

In the absence of shipping instructions we will ship by what we consider the best way, cheapness, quickness, and safety being considered.

Goods ordered sent by mail are at the purchaser's risk. For Postal Insurance see third page of cover.

We assume no responsibility for goods shipped according to instructions, but should miscarriage or loss occur we will do our best, in the interest of the purchaser, to have the lost goods found, or proper restitution made by the transportation company at fault.

Steel Rules

Spring-Tempered

In 1882, L. S. Starrett began the manufacture of light, thin, spring-tempered steel rules. The advantages of these rules over the ordinary thick, soft rules were so apparent that they at once became universally popular among mechanics. They still lead in this class of fine tools. Our fifteen years' experience in tempered rule making, with continually improving processes and products, has resulted in new graduating machines from Mr. Starrett's own designs, and new departments equipped with every perfected appliance needed for the manufacture of accurate scales. The popularity of our spring-tempered rules is attested not only by the demand for them among mechanics, but also by the fact that other manufacturers have been forced to imitate them and to adopt as near as they are able, our improved methods.

Attention is invited to the variety of rules we make: Spring-Tempered, Heavy, Flexible, Semi-Flexible and Narrow, Desk Rules and Shrink Rules, in a number of different English graduations, and Spring-Tempered and Flexible Rules graduated in the Metric System, as well as combining both the Metric and the English measure. Realizing the marked growth of the metric idea in this country, as well as its wide use abroad, we have made preparations to meet the growing demand for metric rules, and offer the largest line in respect to lengths and thicknesses made in the United States.

Please notice that the prices of Metric Rules have been materially reduced, and that Rules of No. 1 and No. 2 graduations in English measure are now sold at the No. 4 graduation prices.

Steel Rules

English Measure

Graduations

Our Rules are divided into parts of inches as follows:—

No. 1 Graduation

1st corner	10, 20, 50, 100
2d "	12, 24, 48
3d "	16, 32, 64
4th "	14, 28

No. 2 Graduation

1st corner	10, 20, 50, 100
2d "	12, 24, 48
3d "	16, 32, 64
4th "	8

No. 4 Graduation

1st corner	64
2d "	32
3d "	16
4th "	8

No. 7 Graduation

1st corner	64
2d "	32
3d "	16
4th "	100

No. 10 Graduation

1st corner	32
2d "	64

No. 11 Graduation

1st corner	64
2d "	100

No. 12 Graduation

1st corner	50
2d "	100

No. 15 Graduation

1st corner	10
2d "	20
3d "	50
4th "	100

No. 16 Graduation

1st corner	32
2d "	64
3d "	50
4th "	100

Our No. 303 Rules, in 2, 3, 4, 6, 9 and 12 inch lengths, of No. 4 graduation, are graduated across the end.

Spring-Tempered Rules

Thickness: $\frac{3}{64}$ in. or No. 18 gauge.

Approximate widths:	$\frac{1}{2}$ in.	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.	$\frac{5}{8}$ in.	$\frac{3}{4}$ in.	$\frac{7}{8}$ in.	1 in.	$1\frac{1}{8}$ in.	$1\frac{1}{4}$ in.	$1\frac{1}{4}$ in.	$1\frac{1}{4}$ in.
Lengths:	1 in.	2 in.	3 in.	4 in.	6 in.	9 in.	12 in.	18 in.	24 in.	36 in.	48 in.
PRICES:	$0.15	.25	.35	.45	.65	1.00	1.25	2.00	2.50	4.00	7.00

No. 300	Spring-Tempered,	No. 4	graduation.	
No. 301	"	No. 1	"	
No. 302	"	No. 2	"	
No. 303	"	No. 4	"	with graduated end.
No. 307	"	No. 7	"	
No. 308	"	No. 15	"	
No. 309	"	No. 16	"	

No. 303 Rules are made in 2 inch to 12 inch lengths only.

Spring-Tempered Rules

With One Beveled Edge

Same widths and thickness as Spring-Tempered Rules above.

Lengths:	1 in.	2 in.	3 in.	4 in.	6 in.	9 in.	12 in.	18 in.	24 in.
PRICES:	$0.20	.30	.45	.60	.80	1.25	1.50	2.50	3.00

No. 400	Beveled,	No. 4	graduation, with	64ths	on beveled edge.
No. 407	"	No. 7	"	100ths	"

Heavy Rules Not Tempered

Approximate widths:	$\frac{5}{8}$ in.	$\frac{3}{4}$ in.	1 in.	$1\frac{1}{4}$ in.	$1\frac{1}{2}$ in.	$1\frac{1}{2}$ in.	$1\frac{1}{2}$ in.	$1\frac{1}{2}$ in.	$1\frac{1}{2}$ in.
" thicknesses:	$\frac{1}{16}$ "	$\frac{5}{64}$ "	$\frac{5}{64}$ "	$\frac{3}{32}$ "	$\frac{3}{32}$ "	$\frac{3}{32}$ "	$\frac{3}{32}$ "	$\frac{3}{32}$ "	$\frac{3}{32}$ "
Lengths:	4 in.	6 in.	9 in.	12 in.	18 in.	24 in.	36 in.	48 in.	
PRICES:	$0.45	.65	1.00	1.25	2.00	2.50	4.00	7.00	

No. 310	Heavy,	No. 4	graduation.
No. 311	"	No. 1	"
No. 312	"	No. 2	"
No. 317	"	No. 7	"
No. 318	"	No. 15	"
No. 319	"	No. 16	"

Heavy Spring-Tempered Rules

Thickness, about $\frac{1}{10}$ inch.

Widths:	$1\frac{1}{4}$ in.	$1\frac{1}{2}$ in.	$1\frac{1}{2}$ in.	$1\frac{1}{2}$ in.	$1\frac{1}{2}$ in.
Length:	12 "	18 "	24 "	36 "	48 "
PRICES:	$1.25	2.00	2.50	5.00	8.00

No. 410 Heavy, Spring-Tempered, No. 4 graduation.
No. 417 " " " No. 7 "

Flexible Rules

These are very thin watch-spring tempered rules, nicely graduated on one side only, in either 32ds and 64ths, 64ths and 100ths, or 50ths and 100ths, whole length. Those from 1 inch to 12 inches are $\frac{1}{2}$ inch wide, and will easily conform to a 2-inch circle. Those from 18 inches to 48 inches are $\frac{3}{4}$ inch wide, and are made from a trifle heavier stock.

Lengths:	1 in.	2 in.	3 in.	4 in.	6 in.	9 in.	12 in.	18 in.	24 in.	36 in.	48 in.
PRICES:	$0.15	.25	.35	.45	.65	1.00	1.25	2.00	2.50	4.00	7.00

No. 320 Flexible, No. 10 graduation.
No. 321 " No. 11 "
No. 322 " No. 12 "

Semi-Flexible Rules

These rules are about $\frac{1}{10}$ inch thick, heavier than the Flexible Rules and lighter than the Spring-Tempered Rules. They are of the same widths as the corresponding lengths of Spring-Tempered Rules.

Lengths:	1 in.	2 in.	3 in.	4 in.	6 in.	9 in.	12 in.
PRICES:	$0.15	.25	.35	.45	.65	1.00	1.25

No. 325 Semi-Flexible, No. 4 graduation

Narrow Rules

$\frac{3}{16}$ inch wide, No. 18 gauge, spring-tempered, graduated one corner each side whole length, either in 32ds and 64ths, 50ths and 100ths, or 64ths and 100ths.

Lengths:	4 in.	6 in.	9 in.	12 in.
PRICES:	$0.45	.65	1.00	1.25

No. 330 Narrow, No. 10 graduation.
No. 331 " No. 11 "
No. 332 " No. 12 "

Steel Rules

Metric

PRICES

5 C. M.	1.9685	inch	$0.25
10 "	3.9370	"	.45
15 "	5.9055	"	.65
20 "	7.8740	"	.85
25 "	9.8425	"	1.05
30 "	11.8110	"	1.25
40 "	15.7480	"	1.65
50 "	19.6850	"	2.00
60 "	23.6220	"	4.00
80 "	31.4960	"	5.60
1 M.	39.3700	"	7.00

Spring-Tempered

Of same widths and thicknesses as Spring-Tempered Rules of English Measure.

No. 340 Graduated three corners in millimeters, one corner in $\frac{1}{2}$ m.m.

No. 341 From 5 to 30 c.m., inclusive, graduated three corners in millimeters, one corner in $\frac{1}{2}$ millimeters. Above 30 c.m., graduated in $\frac{1}{2}$ millimeters on 5 c.m. of one corner, the rest of that corner and the other corners in millimeters.

Flexible

Of same widths and thicknesses as Flexible Rules of English Measure. Graduated on one side only.

Lengths and prices as above.

No. 345 Graduated one edge in millimeters, the other in $\frac{1}{2}$ m.m.

No. 346 " " " " " " " " " "

Narrow

Graduated on one side only, $\frac{3}{16}$ wide, No. 18 gauge.

Sizes 10, 15, 25 and 30 c.m.

Prices as above.

No. 347 Graduated one edge in millimeters, the other in $\frac{1}{2}$ m.m.

No. 348 " " " " " " " " " "

Steel Rules

Metric and English

Same dimensions and prices as Metric Rules on preceding page.

Spring-Tempered

No. 350 Graduated one corner each in millimeters, $\frac{1}{2}$ m.m., 32ds and 64ths.
No. 351 5, 10, 15, 20, 25, and 30 c.m.

First corner graduated to $\frac{1}{8}$ m.m., second corner to 1 m.m., third corner to $\frac{1}{64}$ in., fourth corner to $\frac{1}{100}$ in.
No. 352 40, 50, 60, and 80 c.m., and 1 meter.

First corner, 5 c.m., graduated to $\frac{1}{8}$ m.m., the remainder of that corner, together with second corner, to 1 m.m., third corner, 2 inches to $\frac{1}{64}$, the remainder to $\frac{1}{16}$ of an inch, fourth corner, 2 inches to $\frac{1}{100}$, the remainder to $\frac{1}{50}$ of an inch.

Flexible

Graduated on one side only. Lengths and prices same as metric rules on preceding page.

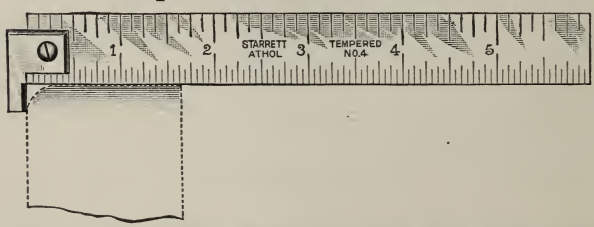
No. 355 Graduated one edge in millimeters, the other in 64ths.
No. 356 " " " " $\frac{1}{2}$ " " " " 100ths.

Narrow

Graduated on one side only, $\frac{3}{16}$ wide, No. 18 gauge. Sizes 10, 15, 25, and 30 c.m. Prices same as for metric rules on preceding page.

No. 357 Graduated one edge in millimeters, the other in 64ths.
No. 358 " " " " " " " " 100ths.

Improved Hook Rules



Very convenient in taking measurements from round corners, through hubs of pulleys, setting inside calipers, etc. The 6 inch may be carried in the pocket. The hook can be quickly removed by turning eccentric stud one-half round.

Lengths:	6 in.	9 in.	12 in.	18 in.	24 in.	36 in.
PRICES:	$1.00	1.40	2.00	2.75	3.50	6.00

No. 420 Our No. 300 Rule, No. 4 graduation, with hook.
No. 421 " No. 410 " No. 4 " " "

The hooks can be applied to our rules of other graduations when ordered. Prices same as above.

Steel Shrink Rules

PRICES

12 inch.....$1.75 24 inch.....$3.50

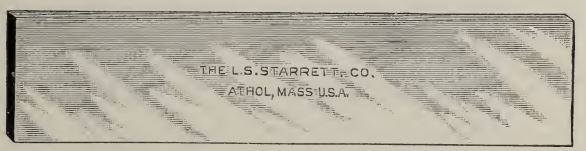
These rules are spring-tempered, except No. 372, and are of the same width and thickness as Spring-Tempered Standard Rules.

No. 370 Shrink, $\frac{1}{8}$ to foot, No. 4 graduation.
No. 371 " " " No. 2 "
No. 372 " " " Flexible, graduated in 32ds and 64ths.
No. 373 Shrink and Standard, $\frac{1}{8}$ to foot, No. 4 graduation.
No. 375 Brass Shrink, $\frac{3}{16}$ to foot, No. 4 graduation.
No. 376 " " " " No. 2 "
No. 377 Double Shrink, $\frac{1}{4}$ to foot, No. 4 "
No. 378 " " " " No. 2 "

Steel Straight Edges

Not graduated. Made in pairs when two are wanted of exactly the same width. The prices given are for *single* straight edges.

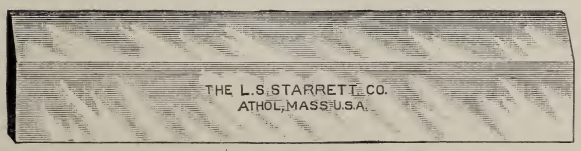
No. 380 Plain



PRICES

12 in. long, 1 in. wide, $\frac{3}{16}$ in. thick, $1.20 | 24 in. long, $1\frac{1}{2}$ in. wide, $\frac{3}{16}$ in. thick, $2.40
18 " " $1\frac{1}{4}$ " " $\frac{3}{16}$ " " 1.80 | 36 " " 2 " " $\frac{1}{4}$ " " 5.00
48 in. long, $2\frac{1}{2}$ in. wide, $\frac{1}{4}$ in. thick, $8.00

No. 385 Beveled



PRICES

12 in. long, 1 in. wide, $\frac{3}{16}$ in. thick, $1.50 | 24 in. long, $1\frac{1}{2}$ in. wide, $\frac{3}{16}$ in. thick, $3.50
18 " " $1\frac{1}{4}$ " " $\frac{3}{16}$ " " 2.50 | 36 " " 2 " " $\frac{1}{4}$ " " 6.00
48 in. long, $2\frac{1}{2}$ in. wide, $\frac{1}{4}$ in. thick, $10.00.

One edge only is beveled, and this to $\frac{1}{16}$ inch thick, from $\frac{1}{2}$ to $\frac{5}{8}$ inch back.

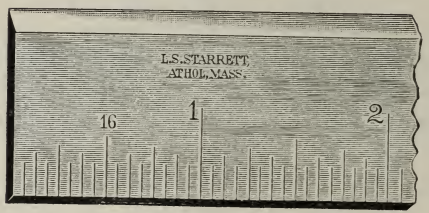
Center Gauges

PRICES

No. 390	Not tempered, graduated one corner each in 32ds, 24ths, 20ths, and 14ths	$0.25
No. 391	Spring-tempered	.35
No. 395	Whitworth, not tempered	.25
No. 397	Metric, not tempered	.25
No. 398	" spring-tempered	.35

Spring-Steel Desk Rules

For Draughtsmen, Bookkeepers, Etc.



These rules are thin, light and handsome, of spring-tempered steel, about 1 inch wide and $\frac{3}{64}$ths inch thick, nicely finished and nickel plated.

One edge is sharply beveled, so that ink won't stick to it. This prevents blotting the paper and smearing the fingers.

The thinness of the rule brings the working edge close to the paper, which is an advantage anyone will appreciate who has done hit-or-miss ruling with a common ruler, the edge of which stands up a quarter of an inch from the work. With Starrett's, you draw the line just where you want it.

Made both plain and accurately graduated on one edge in 16ths of an inch.

PRICES

No. 365

12 inch, not graduated	$0.50
15 " " "	.75
18 " " "	1.00

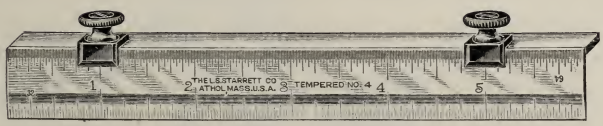
No. 366

12 inch, graduated	$0.75
15 " "	1.10
18 " "	1.40

THE L.S.STARRETT Co., ATHOL, MASS., U.S.A.

Starrett's Patent Key-Seat Rule

No. 105



The improved feature in this Rule consists of a device for holding two straight edges in the form of a box square (or key-seat rule) securely together. One of said straight edges is a spring-tempered scale, with one edge beveled, graduated in 8ths, 16ths, 32ds, 64ths, the other a plain straight edge with two or three clamps (according to its length) which are operated by knurled eccentrics clamping corner and edge of straight edge and scale together; thus, not only allowing the scale to be used as such independently from the other part, but being in two straight pieces it admits of being made from spring-tempered stock and accurately ground, also of inserting in place of the regular width rule, a narrow auxiliary one, adapting it for use on very small shafts, etc. This narrow auxiliary straight edge is either plain or graduated in 32ds and 64ths, and sent when ordered.

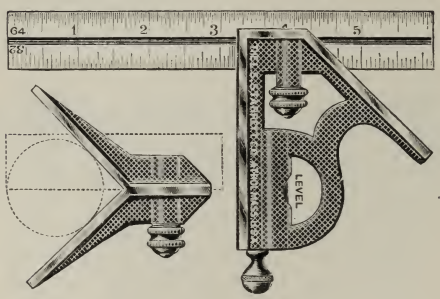
PRICES

6-inch		$2.25
6 "	with auxiliary straight edge, plain	2.75
6 "	" " " " graduated	3.00
9 "		3.00
9 "	with auxiliary straight edge, plain	3.75
9 "	" " " " graduated	4.25

THE L.S.STARRETT Co., ATHOL, MASS., U.S.A.

Starrett's Patent Combination Square

No. 11



Every tool warranted accurate. With the adjustable scale this forms one of the most convenient and useful tools ever devised for mechanics' use. One is a complete substitute for a whole set of common try squares, and is one of the best gauges made for transferring exact measurements or laying out work. It is also convenient for a depth gauge, or to square in a mortise. For a miter it is perfect, while with the auxiliary center head it forms a centering square, both inside and outside, which for convenience and accuracy has no equal.

REDUCED PRICES

4 inch,	without center head or level						$0.75
6 "	with center head				$1.50,	without,	1.00
9 "	"	"	"		1.75,	"	1.25
12 "	"	"	"		2.00,	"	1.50
18 "	"	"	"		2.75,	"	2.25
24 "	"	"	"		3.25,	"	2.75

The 6, 9, 12, 18, and 24 inch have levels (in their stocks) and center heads, and will be sent complete unless otherwise ordered. The 18 and 24 inch have same stock as 12 inch.

The blades are graduated in No. 4, No. 1, No. 2, and No. 7 graduations (see page 4). Those of No. 4 graduation, being most used, will be sent unless otherwise ordered.

Starrett's Patent Combination Square

No. 11M

The same as No. 11, except that the blades are graduated in millimeters.

PRICES

10	C. M.,	without	center	head	or	level			$0.75
15	"	with	center	head			$1.50,	without,	1.00
20	"	"	"	"			1.75,	"	1.25
30	"	"	"	"			2.00,	"	1.50
50	"	"	"	"			2.75,	"	2.25
60	"	"	"	"			3.25,	"	2.75

Starrett's Special Standard Square

No. 8

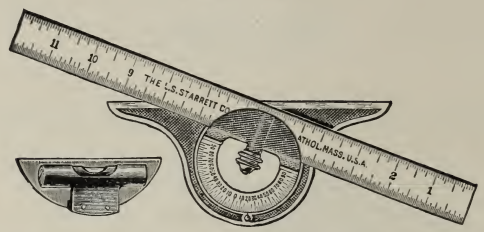
This Square is similar to No. 11, but is larger and heavier. It is designed for the use of manufacturers who desire to keep a reliable standard. No center head is made for this tool.

PRICES

18	inch,	blade	$1\frac{1}{2}$	in.	wide,	$\frac{1}{10}$	in.	thick,	$8\frac{1}{4}$ in. stock $5.00
24	"	"	"	"	"	"	"	"	6.00

Improved Bevel Protractor

No. 12



An adjustable rule, held firmly at any point by a thumb nut, passes through a revolving turret which is nicely graduated in degrees from 0 to 90, both right and left, and can be accurately adjusted to show any angle.

A valuable auxiliary is made in the shape of a small level to be attached in place of the rule removed, forming an adjustable level to show any degree, thus greatly increasing the usefulness of the instrument.

REDUCED PRICES

9 inch	$2.75
12 "	3.00
18 "	3.50
24 "	4.00
Protractor Head only, with level attachment	2.00

The blades are the same as those used on our No. 11 squares. Those of No. 4 graduation will be sent unless otherwise ordered. The head is 7 inches long.

No. 12½

This is a Protractor similar to No. 12. The blade is ⅝ inch wide, and the head 5 inches long. Made only in one size, 9 inches.

PRICE.....$2.75

Improved Bevel Protractor

No. 12M

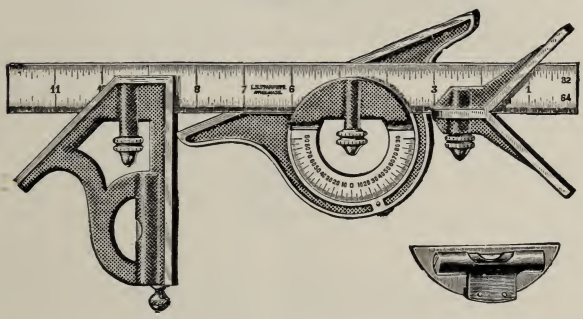
With Blades Graduated in Millimeters.

REDUCED PRICES

20 C. M.	$2.75
30 "	3.00
50 "	3.50
60 "	4.00

Starrett's Combination Set

No. 9



This cut shows Combination Square (No. 11, page 12) with center head and 7-inch Bevel Protractor head (No. 12, page 14), all on the No. 11 Square scale. Each head may be instantly removed, or replaced and used interchangeably with the scale, thus forming the most useful combination set of tools ever devised for mechanics' use.

REDUCED PRICES

9 inch, set complete	$3.75
12 " " "	4.00
18 " " "	4.75
24 " " "	5.25

Combination Set

No. 9M

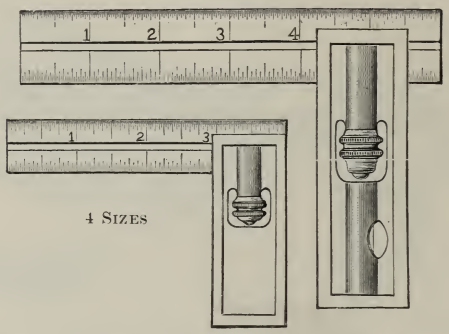
The same as No. 9, except that the blades are graduated in millimeters.

REDUCED PRICES

20 C. M.	$3.75
30 "	4.00
50 "	4.75
60 "	5.25

Starrett's Patent Double Square

No. 13



4 SIZES

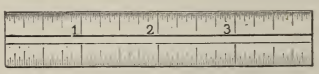
This Square is conceded the most practical one for machinists' and fine tool makers' use ever offered. The sliding scale, shortened or extended full length, makes it more valuable than a full set of the common kind, while with the extra bevel blade, shown in the following cut, we have both the hexagon and octagon angles.

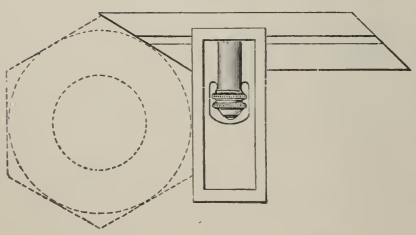
The seat against which the blade is clamped being convex, should corners of the blade get injured, the accuracy of the square is not affected.

PRICES

4 inch	$1.25, with both blades,	$1.65
6 "	2.00, " " "	2.50
9 "	3.00	
12 "	4.00	

Both blades with 4 and 6 inch always sent unless otherwise ordered.
There is a level in the stocks of the 6 inch, 9 inch, and 12 inch squares.





This cut represents the 4 inch and 6 inch double square, with hexagon end of blade applied. Reverse it and the octagon is in position for use. Bevel blades are made to fit only 4 inch and 6 inch sizes.

Patent Double Square

No. 13M

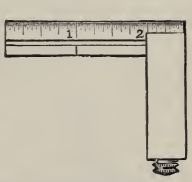
The same as No. 13, except that the blades are graduated in millimeters.

PRICES

10 C. M.	.....	$1.25,	with both blades,			$1.65
15 "	.....	2.00,	"	"	"	2.50
20 "	.....	3.00				
30 "	.....	4.00				

Double Steel Square

No. 14



This cut represents a double *solid steel* square, with our patent 2½-inch sliding scale, and is especially designed for fine tool makers. The rule being narrow and instantly adjusted to any length, however short, allows it to be used where it would be impossible to use any square with a fixed blade.

Fitted to go with this stock, we make not only a bevel blade, shown with our 4-inch double square (No. 13), but a very narrow straight one, about ⅛-inch wide, highly prized by die makers for squaring small holes, both of which blades will be sent with the square unless otherwise ordered.

PRICES

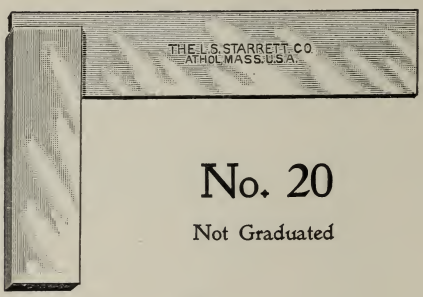
Square	.....	$2.00
"	with either bevel or narrow blade	2.30
"	complete	2.60

No. 14M

With 5 C. M. blade, graduated in millimeters
PRICES the same as for No. 14.

THE L.S.STARRETT CO., ATHOL, MASS., U.S.A.

Hardened Edge Solid Steel Square



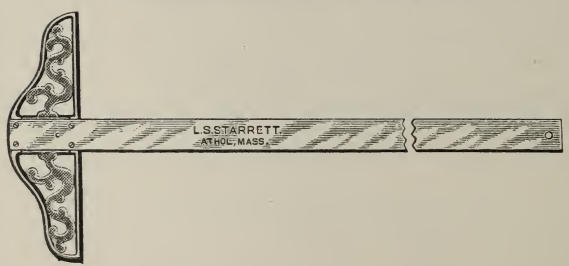
No. 20

Not Graduated

PRICES

1 inch blade, inside beam	$1.50	4½ inch blade, inside beam	$3.50
1½ " " " "	1.75	6 " " " "	4.50
2 " " " "	2.00	9 " " " "	6.50
3 " " " "	2.50	12 " " " "	9.00

Draughtsmen's T Square



The heads are made of aluminum, weighing only from 4 to 6 ounces, and the blades of spring-tempered steel, all nicely finished and warranted accurate.

Dimensions and Prices

No. 16	Head 10 inch long, blade 20 x 1 inch, $\frac{3}{64}$ inch thick	$3.00
No. 18	" 10 " " " 24 x 1 " $\frac{3}{64}$ " "	3.50
No. 19	" 10 " " " 36 x 1¼ " $\frac{3}{64}$ " "	5.00
No. 48	" 10 " " " 48 x 1¼ " $\frac{3}{64}$ " "	6.50

THE L.S.STARRETT CO., ATHOL, MASS., U.S.A.

Thin Steel Try Squares

For Machinists and Draughtsmen

No 21

PRICES

2 inch,	$\frac{1}{20}$	inch thick,	grad.	16 and 64 one side, 32 and 64 other		$1.00
3 "	$\frac{1}{20}$	"	"	16 " 64 " " 32 " 64 "		1.50
4 "	$\frac{1}{16}$	"	"	16ths and 32ds both sides		2.00
6 "	$\frac{1}{16}$	"	"			3.00

No. 21 M

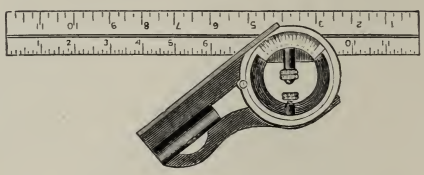
The same as No. 21, except that the graduation is in millimeters.

PRICES

5 C.M.	$1.00
10 "	2.00
15 "	3.00

Starrett's Patent Inclinometer

No. 10



The above cut represents an Inclinometer, try square, and bevel protractor combined.

It is compact, convenient, and a complete and perfect substitute for several costly tools.

It consists of a stock and disc, both slotted to receive the blade, which folds in the stock. The blade attached to the graduated rotary disc may be secured at any angle from 0 to 90 degrees, and by loosening the clamp screw it may be shortened or extended full length, or removed for a straight edge.

The working face of the stock, extending both sides of the blade, admits of its being reversed, so that the same angle may be laid off in opposite directions *without changing* the angle in the tool, thus requiring but ¼ of a graduated circle to obtain all angles both ways.

At 90 degrees, the blade brings up against a case-hardened screw, accurately adjusted, thus forming a TRY SQUARE; by holding the blade perpendicular (the level in the stock being at right angles), a PLUMB; by folding the tool, a LEVEL, length of blade.

Open it to any degree, and work may be leveled to that incline.

PRICES

With 12-inch blade	$5.00
" 18-inch "	6.00
" 24-inch "	7.00
Center head, to fit all sizes	.75

No. 10M

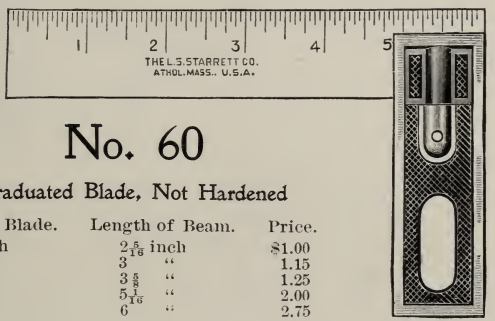
The same as No. 10, except that the graduation is in millimeters.

PRICES

With 30 C. M. blade	$5.00
" 50 " "	6.00
" 60 " "	7.00

Starrett's Reliable Try Squares

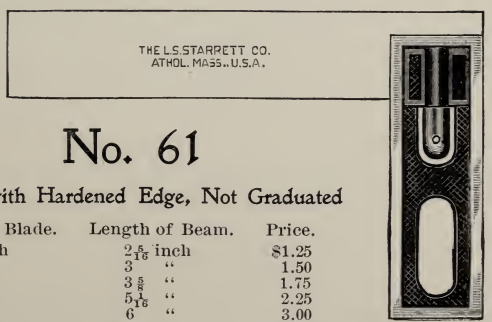
The following cuts represent a new line of Try Squares, handsome in design, light and convenient. The blade is not riveted or soldered to the stock, but is firmly held by our patent bolt and nut, by means of which the tool can be readily taken apart, and when worn the blade and stock can be reground or lapped, and put together again as good as new. Three styles are made as described below, Nos. 60, 61, and 62.



No. 60

Graduated Blade, Not Hardened

Length of Blade.	Length of Beam.	Price.
4 inch	$2\frac{5}{16}$ inch	$1.00
5 "	3 "	1.15
6 "	$3\frac{5}{8}$ "	1.25
9 "	$5\frac{1}{16}$ "	2.00
12 "	6 "	2.75

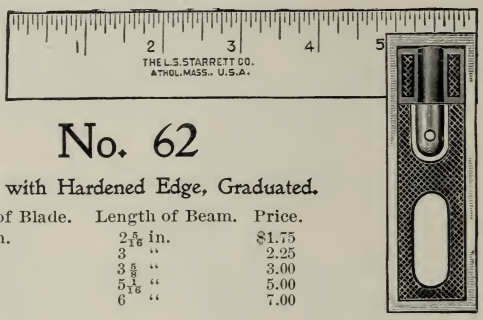


No. 61

Blade with Hardened Edge, Not Graduated

Length of Blade.	Length of Beam.	Price.
4 inch	$2\frac{5}{16}$ inch	$1.25
5 "	3 "	1.50
6 "	$3\frac{5}{8}$ "	1.75
9 "	$5\frac{1}{16}$ "	2.25
12 "	6 "	3.00
18 "	9 "	12.00
24 "	12 "	18.00

Starrett's Reliable Try Squares



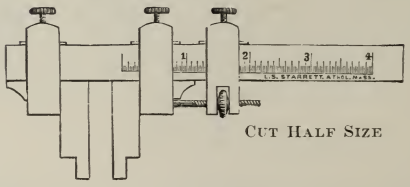
No. 62

Blade with Hardened Edge, Graduated.

Length of Blade.	Length of Beam.	Price.
4 in.	$2\frac{5}{16}$ in.	$1.75
5 "	3 "	2.25
6 "	$3\frac{5}{8}$ "	3.00
9 "	$5\frac{1}{16}$ "	5.00
12 "	6 "	7.00

Caliper Square

No. 25



CUT HALF SIZE

The above cut represents an improved tool for both outside and inside measure. The beam is nicely graduated, 64ths on one side, 100ths on the other. For close work this is a reliable tool.

PRICES

3 in. with adjusting screw	$3.50	without	$3.00
4 " " " "	4.00	"	3.25
6 " " " "	5.50	"	5.00

With hardened jaws, extra, $1.50
In Leatherette case, extra, .75

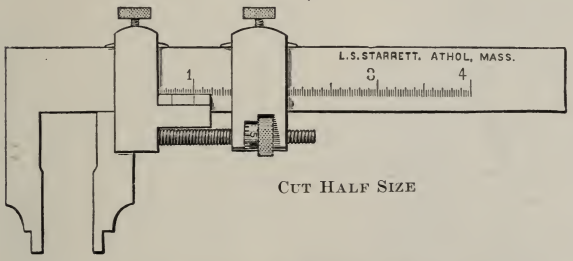
No. 25M

The 4-in. Caliper Square, with adjusting screw, is also graduated to $\frac{1}{2}$ millimeters on one side and 64ths inch on the other.

PRICE.....$4.00

Micrometer Caliper Square

No. 28



CUT HALF SIZE

For Outside and Inside Measure

This instrument enables one to enlarge or decrease work one or more thousandths from that calipered, and fills the bill for both a first-class caliper square and micrometer of large scope and quick adjustment. The jaws are 1⅝ inches long, hardened, and open four inches. One side of the beam is graduated in 64ths and the other in 40ths; and either side may be used as a common caliper square, or, through the micrometer, to show 1,000ths full length, on either inside or outside work. This is done by first setting the indicator mark on the movable jaw to agree with any division nearest the size wanted. Fasten it there, slack binding clasp and turn the micrometer nut to agree with indicator mark on the clasp; now tighten this, slack movable jaw and turn micrometer nut, counting 1,000ths, adding to or taking from the division shown on beam at the starting point.

An excellent feature of this instrument is the spiral spring between jaw and clasp, which not only takes up all backlash, but limits the pressure against the work to strength of spring. This is instantly felt through released pressure on the nut, and prevents springing the jaws, thus calipering to a nicety.

PRICES

In Leatherette case	$8.75
Without case	8.00

Sent with case unless otherwise ordered.

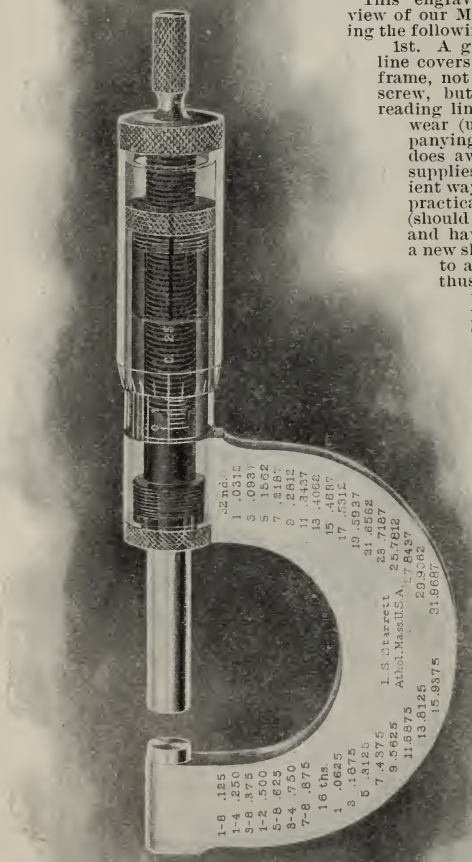
No. 28M

This tool is also made with graduations to ½ m.m. on one side, and either 50ths or 100ths of an inch on the other. The micrometer nut is graduated to read to hundredths of a millimeter.

PRICES same as above.

THE L. S. STARRETT CO., ATHOL, MASS., U.S.A.

Starrett's Micrometers



This engraving represents the interior view of our Micrometers as now made, having the following improved features:—

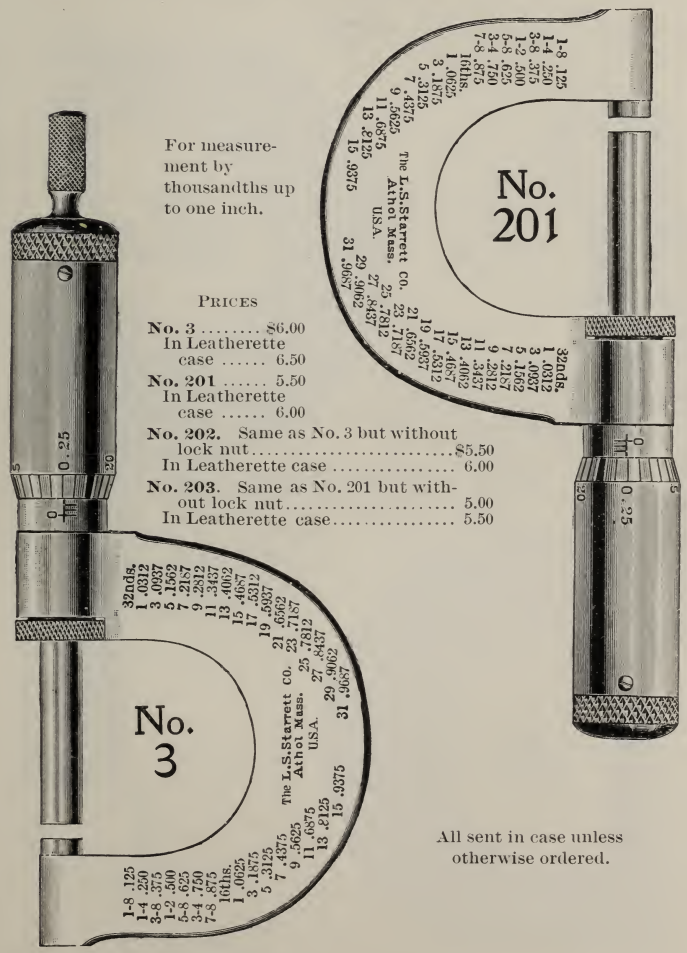
1st. A graduated shell with reading line covers the split nut and shank of frame, not only keeping dirt from the screw, but may be rotated to bring reading line correct to compensate for wear (using special wrench accompanying each Micrometer). This does away with movable anvil and supplies a more exact and convenient way of adjusting. Also makes it practicable to insert a new screw (should one get broken or worn out) and have it read correctly by adding a new shell with reading line on same to agree with the new screw and thus save throwing away the whole thing as heretofore, the pitch of no two screws being *exactly* the same.

2d. A small knurled thumb piece to rotate between thumb and finger speeds the screw about 3 to 1, reduces the leverage, and a more sensitive and correct measure is taken.

3d. A knurled locking nut contracting a split bushing around the spindle takes up wear central and true or locks firm by a slight turn of the same, making a solid gauge when desired.

The above features are patented and controlled by us, excepting a license sold one manufacturer to make the lock nut and speeded attachment only. The graduated shell for adjusting we control exclusively and now apply it to all our outside Micrometers.

Starrett's Speeded Screw Micrometer



For measurement by thousandths up to one inch.

PRICES

No. 3 ..... $6.00
In Leatherette case 6.50

No. 201 ..... 5.50
In Leatherette case 6.00

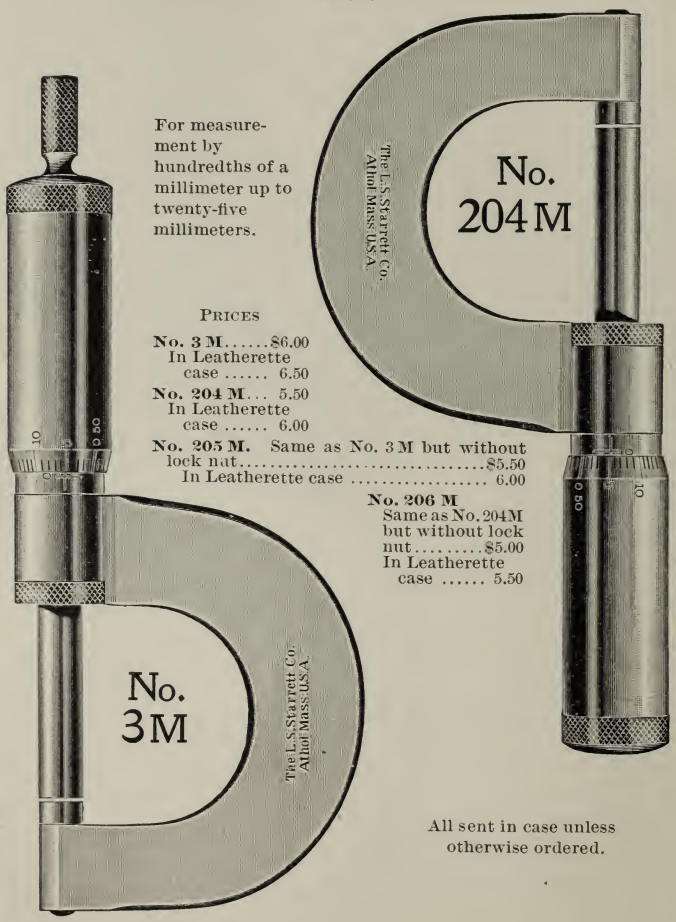
No. 202. Same as No. 3 but without lock nut $5.50
In Leatherette case 6.00

No. 203. Same as No. 201 but without lock nut 5.00
In Leatherette case 5.50

All sent in case unless otherwise ordered.

Starrett's Speeded Screw Micrometer

Metric



For measurement by hundredths of a millimeter up to twenty-five millimeters.

PRICES

No. 3 M.....$6.00
In Leatherette case 6.50

No. 204 M... 5.50
In Leatherette case 6.00

No. 205 M. Same as No. 3 M but without lock nut.....$5.50
In Leatherette case 6.00

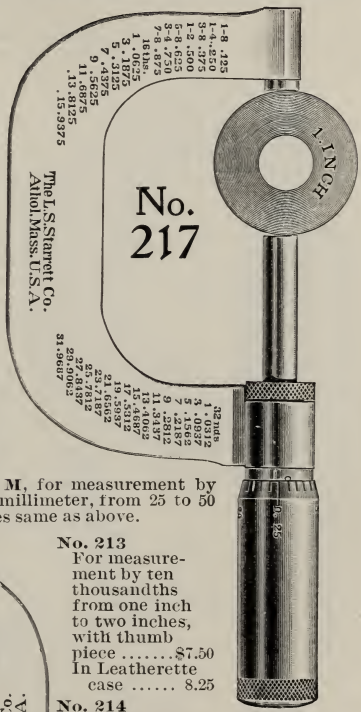
No. 206 M
Same as No. 204M but without lock nut.....$5.00
In Leatherette case 5.50

All sent in case unless otherwise ordered.

Starrett's Speeded Screw Micrometer

Two Inches

For measurement by thousandths from one inch to two inches.

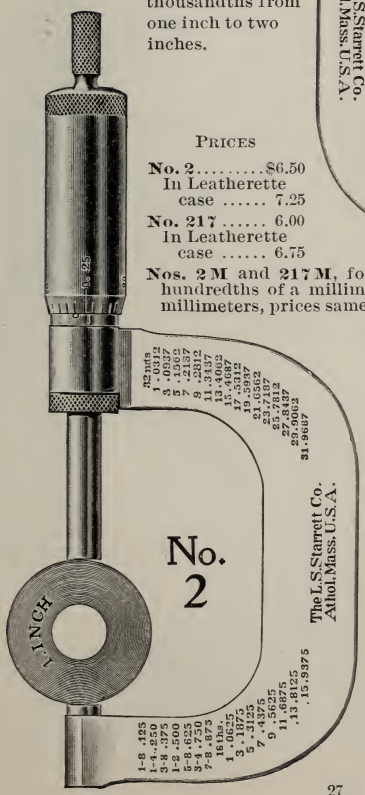


PRICES

No. 2.....$6.50
In Leatherette case 7.25

No. 217 ..... 6.00
In Leatherette case 6.75

Nos. 2 M and **217 M**, for measurement by hundredths of a millimeter, from 25 to 50 millimeters, prices same as above.



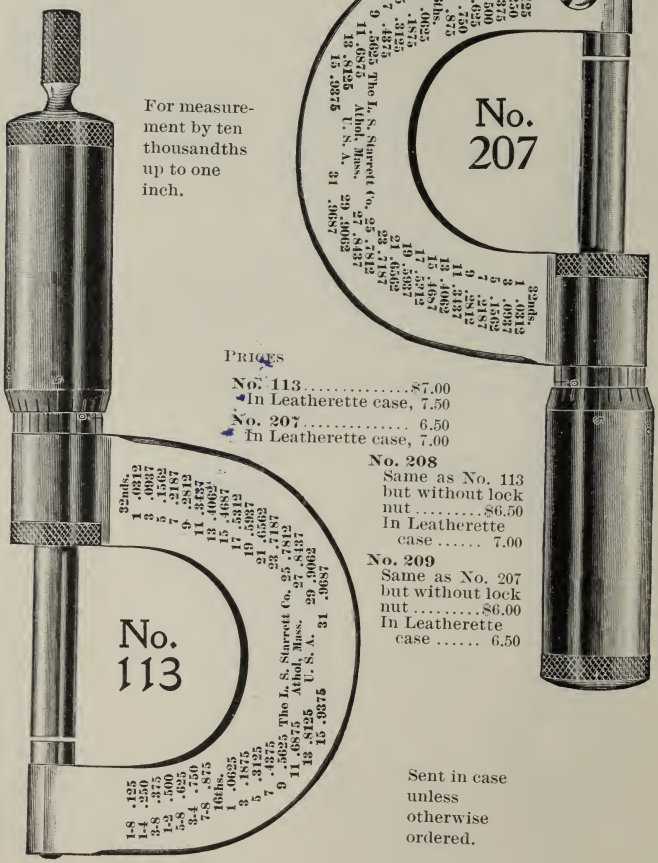
No. 213
For measurement by ten thousandths from one inch to two inches, with thumb piece $7.50
In Leatherette case 8.25

No. 214
Same as above without thumb piece $7.00
In Leatherette case 7.75

All sent in case unless otherwise ordered.

Starrett's Speeded Screw Micrometer

Ten thousandths



For measurement by ten thousandths up to one inch.

PRICES

No. 113.....87.00
In Leatherette case, 7.50

No. 207..... 6.50
In Leatherette case, 7.00

No. 208
Same as No. 113 but without lock nut.....$6.50
In Leatherette case 7.00

No. 209
Same as No. 207 but without lock nut.....$6.00
In Leatherette case 6.50

Sent in case unless otherwise ordered.

Starrett's Speeded Screw Micrometers

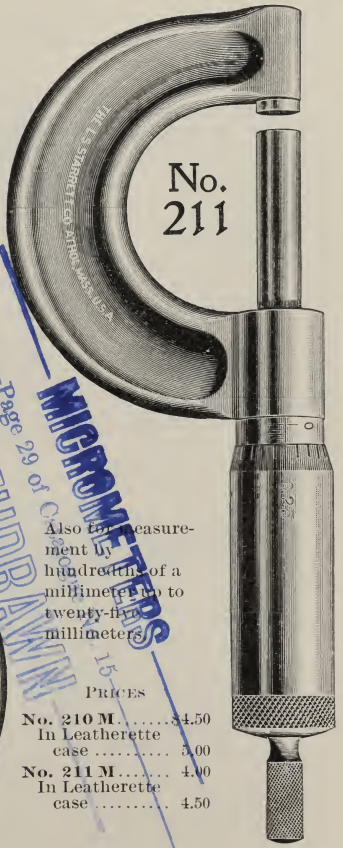
Nos. 210 and 211

For measurement by thousandths up to one inch.

The frame is of drop forged steel, and, while the micrometer is as accurate as the best, it has no high cost finish, and so can be sold at a low price.

PRICES

No. 210.....$4.50
In Leatherette case 5.00
No. 211..... 4.00
In Leatherette case 4.50



Also the measurement by hundredths of a millimeter up to twenty-five millimeters.

PRICES

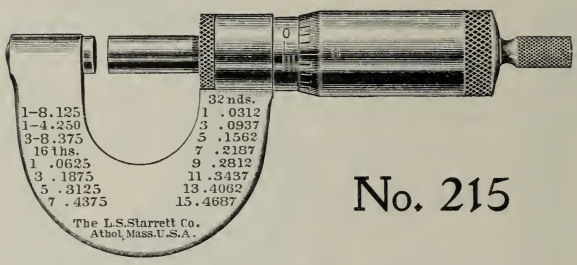
No. 210 M.....$4.50
In Leatherette case 5.00
No. 211 M..... 4.00
In Leatherette case 4.50

All sent in case unless otherwise ordered.

Starrett's Speeded Screw Micrometers

Half-Inch

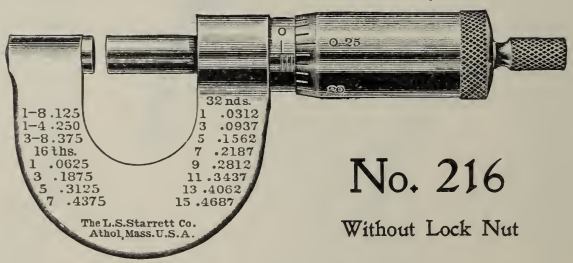
For measurement by thousandths up to one-half inch, also by hundredths of a millimeter up to 13 millimeters.



No. 215

PRICES

No. 215 ..... $5.00
In Leatherette case 5.50
No. 215 M (Metric), same prices.



No. 216

Without Lock Nut

PRICES

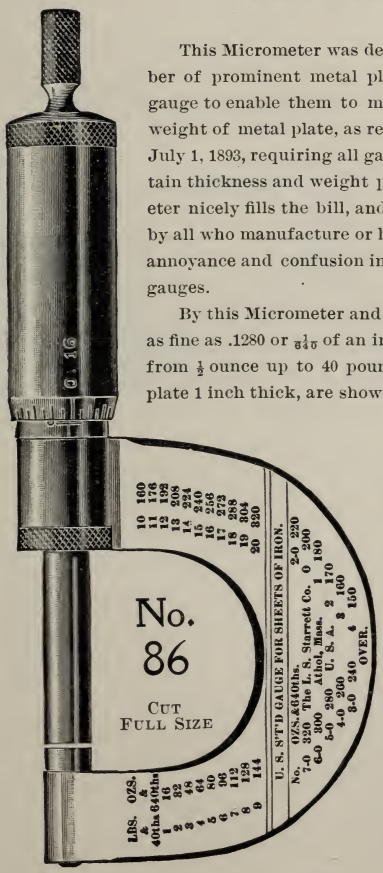
No. 216 ..... $4.50
In Leatherette case 5.00
No. 216 M (Metric) same prices.

Both sent in case unless otherwise ordered.

U. S. Standard Metal Plate

Micrometer and Weight Indicator

No. 86



This Micrometer was designed at the request of a number of prominent metal plate manufacturers, wanting a gauge to enable them to measure and show the indicated weight of metal plate, as required by the law taking effect July 1, 1893, requiring all gauges of iron plates to be of certain thickness and weight per surface foot. This Micrometer nicely fills the bill, and should be universally adopted by all who manufacture or handle metal plates, and so save annoyance and confusion inseparable from using uncertain gauges.

By this Micrometer and Weight Indicator, the measure as fine as .1280 or $\frac{1}{640}$ of an inch up to 1 inch, and the weight from $\frac{1}{2}$ ounce up to 40 pounds, the standard weight for a plate 1 inch thick, are shown.

The numbers and figures on the frame, in connection with graduations upon stem and sleeve, will show the above results when read according to the directions sent with each Indicator.

This Micrometer has the improved features of our No. 3—speeded screw, closed barrel, and locking device.

PRICE $6.50

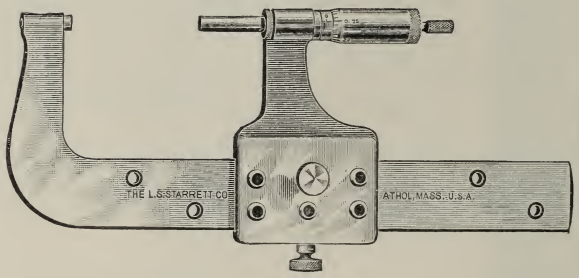
" in Leatherette case 7.00

Sent with case unless otherwise ordered.

THE L.S.STARRETT Co., ATHOL, MASS., U.S.A.

Patent Six Inch Micrometer

No. 128

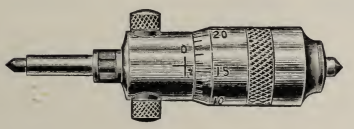


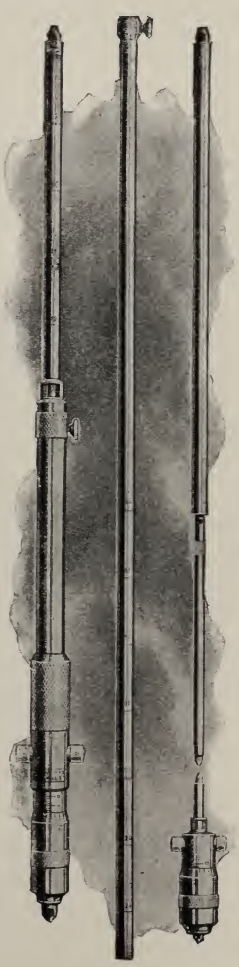
This Micrometer will measure round work to $4\frac{1}{4}$ inches, and flat work to 6 inches. It weighs 21 ounces, and is rigid and accurate. It can be quickly set to exact position, from 1 inch to 6 inches, by inserting the tapering plug. A valuable feature of this tool is a set of six independent holes through both the movable part and the beam, each hole being bushed with hardened steel bushings, ground and lapped to fit the tapering plug which locates to exactness the various inch settings.

PRICE.....$20.00
With Leatherette case, extra, 1.50

Starrett's Inside Micrometer

No. 120





Both have screw and nut same as our Improved No. 3 Micrometer Caliper and read in thousandths. The smaller one measures from 2 inches to 8 inches, has ½-inch movement of screw and requires four extension rods. The rods are provided with a hardened steel adjustable anvil in ends, which permits adjusting for wear. A small binding screw locks rods when set. Rods are finely marked in ½-inch divisions and set to a similar line on a projection of the barrel.

The larger tool is similar in all respects with the exception that it measures from 8 inches to 29 inches, with three extension rods and has a lock for screw as well as rods. This is a very strong and serviceable tool as well as an accurate one. We can furnish rods of extra lengths for these tools when desired.

PRICES

Micrometer with 4 rods, to measure from 2 inches to 8 inches, in case.....$4.00

Micrometer with 3 rods, to measure from 8 inches to 29 inches, in case..... 6.00

Set of two Micrometers, 2 inches to 8 inches and 8 inches to 29 inches, in case.....10.00

Extra rods at 5 cents per inch.

Starrett's Adjustable Caliper Gauge

No. 125

Designed for internal measurements of large cylinders and of distances between uprights. The body of the tool is a steel tube provided with a binding chuck on each of its ends. Into one end is clamped a plain rod, that, when the chuck is loosened, can be quickly adjusted to any approximate size. Into the other end is screwed a threaded anvil for fine adjustment.

To set the gauge, loosen the chuck that clamps the wire rod, slide the rod out or in to the required size, and clamp it. If not quite correct, loosen the chuck on the opposite end and turn the anvil out or in what little is needed.

Made from steel throughout, and nicely finished.

PRICES

2½ inch with three rods, capacity from 2½ inch to 6¾ inch	$1.00
6 " " " " " " 6 " " 16 "	1.25

The diameter of the steel rods is .150 inch. Extra rods furnished at 2 cents per inch.

THE L.S.STARRETT CO., ATHOL, MASS., U.S.A.

Starrett's Micrometer Caliper Gauge

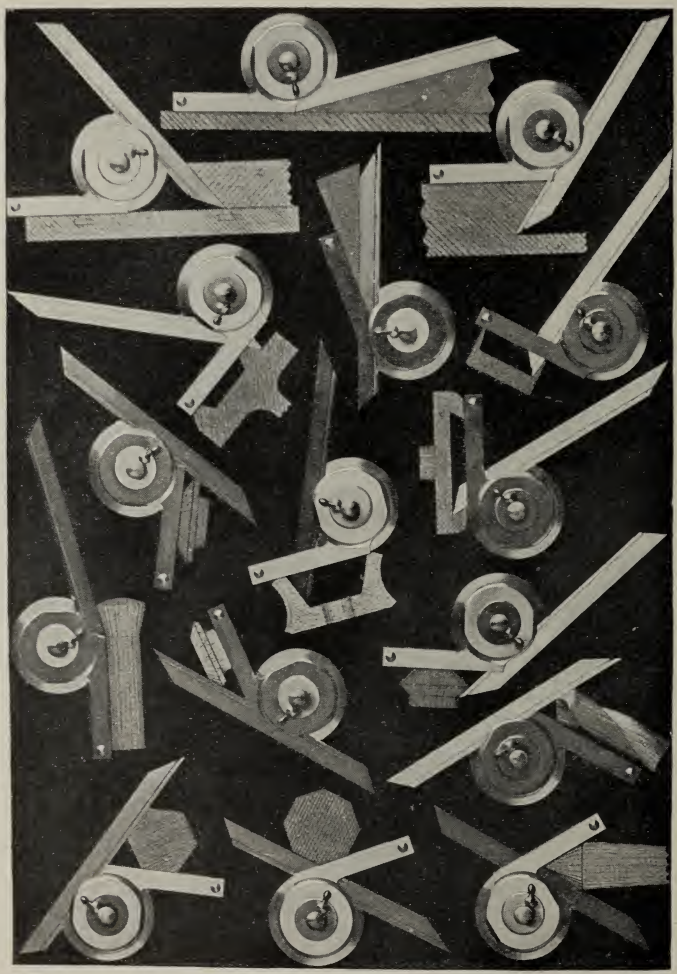
No. 126

Designed for close internal measurements, indicating thousandths where a definite distance in inches is not essential. The body of the tool is a steel tube, provided at one end with a binding chuck in which are fastened the plain rods, and it can quickly be adjusted to any approximate size. The other end has sleeve and body of barrel marked and graduated same as our No. 3 Micrometer Caliper, giving a reading in thousandths, and has $\frac{1}{4}$-inch movement of screw. Anvil in end of sleeve is hardened, as are those in ends of rods.

PRICES

Capacity $2\frac{1}{2}$ inch to 10 inch (with five rods).....$2.00

Extra rods at 2 cents per inch.

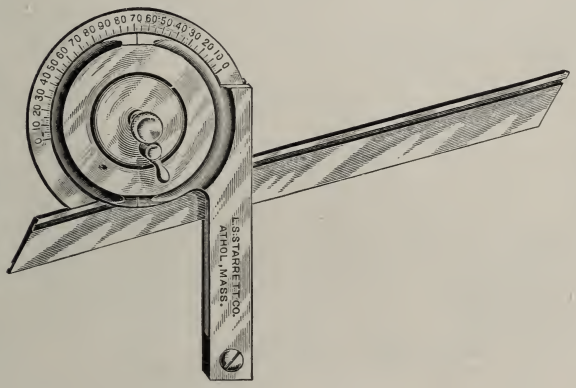


Showing a few of the various uses of
Starrett's Universal Bevel Protractor, No. 360

THE L.S.STARRETT Co., ATHOL, MASS., U.S.A.

Starrett's Universal Bevel Protractor

No. 360



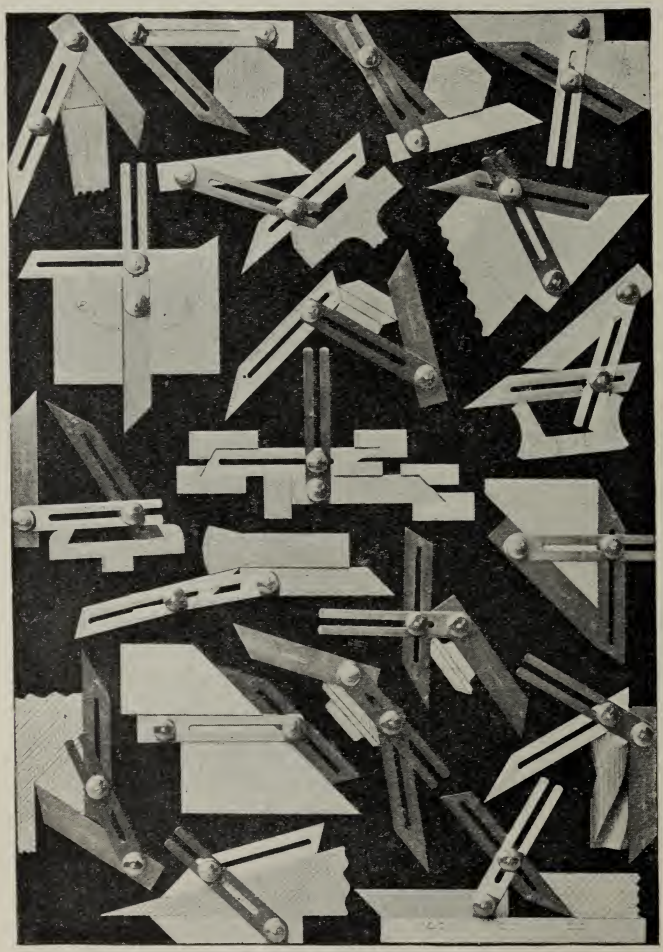
This tool weighs six ounces. The blade is 7 inch by ½ inch, the stock 4 inches long, and both are made from sheet steel, nicely finished. The disc is graduated in degrees from 0 to 90 each way, and rotates the entire circle on a central stud inside the case. The blade (clamped by an eccentric stud against the edge of the disc) may be slipped back and forth its full length, or turned at any angle around the circle and firmly clamped at any point, adapting it for work in positions where others cannot be used, and rendering the common universal bevel (for transferring angles) unnecessary. One side of the stock being flat, makes it a convenient tool for laying on paper in drafting, etc., and it has double the utility of any other tool of the kind.

PRICES

7 inch	$5.00
12 "	6.00
With both 7 and 12 inch blades	6.50

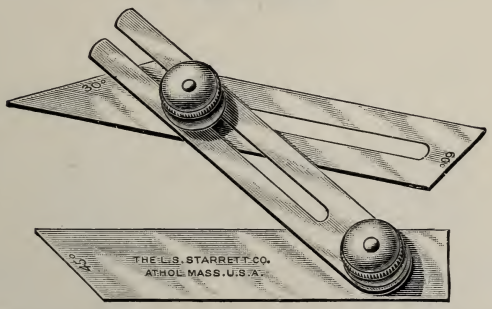
In Leatherette case, 7 inch, 75 cents extra; 12 inch, $1.00 extra.

The 7-inch Protractor, without Leatherette case, will be sent unless otherwise ordered.



Showing some of the many uses of
Starrett's Combination Bevel, No. 49

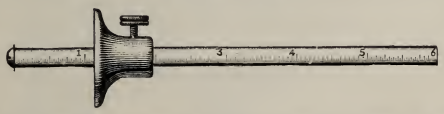
Starrett's Combination Bevel
No. 49



This Bevel, as will be seen, has a stud riveted in the straight edge stock or head, on which its split blade is hinged, so as to swing over the stock, and by the knurled nut clamped at any angle, adapting it for laying out work, in a very simple manner. The slotted auxiliary blade with clamp bolt may be slipped on to the split blade and be clamped at any desired angle and used, in combination with the stock of the other, for laying out work, measuring, or showing any angle desired, and, when so combined, will lie flat upon its work. The stock is about 4 inches long.

PRICE.....$2.00

Starrett's Scratch Gauge
No. 29



This Gauge is made of steel with *hardened* cast steel head. Through it is a split bushing, against which the set screw acts to hold it firm. The beam is graduated in either 50ths or 64ths of an inch. The marker is a thin square piece of steel, nicely tempered, which is firmly held against the end of beam, presenting four marking points.

PRICES

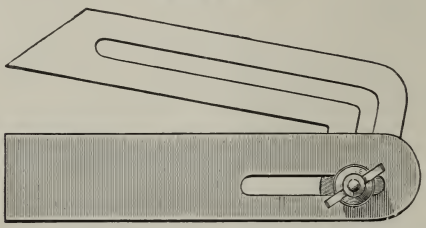
	Graduated	*Not Graduated*
5 inch (beam $\frac{15}{64}$ inch)	$1.00	$0.65
6 " " $\frac{5}{16}$ "	1.25	.75

Unless otherwise ordered, we shall send those graduated in 64ths.

Two extra cutters will be sent with each gauge, fastened to the case. They should last for years.

Universal Bevel

No. 15



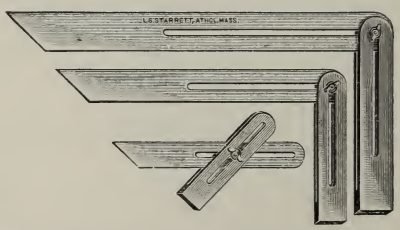
Improved features. The set-off in the blade increases its capacity and usefulness for bevel gear work, etc., so that any angle, however slight, may be obtained.

Another valuable feature is, one edge of the case being solid, a rest is formed directly under the blade, where thin templets may be placed and accurately fitted.

PRICE, 3 inch $1.50

Improved Bevel

No. 47



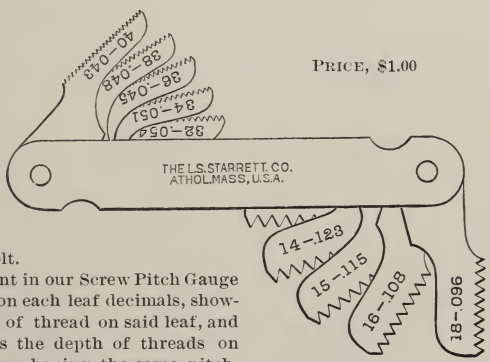
The advantages of this Bevel over any other tool of this kind made, consist in its having not only the blade slotted but the stock as well, through and through, thus admitting adjustments that cannot be obtained with a common bevel. The clamping screw head, which the cut does not show, is let into a rabbet, flush with the surface of the stock, which will lie flat on the work.

PRICES

6 inch	$1.25
9 "	1.50
12 "	1.75

Improved Screw Pitch Gauge

No. 40



PRICE, $1.00

This Gauge has twenty-two pitches, viz.: 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40.

This is the only gauge made not infringing our patents that can be used inside a nut as well as on the outside of a screw or bolt.

A late improvement in our Screw Pitch Gauge consists in stamping on each leaf decimals, showing the double depth of thread on said leaf, and this of course equals the depth of threads on the two sides of a tap having the same pitch, and helps the workman to determine the size of drill needed to drill the hole the right size to leave a full V thread for a tap having the same pitch. To do this, caliper with a micrometer over the threads of the tap and from its size in 1,000ths shown, deduct the decimals given on the pitch gauge leaf, agreeing with the pitch of the tap. The result will show in thousandths the size of drill needed for a full thread. An allowance is to be made for the extent to which it is desired the thread should be flattened.

A further improvement has recently been made in reducing the width of the leaves having the finer pitches, so that they will enter small nuts.

Formula for depth of threads for a V Thread:

$$d = D - \frac{1.733}{N}$$

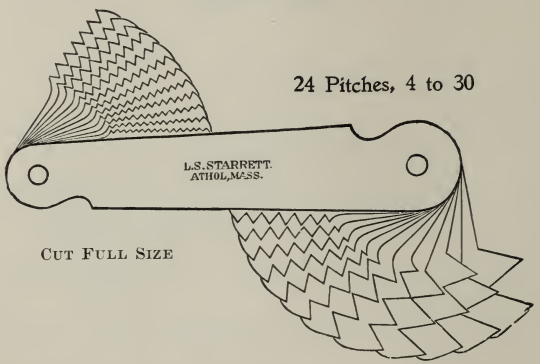
For U. S. Standard:

$$d = D - \frac{1.299}{N}$$

D=Outside diameter of tap.
d=Bottom " " "
N=Number of threads per inch.

NOTE.—The gauge formerly listed as No. 11½ is no longer made, the 11½ and 27 pitches being added to the No. 40 gauge described above.

Screw Pitch Gauge
No. 4



24 Pitches, 4 to 30

CUT FULL SIZE

Has the following pitches: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30. The teeth are sharp and clean cut. Like our No. 40 it can be used inside of a nut as well as on outside of a screw or bolt. It is also a convenient and reliable tool to use as a 60-degree center gauge and gauge to test the grinding of either an inside or outside threading tool.

PRICE $1.25

Screw Pitch Gauge
No. 5

26 Pitches, 32 to 82

Of the same form as our No. 40 Screw Pitch Gauge, for inside and outside work. Has the following pitches: 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82.

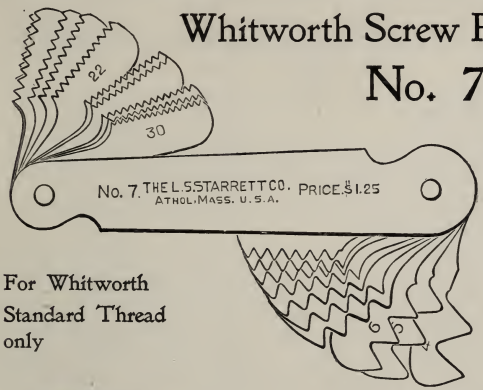
PRICE $1.25

Screw Pitch Gauge
No. 6

30 Pitches, 4 to 42

Of the same form as our No. 4 Screw Pitch Gauge. Has the following pitches: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42.

PRICE $1.50



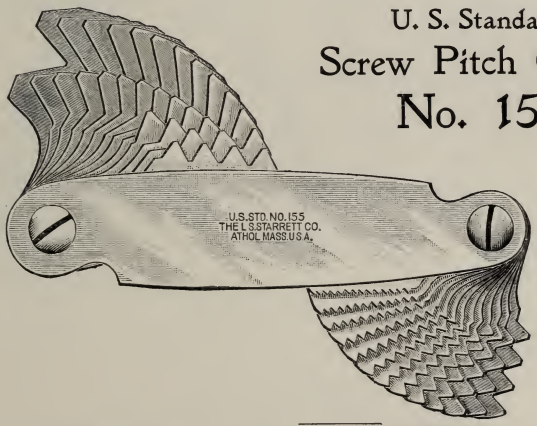
Whitworth Screw Pitch Gauge
No. 7

20 Pitches, 4 to 30

Has the following pitches: 4, 4½, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 40, 48, 60.

PRICE,.....$1.25

For Whitworth Standard Thread only



U. S. Standard
Screw Pitch Gauge
No. 155

This gauge has 25 pitches, viz.: 2¼, 2⅜, 2½, 2⅝, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20. Also a center gauge with coarse and fine notch.

PRICE, $1.50

Bicycle Screw Pitch Gauge
No. 157

Has 22 pitches. Similar in design to No. 40. It is made for the use of bicycle manufacturers, electricians, and others using screws with fine V threads. It has the following pitches: 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74.

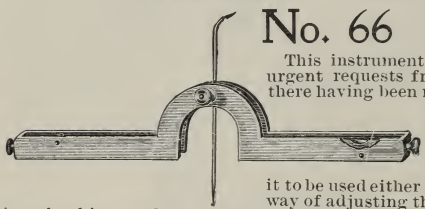
PRICE.....$1.00

Starrett's Thickness Gauge
No. 72

This gauge has 22 leaves, varying in thickness by thousandths, running from .004 to .025. The thickness of each leaf is designated by the number upon it. Each leaf may be used singly or in combination with others, and any thickness in thousandths within their limits may be quickly obtained. The leaves fold within the case, which is 2¾ inches long, a convenient size to carry in the pocket.

PRICE.....$1.25

Locomotive Guide Liner
No. 66



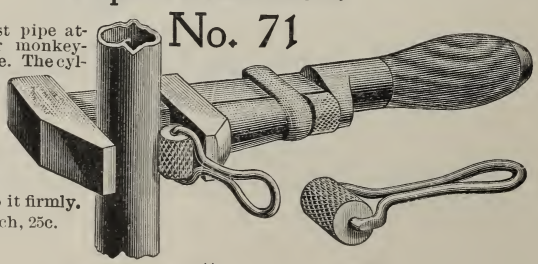
This instrument was devised after many urgent requests from intelligent mechanics, there having been nothing of the kind on the market. The lightness of this tool, combined with strength and accuracy, together with an adjustable level in each end, adapting it to be used either side up, and the convenient way of adjusting the pointer, all go to make it just the thing needed. Length over all, 14 inches; span of arch, 3¼ inches.

PRICE. $2.50

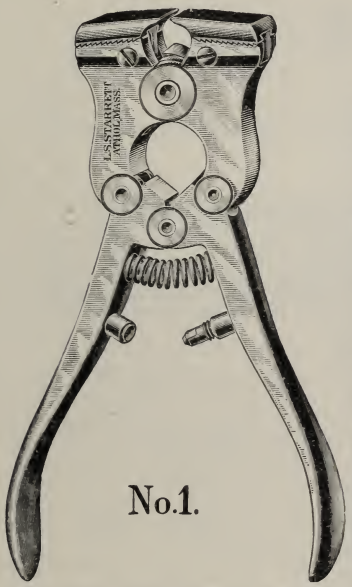
Pipe Attachment
No. 71

The cheapest pipe attachment for monkey-wrenches made. The cylinder, of hardened steel, rolls in between the jaw of the wrench and any round iron or pipe, causing the wrench to grip it firmly.

PRICE, ⅜ inch, 25c.



Starrett's Adjustable Jaw Cut-Nipper



No.1.

No. 1

The jaws are detachable, so that they can be removed, ground, and adjusted when they have become worn. Each jaw can be ground away to the extent of $\frac{1}{4}$ inch, remaining as good as new for practical use; and when used up, if ever, new jaws can be procured.

These jaws have a dovetailed slot in their under side to receive a spline, which extends into a slot in the frame. A tapering screw through the frame and spline draws the jaw firmly down to a toothed seat in the frame, holding it securely.

Another improved feature in this Cut-Nipper is a flat spring below the cutting edges and over the joint, forming a yielding seat for the end of the wire to press against while being cut. This obviates the danger of breaking the jaws,—as often happens with other styles of cut-nippers which allow the wire to be inserted against a solid surface, thereby creating a pushing out strain on the jaws when they are pressed together.

The head and handles are of drop forged steel, finely finished. All the parts are case-hardened, except the jaws. These are made from a high grade of steel, nicely tempered. Those warranted to cut music wire have their cutting edges ground to a short steep bevel, while those for *common use* have their cutting edges ground more acute, work easier, and are preferable for cutting softer wire or for general use.

The 5½-inch Nippers open $\frac{1}{8}$ inch, and the 7-inch open $\frac{5}{32}$ inch.

For Bicycle Use

We also make jaws specially shaped for cutting wire in bicycle rims.

PRICES

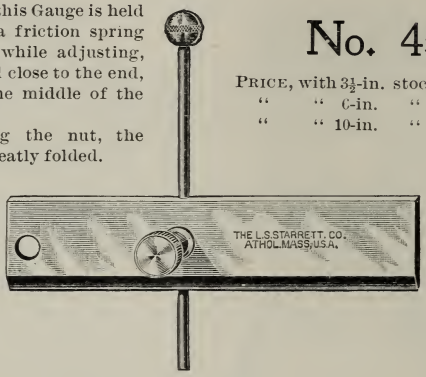
5½ inch, M (for music wire)	$2.00
5½ " C (for common use)	2.00
5½ " B (for bicycle use)	2.00
7 " either M, C, or B	2.50
Extra Jaws, either M, C, or B, which should be designated as above, per pair	.50

Unless otherwise ordered, Cut-Nippers with C jaws will be sent.

Starrett's Depth Gauge

The wire in this Gauge is held to a groove by a friction spring inside the nut while adjusting, and may be used close to the end, as well as in the middle of the Straight Edge.

By loosening the nut, the Gauge may be neatly folded.

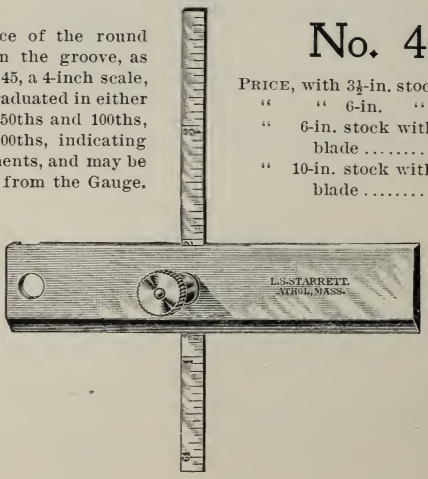


No. 45

PRICE, with 3½-in. stock	$0.75
" " 6-in. "	1.15
" " 10-in. "	1.35

Starrett's Depth Gauge

Has in place of the round wire to slide in the groove, as shown with No. 45, a 4-inch scale, $\frac{3}{16}$ inch wide, graduated in either 32ds and 64ths, 50ths and 100ths, or 64ths and 100ths, indicating exact measurements, and may be used separately from the Gauge.

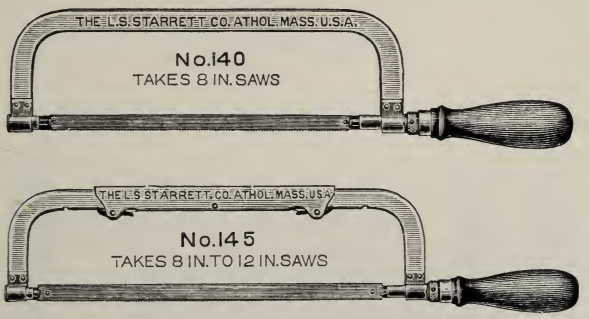


No. 46

PRICE, with 3½-in. stock	$1.25
" " 6-in. "	1.50
" 6-in. stock with 6-in. blade	1.75
" 10-in. stock with 6-in. blade	2.25

THE L.S.STARRETT CO., ATHOL, MASS., U.S.A.

Starrett's Patent Hack Saw Frames



Spring plungers overlap the ends of the saw, automatically holding it to its home. By slightly pushing them back the saw may be *instantly* removed, thus furnishing the most convenient way of attaching or detaching the saw ever devised. An improved nut within the handle, turning with it, gives the desired tension to the saw, which may be quickly and conveniently set at any required angle. The adjustable or extension back frames have improved spring pawls which securely hold the frames to receive saws of various lengths. The frames are neither too light nor too heavy—just right—are finely finished and nickel plated. The handles are of cocobolo. In appearance, workmanship, and utility these tools are not approached by any other hack saw frames made.

PRICES

No. 140.....$0.90
No. 145..... 1.25

Hack Saws

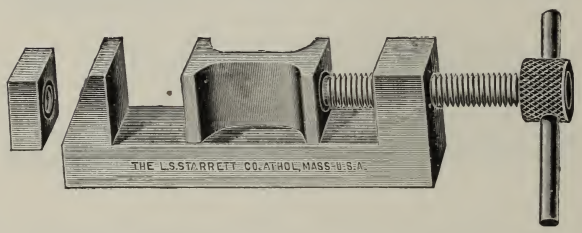
No. 103

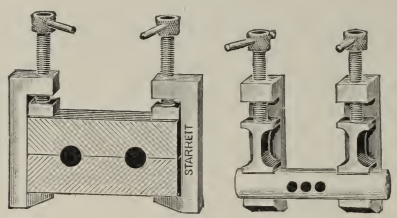
PRICES

Length of blade,	6 in.	7 in.	8 in.	9 in.	10 in.	11 in.	12 in.
PRICE per dozen,	$0.55	.60	.65	.70	.85	.95	1.05

Tool Makers' Steel Clamps

No. 160





These Clamps are made from drop forgings, nicely finished, case-hardened, and have take-up blocks to slip on and off end of screw, and are held to same in a novel manner. They will hold work square and parallel for laying out on surface plates, fitting or drilling. A round piece may be rigidly held in two of the Clamps and drilled on an upright, central and parallel. Put up and sold in pairs. With the small block in use, the capacity of the smaller clamp is a little over one inch, and that of the larger clamp two inches.

PRICES

1 inch (per pair)	$1.00
2 " " "	1.25

Starrett's Pocket Companion Tool

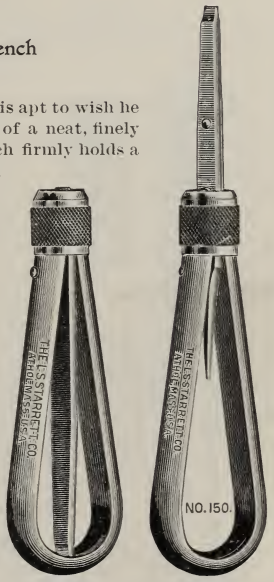
No. 150

Screw Driver, Brad Awl, Wrench

A compact combination of three tools a man is apt to wish he had with him a dozen times a day. Consists of a neat, finely finished steel handle with a knurled nut which firmly holds a screw driver and brad awl made in one piece, this being telescoped within the handle when not in use. The shape of the handle enables it to be used as an emergency wrench—often of the greatest convenience.

The tool weighs only two ounces.

It is of especial value to wheelmen, as it takes the place of a number of tools usually carried with a bicycle.



Closed. Open.

PRICES

Plain, each	$0.35
" in lots of one dozen or over, per dozen	4.00
Nickeled, each	.45
" in lots of one dozen or over, per dozen	5.00

Pocket Companion Tool

No. 151

This is the same as No. 150 above, except that there is a Screw Driver at both ends of the blade, one larger than the other.

PRICES same as for No. 150.

Starrett's High Speed Indicator

No. 104

This Indicator may be run at highest speed required without heating, and this on account of our frictionless bearing against which the inner end of the spindle revolves (for which patent is pending).

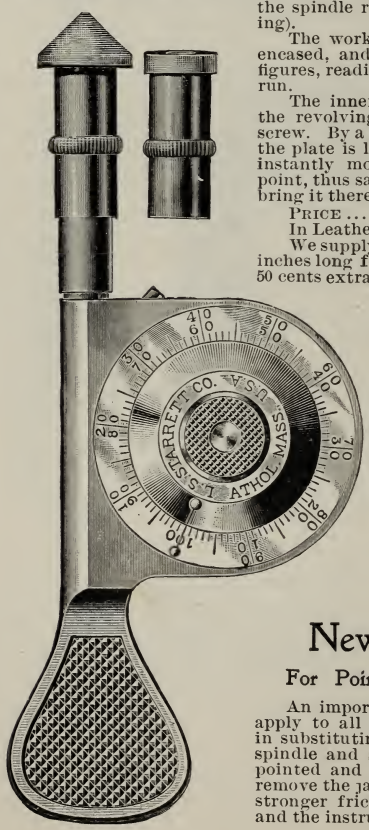
The working parts of this instrument are encased, and the dial plate has two rows of figures, reading right or left, as the shaft may run.

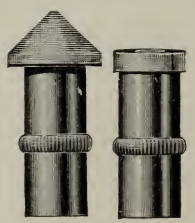
The inner plate is frictionally clamped to the revolving gear by a checked wafer head screw. By a pressure and twist with the thumb the plate is loosened, when the O mark may be instantly moved to agree with the starting point, thus saving time revolving the spindle to bring it there.

PRICE $1.00
In Leatherette case 1.50

We supply the Indicators with a spindle 7½ inches long for use on Dairy Machines, etc., for 50 cents extra.

The Indicator in pasteboard box (list $1.00) will be sent unless otherwise ordered.



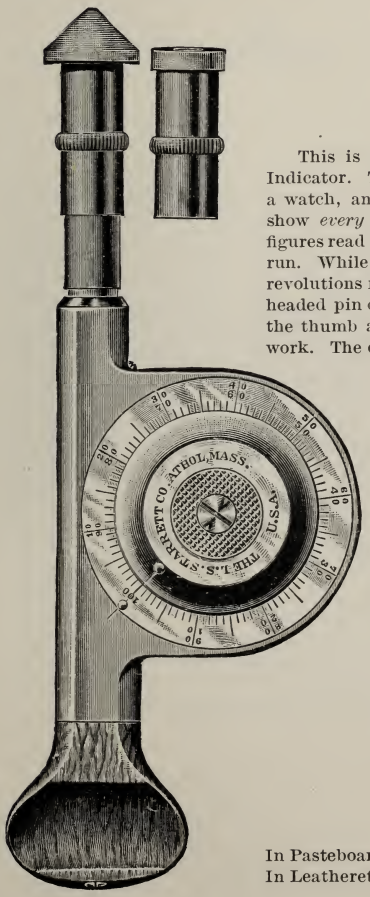


New Rubber Tips

For Pointed and Hollow Centers.

An important improvement which we now apply to all of our Speed Indicators, consists in substituting for the hardened steel pointed spindle and split caps, rubber tips for both pointed and centered shafts, which not only remove the jar and run smoothly, but produce a stronger frictional contact between the shaft and the instrument.

Starrett's Improved Speed Indicator



No. 106

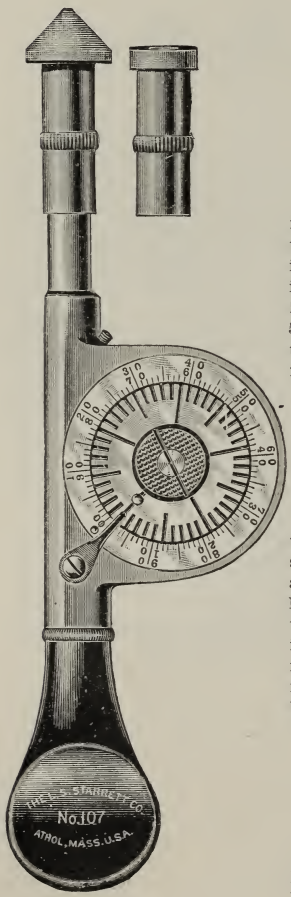
This is a nicely made and finely working Indicator. The working parts are inclosed like a watch, and as well made. The graduations show *every revolution*, and with two rows of figures read both *right* and *left*, as the shaft may run. While looking on the watch each hundred revolutions may be counted by allowing the oval headed pin on the revolving disc to pass under the thumb as the instrument is pressed to its work. The dial is locked to a revolving stud—a slight thumb pressure and twist on the knurled eccentric releases it so that the indicator mark may be readily moved and locked to agree with the starting point, thus saving the necessity of turning the instrument to bring it there.

The instrument is nickel plated, and has a rosewood handle, so that it will not heat the fingers when run at high speed. Has our new rubber tips for both pointed and hollow centers.

PRICES

In Pasteboard box	$1.50
In Leatherette case	2.00

Starrett's Registering Speed Indicator



No. 107

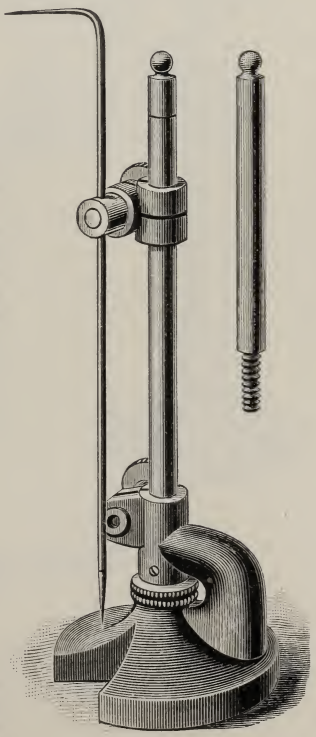
This instrument was devised to automatically register hundreds as well as units and tens, and thus relieve the mind from keeping tally; also to furnish a better registering indicator at a more reasonable cost than heretofore. The instrument will register 5,000 revolutions. The large dial is graduated into one hundred lines, each one representing a revolution of the spindle. The small dial has fifty lines cut upon its face, each representing one hundred revolutions of the spindle (or one complete turn of the large dial). A spring finger trip attached to the case engages with one of the lines in the small dial and holds it from revolving until the large dial makes one complete turn, when the trip pin passing under the spring trip lifts it, and the dial is frictionally carried along by the large plate one line, thus showing that one hundred revolutions of the spindle have been made. The instrument has a hard rubber handle, making a safe insulator when used on electrical machinery. It has our new rubber tips for both pointed and hollow centers.

PRICES

In Pasteboard box	$3.00
In Leatherette case	3.50

Surface Gauge

No. 52



This Gauge, with improvements as made for a few years past, gives great satisfaction to all who use it.

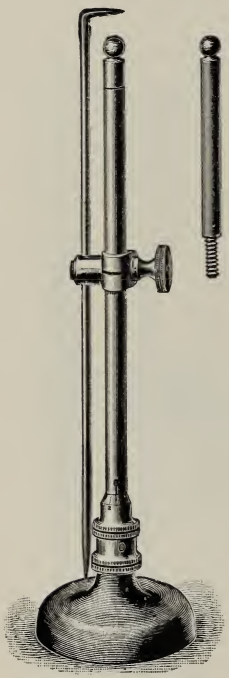
The sleeve and needle clasp, when loosened for adjustment, are both held by a slight spring friction, and by a single knurled nut *both* are rigidly clamped. For fine adjustment, the spindle in the base is raised or lowered by a knurled nut, and all backlash is taken up by a spiral spring in the base.

For above 12-inch lengths, an extension is provided to couple on to the spindle.

PRICES

8-inch	$2.00
12 "	2.75
12 " with 6-inch extension	3.25
Sleeve alone	1.00

Starrett's Micrometer Surface Gauge



No. 53

This Gauge has a turned and polished base, a micrometer adjusting nut reading 1,000ths, and a six-inch extension for the spindle. By means of springs and taper fitting parts of the sleeve (not shown in cut) the scriber is held by slight friction in any position while adjustments are made, and firmly held by a turn of the nut. A knurled cam on the base releases and locks the spindle for adjusting.

PRICES

8 inch, without extension	$2.50
12 " " "	3.50
12 " with "	4.00

In ordering, give the SIZE wanted.

Surface Gauge Attachment

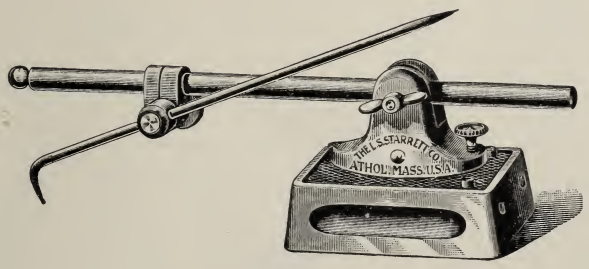
No. 54

To be used between the centers of the lathe to adjust, locate and lay out work secured to the face-plate. An auxiliary arbor is supplied size of No. 53 Surface Gauge, 12-inch Spindle, the sleeve fitting both spindle and arbor. Those having the Surface Gauge will need the arbor only.

PRICE of the Auxiliary Arbor.....$0.50, Complete, $1.50

Starrett's Universal Surface Gauge

No. 55



This Gauge has the following improved features, viz.: a joint at the base which allows the spindle and scriber to be moved back and forth and placed in any position from upright to horizontal to reach over, back of and under work that could not be got at with old style gauges, while by inclining the spindle over the work its scope for long reach is increased.

The fine adjustment is nicely obtained by the knurled screw in the rocking bracket at the base acting against a stiff spring under the opposite end, while the joint above with the spindle may be set and rigidly held in any position desired. Two pins through the base, frictionally held, may be pushed down by slight pressure to form a bearing to work from the edge of, or in the slots of, the planer bed for lining up work, while the weight of the gauge against the bed with a little pressure is sufficient to push them back. Grooves around these pins, against which a pointed spring plunger presses, insure their being held in place either up or down. Concaved depressions milled in the sides of the base make it convenient for thumb and finger to grasp.

This Gauge is furnished with our improved sleeve, which rigidly holds the scriber.

The Gauge is nicely made in two sizes, with spindles of extra length to order.

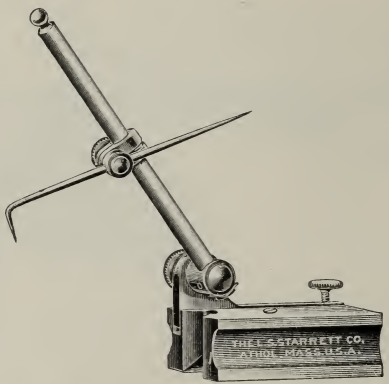
PRICES

9 inch	$2.50
12 "	3.00
With two spindles 12 and 18 inches	3.50

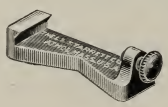
Extra spindles of any length furnished at a rate of 3 cents an inch.

Tool Makers' Universal Surface Gauge

No. 56



This gauge is admirably adapted for light work. It is made on the principle of our new No. 55. The base is steel, nicely finished and *case-hardened*, with depressions milled in the sides for the thumb and finger to grasp. The top side of it is slotted, and the rocking bracket is pivoted in the same. There is a stiff spring under one end of the bracket and a knurled adjusting screw in the other; the spindle jointed to this may be set and rigidly held in any position from vertical to horizontal, and the scriber placed in position to be used below its base for Depth Gauge, or (with bent end down) a Scribing Gauge. A V-shaped groove in the end and bottom adapts it for use on cylindrical work. There is a small hole in the clamp next to the base in which the scriber may be used for light work, the spindle being removed. An auxiliary guide piece is furnished to clamp to the base.

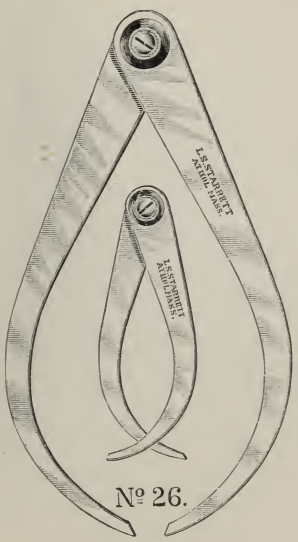


It weighs but ten ounces, and is five inches high, and, folding the spindle (which is four inches long) horizontally over the base, it may be packed in $1\frac{3}{8} \times 1\frac{1}{2} \times 4$ inches space in the tool chest.

PRICE, with auxiliary guide $3.00
" without " " 2.50

Sent with guide unless otherwise ordered.

Starrett's Improved Firm-Joint Calipers



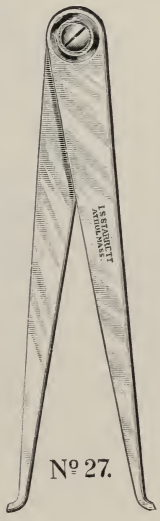
No. 26.

PRICES

3 inch	.....	$0.40
4 "	.....	.50
5 "	.....	.55
6 "	.....	.65
8 "	.....	.80
10 "	.....	.90
12 "	.....	1.00
14 "	.....	1.50
16 "	.....	1.75
18 "	.....	2.10
20 "	.....	2.50
24 "	.....	3.00

The above sizes refer to the *length* of the Calipers.

Their capacity is about one third greater than the size given.

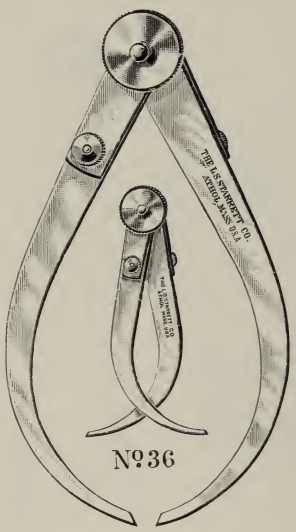


No. 27.

The improvement in these Calipers consists in the construction of the joint, which is so made as to be drawn together by means of a screw forcing a washer on to a squared end of the main rivet, which extends through the legs, thus clamping them together between bearings so shaped as to insure a SMOOTH and UNIFORM friction, of more or less tension to suit the user.

The quality of these Calipers is incomparably superior to that of any old style riveted-joint caliper on the market.

Starrett's Lock-Joint Transfer Calipers



No. 36

PRICES

4 inch,	.....	$1.25
5 "	.....	1.40
6 "	.....	1.50
8 "	.....	1.75
10 "	.....	2.00
12 "	.....	2.25
14 "	.....	2.50
16 "	.....	2.75
18 "	.....	3.00
20 "	.....	3.50
24 "	.....	4.25

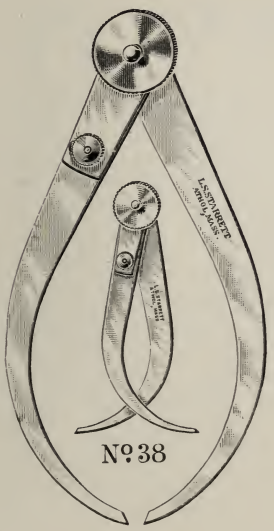
No. 37

These instruments (Nos. 36 and 37) not only have all the excellent features of Nos. 38 and 39, as described on another page, but in addition to common use may be used inside of chambered cavities, over flanges, etc., removed and replaced without losing the size calipered. This is done by loosening the nut binding one arm to the auxiliary leaf and swinging it out or in (while the joint is locked) to clear the obstruction, then moving it back against a stop, where it will show the exact size measured.

The sizes given refer to the length of the calipers, but the outside ones will caliper a cylinder 20 per cent. larger than their length, and the inside calipers will open nearly twice their length. This applies also to Nos. 26 and 27 on the preceding page, as well as to Nos. 38 and 39 following.

THE L.S.STARRETT CO., ATHOL, MASS., U.S.A.

Starrett's Lock-Joint Calipers



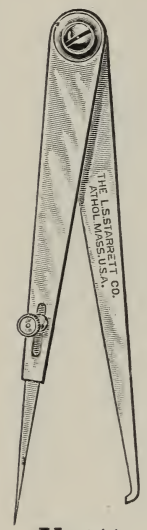
PRICES

4 inch,	.....	$0.90
6 "	.....	1.00
8 "	.....	1.25
10 "	.....	1.50
12 "	.....	1.75
14 "	.....	2.00
16 "	.....	2.25
18 "	.....	2.50
20 "	.....	2.75
24 "	.....	3.50

These cuts represent long needed tools, viz.: simple, light, low-priced and reliable calipers of wide scope for both inside and outside work, that can be instantly adjusted to their full extent, and as quickly locked firm in the joint, and yet provided with a sensitive adjustment. The improvement consists, first, in a socket joint made tapering, and locked or released by a partial turn of the knurled disc drawing it together. A spring washer under the disc maintains an easy friction in the joint when unlocked.

To further describe, in the under side of short arm is a slot containing a stiff spring. Riveted into the middle leg and projecting through an opening in the arm, is a *threaded stud* on which is a knurled nut having a beveled hub —this bears against a cone in the arm—the action of the spring holding them together turns the nut, presses them apart and adjusts the leg when the joint is locked. The spring taking up all backlash the legs are firm.

New Firm-Joint Hermaphrodite Calipers



No. 41

No. 41

These Calipers have our adjustable point, as well as the improved firm-joint, which has made our No. 26 Outside and No. 27 Inside Calipers deservedly popular among mechanics. This joint, with its smooth and uniform friction, is incomparably superior to the old style riveted joint.

PRICES

4 inch	$0.65
6 "	.80
8 "	1.00
10 "	1.20

No. 241

The same as No. 41 except the left hand point (see cut) is solid instead of adjustable.

PRICES

3 inch	$0.40
4 "	.50
5 "	.55
6 "	.65
8 "	.80
10 "	.90
12 "	1.00

Hermaphrodite Calipers

No. 42

No. 42

With our adjustable point, lock joint and sensitive adjustment. A good thing.

PRICES

4 inch	$1.00
6 "	1.15
8 "	1.35
10 "	1.60

No. 242

The same as No. 42 except the left hand point (see cut) is solid instead of adjustable.

PRICES

4 inch	$0.90
6 "	1.00
8 "	1.25
10 "	1.50

New Dividers

No. 43

With our improved lock-joint attachment and sensitive adjustment. It is light and stiff, with large capacity, instantly opened, closed, and locked. The points are nicely tempered.

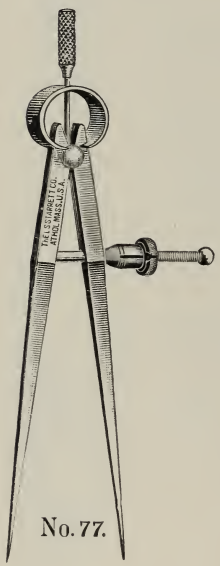
PRICES

6 inch	$1.00
8 "	1.25
10 "	1.50

No. 43

The Fay Patent Spring Dividers

With Spring Nut



No. 77.

Spring Nut

The Fay Calipers and Dividers, Nos. 74 to 77, all sizes, are sent *with Spring Nut* unless otherwise ordered.

The above cut represents our Spring Dividers with new quick-adjusting, automatic closing spring nut, a critical examination of which will at once show their superiority over all others on the market. Their use will save much valuable time in opening and closing spring-bow calipers and dividers.

They are also made with a solid nut.

PRICES

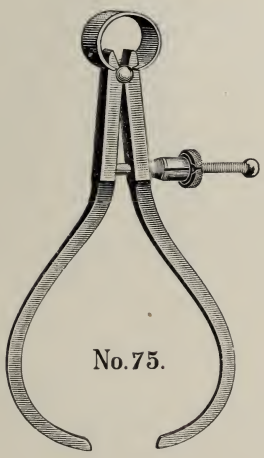
2½	inch, each, with spring nut					....	$1.15	with solid nut			.....	$1.00
3	"	"	"	"	"	....	1.15	"	"	"	.....	1.00
4	"	"	"	"	"	....	1.40	"	"	"	.....	1.25
5	"	"	"	"	"	....	1.40	"	"	"	.....	1.25
6	"	"	"	"	"	....	1.75	"	"	"	.....	1.50

The Fay Patent

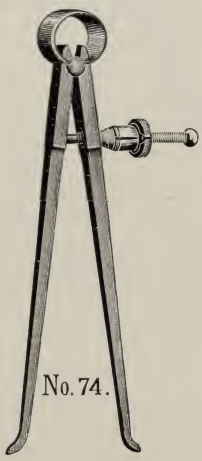
Outside and Inside Calipers

With Spring Nut

No. 74 represents a new Inside Transfer Caliper, with either solid or spring nut. The bow is stiff, making the caliper reliable. After calipering inside a chambered cavity, by pressing the legs together they may be withdrawn, and as they spring back will show the exact size calipered.



No. 75.



No. 74.

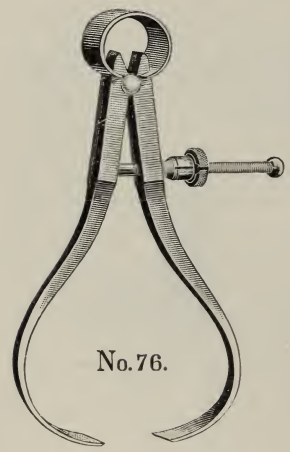
PRICES

OUTSIDE, No. 75			INSIDE, No. 74		
	Solid Nut	*Spring Nut*		*Solid Nut*	*Spring Nut*
2½ inch	$1.00	$1.15			
3 "	1.00	1.15	3 inch	$1.00	$1.15
4 "	1.10	1.25	4 "	1.10	1.25
5 "	1.10	1.25	5 "	1.10	1.25
6 "	1.35	1.50	6 "	1.35	1.50

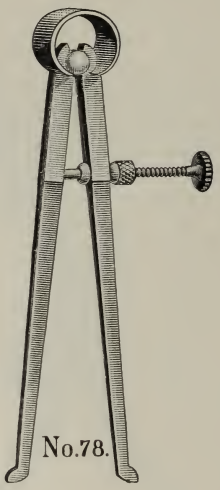
These Calipers will be sent *with Spring Nut* unless otherwise ordered.

THE L.S.STARRETT Co., ATHOL, MASS., U.S.A.

The Fay Patent Thread and Inside Calipers



No. 76.



No. 78.

PRICES

THREAD, No. 76

	Solid Nut	*Spring Nut*
3 inch	$1.00	$1.15
4 "	1.10	1.25
5 "	1.10	1.25

INSIDE, No. 78

	Solid Nut
4 inch	$1.10
5 "	1.10

No. 78 Inside Calipers are not made to receive the spring nut.

Duplicate Parts

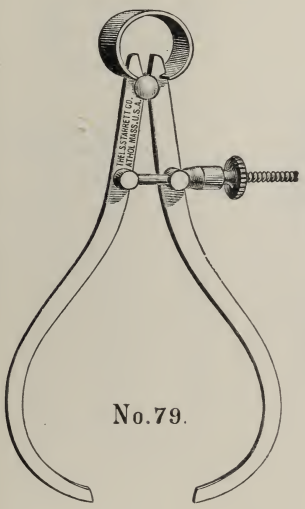
For either size and style of Fay Caliper or Divider will be forwarded to any address, postpaid, on receipt of following prices:—

Screw and Ball	$0.15	Leg	$0.35
Thumb Attachment	.15	Spring	.25
Solid Nut	.10	Jam Washer	.10
Spring Nut	.25	Fulcrum Stud	.10

Yankee Outside and Inside Calipers

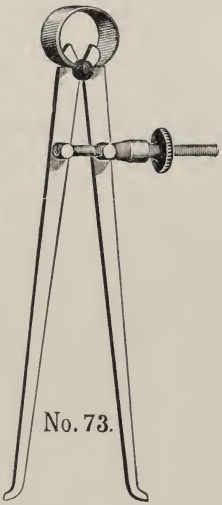
The Yankee Calipers and Dividers are manufactured under the Fay patent, are not quite so heavy as the Fay, and cost less. They are much liked, and on account of price are preferred by many to the higher cost tools.

All sizes are supplied with either solid or quick-adjusting nut.



No. 79.

Fitted with Spring Nut when so ordered, 25 cts. extra.



No. 73.

No. 73 represents a new Yankee Inside Transfer Caliper with either spring or solid nut. The bow is stiff, making the caliper reliable. After calipering inside of chambered cavity by springing in the legs they may be withdrawn, and as they spring back will show the exact size calipered.

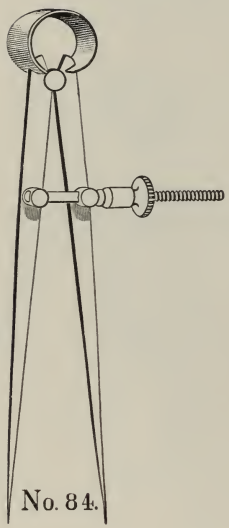
PRICES, NO. 79 OR NO. 73

2½	inch,	with	solid	nut	$0.65		with	spring	nut	$0.90
3	"	"	"	"	.70		"	"	"	.95
4	"	"	"	"	.75		"	"	"	1.00
5	"	"	"	"	.80		"	"	"	1.05
6	"	"	"	"	.85		"	"	"	1.10
8	"	"	"	"	1.00		"	"	"	1.25

Sent with solid nut unless otherwise ordered.

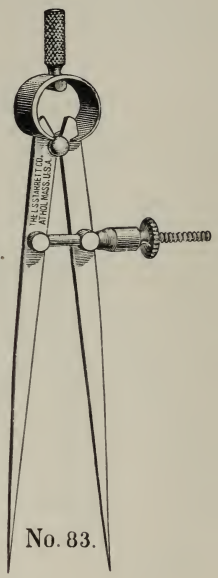
THE L. S. STARRETT CO., ATHOL, MASS., U.S.A.

Yankee Spring Dividers



No. 84.

With Spring Nut, 25 cents extra.



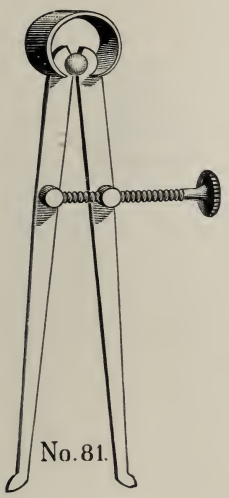
No. 83.

These Dividers are furnished with spring nut when ordered, at an extra cost of 25 cents each.

PRICES

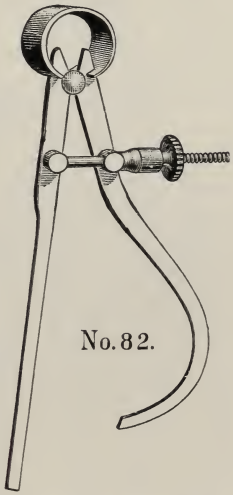
No. 84		No. 83	
2½ inch, each	$0.65	With thumb attachment	$0.80
3 " "	.70	" " "	.85
4 " "	.75	" " "	.90
5 " "	.80	" " "	.95
6 " "	.85	" " "	1.00
8 " "	1.10	" " "	1.25

Yankee Inside and Keyhole Calipers



INSIDE CALIPER

Spring Nut on No. 82, 25 cents extra.

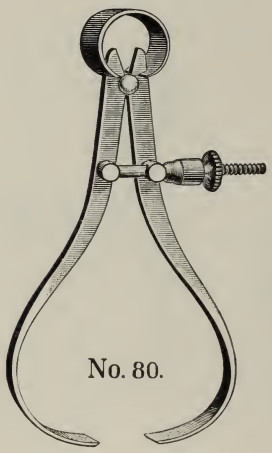


KEYHOLE CALIPER

PRICES

Inside Calipers		Keyhole Calipers	
4 inch, with solid nut, each	$0.75	3 inch, with solid nut, each	$0.70
5 " " " " "	.80	4 " " " " "	.75
6 " " " " "	.85		

Yankee Thread Calipers



No. 80.

With Spring Nut, 25 cents extra.

PRICES

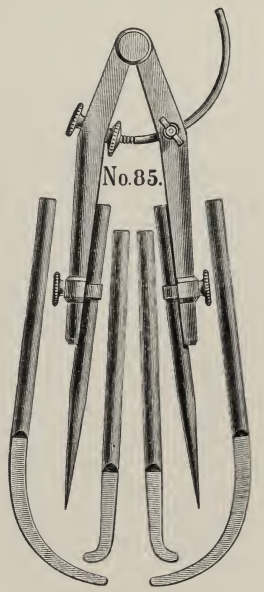
3 inch, with solid nut	$0.75	with spring nut	$1.00
4 " " " "	.90	" " "	1.15
5 " " " "	1.00	" " "	1.25

Duplicate Parts

for either size of Yankee Caliper or Divider will be forwarded to any address, postpaid, on receipt of the following prices:—

Screw and Ball	$0.15	Spring	$0.25
Thumb Attachment	.15	Jam Washer	.10
Solid Nut	.10	Fulcrum Stud	.10
Spring Nut	.25	Stud	.10
Leg	.25		

Starrett's Improved Extension Divider



This is a well-made, nicely finished Divider, with auxiliary caliper legs, which, together with a common pencil, form convenient combinations. Our patent locking nut between the arms, against which a spiral spring acts, is a valuable feature. After the fine adjustment is made, the nut may be turned back, locking spring and arms firmly, thus remedying the weak point which renders the common wing divider only as stiff as the adjusting spring. A full-threaded nut on the stud, through which the quadrant passes, is a more durable fastener than two or three threads tapped in the arm to hold the wing of the old style. The head and arms of this tool are made from best malleable iron, the rest of steel. The points are hardened and warranted first-class. The smallest size is 7 inches long; by adjustment of points it becomes 9 inches, and will scribe a 22-inch circle; will caliper 11 inches outside and 13 inches inside. The second size is 9 inches; by adjustment of points it becomes 12 inches, and will scribe a 30-inch circle, and caliper 14 inches outside and 16 inches inside. The Dividers will be sold without caliper legs *when so ordered.*

PRICES

7 inch, with Divider Legs only	$1.25
9 " " " " "	1.50
7 " complete	2.25
9 " "	2.50

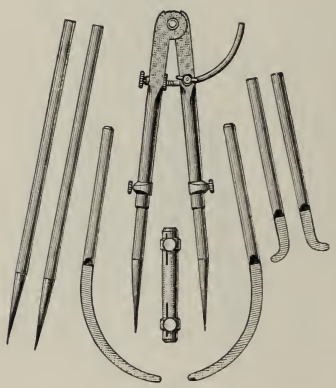
For Ball Points which may be used with this tool, see page 71.

THE L. S. STARRETT CO., ATHOL, MASS., U.S.A.

Starrett's Improved Bronze Divider

Nickel Plated

No. 90



The head and socket legs of this tool are made from drawn (not cast) bronze metal, and are hard, tough, strong, *finely finished* and nickel plated.

The joint is large and firm. Our patent locking nut between the arms, against which a spiral spring acts, is a valuable feature. After the fine adjustment is made, the nut may be turned back, locking spring and arms firmly, thus remedying the weak point in the common wing divider, which is only as stiff as the adjusting spring. The quadrant is fastened by our improved method.

A common pencil fits either socketed leg, while an auxiliary holder fits reversed end of either short point for an extension. The head, with short point, is eight inches long; may be extended two inches more; will caliper 10 inches outside and 12½ inside. With short points it will scribe a 24-inch and with long points a 34-inch circle.

PRICES

With short points only	$2.25
Set complete	4.00

Sent complete, unless otherwise ordered.

Extra Parts

Long Points	$0.50
Outside or Inside Caliper Legs	.50
Auxiliary Pencil Holder	.40
Extra Long Points (will scribe 44-inch circle) made to order	.60

For Ball Points which may be used with this tool, see next page.

Ball Points

No. 88

For Use with No. 85 or No. 90 Dividers and No. 51 and No. 58 Trammels

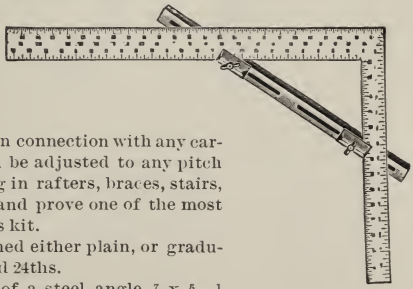
This attachment consists of four balls, of $1\frac{9}{16}$ inch, 1 inch, $\frac{3}{4}$ inch, and $\frac{1}{2}$ inch diameter respectively, and a holder which fits either divider leg or trammel head. It is used to form a seat for the divider leg in describing circles around a hole.

PRICES

Complete, 4 Balls and Holder	$1.25
Either Ball or Holder	.25

Patent Stair Gauge

No. 110



This Gauge is to be used in connection with any carpenter's steel square, and can be adjusted to any pitch or angle desired. For cutting in rafters, braces, stairs, etc., it will soon pay its cost and prove one of the most valuable tools in a carpenter's kit.

The attachment is furnished either plain, or graduated in inches, 4ths, 12ths, and 24ths.

It is made in the shape of a steel angle $\frac{7}{8}$ x $\frac{5}{8}$, $\frac{1}{8}$ inch thick, ground straight and nickel plated.

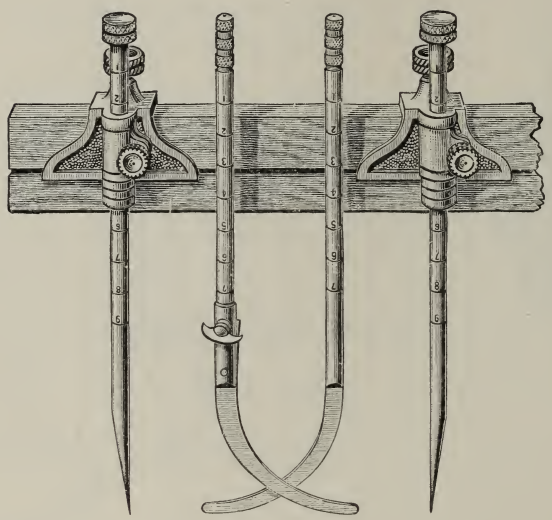
PRICES

Plain, 18-inch, nickel plated	$1.00
" 28 " " "	1.50
Graduated, 18-inch, nickel plated	1.50
" 28 " " "	2.25

Sent plain, unless otherwise ordered.

Extension Beam Trammels

No. 51



The above cut represents a pair of Trammel Heads, with an opening through the under side to accommodate the extension, giving width and stiffness in proportion to the length required for large work, while it is equally well adapted to receive a narrow beam for light work.

The points are eccentric, and may be loosened and rotated in their sockets to make fine adjustments. Either point may be removed and a common pencil inserted.

One of the caliper legs is provided with a joint, worked by an eccentric thumb piece for fine adjustments.

The marks on the legs enable them to be adjusted in proper relation to each other.

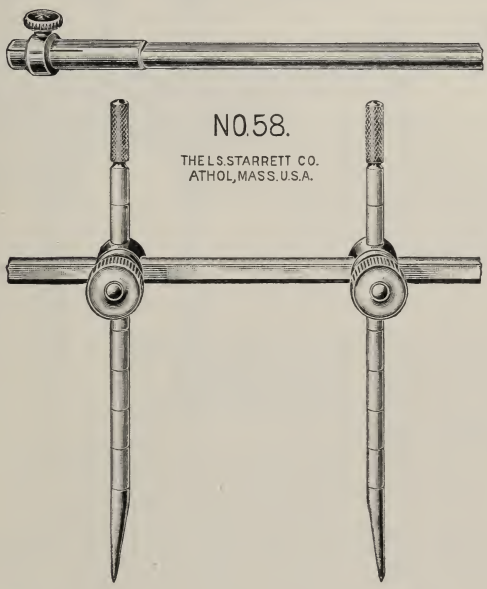
PRICES

Complete	$3.25
Without Caliper Legs	2.50

Sent complete, unless otherwise ordered.

For Ball Points which may be used with this tool, see page 71.

Starrett's
Extension Steel Beam Trammels



The beam of this tool is $\frac{5}{16}$ inch round, with one side flattened. It is made in one, two or three sections, of 14-inch lengths each, and coupled together by means of our improved socket coupling and grip nut, rigidly holding them for long reaches. With one 14-inch section only, it weighs but 8 ounces. The slides carrying the points grip both beam and points, by a partial turn of the knurled nut. Fine adjustments are made by a slight rotation of one or the other eccentric point, which by friction springs retain it when the nut is loosened.

The Trams are nicely finished and will be supplied with any number of the sections desired.

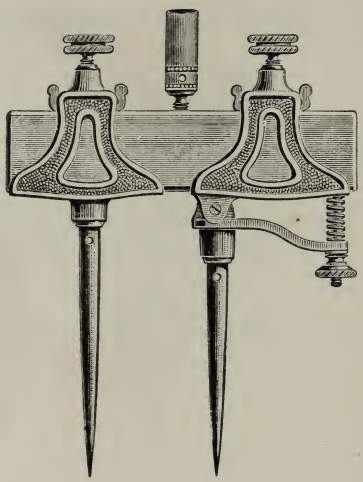
PRICES	*Not Plated*	*Plated*
With one section, 14 inch	$2.25	$2.50
" two " 28 "	2.60	2.85
" three " 42 "	3.00	3.25
Caliper Points to fit this tool, extra, per pair	.50	

Those not nickeled will be sent unless otherwise ordered.

For Ball Points which may be used with this tool, see page 71.

Improved Trammel Points

No. 50



Made of bronze metal, with forged steel points, hardened.

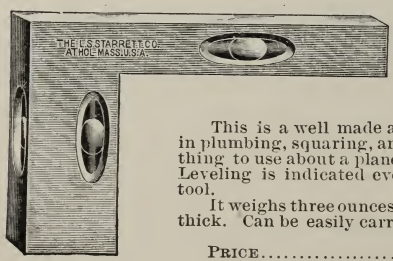
Either point can be removed, and the pencil socket accompanying each pair put in its place.

Adjustable like *spring dividers*. Light and durable.

PRICES

With 3 inch points, adjustable	$2.50
With 3 inch points, not adjustable	1.50
Extra long points, 5 inch, per set	.35

Starrett's Cross-Test Level, Plumb and Square



No. 134

This is a well made and reliable tool, and valuable in plumbing, squaring, and leveling up work. Just the thing to use about a planer or in setting up machinery. Leveling is indicated every way without moving the tool.

It weighs three ounces. Size 2 inch x 3 inch x $\frac{1}{2}$ inch thick. Can be easily carried in the pocket.

PRICE.....$1.50

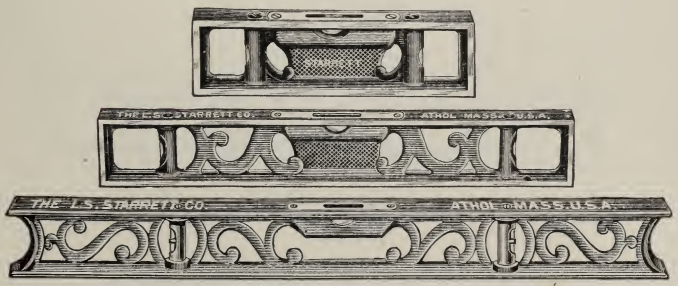
Starrett's New Levels

No. 130

Bench Level

PRICE, 3½ inch.....$0.30

No. 132



Bench Levels with Double Plumbs

PRICES

4 inch, with square ends.....	$1.35	12 inch, with square ends.....	$1.75
6 " " " "	1.50	18 inch, as in bottom cut	2.00
9 " " " "	1.65	24 " " " " "	2.25

Our No. 132, No. 133, No. 95, and No. 96 Levels all have a longitudinal groove in seat of frame, as shown in this small cut, adapting them to rest on cylindrical shafts or pipes as well as on flat surfaces, and even improving them for use on flat surfaces.

Adjustable Bench Levels

With ground and graduated vials,—accurate and very sensitive.

These Levels are so constructed that they can be accurately adjusted, and when so adjusted are not liable to get out of truth, the vials being set in tubes having solid ends which are firmly clamped to the base. The tubes are nickel plated, the bases japanned or nickel plated. The outer tube may be turned so as to protect the glass when not in use. These Levels have the longitudinal groove mentioned on the preceding page.

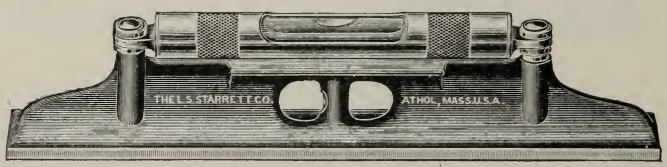
No. 95

PRICES

4 inch,	Plain	Vial	.....	$1.00
6 "	"	"	.....	1.25
8 "	"	"	.....	1.50
12 "	"	"	.....	2.00
18 "	"	"	.....	3.00

Either size, nickel base, 15 cents extra.

No. 96



PRICES

4 inch,	with Ground and Graduated	Vial	.....	$2.50
6 "	"	"	.....	3.50
8 "	"	"	.....	4.00
12 "	"	"	with plumb.....	5.50
18 "	"	"	with double plumb.....	8.00

Either size, nickel base, 15 cents extra.

The bottoms of these Levels are all ground true.

Nickel Plated Pocket Levels

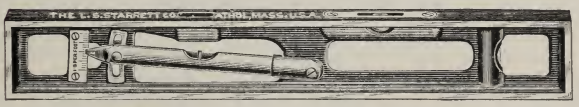
No. 135

PRICES

$2\frac{1}{2}$ inch.....$0.40 | $3\frac{1}{2}$ inch.....$0.50

Engineers' and Plumbers' Levels

No. 133



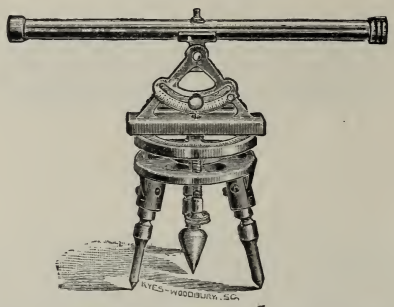
The above represents an adjustable, incline Level, a fixed Level, and a Plumb. The hinged tube inside the working faces of the frame, carrying a level glass, is adjustable to the graduated scale, and shows any incline by 32ds (or less) to 2 inches to the foot without interfering in the least with the Plumb or Level.

A longitudinal groove in seat of frame (not shown in cut) adapts it to rest on a cylindrical shaft or pipe as well as on flat surfaces, making it convenient to determine the pitch of drain pipes, etc.

These instruments are supplied with either ground or plain glasses. Only one size made, length of which is 15 inches.

PRICE, with plain glasses.....$3.00
" " ground " 6.00

Transit
No. 99



This instrument is designed especially to meet the wants of architects, carpenters, masons, millwrights, contractors, and builders, who in their work often require the use of a level and some instrument for the taking of angles, but do not feel like paying the price of a surveyor's or engineer's transit.

The instrument is composed of iron and brass, and consists of a tripod, to the head of which is connected by a ball-and-socket joint an upper plate, which can be leveled by the leveling screws.

This plate is recessed to contain a graduated arc for taking angles. On this plate rests a triangular frame to which is attached a level, a graduated arc for taking vertical angles, and a sight tube. The plain sight tube has no lenses, is brass, twelve inches long; in one end is a small eye aperture, in the other the usual cross wires.

The telescope has cross lines, is adjustable to distances, and is same size and length as plain sight tube.

With short legs, as shown in the cut, the instrument is eight inches high. With long extension legs, which fasten on over the short, the height can be from two feet eight inches to four feet eight inches. The sight tube, level case, and graduated arcs are nickel plated, the other parts are japanned.

The advantages of this Transit are as follows: The head is held to the tripod with a bolt and nut, so as to make it stationary at any given point; the graduated arc can be clamped to the base-plate by throwing a small cam arrangement.

All points taken into consideration, this Transit is one of the best of its kind in the market. It is adapted to almost all kinds of work, and is made of the best of materials, and finished and adjusted by skilled workmen. It is warranted perfect and accurate in every respect.

When packed and ready for shipment it weighs about 15 pounds.

For PRICES, see next page.

(Transit, No. 99.)

PRICES

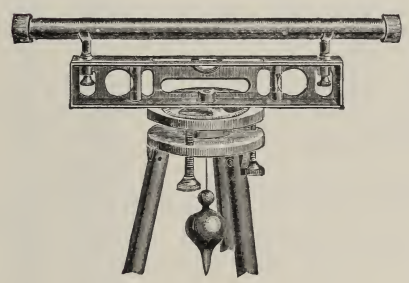
With plain sight tube and long legs	$16.50
" " " " " short legs	15.00
" " " " " long legs and ground level vial	18.00
" " " " " short legs " " " "	16.50
" telescope, long legs, and ground level vial	28.00
" " short " " " " "	26.50

Compass, about two inches diameter, extra, $5.00.

Target to go on common ten-foot pole, extra, $1.50.

Leveling Instrument

No. 101



Warranted to be true in every respect.

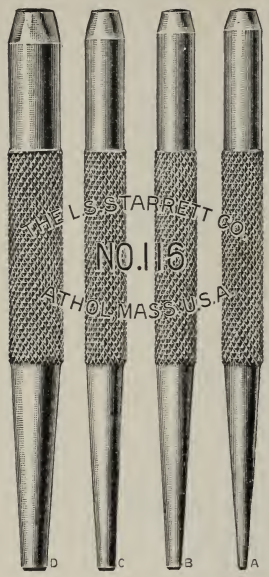
The best, the cheapest and most durable in the market for the money.

It is adapted for the use of architects, carpenters, builders, stone masons, and others, for leveling, getting angles, etc.

It is made of iron, japanned, except the sight tube, which is of brass, nickel plated. It weighs, when packed in box for shipment, 13¾ pounds. Directions sent with instrument.

PRICES

Japanned, nickeled tube	$12.50
" " " with ground vial in level	14.00



Nail Sets

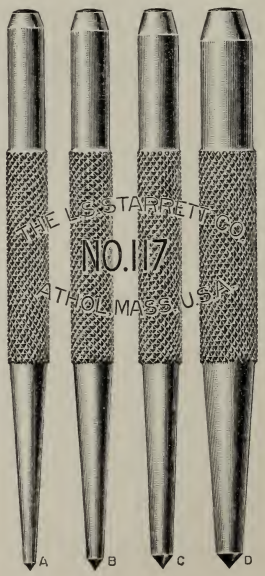
No. 116

Made of a fine grade of steel, both ends hardened, centers nicely knurled, tips concaved, tops oval, and the size just right.

Length of each size 4 inches. Diameter at tip A $\frac{5}{64}$ inch, B $\frac{3}{32}$ inch, C $\frac{9}{64}$ inch, D $\frac{5}{32}$ inch.

PRICE

Per dozen	$1.25
Each	.15



Machinists' Center Punches

No. 117

Made to supply the demand for a better article than has heretofore been on the market. Made of fine steel, neatly shaped, with both ends tempered and points nicely ground.

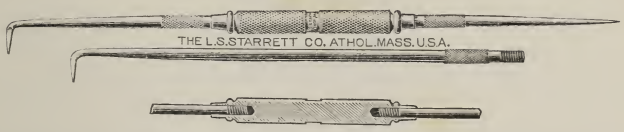
Length of each size 4 inches. Diameter, A $\frac{5}{64}$ inch, B $\frac{3}{32}$ inch, C $\frac{9}{64}$ inch, D $\frac{5}{32}$ inch.

A larger size, E, is made for heavy work, —diameter $\frac{1}{4}$ inch, diameter of knurled part $\frac{1}{2}$ inch.

PRICE

Per dozen	$2.00
Each	.20

Improved Scriber
No. 67



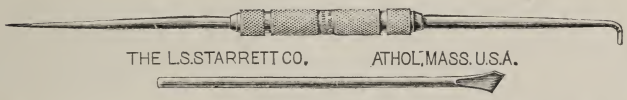
This Scriber is made for mechanics who want a better thing than has been heretofore obtainable. These points are made of a fine grade of steel, nicely tempered. The knurled stock is of sufficient size to be easily held without cramping or turning in the fingers. The long bent point will be found a valuable auxiliary for reaching through holes, etc. Length, with short bent point, 9 inches; with long point, 12 inches. All parts are interchangeable. The knurled sleeve is nickeled.

PRICES

Complete	$0.45
Without long point	.35
Straight point, long or short bent point, each	.10

The tool will be sent complete unless otherwise ordered.

Improved Adjustable Sleeve Scriber
No. 68



The knurled sleeve has hole clear through and a clamping device at each end, adapting it for slipping on or off different tools, securely holding them near to or away from the working point. The knurled sleeve is nickeled.

This Scriber is made in two lengths, 8 inches and 12 inches. Tool makers will find the small size more desirable for general use, and the larger one for heavier work. For pattern makers a Knife Scriber, made of a fine grade of steel, is supplied as an auxiliary.

PRICES

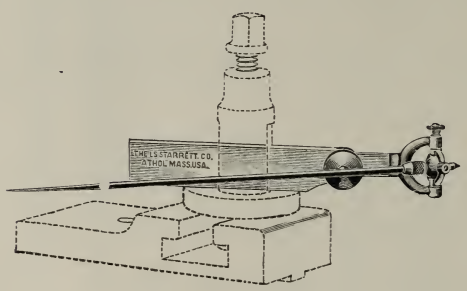
Either size, without knife point	$0.50
Knife point, extra	.15
Extra Scriber points, each	.20

The 8-inch being the more popular size, will be sent (without knife point) unless otherwise ordered.

THE L.S.STARRETT CO., ATHOL, MASS., U.S.A.

Center Tester

No. 65

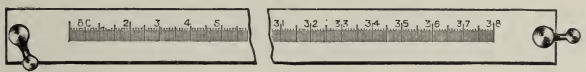


This instrument was designed to use in adjusting and locating centrally any point or hole in a piece of work operated upon in a lathe chuck or on a face-plate; also to test the truth of lathe centers or a shaft between the centers, the instrument being held in the tool post.

The Tester is of improved design and nicely made. The indicating needle passes through the ball, having a split stem, forming a chuck for holding the needle adjusted to any desired length. The ball is pivoted to form a universal joint, but may be instantly converted into a single joint for a tilting motion by only tightening the knurled nut, adapting it for both inside and outside surface contact. A steel bead, not shown in the cut, and carried on the needle, slips over the point of same when used for inside work. The instrument is joined to a tool-post shank by a flexible steel ribbon with sufficient spring to properly hold the needle in contact with the work. It is a tool needed in every up-to-date tool room.

PRICE $2.50

Combination Straight Edge
No. 167



The needle carriers at each end swing on taper studs, and carry needle-pointed brads frictionally held in their split ends. These may be swung to bring the points close to the working edge, and by a slight turn of a knurled nut may be rigidly locked, holding the straight edge bradded to the paper. Using one brad secured at the working edge and swinging the jointed arm, see cut No. 165 (the protractor being removed), over against the straight edge to form a corner to place pencil, circular lines may be struck any desired size, and radial lines drawn to perfection. The straight edges, either graduated or plain, will be furnished with the brad carriers without the other attachments, or with any or all of them, making a complete set—the different lengths governing the price. Those having use for the set will highly appreciate it. They are also furnished plain, without carriers.

PRICES

18 inches	long,	1¼	wide,	not	graduated	.....	$2.25	graduated in 32ds	....	$3.00
24	"	"	1¼	"	"	"	.....	2.75	"	"	"	....	3.50
30	"	"	1¼	"	"	"	.....	3.50	"	"	"	....	4.75
36	"	"	1¾	"	"	"	.....	4.25	"	"	"	....	5.50
42	"	"	1¾	"	"	"	.....	5.00	"	"	"	....	6.75
48	"	"	1¾	"	"	"	.....	5.75	"	"	"	....	8.00

Extra needle points, 30 cents per dozen; extra needle holders, 10 cents each. In ordering the latter, mention the width of straight edge blade.

Plain Straight Edges
No. 169

These are spring-tempered steel, No. 16 gauge, same width as No. 167.

PRICES

18	inch,	Plain,	$1.50	Nickeled,	$1.75	36	inch,	Plain,	$3.00	Nickeled,	$3.50
24	"	"	2.00	"	2.40	42	"	"	3.75	"	4.25
30	"	"	2.50	"	3.00	48	"	"	4.50	"	5.25

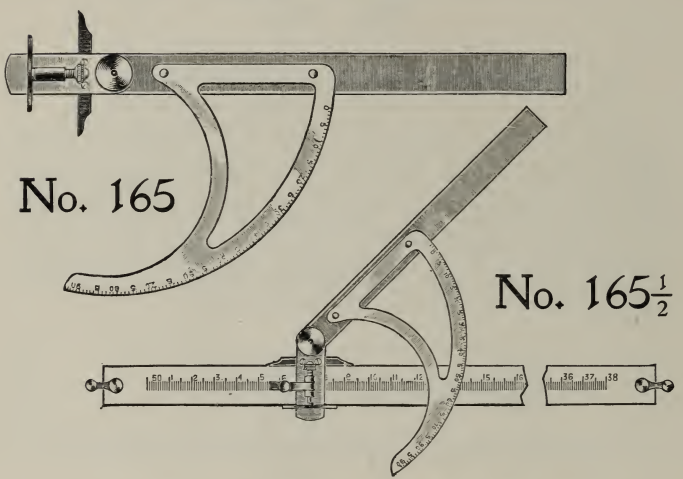
Adjustable Metal Edge
No. 168

We furnish a metal T Rail, or straight edge with attachments to secure it to end, or end and side of draughting board or table. These are ground perfectly straight and are nickel plated. The T Square used against this insures more accurate results than could be obtained by working against a wooden board or table.

PRICES

16	inch,	$1.35	18	inch,	$1.50	19	inch,	$1.60	20	inch,	$1.70	21	inch,	$1.80
23	"	1.90	24	"	2.00	26	"	2.20	27	"	2.30	28	"	2.40
30	"	2.50	32	"	2.65	34	"	2.85	36	"	3.00	38	"	3.20
40	"	3.35	48	"	4.00	60	"	5.00						

Protractor



Cut No. 165 shows the Bevel Arm and Protractor. No. 165½ shows the same and Section Liner as applied to No. 167 Straight Edge. The Protractor Arm is jointed to a clasp which slides on the Straight Edge or may be locked to it at will. This may be set at an angle (either way), and the joint locked by a slight turn of the knurled disc forcing it together. The Protractor is ¼ of a 14-inch circle, and is graduated as fine as quarter-degrees. This, by steady pins, accurately fits (either side up) the jointed arm. Reading by the edge of the blade, the arm may be set to any degree, or finer as desired, and the Protractor removed so as not to obstruct the work.

An improved Section Liner is provided, attached to the clasp (see larger cut of this, No. 166). This is in the form of a knuckle joint, and feeds either way against the graduation marks cut in the surface of the Straight Edge or T Square. By thumb pressure on the button-headed screw, which may be adjusted to a fine or coarse movement, hatching may be rapidly and evenly done, and for accurately spacing work for draughting to the scale of $\frac{1}{16}$, $\frac{1}{8}$ or $\frac{1}{4}$ to foot, the device is a great convenience. Pressing the button two or more times, any desired distance can be quickly and evenly spaced off, and with the assurance that no mistake is made, as is liable when other means are employed.

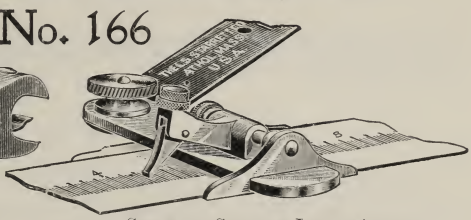
PRICES

Protractor only	$5.00		
Jointed Blade, 15 inch	5.00	with Protractor	$10.00
" " 24 "	6.00	" "	11.00
" " 36 "	7.00	" "	12.00
With Section Liner	2.50 extra.		

Long auxiliary blades for interchangeable use, with clasp, are supplied. PRICE, 24 inch, $2.00; 36 inch, $2.50.

Starrett's Section Liner No. 166

SECTION LINER

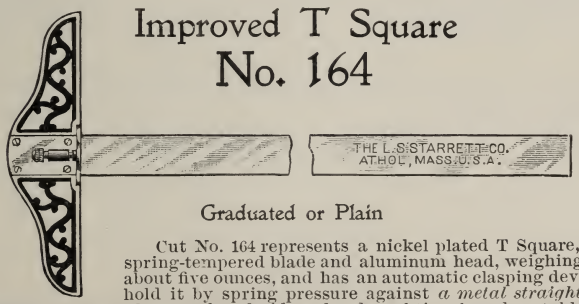


SHOWING SECTION LINER APPLIED

This cut shows the Section Liner more plainly than cut No. 165½. This is hinged to the clasp connected with jointed blade. Its hardened steel dog feeding against the graduation marks in the center of spring-tempered square blade or straight edge moves it with uniform evenness as fine or coarse as desired, the throw being regulated by turning the adjusting nut. It should be understood that the Section Liner can only be used in connection with our graduated T square blades and combination straight edges, etc. With these it is a wonderful help to the draughting fraternity.

PRICE.....$2.50

Improved T Square No. 164



Graduated or Plain

Cut No. 164 represents a nickel plated T Square, with spring-tempered blade and aluminum head, weighing only about five ounces, and has an automatic clasping device to hold it by spring pressure against *a metal straight edge* attached to the end, or end and side, of a draughting board or table (see description of Metal Edge, No. 168), or, by a slight turn of knurled nut, locked firm. The top side of the blade graduated forms a scale to set dividers, etc., and a feed rack, for Section Liner to work against, to move jointed blade (as shown in cut No. 165½ used with Combination Straight Edge). The Square will be furnished plain or graduated.

PRICES

22 x 1¼-inch blade,			10-inch head,				not graduated,	$3.50	graduated,	$4.25
26 x 1¼	"	"	10	"	"	"	"	4.25	"	5.00
32 x 1¼	"	"	10	"	"	"	"	5.00	"	6.00
36 x 1¾	"	"	13	"	"	"	"	5.75	"	7.00
42 x 1¾	"	"	13	"	"	"	"	6.50	"	8.00
48 x 1¾	"	"	13	"	"	"	"	7.50	"	9.50

Separate Parts of Squares, Etc.

☞Persons ordering extra parts must send in, by mail or otherwise, prepaid, the piece they want stock or blade fitted to. Mark name and address of sender plainly on the package.

PRICES

Squares, No. 11 and No. 11 M

	Scale	*Stock*	*Center Head*
4 inch or 10 C. M.	$0.50	$0.50	
6 " 15 "	.75	.75	$0.50
9 " 20 "	1.00	.75	.75
12 " 30 "	1.25	1.00	.75
18 " 50 "	2.00	1.00	.75
24 " 60 "	2.50	1.00	.75

Scribers ..... 10 cents each.

Square, No. 8

	Scale	*Stock*
18 inch	$2.50	$3.50
24 "	3.50	3.50

Protractors, No. 12 and No. 12 M

Prices of Scales, same as for corresponding sizes of No. 11 and No. 11 M.

Price of Head, with Level $2.00
" " Level alone ..... .25

Sets, No. 9 and No. 9 M

Prices of Scales, Stocks, and Center Heads, same as for corresponding sizes of No. 11 Square.

Price of Protractor Head $2.00

Squares, No. 13 and No. 13 M

	Scale	*Stock*	*Beveled Blade*
4 inch or 10 C. M.	$0.50	$0.75	$0.40
6 " 15 "	.75	1.25	.50
9 " 20 "	1.00	2.00	
12 " 30 "	1.25	2.75	

Squares, No. 14 and No. 14 M

Stock ..... $1.50 | Bevel Blade $0.30
Scale ..... .50 | Narrow Blade ..... .30

Inclinometer, No. 10

	Scale	*Stock*	*Center Head*
12 inch	$1.50	$3.50	$0.75
18 "	2.50	3.50	.75
24 "	3.50	3.50	.75

Level Glasses

Price for Level Glasses for Nos. 11, 13, and 10 ..... 10 cents each.
" " " " and setting same ..... 35 " "

THE L.S.STARRETT CO., ATHOL, MASS., U.S.A.

OUR

CUTTER DEPARTMENT

Is equipped with standard and special Tools best adapted to the different operations in the production of

FIRST . . CLASS . . **CUTTERS** AND TOOLS OF SIMILAR CONSTRUCTION . .

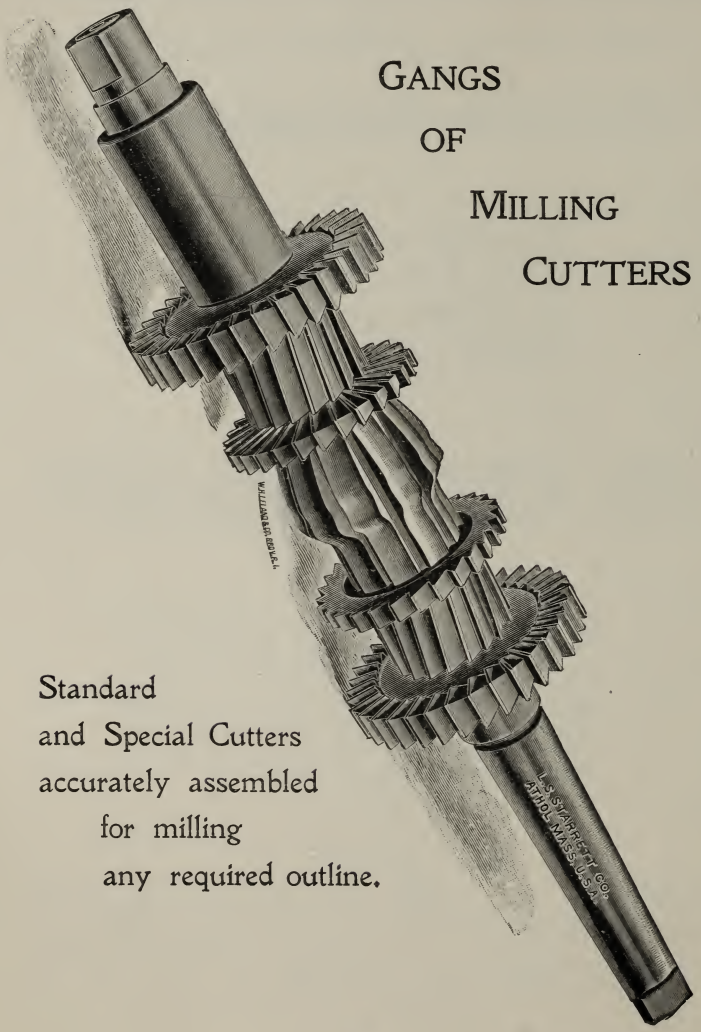
WE are constantly increasing our plant as the introduction of New Designs in TOOLS calls for increased facilities. We carry a large assortment of Standard Cutters which are listed on the following pages. We would advise customers to adopt the standard dimensions if possible, thus saving the extra expense and delay which must occur if Cutters are made to special dimensions.

OUR ANNEALING FACILITIES

are complete, being arranged to anneal steel as large as 9 inches in diameter in 6-foot lengths.

THE L. S. STARRETT CO., ATHOL, MASS., U.S.A.

GANGS OF MILLING CUTTERS



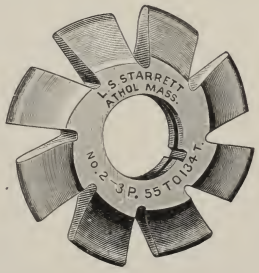
Standard
and Special Cutters
accurately assembled
for milling
any required outline.

Patent Involute Cutters

For Teeth of Gear Wheels

Notice

The forms of all our Gear Cutters are originated and made by use of expensive special machinery, under careful supervision, therefore are free from all imperfections found in cutters the forms of which are obtained from cutters which are more or less imperfect both on account of alteration in tempering or imperfections of workmanship.



All gears of same pitch cut with these Cutters are interchangeable.

For instruction in ordering, see following page.

Diametral Pitch.	Price of Each Cutter.	Diameter of Cutter.	Hole in Cutter.	Diametral Pitch.	Price of Each Cutter.	Diameter of Cutter.	Hole in Cutter.
		Inches.	Inches.			Inches.	Inches.
*2	$12.50	5	1 1-4	16	$2.45	1 15-16	7-8
*2 1-4	11.25	4 1-2	1 1-4	18	2.35	1 15-16	7-8
*2 1-2	10.00	4 1-4	1 1-4	20	2.30	1 7-8	7-8
*2 3-4	9.00	4	1 1-4	22	2.20	1 13-16	7-8
3	7.00	3 13-16	1 1-4	24	2.10	1 3-4	7-8
*3 1-4	6.50	3 11-16	1 1-4	26	1.95	1 3-4	7-8
*3 1-2	6.25	3 1-2	1 1-4	28	1.80	1 3-4	7-8
*3 3-4	6.00	3 3-8	1 1-4	30	1.80	1 3-4	7-8
4	5.50	3 3-8	1 1-4	32	1.80	1 3-4	7-8
*4 1-2	5.00	3 1-4	1 1-4	36	1.80	1 3-4	7-8
5	4.50	3 1-16	1 1-4	*38	1.80	1 3-4	7-8
*5 1-2	4.20	2 7-8	1 1-4	40	1.80	1 3-4	7-8
6	3.90	2 3-4	1 1-16	*44	1.80	1 3-4	7-8
7	3.60	2 9-16	1 1-16	48	1.80	1 3-4	7-8
8	3.40	2 1-2	1 1-16	*50	1.80	1 3-4	7-8
9	3.20	2 3-8	1 1-16	*56	1.80	1 3-4	7-8
10	3.00	2 1-8	7-8	*60	1.80	1 3-4	7-8
11	2.75	2 1-16	7-8	*64	1.80	1 3-4	7-8
12	2.65	2	7-8	*70	1.80	1 3-4	7-8
*13	2.60	2	7-8	*80	1.80	1 3-4	7-8
14	2.55	2	7-8	*120	1.80	1 3-4	7-8
*15	2.50	2	7-8			1 3-4	7-8

Cutters marked * are made to order.

Gears cut with our Cutters will work with gears cut in accordance with the Brown & Sharpe system, but we would prefer that customers adopt our Cutters exclusively, in order that we may guarantee satisfactory results.

Involute Gear Cutters

Extra Large Diameter

Diametral Pitch.	Price.	Diameter of Cutter.	Hole in Cutter.
		Inches.	Inches.
3	$8.00	4 3-4	1 1-4
*3 1-4	7.75	4 1-2	1 1-4
*3 1-2	7.25	4 1-2	1 1-4
*3 3-4	6.75	4 1-4	1 1-4
4	6.25	4 1-4	1 1-4
*4 1-2	5.75	4 1-4	1 1-4
5	5.25	4	1 1-4
*5 1-2	5.00	4	1 1-4
6	4.75	3 3-4	1 1-4
*7	4.50	3 5-8	1 1-4
8	4.25	3 1-2	1 1-4
*9	4.00	3 1-2	1 1-4

Cutters marked * are made to order.

Our Gear Cutters can be sharpened without changing their form. According to the system adopted by us any wheel of one pitch will gear into any other wheel or into a rack of the same pitch. *Eight cutters are required for each pitch.* These eight cutters are adapted to cut from a pinion of twelve teeth to a rack, and are numbered respectively as follows:—

No. 1 will cut wheels from 135 teeth to a rack.
" 2 " " " " 55 " " 134 teeth.
" 3 " " " " 35 " " 54 "
" 4 " " " " 26 " " 34 "
" 5 " " " " 21 " " 25 "
" 6 " " " " 17 " " 20 "
" 7 " " " " 14 " " 16 "
" 8 " " " " 12 " " 13 "

In ordering, give the *No. of Cutter* and *Diametral Pitch* required. A stock of Cutters, from 3 to 48 pitch, is kept on hand. Cutters in stock can be ordered by telegraph. Form of telegram: "*Send one Cutter No. three, six pitch.*"

Special Gear Cutters

Worm Wheel Cutters and Cutters of special dimensions are made to order at special prices.

Spur and Bevel Gear Cutters, shown in lists, when ordered with special size hole, are made to order at an advance of fifty cents each on list price. If six or more of one pitch are ordered with special size hole, the list price is charged.

Cutters for Mitre and Bevel Gears

Diametral Pitch.	Price of Each Cutter.	Diameter of Cutter.	Hole in Cutter.
		Inches.	Inches.
4	$5.50	3 3-8	1 1-4
5	4.50	3 1-16	1 1-4
6	3.90	2 3-4	1 1-16
8	3.40	2 1-2	1 1-16
10	3.00	2 1-8	7-8
12	2.65	2	7-8
14	2.55	2	7-8
16	2.45	1 15-16	7-8
20	2.30	1 7-8	7-8
24	2.10	1 3-4	7-8

These Cutters are carried in stock.

Cutters for pitches not given in the above list will be made to order.

Eight Cutters are made for each pitch as by list of Involute Gear Cutters.

These Cutters are thin enough to cut any bevel gear whose tooth face is not longer than one-third the distance from its outer end to the point where the shaft center lines meet.

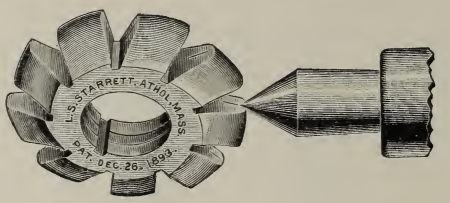
In ordering Cutters for Bevel Gears, if the number of teeth in each gear and the pitch are given, also the angle of the shafts, if different from a right angle, we can select the proper Cutter to send.

When an extra length of face is wanted, requiring an especially thin Cutter, this length should be specified in the order.

Table showing Depth of Space and Thickness of Tooth in Spur Wheels when cut with our Cutters

Pitch of Cutter.	Depth to be Cut in Gear.	Thickness of Tooth at Pitch Line.	Pitch of Cutter.	Depth to be Cut in Gear.	Thickness of Tooth at Pitch Line.
	Inches.	Inches.		Inches.	Inches.
2	1.078	.785	12	.180	.131
2 1-4	.958	.697	14	.154	.112
2 1-2	.863	.628	16	.135	.098
2 3-4	.784	.570	18	.120	.087
3	.719	.523	20	.108	.079
3 1-2	.616	.448	22	.098	.071
4	.539	.393	24	.090	.065
5	.431	.314	26	.083	.060
6	.359	.262	28	.077	.056
7	.308	.224	30	.072	.052
8	.270	.196	32	.067	.049
9	.240	.175	36	.060	.044
10	.216	.157	40	.054	.039
11	.196	.143	48	.045	.033

Patent Involute Cutters



An improved feature is the centering line on the heel face of the teeth for convenience in setting the Cutter central with the work spindle. The location of the line is such as to overcome all the objectionable features of Cutters which have a line intersecting the cutting edge of the teeth, such as excessive wear of the Cutter teeth, and the corresponding disfigurement of gears at the bottom of tooth spaces.

The teeth of all our formed Cutters are shaped to be ground without changing their form.

Table showing the Corresponding Diametral and Circular Pitches.

No. 1 Table shows the diametral pitches with the corresponding circular pitches.

No. 2 Table shows the circular pitches with the corresponding diametral pitches.

TABLE No. 1.				TABLE No. 2.			
Diametral Pitch.	Circular Pitch.	Diametral Pitch.	Circular Pitch.	Circular Pitch.	Diametral Pitch.	Circular Pitch.	Diametral Pitch.
	Inches.		Inches.	Inches.		Inches.	
2	1.571	12	.262	2	1.571	7-8	3.590
2 1-4	1.396	14	.224	1 7-8	1.676	13-16	3.867
2 1-2	1.257	16	.196	1 3-4	1.795	3-4	4.189
2 3-4	1.142	18	.175	1 5-8	1.933	11-16	4.570
3	1.047	20	.157	1 1-2	2.004	5-8	5.027
3 1-2	.898	22	.143	1 7-16	2.185	9-16	5.585
4	.785	24	.131	1 3-8	2.285	1-2	6.283
5	.628	26	.121	1 5-16	2.394	7-16	7.181
6	.524	28	.112	1 1-4	2.513	3-8	8.378
7	.449	30	.105	1 3-16	2.646	5-16	10.053
8	.393	32	.098	1 1-8	2.793	1-4	12.566
9	.349	36	.087	1 1-16	2.957	3-16	16.755
10	.314	40	.079	1	3.142	1-8	25.133
11	.286	48	.065	15-16	3.351	1-16	50.266

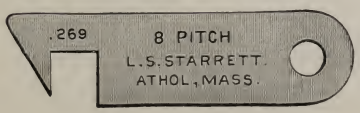
According to our system, any wheel of one pitch will gear into any other wheel or into a rack of the same pitch. *Eight Cutters are required for each Pitch.* These eight Cutters are adapted to cut from a pinion of twelve teeth to a rack, and are numbered respectively, 1, 2, 3, etc. The number of teeth and the pitch for which a Cutter is adapted is also marked on each.

Stocking Cutters for Gears

By the use of these Cutters, the stocking or roughing of gears is greatly facilitated.

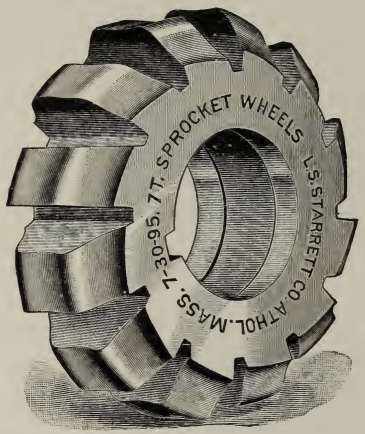
Diametral Pitch.	Price of Each Cutter.	Diameter of Cutter.	Hole in Cutter.
		Inches.	Inches.
2	$7.50	5	1 1-4
2 1-4	6.75	4 1-2	1 1-4
2 1-2	6.00	4 1-4	1 1-4
2 3-4	5.40	4	1 1-4
3	4.20	3 7-8	1 1-4
3 1-4	3.90	3 3-4	1 1-4
3 1-2	3.75	3 5-8	1 1-4
3 3-4	3.60	3 1-2	1 1-4
4	3.30	3 3-8	1 1-4
4 1-2	3.00	3 1-4	1 1-4
5	2.70	3 1-8	1 1-16
5 1-2	2.50	2 7-8	1 1-16
6	2.35	2 3-4	1 1-16
7	2.20	2 5-8	1 1-16
8	2.05	2 1-2	1 1-16

Depth of Gear Tooth Gauges



Depth of Gear Tooth Gauges for all regular pitches, from 3 to 48 pitch inclusive, are carried in stock. One gauge answers for each pitch, and indicates the extreme depth to be cut.

PRICE..... $0.25
Made to order..... .75



Sprocket Wheel Cutters

We make and carry in stock a form of Sprocket Wheel Cutter for the ordinary 1-inch pitch chain.

Cutters of special forms made to order.

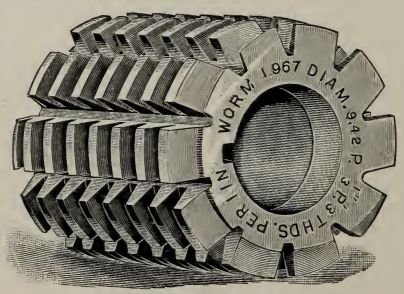
Number of Teeth of Sprocket.	Price.	Diameter of Cutter.	Hole in Cutter.
		Inches.	Inch.
6	$6.00	2 3-4	1
7	6.00	2 3-4	1
8	6.00	2 3-4	1
9	6.00	2 3-4	1
10	6.00	2 3-4	1
11	6.00	2 3-4	1
12 to 13	6.00	2 3-4	1
14 to 16	6.00	2 3-4	1
17 to 20	6.00	2 3-4	1
21 to 25	6.00	2 3-4	1
26 to 30	6.00	2 3-4	1

Worm Hobs

We are arranged to make Hobs which have teeth relieved similar to our Formed Cutters. By this method of providing clearance, the teeth can be repeatedly ground without changing the form.

The following dimensions should be given in order:—
Diameter of Worm.
Size of Hole in Hob.
Dimensions of Key-ways.
Lead or Number of Threads to 1 inch.
Single or Double Threads, etc.
Right or Left Hand.

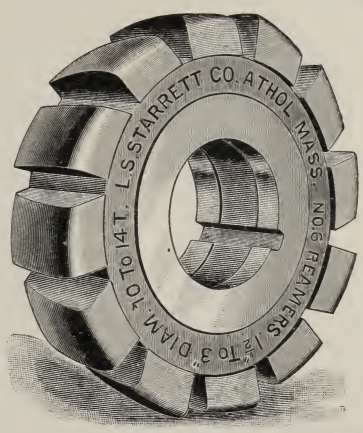
PRICES quoted on application.



Special Cutters

For Fluting Reamers

These Cutters have forms which admit of quick and accurate adjustment to proper position in relation to center of Reamer. The side teeth are relieved and cutters can be ground without changing the form. When ordering, give number of Cutter or diameter of Reamer as per following list:—



Number of Cutter.	Price.	Diameter of Reamer.	Number of Teeth.	Hole in Cutter.
		Inches.		Inch.
1	$2.00	1-8 to 3-16	6	7-8
2	2.10	1-4 " 5-16	6	7-8
3	2.20	3-8 " 7-16	6	7-8
4	2.40	1-2 " 15-16	6 to 8	7-8
5	2.70	1 " 1 7-16	8 " 10	7-8
6	2.90	1 1-2 " 3	10 " 14	7-8

Special Cutters

For Grooving Taps

These Cutters do not make as deep a groove in proportion to the width as the Tap and Reamer Cutters. They are not suitable for fluting reamers.

These Cutters can be sharpened by grinding without changing their form. In ordering, give number of Cutter or diameter of Tap, as by above list.

Number of Cutter.	Price of Each Cutter.	Diameter of Taps.	Diameter of Cutter.	Hole in Cutter.
		Inches.	Inches.	Inch.
1	$2.00	0 to 1-8	1 3-4	7-8
2	2.10	5-32 " 1-4	1 3-4	7-8
3	2.20	9-32 " 3-8	1 7-8	7-8
4	2.40	7-16 " 5-8	2	7-8
5	2.70	11-16 " 7-8	2 1-8	7-8
6	3.00	15-16 " 1 1-4	2 1-4	7-8
7	3.30	1 5-16 " 1 5-8	2 3-8	7-8
8	3.60	1 11-16 " 2	2 5-8	7-8

Tap and Reamer Cutters

No. of Cutter.	Price of Each Cutter.	Diameter of Tap.	No. of Teeth in Tap.	Diameter of Cutter.	Hole in Cutter.
		Inches.		Inches.	Inch.
1	$2.00	0 to 1-8	4	1 3-4	7-8
2	2.10	5-32 " 1-4	4	1 3-4	7-8
3	2.20	9-32 " 3-8	4	1 7-8	7-8
4	2.40	7-16 " 5-8	4	2	7-8
5	2.40	11-16 " 7-8	4	2 1-8	7-8
6	2.70	15 16 " 1 1-4	4	2 1-4	7-8
7	2.70	1 5-16 " 1 5-8	4	2 3-8	7-8
8	3.00	1 11-16 " 2	4	2 5-8	7-8

No. 1 Cutter is suitable for grooving taps $\frac{1}{8}$ inch or less diameter; No. 2 for taps larger than $\frac{1}{8}$ inch and up to $\frac{1}{4}$ inch diameter, etc.

These Cutters are also adapted for fluting reamers, for which purpose it is necessary only to cut one or more grooves of a less depth in order to flute unevenly.

No. of Cutter.	Price of Each Cutter.	Diameter of Reamer.	No. of Teeth in Reamer.	Diameter of Cutter.	Hole in Cutter.
		Inches.		Inches.	Inch.
1	$2.00	1-8 to 1-4	6	1 3-4	7-8
2	2.10	9-32 " 3-8	6	1 3-4	7-8
3	2.20	13-32 " 1-2	6	1 7-8	7-8
4	2.40	17-32 " 3-4	6	2	7-8
4	2.40	25-32 " 1 1-8	8	2	7-8
5	2.40	1 5-32 " 1 3-8	8	2 1-8	7-8
5	2.40	1 13-32 " 1 3-4	10	2 1-8	7-8
6	2.70	1 25-32 " 2	10	2 1-4	7-8

These Cutters can be sharpened without changing their form.

In ordering, give number of Cutter, or diameter and number of teeth of tap or reamer as by above lists.

Circular Cornering Cutters

SINGLE RIGHT HAND.

SINGLE LEFT HAND.

DOUBLE RIGHT AND LEFT HAND.

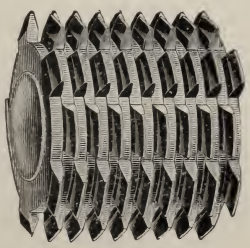
Radius of Circle.	Diameter of Cutter.	Diameter of Holes.	Price of Single Cutter.	Price of Double Cutter.
Inch.	Inches.	Inches.		
1-32	2 1-8	7-8 and 1	$2.00	$2.80
1-16	2 1-4	7-8 " 1	2.10	2.95
3-32	2 3-8	7-8 " 1	2.30	3.25
1-8	2 1-2	7-8 " 1	2.50	3.50
5-32	2 1-2	7-8 " 1	2.70	3.80
3-16	2 5-8	7-8 " 1	2.90	4.25
7-32	2 5-8	7-8 " 1	3.10	4.75
1-4	2 3-4	7-8 " 1	3.30	5.25
5-16	2 3-4	7-8 " 1	3.60	5.75
3-8	2 3-4	7-8 " 1	3.75	6.00

Cutters

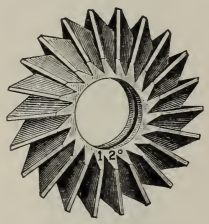
For Milling Hair Clipper Plates or Similar Work

MADE TO ORDER.

The relative position of teeth are arranged similar to cut, or as our customers prefer.



Cutters for Spiral Mills



RIGHT-HAND CUTTER

We keep in stock a form of Cutter especially adapted to the cutting of spiral mills, either 53° or 40° one side, and 12° on the other. We prefer the 53° angle, except for small and fine-tooth cutters. Right or left hand cutters are carried in stock.

PRICES: 2½ inch diameter, ½ inch thick,
⅞-inch hole.....$2.70 each.
2¾ inch diameter, ½ inch thick, 1-inch hole 3.00 "

Special shaped Cutters of any angle made to order.

Angular Cutters

For cutting the teeth of cutters straight or spiral. These Cutters are kept in stock. They can be sharpened without changing their shape by grinding upon the face. Cutters are 2½ inches diameter, ½ inch thick, and have ⅞-inch holes.

PRICE.....$3.50 each.

RIGHT-HAND CUTTER

Angular Cutters,

Which have Side Ground Concave

RIGHT-HAND CUTTER

Owing to the increasing demand for these Cutters, we have decided to carry them in stock. Angles are 40°, 45°, 50°, 60°, 70°, 80°, both right and left hand. Cutters are 2½ inches diameter, ½ inch thick, and have ⅞-inch holes.

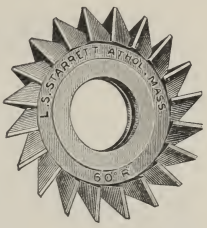
PRICE.....$2.25 each.

Angular Cutters

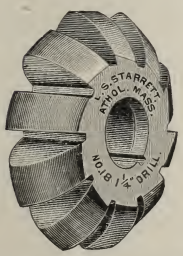
We keep in stock Angular Cutters of 40°, 45°, 50°, 60°, 70° and 80° angle, right and left hand, suitable for cutting the teeth of ratchet wheels, cutters, and mills.

PRICES

Cutters, $2\frac{1}{2}$ inch diameter, $\frac{1}{2}$ inch thick, $\frac{7}{8}$-inch hole.....$2.70 each.
Cutters, $2\frac{3}{4}$ inch diameter, $\frac{1}{2}$ inch thick, 1-inch hole..... 3.00 "



RIGHT-HAND CUTTER

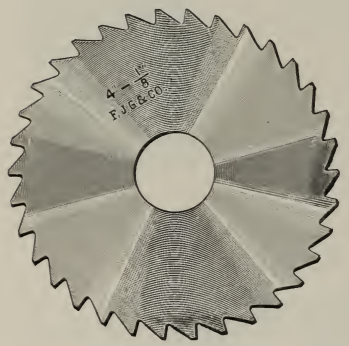


Cutters for Grooving Straight Lipped Twist Drills

No. Cutter.	Price of Cutter.	Diameter of Drill.	Diameter of Cutter.	Hole in Cutter.
		Inches.	Inches.	Inches.
1	$1.50	1-16	1 3-4	7-8
2	1.70	1-8	1 3-4	7-8
3	1.90	3-16	1 3-4	7-8
4	2.10	1-4	1 3-4	7-8
5	2.30	5-16	2	7-8
6	2.40	3-8	2	7-8
7	2.60	7-16	2	7-8
8	2.80	1-2	2	7-8
9	3.00	9-16	2 1-8	7-8
10	3.20	5-8	2 1-8	7-8
11	3.40	11-16	2 1-8	7-8
12	3.60	3-4	2 1-4	7-8
13	3.80	13-16	2 1-4	7-8
14	4.00	7-8	2 1-2	7-8
15	4.20	15-16	2 1-2	7-8
16	4.50	1	2 3-4	7-8
17	5.00	1 1-8	2 3-4	7-8
18	5.50	1 1-4	3	7-8
19	6.25	1 1-2	3 1-2	1
20	7.00	1 3-4	3 1-2	1
21	7.75	2	3 3-4	1

These Cutters can be sharpened by grinding without changing their form. In ordering, give number of Cutter or diameter of Drill, as by above list.

Metal Slitting Saws



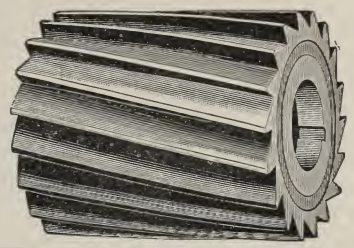
These are thin MILLING CUTTERS with the sides accurately ground concave for clearance, and are hardened to cut metals.

In ordering *special* saws, please state for what purpose they are required.

Diameter.	Price.	Thickness.	Hole.
Inches.		Inches.	Inches.
2 1-2	$1.00	1-32	7-8
2 1-2	1.00	3-64	7-8
2 1-2	.90	1-16	7-8
2 1-2	.90	3-32	7-8
2 1-2	.90	1-8	7-8
3	1.25	1-32	1
3	1.10	3-64	1
3	1.00	1-16	1
3	1.00	3-32	1
3	1.00	1-8	1
4	1.45	3-64	1
4	1.25	1-16	1
4	1.20	3-32	1
4	1.20	1-8	1
5	1.80	1-16	1
5	1.60	3-32	1
5	1.50	1-8	1
5	1.50	1-8	1 1-4
5	1.50	1-8	1 1-2
6	2.70	1-8	1
6	3.50	3-16	1 1-2
7	3.80	1-8	1

Special Saws to be used in gangs for cutting off Bicycle Sprocket Chain Links and similar purposes will be promptly made to order.

Milling Cutters

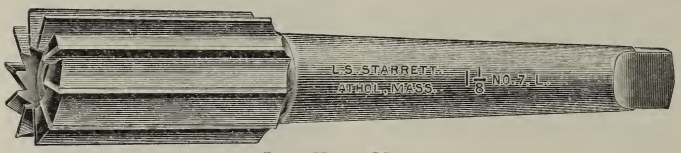


Cutters not included on list promptly furnished to order, and special attention given to designing gangs of Cutters for milling straight, irregular, or combined surfaces. See page 88.

Listed Cutters of one inch face and over have teeth of a spiral form.

Width of Face.	Price of Each Cutter.	Diameter of Cutter.	Size of Hole.	Width of Face.	Price of Each Cutter.	Diameter of Cutter.	Size of Hole.
Inches.		Inches.	Inches.	Inches.		Inches.	Inches.
1-2	$1.75	2 1-4	7-8	1 1-2	$4.30	3	1 1-4
1	2.50	2 1-4	7-8	1 3-4	4.50	3	1 1-4
1 3-4	3.30	2 1-4	7-8	2	4.70	3	1 1-4
3-16	1.30	2 1-4	1	2 1-2	5.20	3	1 1-4
3-16	1.30	2 1-2	1	3	5.40	3	1 1-4
1-4	1.40	2 1-2	1	3 1-2	5.90	3	1 1-4
5-16	1.50	2 1-2	1	4	6.40	3	1 1-4
3-8	1.60	2 1-2	1	5	7.80	3	1 1-4
7-16	1.70	2 1-2	1	6	10.80	3	1 1-4
1-2	1.80	2 1-2	1	1-2	3.15	3 1-2	1 1-4
9-16	1.90	2 1-2	1	9-16	3.30	3 1-2	1 1-4
5-8	2.00	2 1-2	1	5-8	3.45	3 1-2	1 1-4
11-16	2.10	2 1-2	1	11-16	3.65	3 1-2	1 1-4
3-4	2.20	2 1-2	1	3-4	3.85	3 1-2	1 1-4
13-16	2.30	2 1-2	1	7-8	4.35	3 1-2	1 1-4
7-8	2.40	2 1-2	1	1	4.75	3 1-2	1 1-4
1	2.60	2 1-2	1	1 1-4	5.15	3 1-2	1 1-4
1 1-4	2.90	2 1-2	1	1 1-2	5.60	3 1-2	1 1-4
1 1-2	3.10	2 1-2	1	1 3-4	6.00	3 1-2	1 1-4
1 3-4	3.40	2 1-2	1	2	6.40	3 1-2	1 1-4
2	3.70	2 1-2	1	2 1-2	6.90	3 1-2	1 1-4
2 1-2	4.10	2 1-2	1	3	7.40	3 1-2	1 1-4
3	4.50	2 1-2	1	3 1-2	8.15	3 1-2	1 1-4
3 1-2	5.00	2 1-2	1	4	9.15	3 1-2	1 1-4
4	5.50	2 1-2	1	5	10.40	3 1-2	1 1-4
3-8	1.70	2 5-8	1	6	11.90	3 1-2	1 1-4
7-16	1.80	2 5-8	1	1-2	3.90	4	1 1-4
1-2	1.90	2 3-4	1	9-16	4.10	4	1 1-4
9-16	2.00	2 3-4	1	5-8	4.30	4	1 1-4
5-8	2.10	2 3-4	1	11-16	4.50	4	1 1-4
4	6.00	2 3-4	1 1-4	3-4	4.70	4	1 1-4
6	10.00	2 3-4	1 1-4	7-8	5.15	4	1 1-4
11-16	2.20	2 7-8	1	1	5.65	4	1 1-4
3-4	2.30	2 7-8	1	1 1-4	6.25	4	1 1-4
7-8	2.50	2 7-8	1	1 1-2	6.65	4	1 1-4
3-8	2.10	3	1 1-4	1 3-4	7.05	4	1 1-4
7-16	2.25	3	1 1-4	2	7.45	4	1 1-4
1-2	2.40	3	1 1-4	2 1-2	8.40	4	1 1-4
9-16	2.55	3	1 1-4	3	9.00	4	1 1-4
5-8	2.70	3	1 1-4	3 1-2	10.00	4	1 1-4
11-16	2.85	3	1 1-4	4	11.00	4	1 1-4
3-4	3.00	3	1 1-4	5	13.50	4	1 1-4
7-8	3.30	3	1 1-4	6	15.50	4	1 1-4
1	3.60	3	1 1-4	3	9.00	4	1 1-2
1 1-4	4.00	3	1 1-4	6	15.50	4	1 1-2

End Mills



LEFT-HAND MILL

In ordering, state whether Right or Left Hand Mills are wanted.

Diameter of Mill.	Price.	Length of Cut.	Whole Length.	No. of Taper.
Inches.		Inches.	Inches.	
1-4	$1.90	13-16	2 7-16	4
1-4	1.15	13-16	3	5
5-16	1.00	7-8	2 7-16	4
5-16	1.15	7-8	3 1-16	5
3-8	1.10	7-8	2 7-16	4
3-8	1.20	7-8	3 1-16	5
7-16	1.10	15-16	2 1-2	4
7-16	1.25	15-16	3 1-8	5
1-2	1.30	1	3 1-8	5
1-2	1.45	1 1-8	5 1-8	7
9-16	1.35	1	3 1-8	5
9-16	1.50	1 1-4	5 1-4	7
5-8	1.45	1 1-4	3 5-16	5
5-8	1.70	1 1-2	5 3-8	7
11-16	1.75	1 1-2	5 3-8	7
11-16	1.90	1 1-2	6 13-16	9
3-4	1 80	1 5-8	5 1-2	7
3-4	1.95	1 5-8	6 15-16	9
13-16	1.90	1 5-8	5 3-4	7
13-16	2.00	1 5-8	6 15-16	9
7-8	2.10	1 3-4	5 7-8	7
7-8	2.25	1 3-4	7 1-16	9
15-16	2.10	1 3-4	5 7-8	7
15-16	2.25	1 3-4	7 1-16	9
1	2.15	1 7-8	6	7
1	2.30	1 7-8	7 3-16	9
1 1-16	2.15	1 7-8	6	7
1 1-16	2.35	1 7-8	7 3-16	9
1 1-8	2.25	2	6 1-4	7
1 1-8	2.40	2	7 1-4	9
1 3-16	2.25	2	6 1-4	7
1 3-16	2.50	2	7 1-4	9
1 1-4	2.25	2	6 1-4	7
1 1-4	2.55	2	7 1-4	9
1 5-16	2.75	2 1-8	7 3-8	9
1 3-8	2.75	2 1-8	7 3-8	9
1 7-16	3.00	2 1-4	7 1-2	9
1 1-2	3.00	2 1-4	7 1-2	9

Special End Mills, Hollow, Counterboring, or any special Mills in this class made to order.

Standard T Slot Cutters

LEFT-HAND CUTTER.

No. of Cutter.	Price.	Thickness of Cutter.	Diameter of Cutter.	Diameter of Neck of Cutter.	Length of Neck.	No. of Taper.
		Inches.	Inches.	Inches.	Inches.	
4	$1.50	5-32	1-2	7-32	1-4	4
7	1.60	5-32	1-2	7-32	1-4	5
10	1.80	5-32	5-8	9-32	5-16	5
13	2.10	5-32	5-8	9-32	5-16	7
16	2.00	7-32	11-16	11-32	3-8	5
19	2.20	7-32	11-16	11-32	3-8	7
22	2.35	7-32	13-16	3-8	7-16	7
25	2.50	7-32	13-16	3-8	7-16	9
28	2.60	9-32	15-16	7-16	1-2	7
31	2.80	9-32	15-16	7-16	1-2	9
34	3.10	13-32	1 3-16	17-32	5-8	9
37	3.45	17-32	1 5-16	21-32	15-16	9

The Cutters are made $\frac{1}{32}$ inch larger in diameter than the figures given.

Standard Tapers as Referred to in this Catalogue

No. of Taper	4	5	7	9
Diameter at small end	.35 inch.	.45 inch.	.60 inch.	.90 inch.

The Taper is $\frac{1}{2}$ inch per foot.

Shanks Standard Taper for Milling Machines

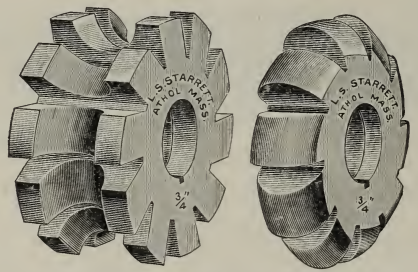
MADE BY

BROWN & SHARPE MFG. CO. — CINCINNATI MILLING MACHINE CO.
GARVIN MACHINE CO. — KEMPSMITH MACHINE TOOL CO.

Standards adopted by Brainard Milling Machine Co., and others, will be furnished promptly.

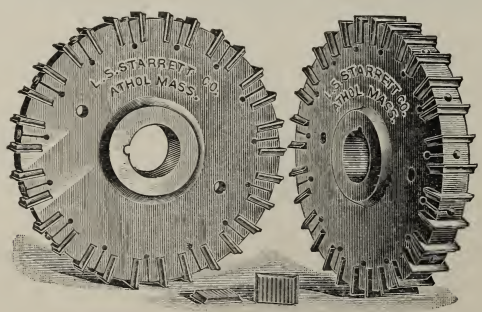
Concave and Convex Cutters

For Milling Half Circles



These cutters can be sharpened by grinding without changing their form.

Diameter of Circle.	Diameter of Cutter.	Size of Hole.	Convex Cutter. Price.	Concave Cutter. Price.
Inches.	Inches.	Inches.		
1-8	2	7-8	$2.00	$2.40
1-4	2	7-8	2.50	3.00
3-8	2 1-4	7-8	3.10	3.70
1-2	2 1-4	7-8	3.60	4.30
5-8	2 3-4	7-8	4.00	4.80
3-4	2 3-4	7-8	4.40	5.25
7-8	3 1-4	1	4.80	5.75
1	3 1-4	1	5.25	6.30
1 1-8	3 1-2	1	5.75	6.90
1 1-4	3 1-2	1 1-4	6.25	7.50
1 3-8	3 3-4	1 1-4	7.00	8.40
1 1-2	3 3-4	1 1-4	7.75	9.30



Inserted Tooth Mills Made to Order.

Prices quoted on application.

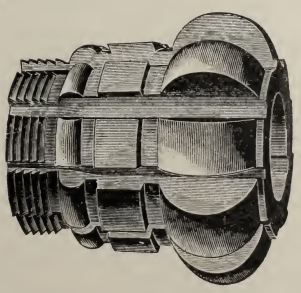
Side Milling Cutters

Diameter.	Price Each.	Width of Face.	Hole.
Inches.		Inches.	Inches.
2	$2.00	3-16	1-2
2	2.05	1-4	1-2
2	2.10	3-8	1-2
2	2.00	3-16	5-8
2	2.05	1-4	5-8
2	2.10	3-8	5-8
2 1-2	2.15	1-4	7-8
2 1-2	2.20	3-8	7-8
2 1-2	2.25	1-2	7-8
2 3-4	2.30	1-4	7-8
2 3-4	2.30	3-8	7-8
2 3-4	2.35	1-2	7-8
3	2.40	1-4	1
3	2.50	3-8	1
3	2.80	1-2	1
3 1-2	3.50	9-16	1
4	4.70	5-8	1
5	6.00	3-4	1
6	8.50	15-16	1 1-4
6	8.50	15-16	1 1-2
7	17.00	1 1-8	1 1-4
8	23.00	1 3-8	1 1-4
8	23.00	1 3-8	1 1-2

Cutters varying from the above list are made to order.

Formed Milling Cutters

For Milling Parts of Machinery



These Cutters can be made in a great variety of outlines, and can be sharpened by grinding without changing their form. They are economical in the production of duplicate and interchangeable parts.

In ordering, send sketch of, or sample piece to be milled, with size of hole required, and indicate the direction Cutter is to revolve.

Exact duplicate Cutters can be made at any time. This is of great importance when accuracy in duplication of machine parts is required.

Screw-Slotting Cutters

These Cutters have a fine pitch of teeth especially adapted for the slotting of screw heads and similar work.

Diameter of Screw Head to be Slotted.	Thickness of Cutter by Amer. Standard Wire Gauge.	Price of Each Cutter.	Thickness of Cutter in Decimals.	Diameter of Cutter.	Size of Hole.
Inches.	Number.		Inches.	Inches.	Inches.
7-8	8	$0.60	.128	2 3-4	3-4 and 1
3-4	9	.50	.114	2 3-4	3-4 and 1
5-8	10	.40	.102	2 3-4	3-4 and 1
5-8	11	.35	.091	2 3-4	3-4 and 1
1-2	12	.30	.081	2 3-4	3-4 and 1
1-2	13	.25	.072	2 3-4	3-4 and 1
3-8	14	.20	.064	2 3-4	3-4 and 1
11-32	15	.15	.057	2 3-4	3-4 and 1
5-16	16	.15	.051	2 3-4	3-4 and 1
9-32	17	.15	.045	2 3-4	3-4 and 1
1-4	18	.15	.040	2 3-4	3-4 and 1
7-32	19	.15	.035	2 3-4	3-4 and 1
3-16	20	.15	.032	2 3-4	3-4 and 1
1-8	21	.15	.028	2 3-4	3-4 and 1
1-8	22	.15	.025	2 3-4	3-4 and 1
1-8	23	.15	.023	2 3-4	3-4 and 1
1-8	24	.15	.020	2 3-4	3-4 and 1
1-8	25	.15	.018	2 3-4	3-4 and 1
1-8	26	.15	.016	2 3-4	3-4 and 1
1-8	27	.15	.014	2 3-4	3-4 and 1
1-8	28	.15	.012	2 3-4	3-4 and 1
1-8	30	.15	.010	2 3-4	3-4 and 1
1-8	32	.15	.008	2 3-4	3-4 and 1
1-8	34	.15	.006	2 3-4	3-4 and 1
3-8	14	.20	.064	2 3-4	5-8
11-32	15	.15	.057	2 3-4	5-8
5-16	16	.15	.051	2 3-4	5-8

(Continued)

Screw-Slotting Cutters (Continued)

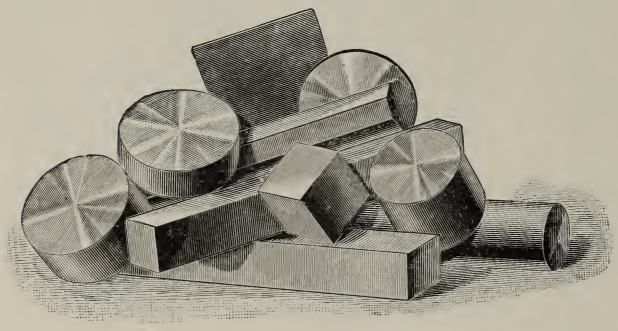
Diameter of Screw Head to be Slotted.	Thickness of Cutter by Amer. Standard Wire Gauge.	Price of Each Cutter.	Thickness of Cutter in Decimals.	Diameter of Cutter.	Size of Hole.
Inches.	Number.		Inches.	Inches.	Inches.
9-32	17	$0.15	.045	2 3-4	5-8
1-4	18	.15	.040	2 3-4	5-8
7-32	19	.15	.035	2 3-4	5-8
3-16	20	.15	.032	2 3-4	5-8
1-8	21	.15	.028	2 3-4	5-8
1-8	22	.15	.025	2 3-4	5-8
1-8	23	.15	.023	2 3-4	5-8
1-8	24	.15	.020	2 3-4	5-8
1-8	25	.15	.018	2 3-4	5-8
1-8	26	.15	.016	2 3-4	5-8
1-8	27	.15	.014	2 3-4	5-8
1-8	28	.15	.012	2 3-4	5-8
1-8	30	.15	.010	2 3-4	5-8
1-8	32	.15	.008	2 3-4	5-8
1-8	34	.15	.006	2 3-4	5-8
3-16	20	.15	.032	2 3-4	1-2
1-8	21	.15	.028	2 3-4	1-2
1-8	22	.15	.025	2 3-4	1-2
1-8	23	.15	.023	2 3-4	1-2
1-8	24	.15	.020	2 3-4	1-2
1-8	25	.15	.018	2 3-4	1-2
1-8	26	.15	.016	2 3-4	1-2
1-8	27	.15	.014	2 3-4	1-2
1-8	28	.15	.012	2 3-4	1-2
1-8	30	.15	.010	2 3-4	1-2
1-8	32	.15	.008	2 3-4	1-2
1-8	34	.15	.006	2 3-4	1-2
3-16	20	.15	.032	2 1-4	1-2, 5-8, 3-4
1-8	21	.15	.028	2 1-4	1-2, 5-8, 3-4
1-8	22	.15	.025	2 1-4	1-2, 5-8, 3-4
1-8	23	.15	.023	2 1-4	1-2, 5-8, 3-4
1-8	24	.15	.020	2 1-4	1-2, 5-8, 3-4
1-8	25	.15	.018	2 1-4	1-2, 5-8, 3-4
1-8	26	.15	.016	2 1-4	1-2, 5-8, 3-4
1-8	27	.15	.014	2 1-4	1-2, 5-8, 3-4
1-8	28	.15	.012	2 1-4	1-2, 5-8, 3-4
1-8	30	.15	.010	2 1-4	1-2, 5-8, 3-4
1-8	32	.15	.008	2 1-4	1-2, 5-8, 3-4
1-8	34	.15	.006	2 1-4	1-2, 5-8, 3-4
1-8	24	.12	.020	1 3-4	3-8, 1-2, 5-8
1-8	25	.12	.018	1 3-4	3-8, 1-2, 5-8
1-8	26	.12	.016	1 3-4	3-8, 1-2, 5-8
1-8	27	.12	.014	1 3-4	3-8, 1-2, 5-8
1-8	28	.12	.012	1 3-4	3-8, 1-2, 5-8
1-8	30	.12	.010	1 3-4	3-8, 1-2, 5-8
1-8	32	.12	.008	1 3-4	3-8, 1-2, 5-8
1-8	34	.12	.006	1 3-4	3-8, 1-2, 5-8

Cutters varying from the list are made to order.

THE L.S.STARRETT CO., ATHOL, MASS., U.S.A.

Best Warranted Annealed Cast Steel

In Bars or Blanks



Send for Price List of Blanks

To accommodate those wanting a superior quality of steel, annealed or otherwise, we have with our unsurpassed cutting-up and annealing facilities prepared ourselves to supply it. The annealed in blanks, cut to 6-foot lengths and under. The unannealed in bars, or cut to special lengths.

Parties desiring a fine grade of tool steel for any purpose will find it for their interest to confer with us before ordering elsewhere. We shall furnish steel which experience in our own works has proved to be the best, and which, in our judgment, will be best adapted for the purpose wanted. (In ordering, the use for which the steel is wanted should be stated.) Poor steel is dear at *any price.* Steel we furnish, though necessarily costing more than low grades, is the cheapest when made up in tools that will stand to do many times more and better work than a cheaper steel. "Quality tells."

Table of Decimal Equivalents

OF

8ths, 16ths, 32ds, and 64ths of an Inch

8ths

$\frac{1}{8} = .125$
$\frac{1}{4} = .250$
$\frac{3}{8} = .375$
$\frac{1}{2} = .500$
$\frac{5}{8} = .625$
$\frac{3}{4} = .750$
$\frac{7}{8} = .875$

16ths

$\frac{1}{16} = .0625$
$\frac{3}{16} = .1875$
$\frac{5}{16} = .3125$
$\frac{7}{16} = .4375$
$\frac{9}{16} = .5625$
$\frac{11}{16} = .6875$
$\frac{13}{16} = .8125$
$\frac{15}{16} = .9375$

32ds

$\frac{1}{32} = .03125$
$\frac{3}{32} = .09375$
$\frac{5}{32} = .15625$
$\frac{7}{32} = .21875$
$\frac{9}{32} = .28125$
$\frac{11}{32} = .34375$
$\frac{13}{32} = .40625$
$\frac{15}{32} = .46875$
$\frac{17}{32} = .53125$
$\frac{19}{32} = .59375$
$\frac{21}{32} = .65625$
$\frac{23}{32} = .71875$
$\frac{25}{32} = .78125$
$\frac{27}{32} = .84375$
$\frac{29}{32} = .90625$
$\frac{31}{32} = .96875$

64ths

$\frac{1}{64} = .015625$
$\frac{3}{64} = .046875$
$\frac{5}{64} = .078125$
$\frac{7}{64} = .109375$
$\frac{9}{64} = .140625$
$\frac{11}{64} = .171875$
$\frac{13}{64} = .203125$
$\frac{15}{64} = .234375$
$\frac{17}{64} = .265625$
$\frac{19}{64} = .296875$
$\frac{21}{64} = .328125$
$\frac{23}{64} = .359375$
$\frac{25}{64} = .390625$
$\frac{27}{64} = .421875$
$\frac{29}{64} = .453125$
$\frac{31}{64} = .484375$
$\frac{33}{64} = .515625$
$\frac{35}{64} = .546875$
$\frac{37}{64} = .578125$
$\frac{39}{64} = .609375$
$\frac{41}{64} = .640625$
$\frac{43}{64} = .671875$
$\frac{45}{64} = .703125$
$\frac{47}{64} = .734375$
$\frac{49}{64} = .765625$
$\frac{51}{64} = .796875$
$\frac{53}{64} = .828125$
$\frac{55}{64} = .859375$
$\frac{57}{64} = .890625$
$\frac{59}{64} = .921875$
$\frac{61}{64} = .953125$
$\frac{63}{64} = .984375$

Principal Standards for Wire Gauge

Used in the United States

Dimensions of Sizes in Decimal Parts of an Inch

Number of Wire Gauge.	American, or Brown & Sharpe.	Birmingham, or Stubs'.	Washburn & Moen Mfg. Co.	Number of Wire Gauge.
000000	.....	...	.46	000000
00000	.....	...	.43	00000
0000	.46	.454	.393	0000
000	.40964	.425	.362	000
00	.3648	.38	.331	00
0	.32486	.34	.307	0
1	.2893	.3	.283	1
2	.25763	.284	.263	2
3	.22942	.259	.244	3
4	.20431	.238	.225	4
5	.18194	.22	.207	5
6	.16202	.203	.192	6
7	.14428	.18	.177	7
8	.12849	.165	.162	8
9	.11443	.148	.148	9
10	.10189	.134	.135	10
11	.090742	.12	.12	11
12	.080808	.109	.105	12
13	.071961	.095	.092	13
14	.064084	.083	.08	14
15	.057068	.072	.072	15
16	.05082	.065	.063	16
17	.045257	.058	.054	17
18	.040303	.049	.047	18
19	.03589	.042	.041	19
20	.031961	.035	.035	20
21	.028462	.032	.032	21
22	.025347	.028	.028	22
23	.022571	.025	.025	23
24	.0201	.022	.023	24
25	.0179	.02	.02	25
26	.01594	.018	.018	26
27	.014195	.016	.017	27
28	.012641	.014	.016	28
29	.011257	.013	.015	29
30	.010025	.012	.014	30
31	.008928	.01	.0135	31
32	.00795	.009	.013	32
33	.00708	.008	.011	33
34	.006304	.007	.01	34
35	.005614	.005	.0095	35
36	.005	.004	.009	36
37	.004453	....	.0085	37
38	.003965	....	.008	38
39	.003531	....	.0075	39
40	.003144	....	.007	40

Table of Decimal Equivalents

OF

Millimeters and Fractions of Millimeters

$\frac{1}{100}$ m.m. = .0003937 inch.

m.m.	*inches.*	*m.m.*	*inches.*	*m.m.*	*inches.*
$\frac{1}{50}$ =	.00079	$\frac{26}{50}$ =	.02047	2 =	.07874
$\frac{2}{50}$ =	.00157	$\frac{27}{50}$ =	.02126	3 =	.11811
$\frac{3}{50}$ =	.00236	$\frac{28}{50}$ =	.02205	4 =	.15748
$\frac{4}{50}$ =	.00315	$\frac{29}{50}$ =	.02283	5 =	.19685
$\frac{5}{50}$ =	.00394	$\frac{30}{50}$ =	.02362	6 =	.23622
$\frac{6}{50}$ =	.00472	$\frac{31}{50}$ =	.02441	7 =	.27559
$\frac{7}{50}$ =	.00551	$\frac{32}{50}$ =	.02520	8 =	.31496
$\frac{8}{50}$ =	.00630	$\frac{33}{50}$ =	.02598	9 =	.35433
$\frac{9}{50}$ =	.00709	$\frac{34}{50}$ =	.02677	10 =	.39370
$\frac{10}{50}$ =	.00787	$\frac{35}{50}$ =	.02756	11 =	.43307
$\frac{11}{50}$ =	.00866	$\frac{36}{50}$ =	.02835	12 =	.47244
$\frac{12}{50}$ =	.00945	$\frac{37}{50}$ =	.02913	13 =	.51181
$\frac{13}{50}$ =	.01024	$\frac{38}{50}$ =	.02992	14 =	.55118
$\frac{14}{50}$ =	.01102	$\frac{39}{50}$ =	.03071	15 =	.59055
$\frac{15}{50}$ =	.01181	$\frac{40}{50}$ =	.03150	16 =	.62992
$\frac{16}{50}$ =	.01260	$\frac{41}{50}$ =	.03228	17 =	.66929
$\frac{17}{50}$ =	.01339	$\frac{42}{50}$ =	.03307	18 =	.70866
$\frac{18}{50}$ =	.01417	$\frac{43}{50}$ =	.03386	19 =	.74803
$\frac{19}{50}$ =	.01496	$\frac{44}{50}$ =	.03465	20 =	.78740
$\frac{20}{50}$ =	.01575	$\frac{45}{50}$ =	.03543	21 =	.82677
$\frac{21}{50}$ =	.01654	$\frac{46}{50}$ =	.03622	22 =	.86614
$\frac{22}{50}$ =	.01732	$\frac{47}{50}$ =	.03701	23 =	.90551
$\frac{23}{50}$ =	.01811	$\frac{48}{50}$ =	.03780	24 =	.94488
$\frac{24}{50}$ =	.01890	$\frac{49}{50}$ =	.03858	25 =	.98425
$\frac{25}{50}$ =	.01969	1 =	.03937	26 =	1.02362

10 m.m. = 1 Centimeter = 0.3937 inches.
10 c.m. = 1 Decimeter = 3.937 inches.
10 d.m. = 1 Meter = 39.37 inches.
25.4 m.m. = 1 English Inch.

Index

Tools

Cutters

Postal Insurance

We have made an arrangement with a responsible Insurance Company, by which parcels of merchandise in transit either by registered or unregistered mail in the United States, may be insured against loss upon the payment of the following fees :—

In the **unregistered** mail **five cents** insures parcels valued at $5.00 or less, and **ten cents** parcels valued at from $5.00 to $10.00.

In the **registered** mail **five cents** insures parcels valued at $25.00 or less, and **ten cents** parcels valued at from $25.00 to $100.00.

No single parcel **unregistered** will be insured for more than $10.00, and no single parcel **registered** for more than $100.00.

Customers wishing parcels insured will please so state in ordering, and add the required fee as given above, to the amount remitted.

If registration is ordered, the regular fee of **eight cents** should also be added.