Catalog No. 12

▽

The HJORTH LATHE

Manufactured by

HJORTH LATHE & TOOL COMPANY

Office
BOSTON, MASS., U. S. A.

Works
WOBURN, MASS., U. S. A.

FOREWORD

WE present in the following pages illustrations of the Hjorth Bench Lathe and some of its attachments. MR. HENRICK J. HJORTH, the designer, has a wide reputation both here and abroad as the inventor of our important mechanical devices.

Aided by his practical experience of more than thirty years, he has devoted his inventive genius to designing, building and perfecting a precision Lathe which embodies improvements possessed by no other Lathe on the market.

His purpose was to construct a Lathe that could meet the exacting requirements of the modern machine shop where accuracy and speed, with its consequent low cost per unit out-put, is essential. His success in this respect may be said to mark a great advance in the evolution of Lathe construction.

We submit this catalog for the serious consideration of those who wish to adopt a Lathe which possesses the latest and best improvements in machine tool construction.

HJORTH LATHE & TOOL COMPANY

OFFICE
27 School St., Boston, Mass., U. S. A.

WORKS
Woburn, Mass., U. S. A.

SPECIFICATIONS OF THE HJORTH LATHE

No. 4 and No. 5

(For detailed construction see pages 56 to 60 inclusive)

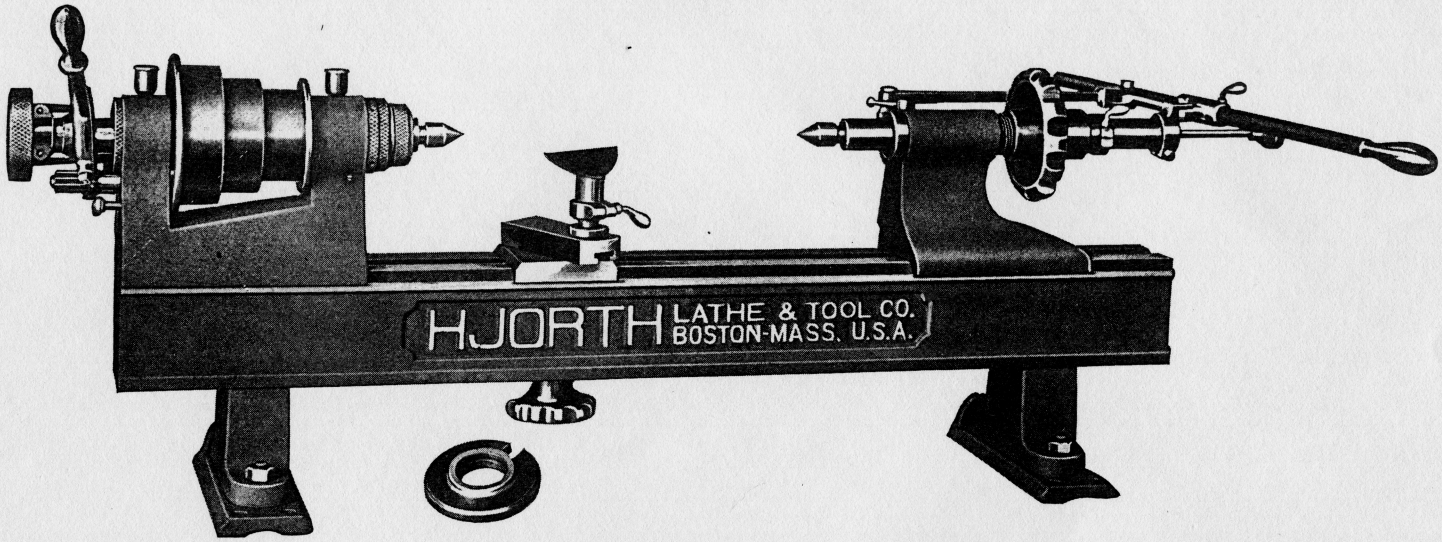
The Bed is very heavy and rigid of construction, having large internal ribs which effectually prevent springing of bed under heavy duty. Its bearings and attachments are scraped to a master standard guage, so that all attachments made by us will always fit our lathe. Head and Tail Stock Spindles are hardened, tempered and ground.

The Hjorth Lathe has many patented features and attachments, making it a machine of great variety and scope in capacity and performance.

Length of bed, 36 inches
Swings over ways, 8⅝ inches
Distance between centers, 18 inches
Hole through spindle, ¾ inches
Diameter of aluminum pulley, for grinding atachment, 14 inches
Diameter of counter pulleys, 5 inches
Face of counter pulleys, 1½ inches
Diameter of tail stock spindle, 1⅛ inches
Capacity of chucks up to ⅝ inch
Angle of chuck head, 15°
Diameter of lathe cone pulleys, 3½, 4¼ and 5 inches
Face of cone pulley, 1¼ inches wide
Speed of counter chaft, 1000 revolutions fast, 500 revolutions, slow and reverse.
Weight of lathe, 143 pounds, countershaft and treadles, 63 pounds.
Brown and Sharpe No. 6 Taper 2½ inches long is used for head and tail stock.

All the above specifications apply to both No. 4 and No. 5 lathes, except capacity of chucks for No. 5 lathe is up to ⅞ inch, face of cone pully is 1⅜ inches wide, hole through live spindle 1 inch.

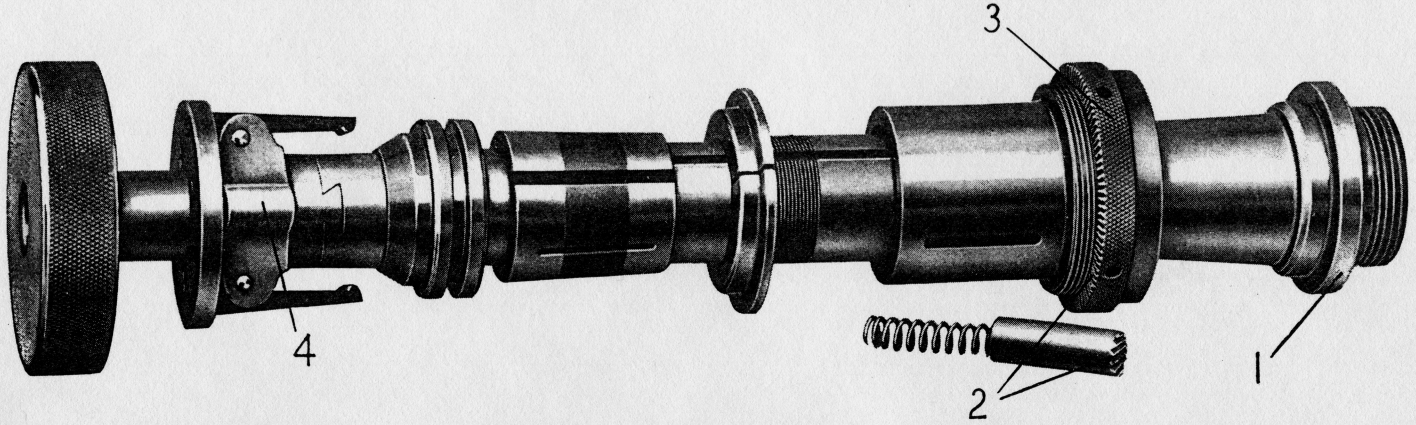
COMBINATION SCREW AND LEVER TAIL STOCK
INDEPENDENT END-THRUST ADJUSTMENT
AUTOMATIC CHUCK CLOSER
(All Patented)



Above illustration shows the Automatic Chuck Closer, Head with the independent end thrust adjustment, (shown on next page) and the combination screw and lever tail stock. Also T rest and shoes constructed to move lathe to permit belt adjustment. (The latter enables glueing of belt to head stock cone). Note center removing rod in tail stock spindle.

Stroke of Combination Tail Stock is $4\frac{1}{4}$ inches and its screw movement is $2\frac{3}{4}$ inches, while the screw movement of plain tail stock is 3 inches.

THE HJORTH PATENTED HEAD STOCK SPINDLE



1—Points to Independent End-Thrust Flange
2—Points to Locking Device
3—Points to Independent Strain Relieving Collar
4—Points to Automatic Chuck Closer

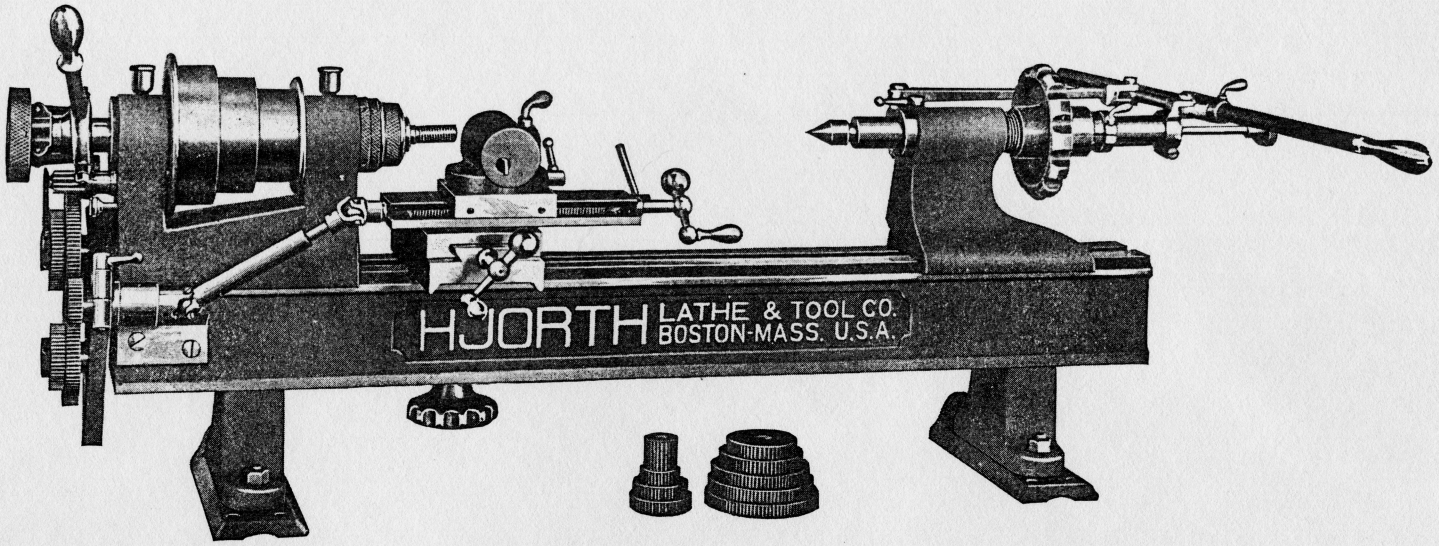
Each bearing is supplied with four felt oiling grooves.

Spindles and bearings are of best tool steel hardened, ground and lapped. Hole through the live spindle $\frac{3}{4}$ inch. Drawn-in spindle engages self-centering collet chucks and permits round stock up to $\frac{5}{8}$ inch to pass through. The nose of spindle is threaded and threads after being hardened are accurately ground, allowing face plates, jaw chuck, etc., to be affixed. The spindle front bearing is of the two-angle type, namely 3° and 45°. The spring collets have a 15° angle for compression. This degree of angle has been adopted, as experience has shown that such angle furnishes the maximum grip on the stock being held, with the minimum pull on the threads of the spindle and chucks.

The end-thrust adjustment of front bearing is accomplished in rear of cone pulley by an adjusting nut which can be locked when properly set and the rear bearing is adjusted by screw.

Special attention is called to the above described patented end-thrust strain relieving device, which goes with every Hjorth head stock, and the merit of which is selfevident.

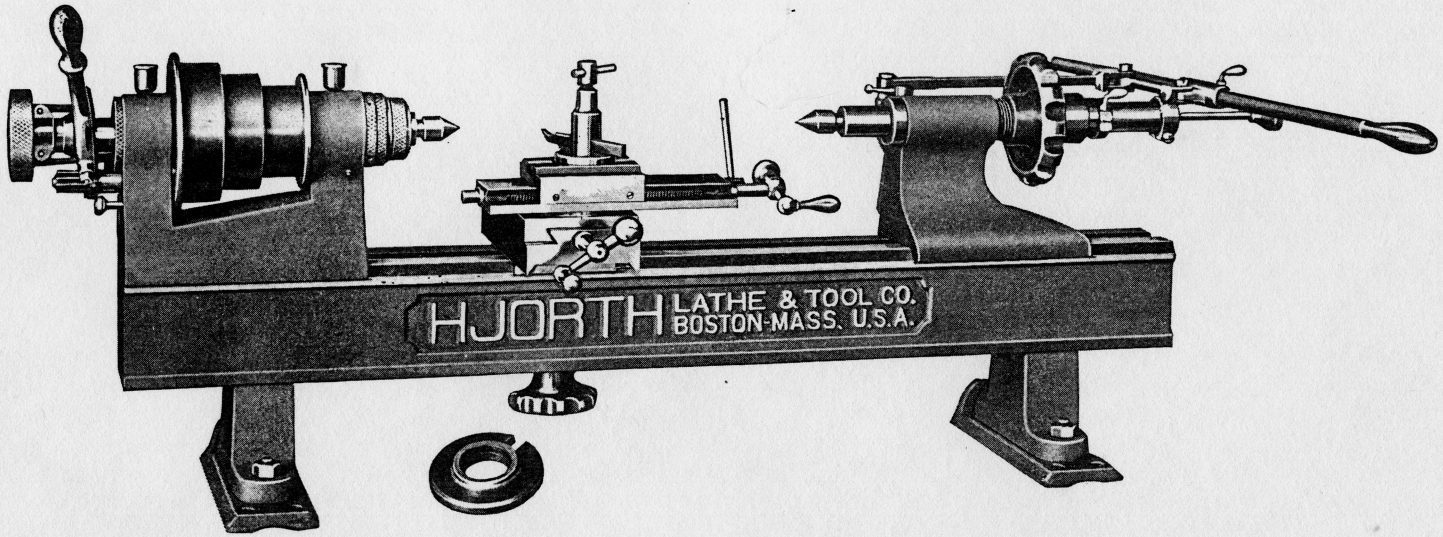
SCREW CUTTING ATTACHMENT AND COMBINATION SLIDE REST



Above illustration shows Screw Cutting attachment for cutting threads from 10 to 80. (See table in back of catalog pages 46 and 47.)

Also Combination Slide Rest. The eccentric tool holder allows for necessary clearance of round turning tools. Our binding system has been tested with the best of results. Both swivels are graduated in degrees allowing any angle to be set at any point. Upper slide movement $5\frac{1}{2}$ inches, lower $4\frac{1}{2}$ inches. Diameter of lead screw $\frac{3}{8}$ inch, lead 10 per inch, acme threads.

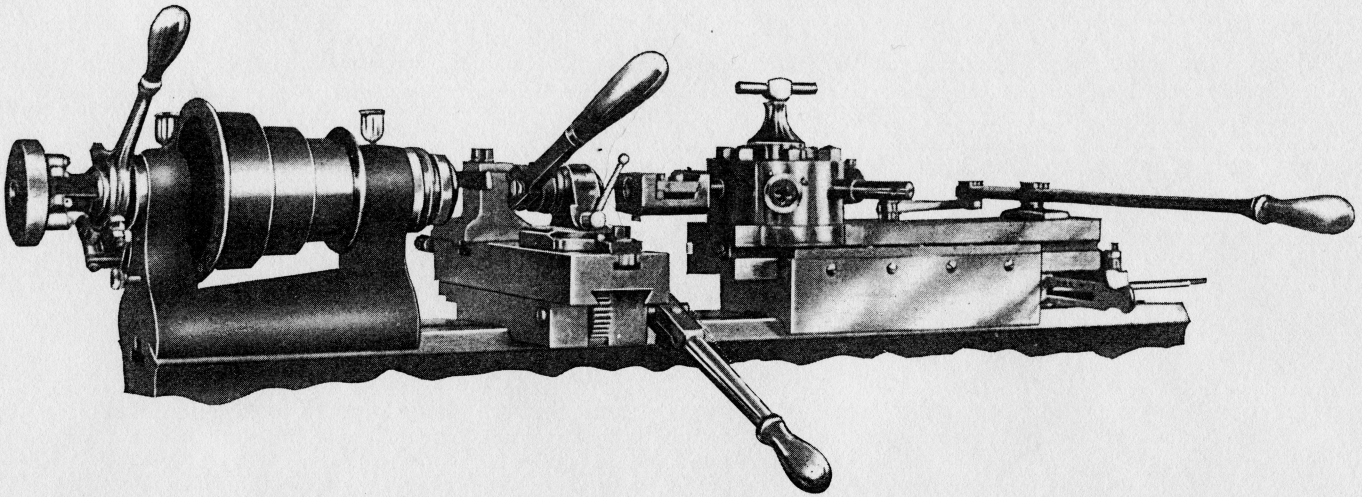
SLIDE REST WITH ROCKER TOOL POST



Above illustration shows Slide Rest with Rocker Tool Posts for flat forged tools or a common tool holder for 3-16 inch self hardening tools. This Slide Rest can also be used in connection with screw cutting attachment and all other purposes except with milling attachments.

Tool post accomodates holders up to $\frac{3}{8}$ inch by $\frac{7}{8}$ inch. (See page 26).

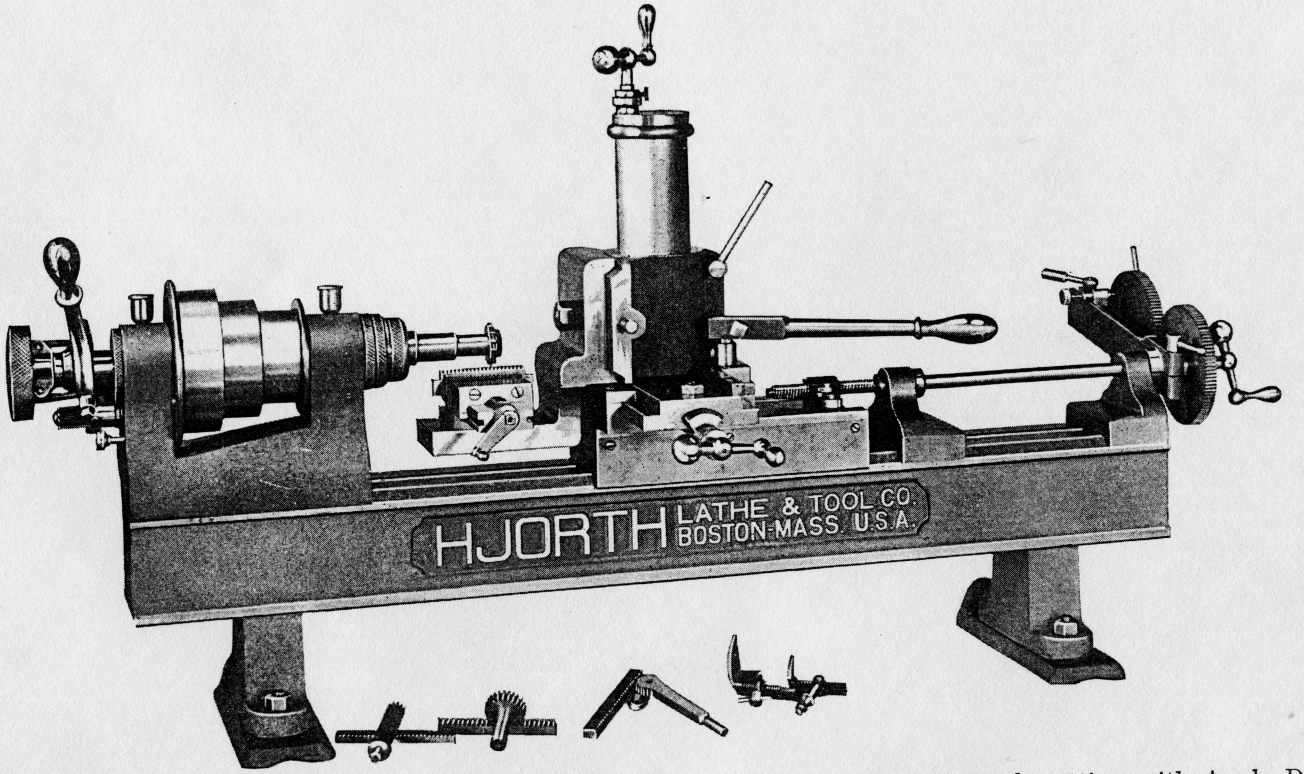
TURRET ATTACHMENT



Used in connection with the Forming and Cutting Off Attachment (see page 23), and Automatic Chuck Closer (Patented).

NOTE:—Knurling Attachment operated with Forming Slide. Liberal sliding surfaces, ensuring the maximum of rigidity. Adjustable back and side stops for forming slide. Graduated Swivel Forming-post on cross slide by which any degree of angle may be secured with straight cutters. Independent stops on Turret which are numbered to correspond with each one of the six $\frac{5}{8}$ inch diameter tool-holes in Turret head. Space between tools of forming attachment allows perfect freedom in the operating of Turret tools.

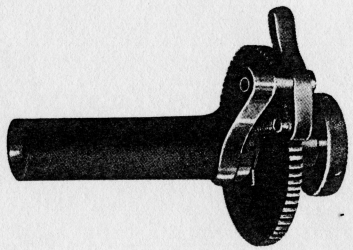
UNIVERSAL MILLING ATTACHMENT (Patented)



Above illustration shows Universal Milling Attachment, Stand and Base mounted for rack cutting with Angle Device, for holding work, on left and Rack, or Dividing Head Cutting Device on right, with Combination Lever and Screw feed. Universal Milling Attachment includes Index Quill and eight Index Plates. This atachment is used in conjunction with the Combination Slide Rest, but not with the Rocker Tool Post Slide Rest. With use of angle and swivel vice on same, various kinds of milling, sawing and slotting can be done. (See table in back.) Longitudinal movement 4 inches.

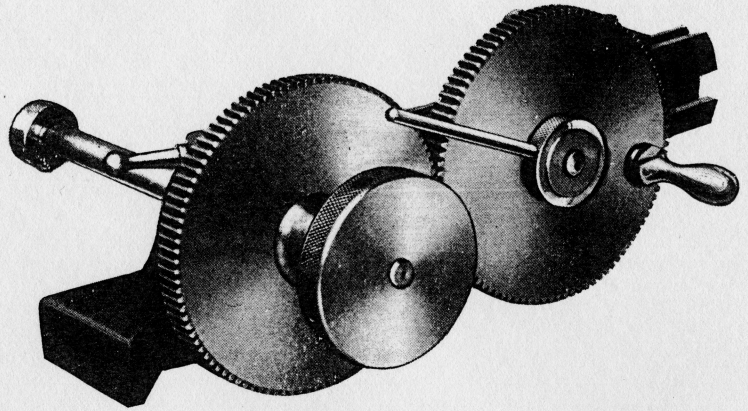
See Pages 46 and 47 for Gear Tables for Rack-Cutting Attachment.

Hjorth Lathe & Tool Company

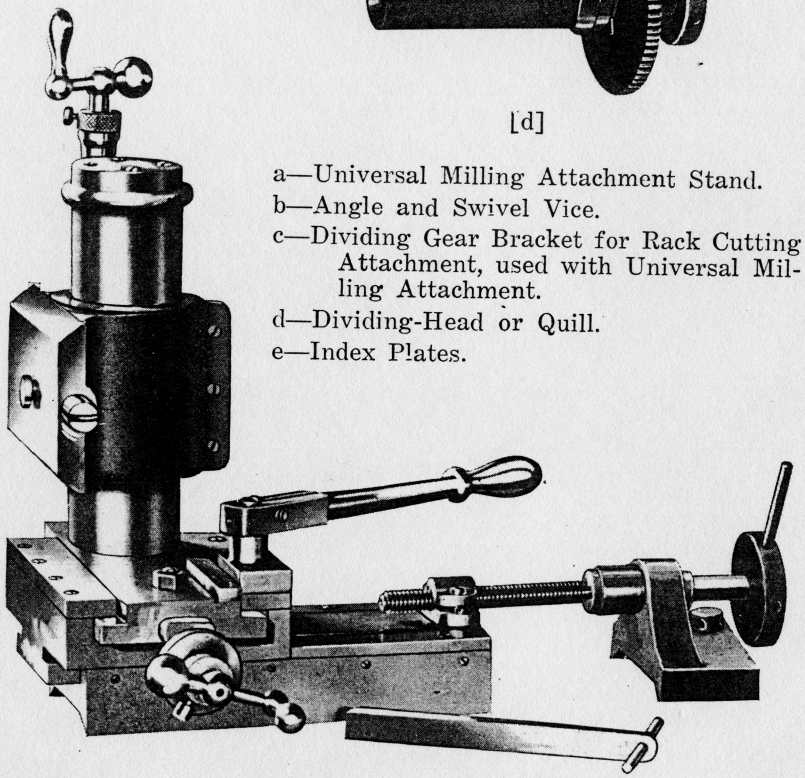


[d]

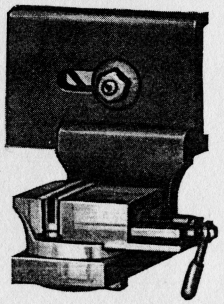
a—Universal Milling Attachment Stand.
b—Angle and Swivel Vice.
c—Dividing Gear Bracket for Rack Cutting Attachment, used with Universal Milling Attachment.
d—Dividing-Head or Quill.
e—Index Plates.



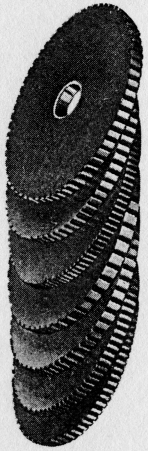
[c]



[a]

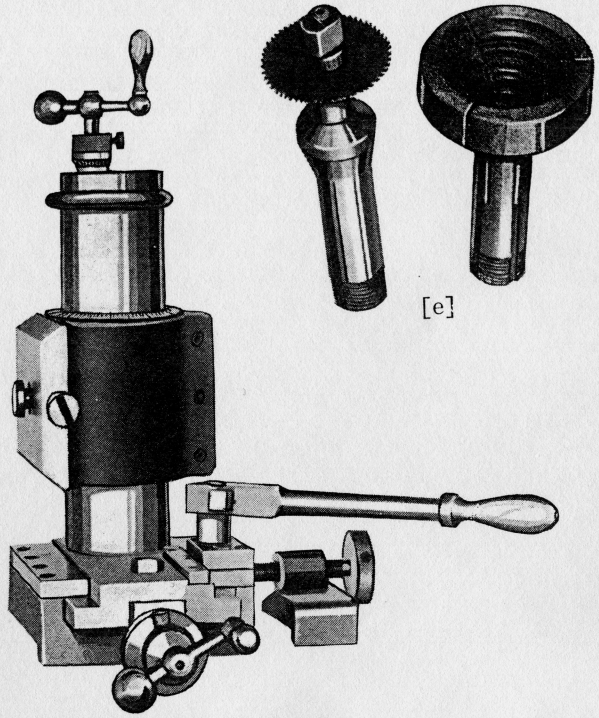


[b]



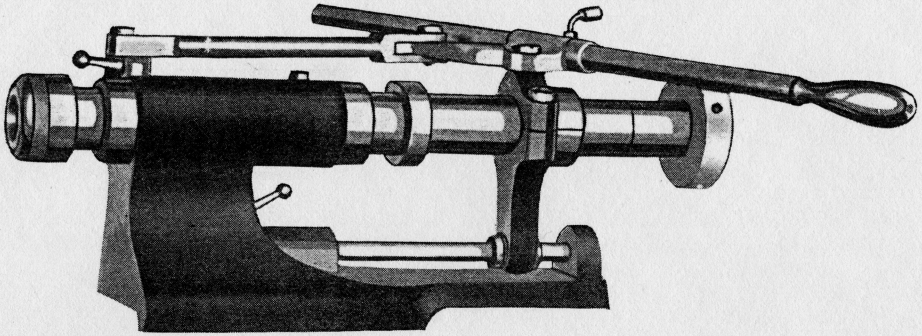
[e]

Hjorth Lathe & Tool Company



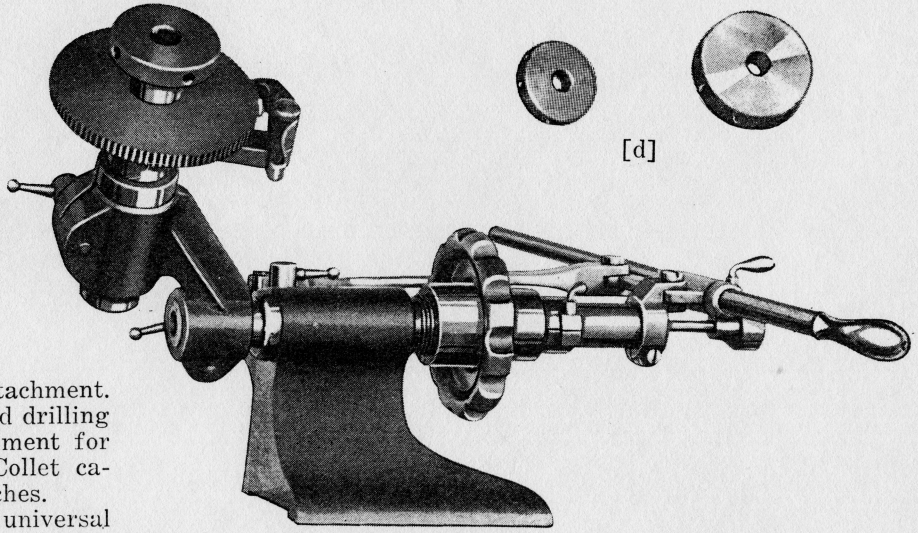
[a]

[e]



[c]

[d]



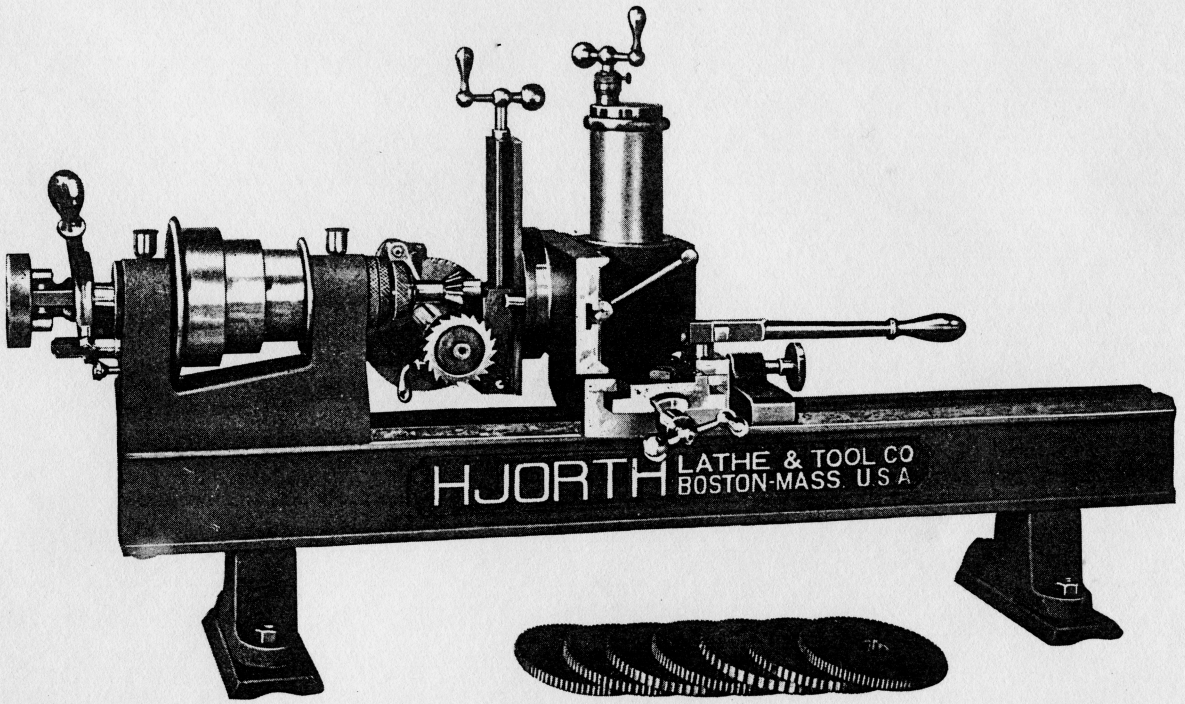
[b]

a—Plain Milling Attachment Stand.
b—Tail-Stock (Patented) with Dividing Drilling Attachment. This attachment is used for accurately spacing and drilling holes and can be used also with grinding attachment for spacing purposes and for resharpening saws. Collet capacity $\frac{5}{8}$ inch and step chuck capacity up to $2\frac{1}{2}$ inches.
c—Spring Collet Lever Tail-Stock, with same collet and universal chuck capacity as head-stock, $\frac{5}{8}$ inch.
d—Work spaced and drilled.
e—Collets used in attachment b.

PLAIN MILLING ATTACHMENT

With Base and Stand, Screw and Lever Feed, Quill and 8 Dividing Index Plates

Numbered 45-54-60-64-72-80-84-100) (Patented)



The Combination Slide Rest is used with this Attachment. This illustration shows also a milling slide designed for milling only. (See next page).

UNIVERSAL AND PLAIN MILLING ATTACHMENT

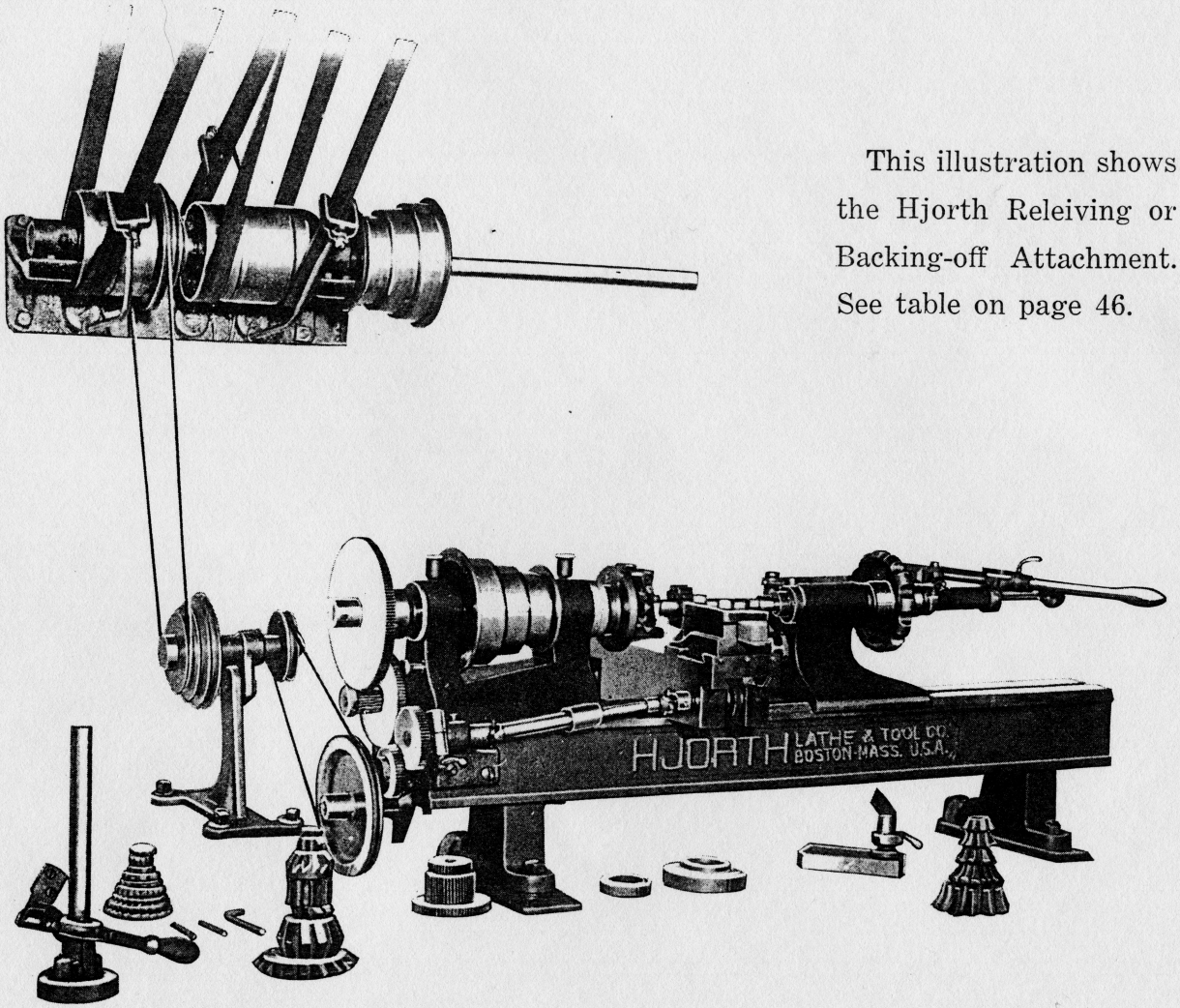
Illustrations on pages 10 and 11 show Universal Milling Attachment with combination lever and screw feed for gear cutting, milling of cutters, reamers, taps, etc. Accomodates spring chucks up to 5/8 inch.

The cylindrical post on this milling attachment is much more rigid and practical than the old style of block or upright slide. The vertical screw provides for setting the shoeblock at a height most suitable for the kind of work to be milled above as well as below the lathe center.

The shoeblock is graduated in degrees so as to be set to any angle for cross or angular milling, this makes the shoeblock independent from lower slide, so that any angle set can be properly milled. A key, inserted through shoeblock, is held on the cylindrical post by means of two taper headed screws so that shoeblock can be raised or lowered without changing its square position to lathe bed. When angle milling is to be done, loosen key by removing taper screws.

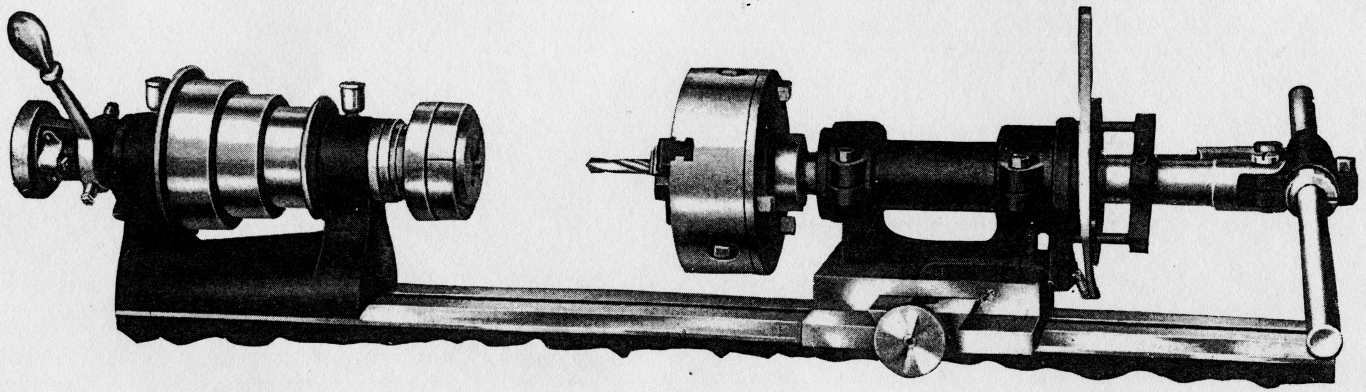
Cylindrical post and cross-slide each have a movement of 3 1/2 inches.

The milling slide is held on shoeblock by means of an eccentric binder and has a movement of 5 1/2 inches.



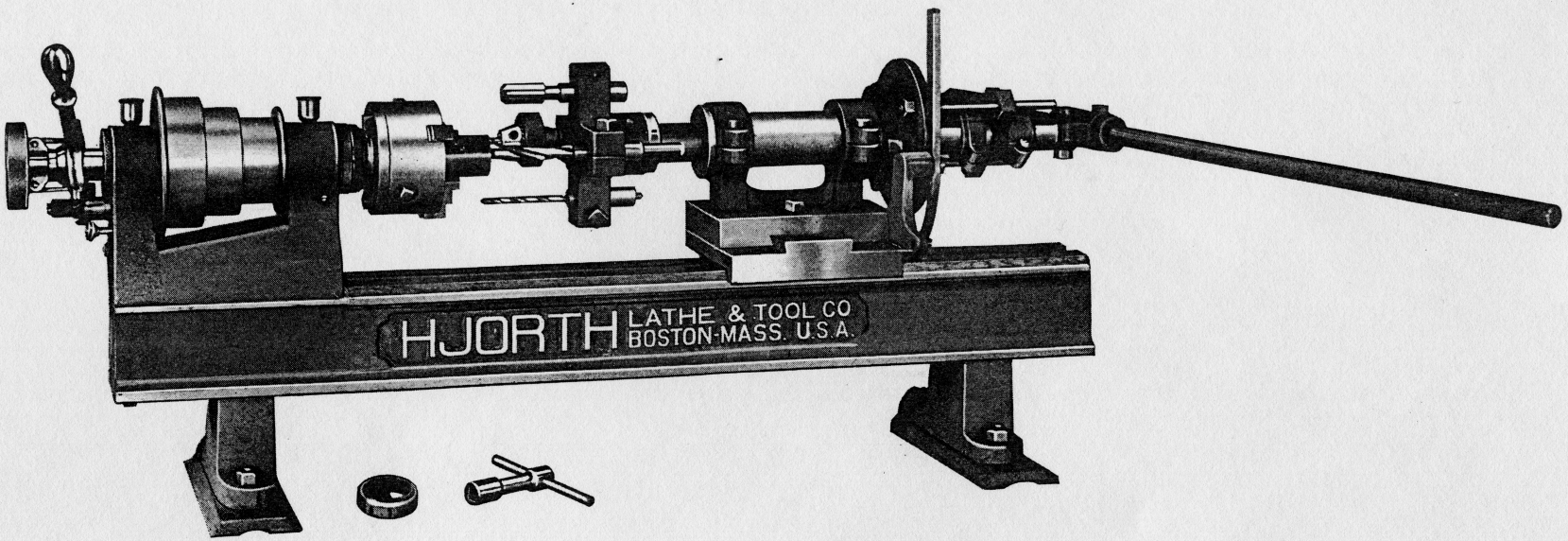
This illustration shows the Hjorth Releiving or Backing-off Attachment. See table on page 46.

DRILLING ATTACHMENT



Drilling Attachment with interchangeable index plate, designed for **Center and Off Center Work** for drilling, milling, tapping and indexing. Off center work is done accurately by removing drill to headstock chuck and work to universal chuck, which by means of cross slide can be placed by operator in desired position.

TURRET DRILLING AND TAPPING ATTACHMENT



Above ilustration shows the Turret Drilling and Tapping attachment for **Drilling, Reaming and Tapping.** Construction of patented lathe headstock enables turret to drill up to $\frac{3}{4}$ inch. Lever handle 36 inches. Stroke of spindle 4 inches.

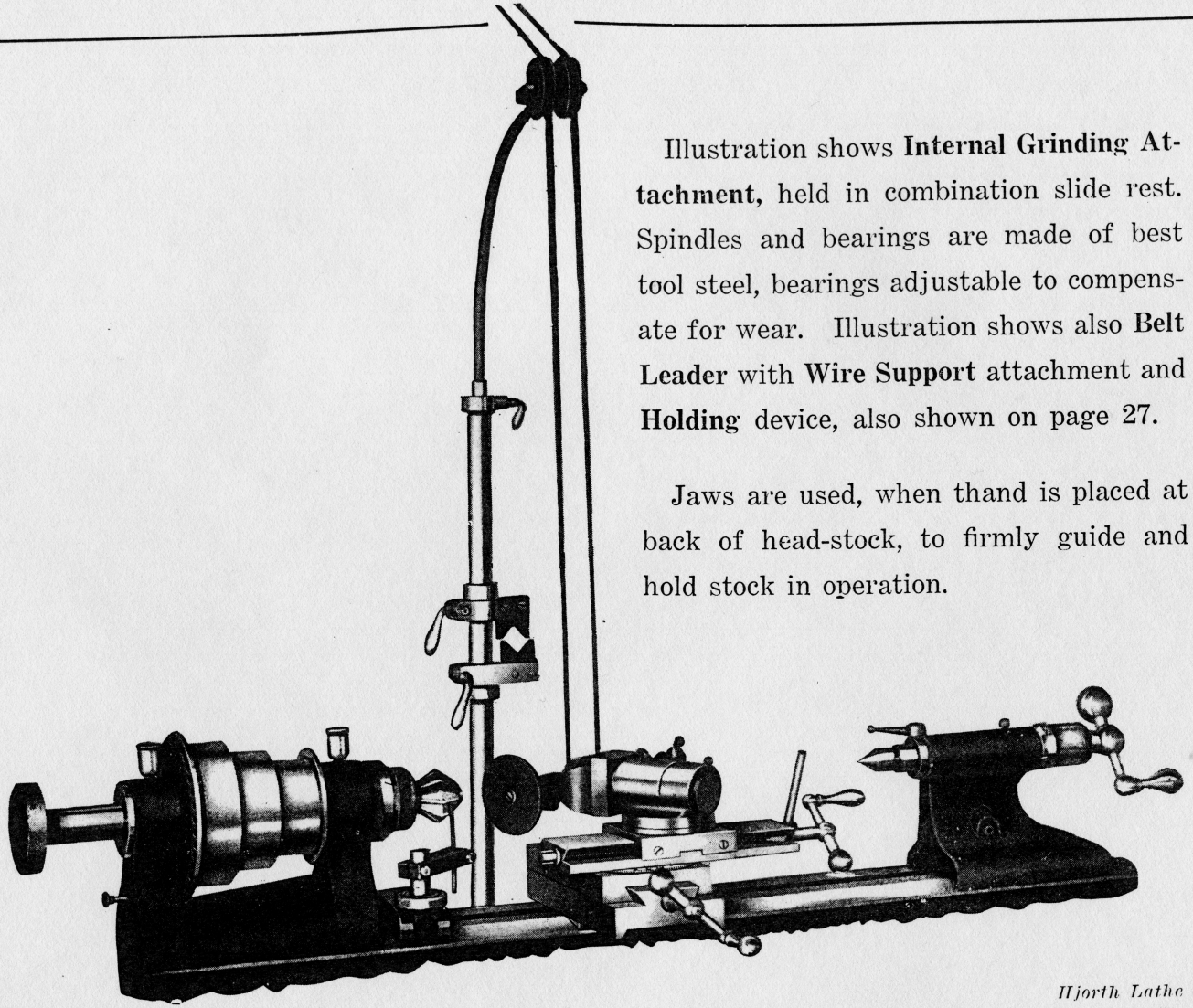
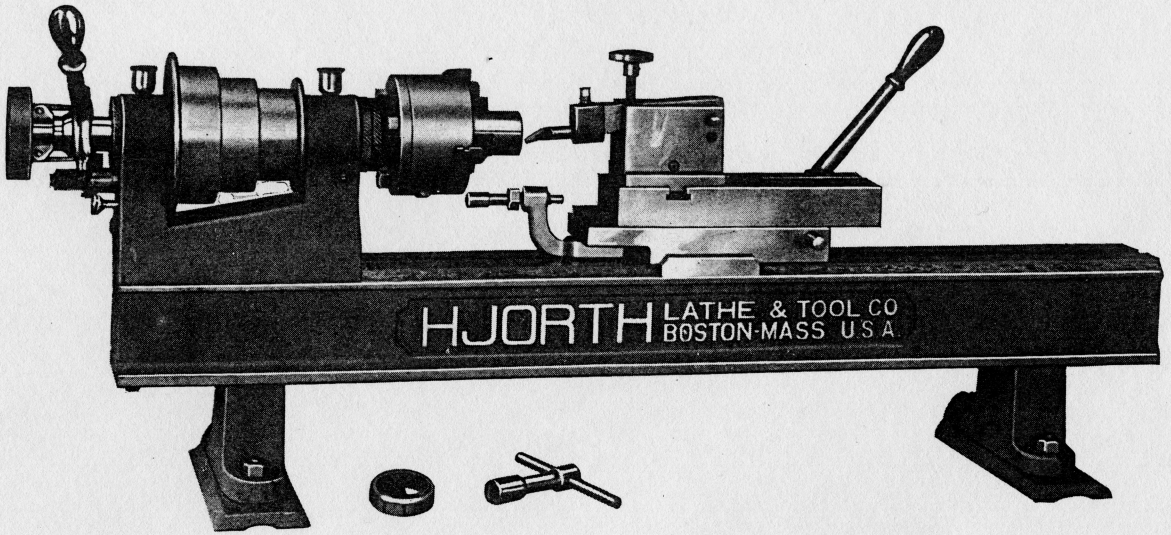


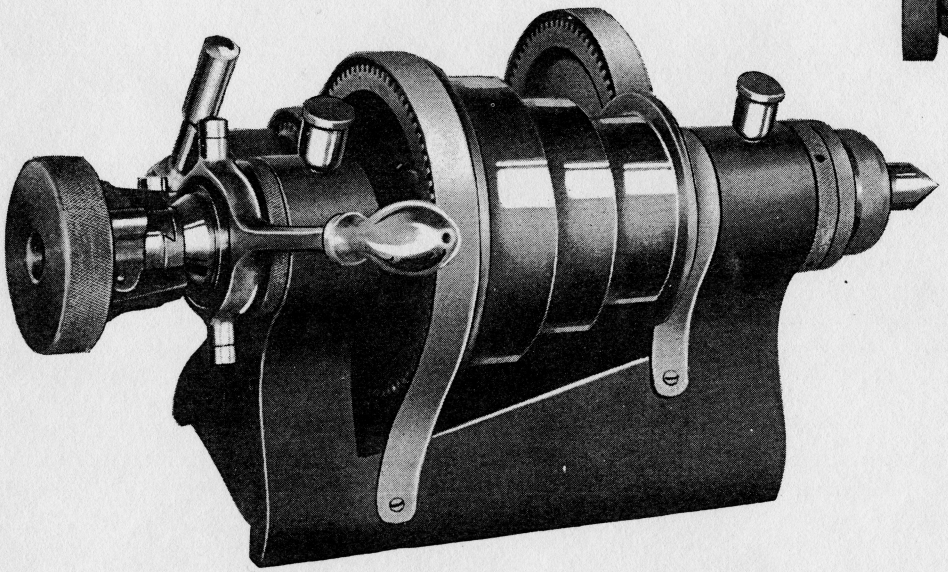
Illustration shows **Internal Grinding Attachment,** held in combination slide rest. Spindles and bearings are made of best tool steel, bearings adjustable to compensate for wear. Illustration shows also **Belt Leader** with **Wire Support** attachment and **Holding** device, also shown on page 27.

Jaws are used, when thand is placed at back of head-stock, to firmly guide and hold stock in operation.

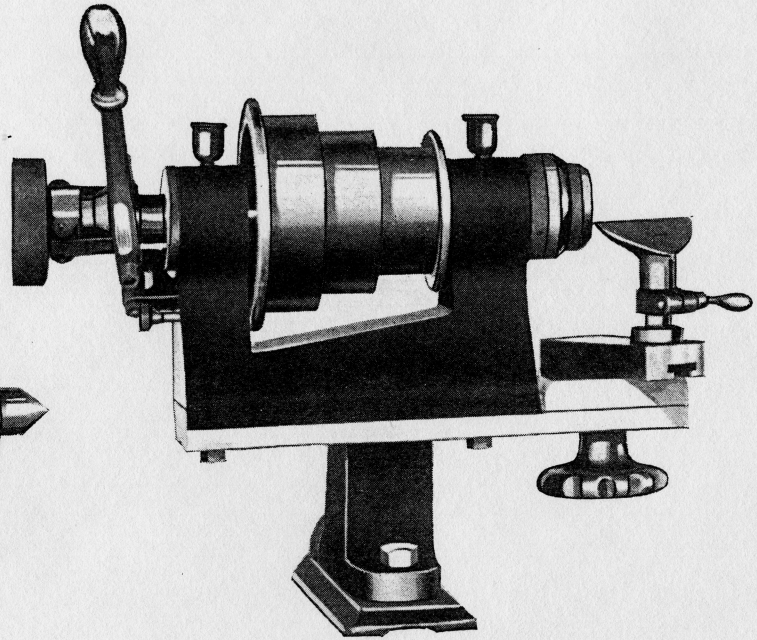
SLOTTING ATTACHMENT



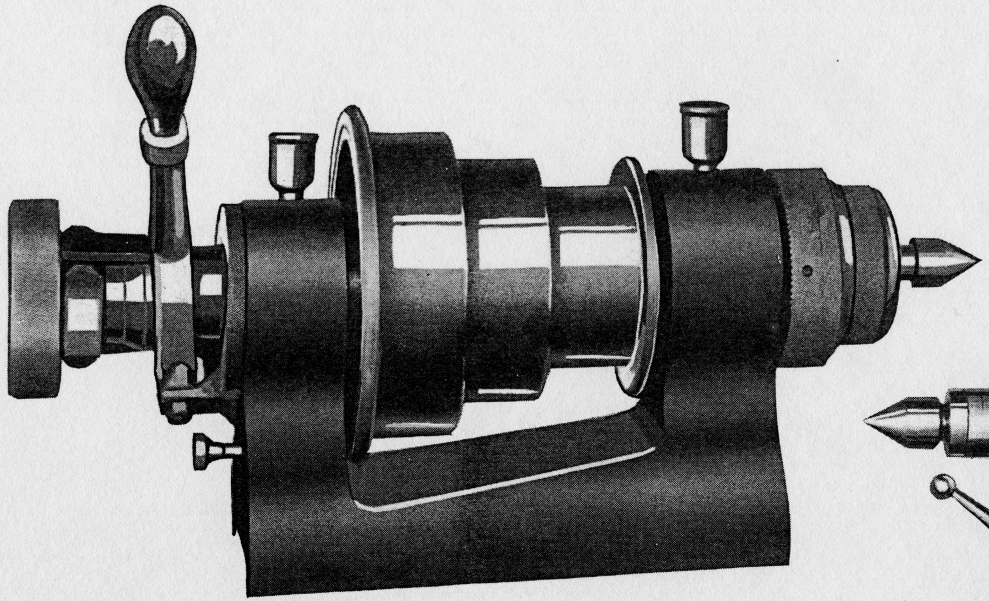
Above illustration shows Slotting Attachment on base of forming slide for key-seating.



BACK GEARED HEADSTOCK
with $\frac{5}{8}$ inch collet capacity.



INDEPENDENT LATHE HEADSTOCK
on stand with Automatic Chuck Closer Attachment for filing, polishing and hand-tooling. Either slide rest can also be attached and used.

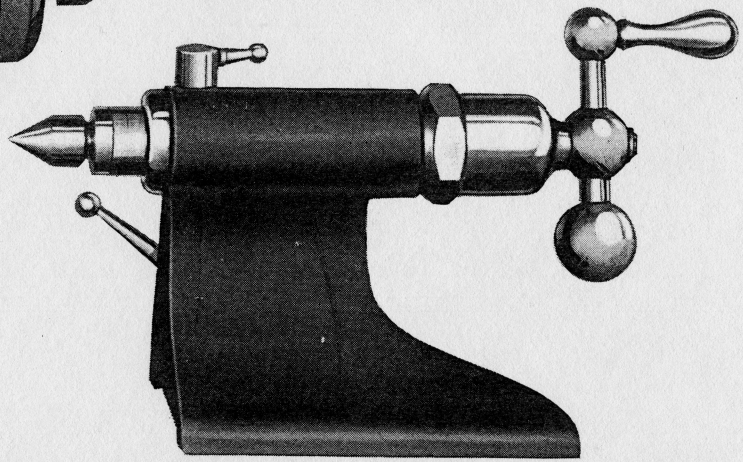


[a]

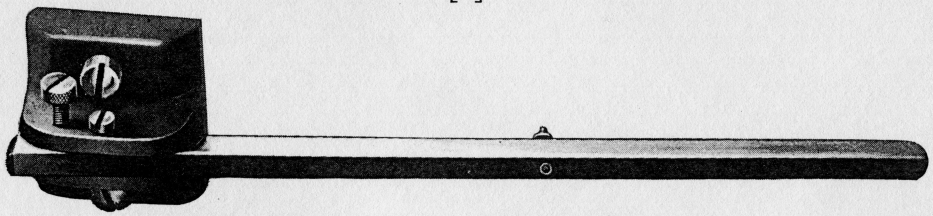
a—Lathe No. 5 Head-Stock, collet capacity ⅞ inch; Live Spindle capacity 1 inch.

b—Special Head-Stock Lever, index for use on indexed cone rim.

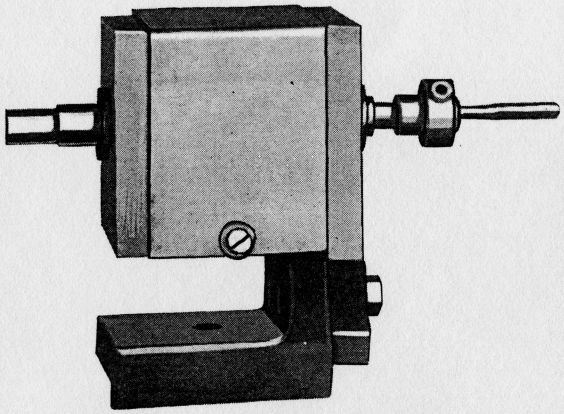
c—Regular Screw Tail-Stock.



[c]

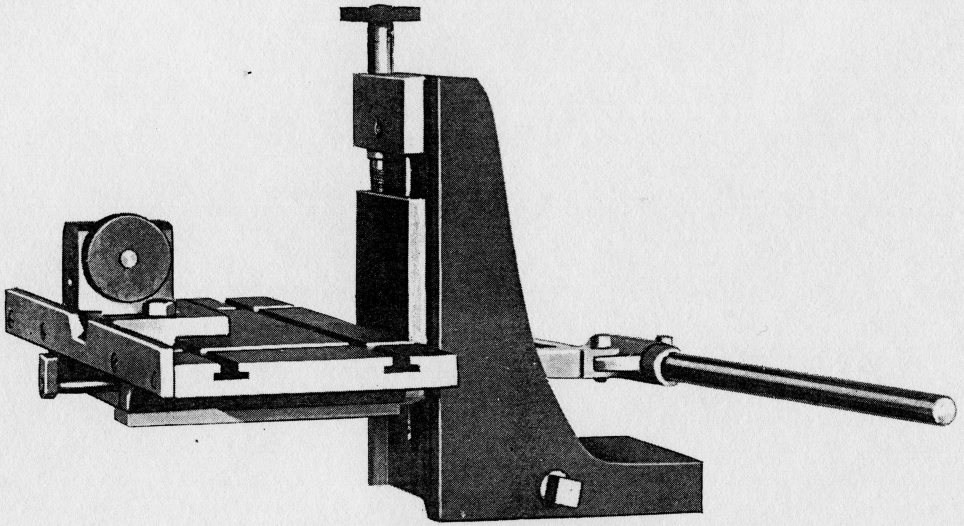


[b]

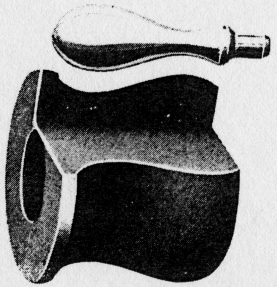


REVERSIBLE TAPPING ATTACHMENT

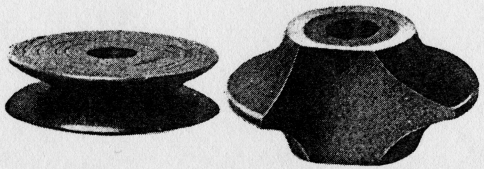
Tapping spindle may at any time, during operation, be reversed by means of clutch and reverse-gear.



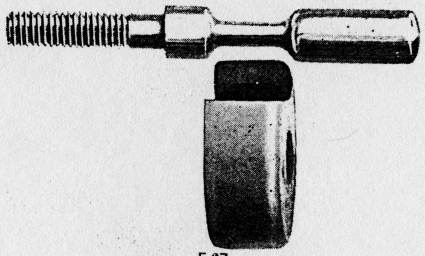
ADJUSTABLE TABLE FOR SAME



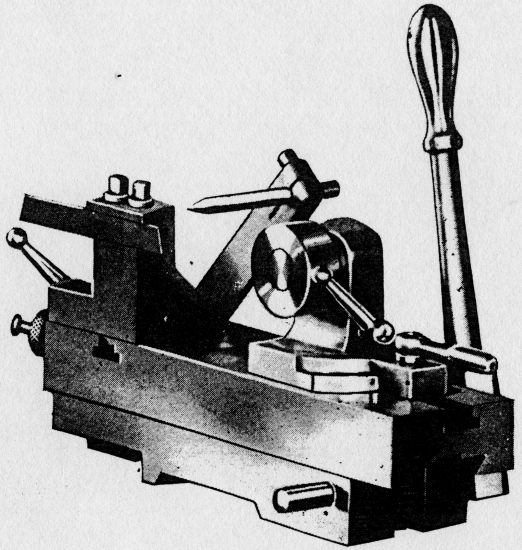
[e]



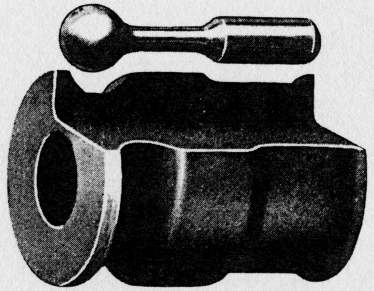
[d]



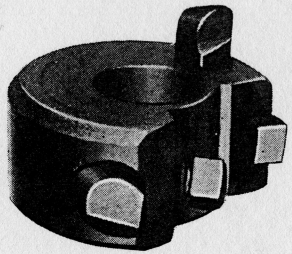
[f]



[a]



[c]

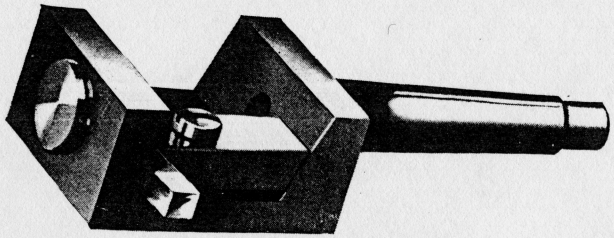


[b]

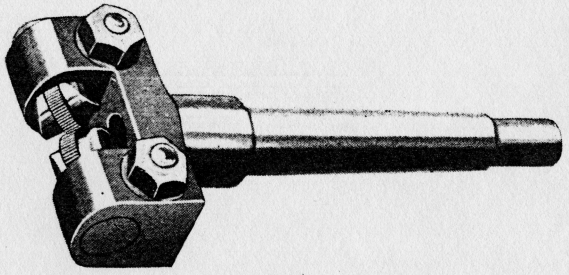
[g]

a—Forming and Cutting-Off Slide, with graduated swivel tool post and two adjustable stops. (See page 9).

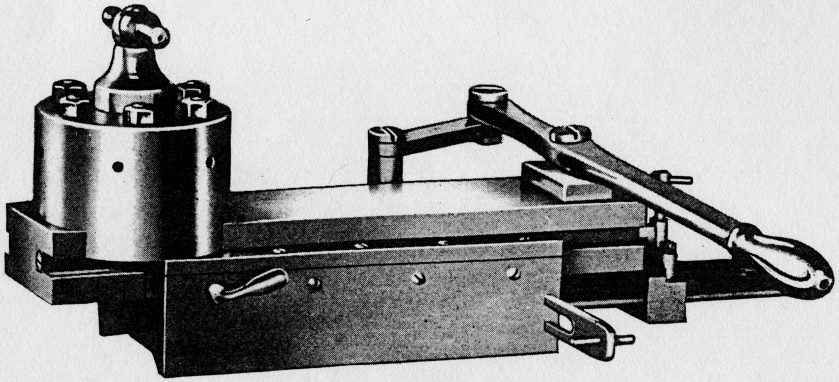
b—Holder, with high speed bits.
c, d, e and f—Samples of work formed.
g—Bit for holder b.



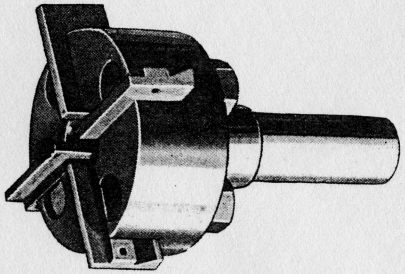
[c]



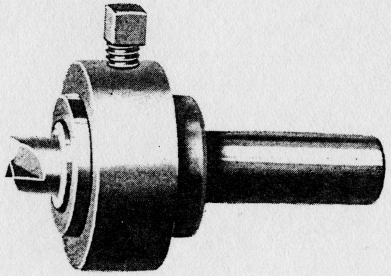
[d]



[a]



[b]



[e]

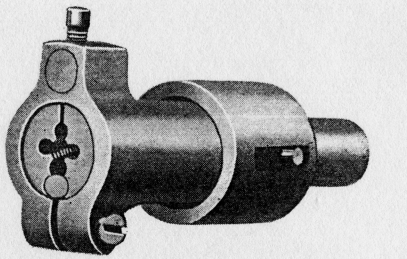
a—Lathe Bed Turret Attachment, with $\frac{5}{8}$ inch tool holes.

b—Box Milling Tool.

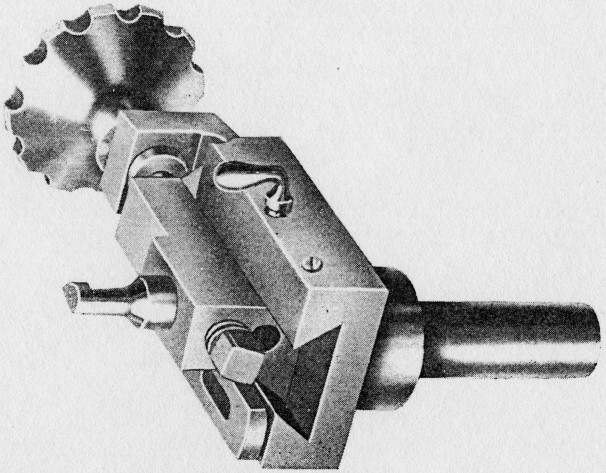
c—Box Mill $\frac{5}{8}$ Inch Shanck, made for turret, and Taper Shank for tail-stock.

d—Knurling Tool for turret or tail-stock.

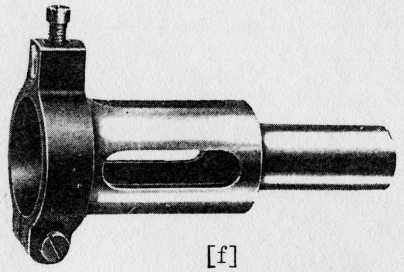
e—Hollow Mill.



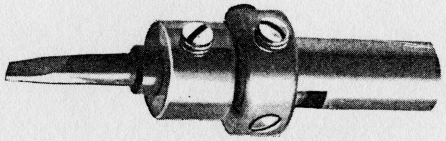
[b]



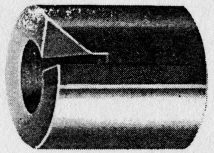
[a]



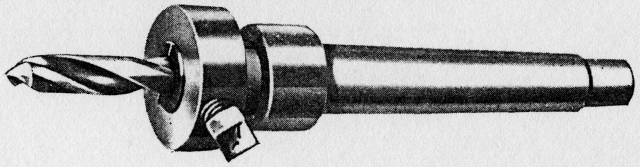
[f]



[d]



[c]



[e]

a—Turret Recessing Tool.

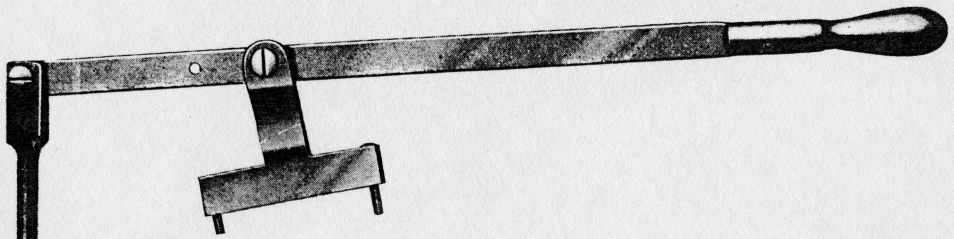
b—Elastic Die Holder, for turret and tail-stock.

c—Centering Tool, for turret.

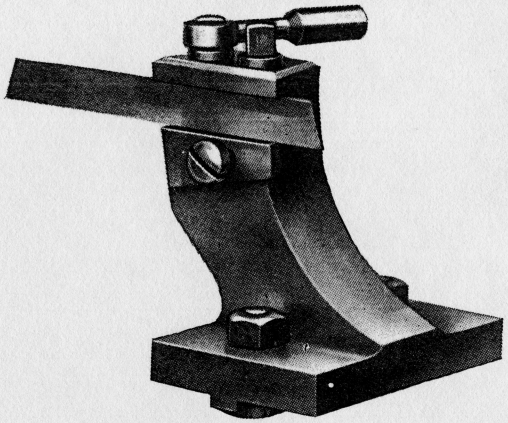
d—Adjustable Boring Tool, for turret and tail-stock.

e—Drill Holder.

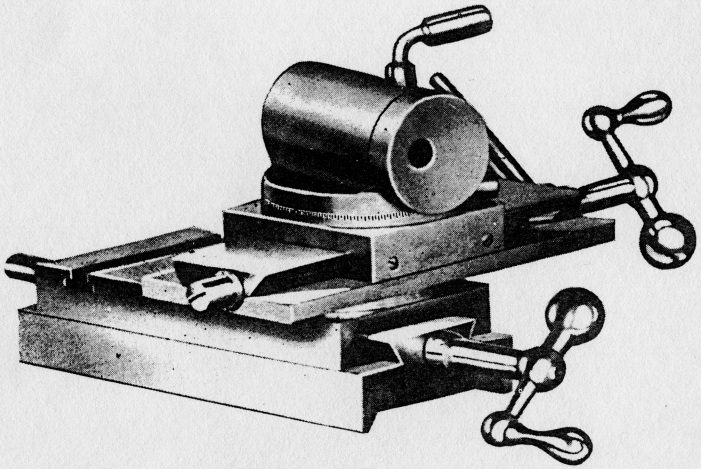
f—Elastic Die Holder.



[c]



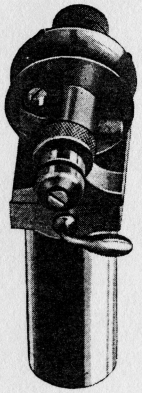
[b]



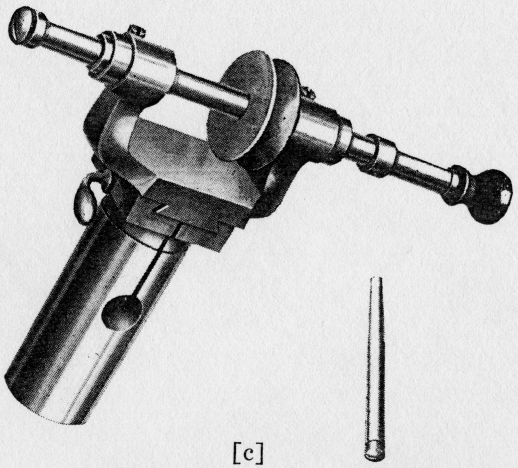
[a]

[e]

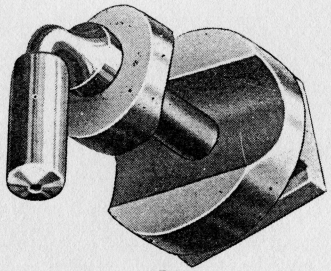
a—Combination Slide Rest, used for all atachments including milling, (see page 7).
b—Adjustable Cutting-Off Tool Holder, for either slide rest.
c—Lever Attachment, for quick moving of upper slide head in turning and grinding.
d—External Grinding Attachment.
e—Grinder Support, for sharpening cutters held on T rest.



[d]

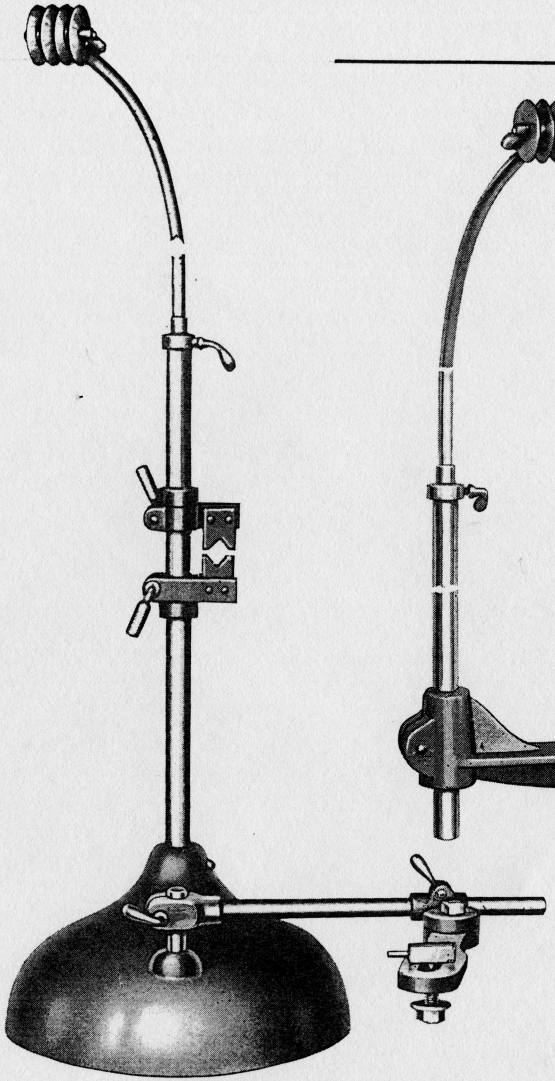


[c]

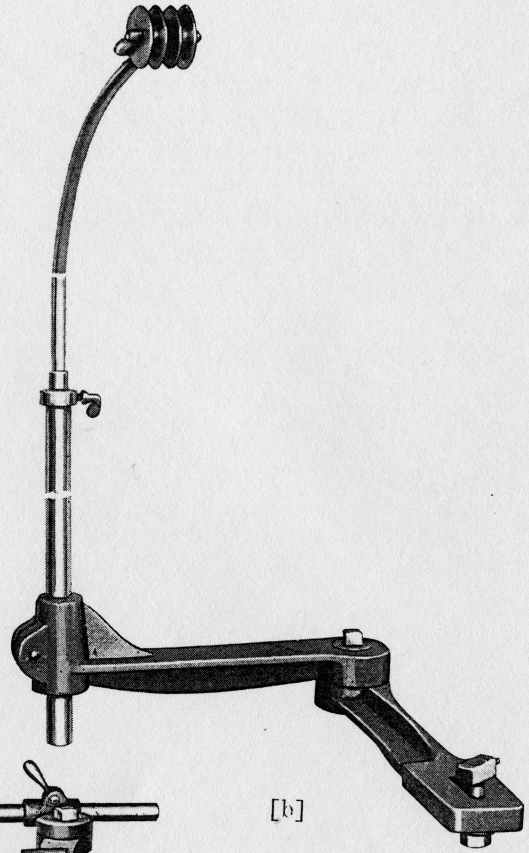


[d]

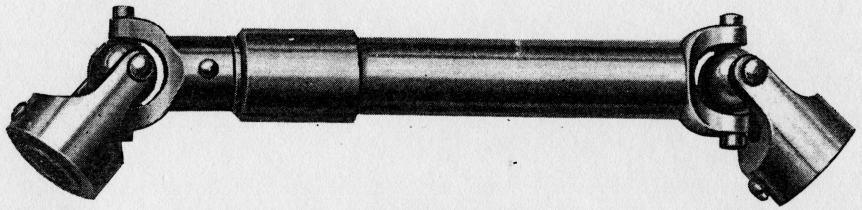
a—Combination Belt Leader and Wire Support.
b—Grinder Belt Leader, fastened from inside of lathe bed.
c—Holder, for grinders when used with racker tool posts slide rest.
d—Internal Grinding Attachment.



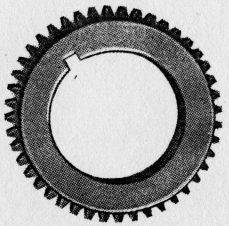
[a]



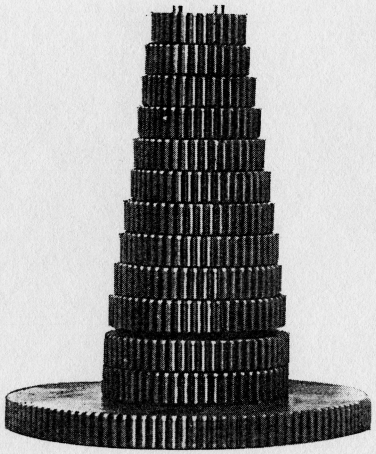
[b]



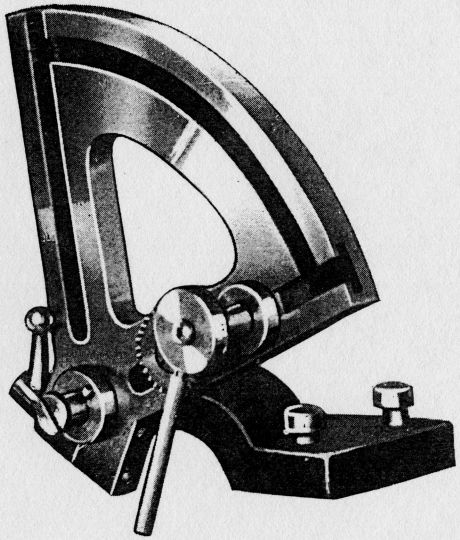
[b]



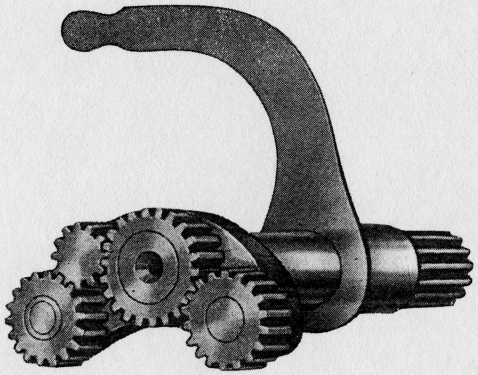
[c]



[e]

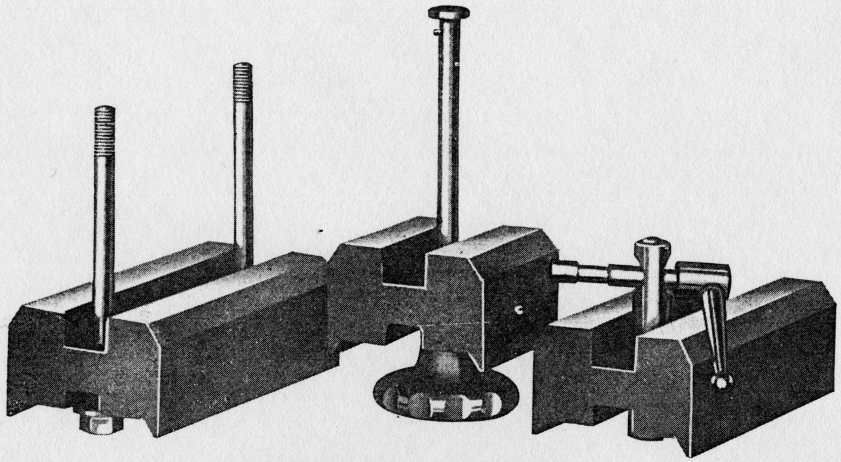


[a]

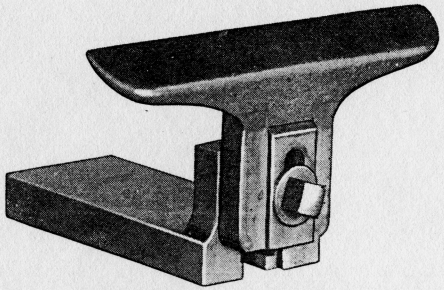


[d]

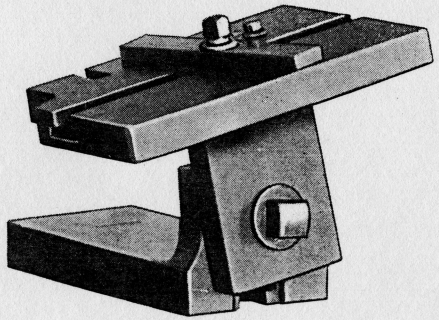
a—Gear Swivel, with bracket.
b—Screw Cutting Attachment Ball Joint.
c—Spindle Gear.
d—Switch Gear, for screw cutting.
e—Screw Cutting Gears.



TWO INCH RAISING BLOCKS

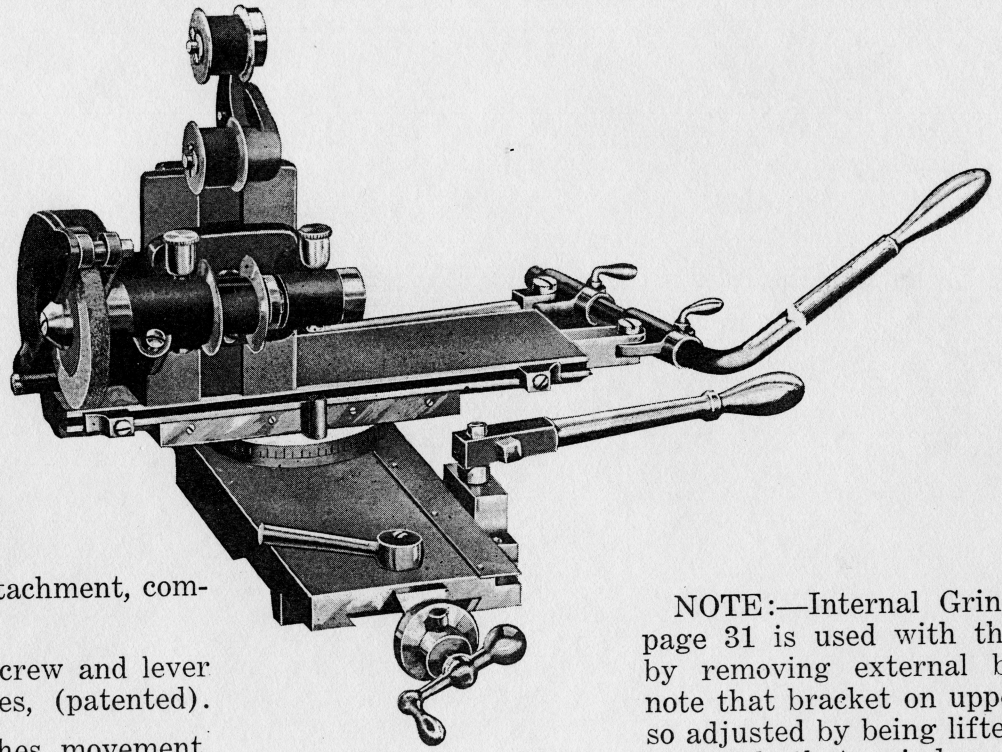


PATTERNMAKER T REST



SAW TABLE

UNIVERSAL GRINDING ATTACHMENT



Universal Grinding Attachment, composed of:

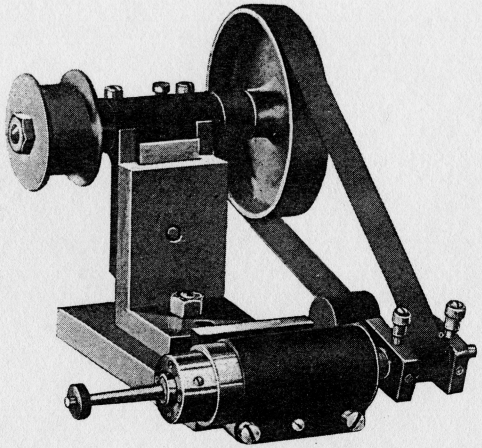
1—Lower slide with screw and lever feeds, movement 5 inches, (patented).

2—Upper slide, 7 inches movement.

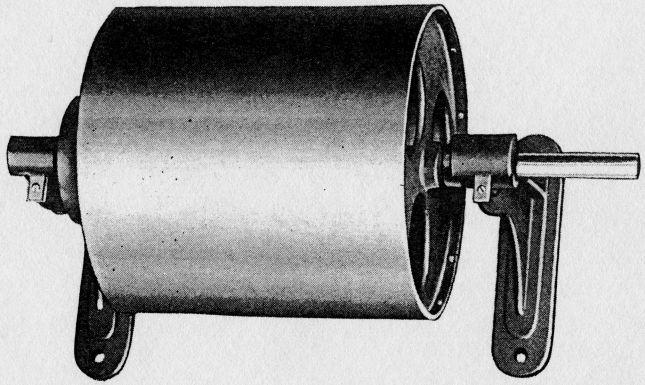
3—Table bracket, holding external spindle.

NOTE:—Internal Grinder shown on page 31 is used with this attachment by removing external bracket. Also note that bracket on upper slide can be so adjusted by being lifted, swivelled or reversed, that grinder spindle can be placed in any desired position for work under operation.

Speed of spindle for external grinding 6,000, and for internal grinding 35,000 revolutions per minute.

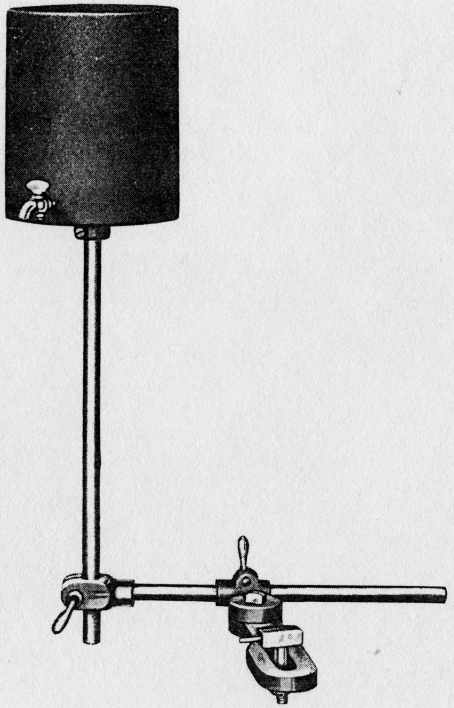


INTERNAL GRINDING ATTACHMENT
(Patented)



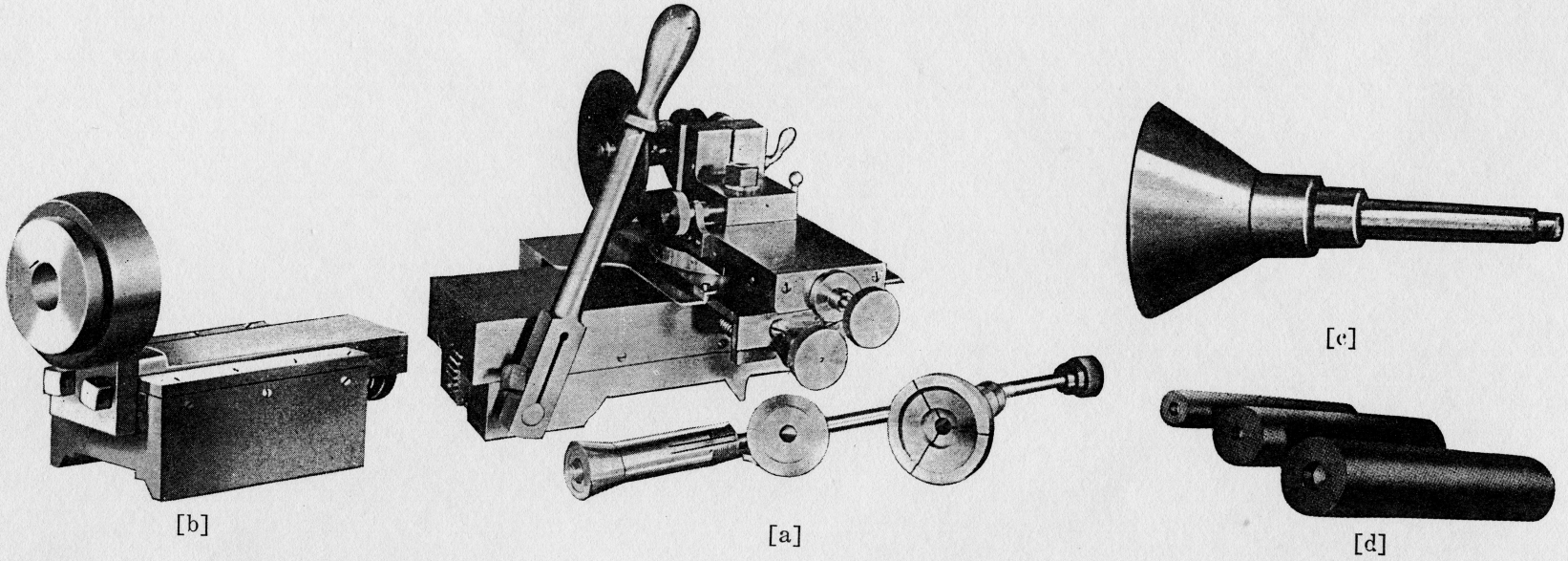
OVERHEAD COUNTERSHAFT DRUM
For Universal Grinding Attachment
(See page 60).

STAND FOR HJORTH LATHE



OIL SUPPLY TANK
For Lathe

FORM GRINDING ATTACHMENT



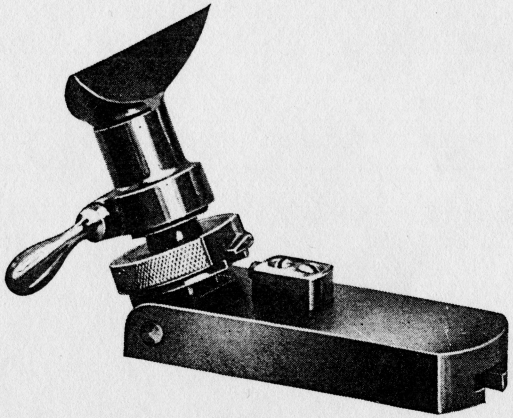
[b] [a] [c] [d]

a—Form Grinding Attachment, the circular paper cutter shows where face, curve and cutting edge by this attachment are all ground in one operation. ¶ This attachment is designed to grind stock into various forms and shapes by means of a grinding slide and forming cam.

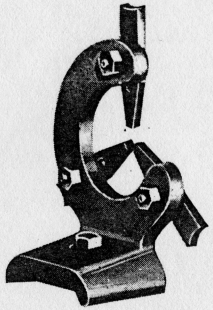
b—Self-Centering Drilling Attachment, with automatic device returning slide to original position after each operation.

c—Bell Center, used in tail-stock with attachment (b).

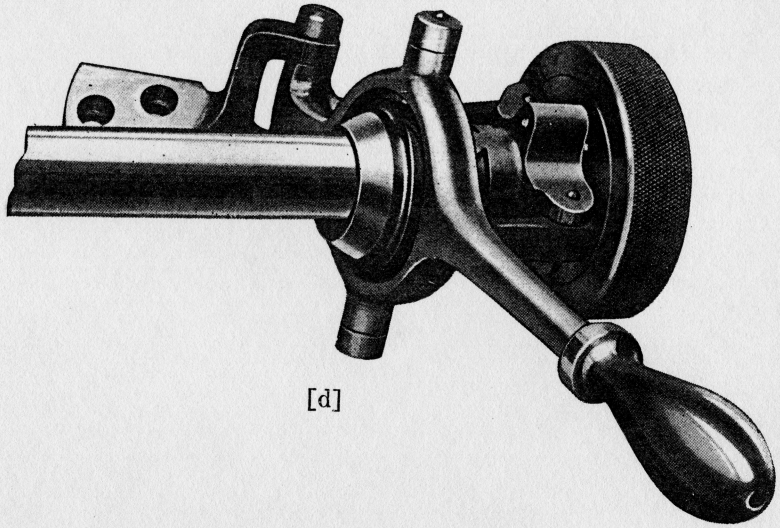
d—Samples of work.



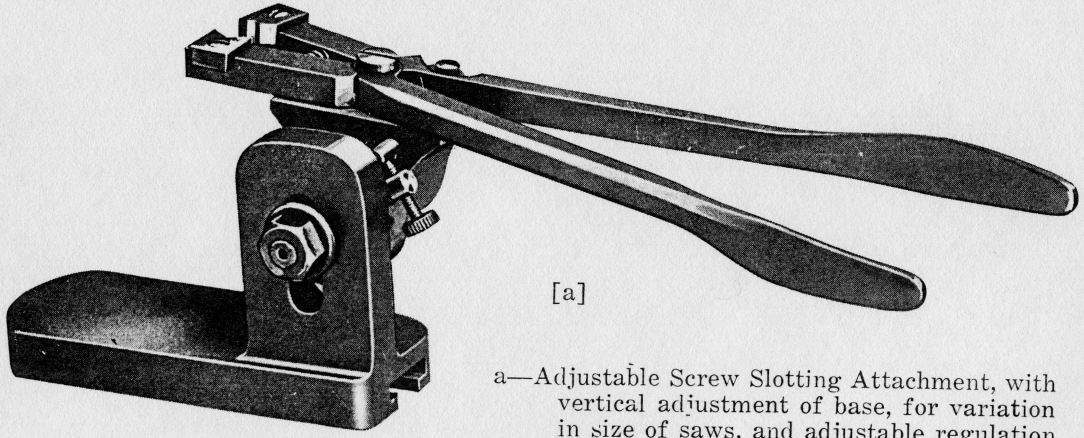
[b]



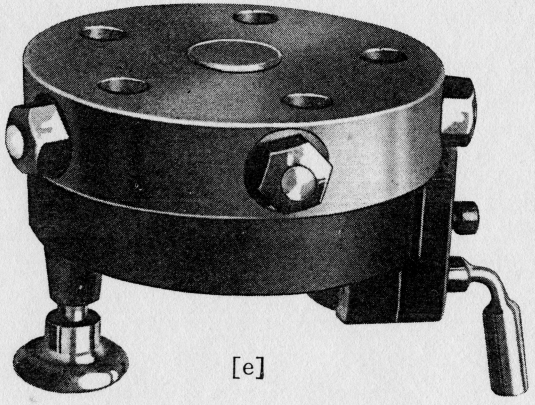
[c]



[d]



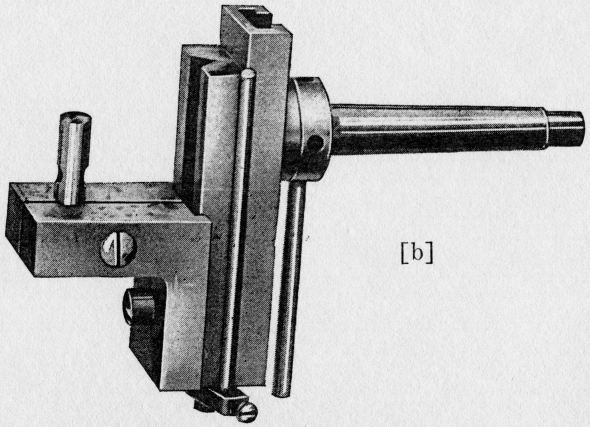
[a]



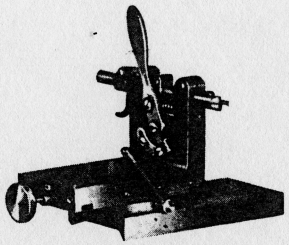
[e]

a—Adjustable Screw Slotting Attachment, with vertical adjustment of base, for variation in size of saws, and adjustable regulation stop.

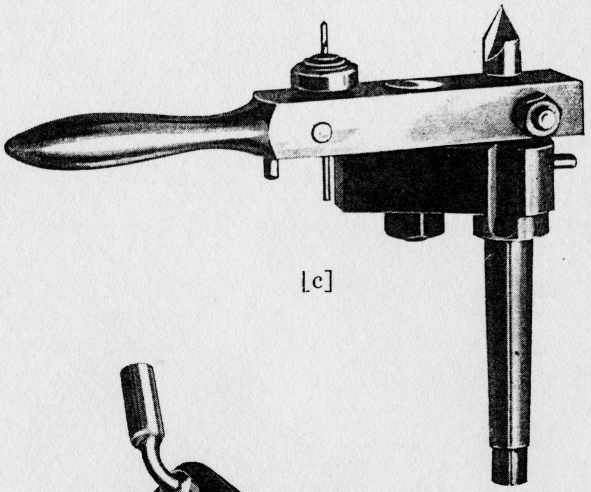
b—Tip Over T Rest (Patented), with movable T post and upright locking device.
c—Back Rest, with combination jaws. d—Automatic Chuck Closer Attachment.
e—Turret Tail-Stock, with five $\frac{5}{8}$ inch tool holes.



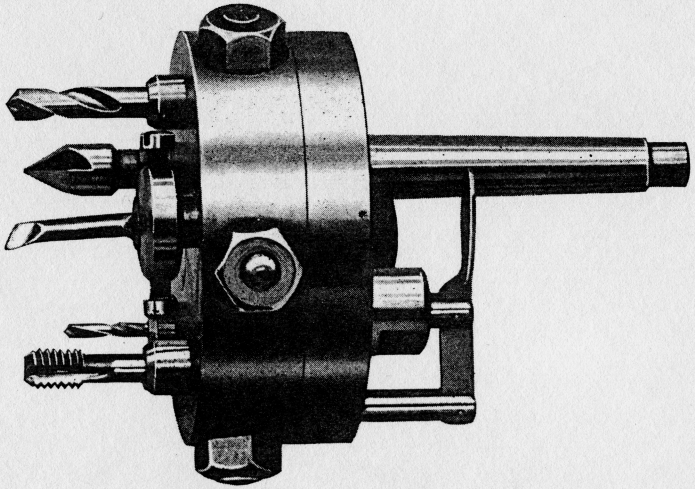
[b]



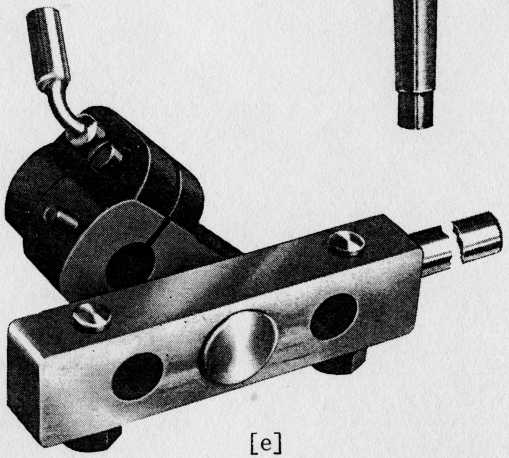
[d]



[c]

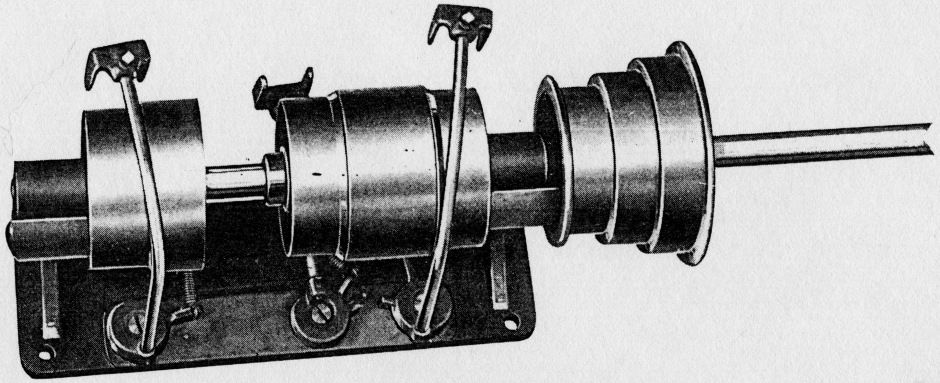


[b]

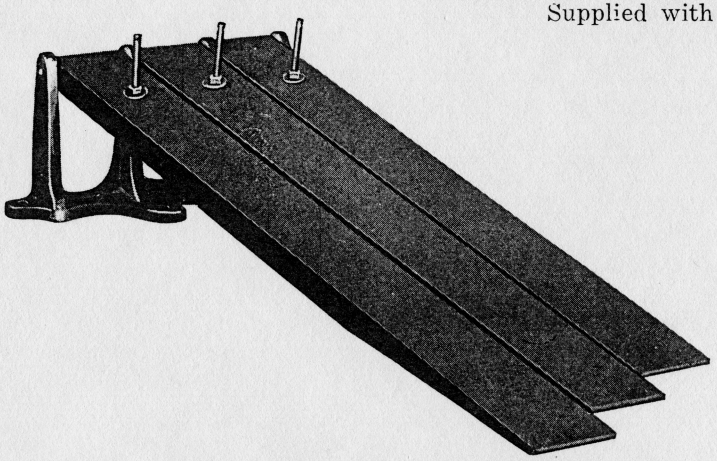


[e]

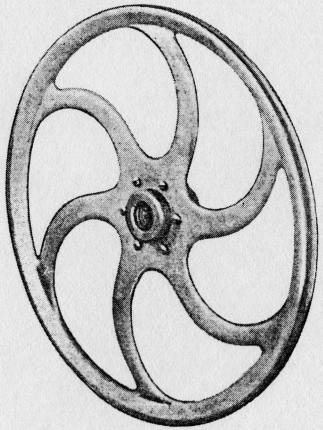
a—Turret Tail-Stock Attachment, with lever locking device and $\frac{1}{2}$ inch tool holes.
b—Adjustable V Block and Angle Table, for drilling and tapping.
c—Drilling, Reaming and Centering Attachment.
d—Graduating Slide Attachment.
e—Turret Lever Tail-Stock, with two $\frac{3}{4}$ inch tool holes.



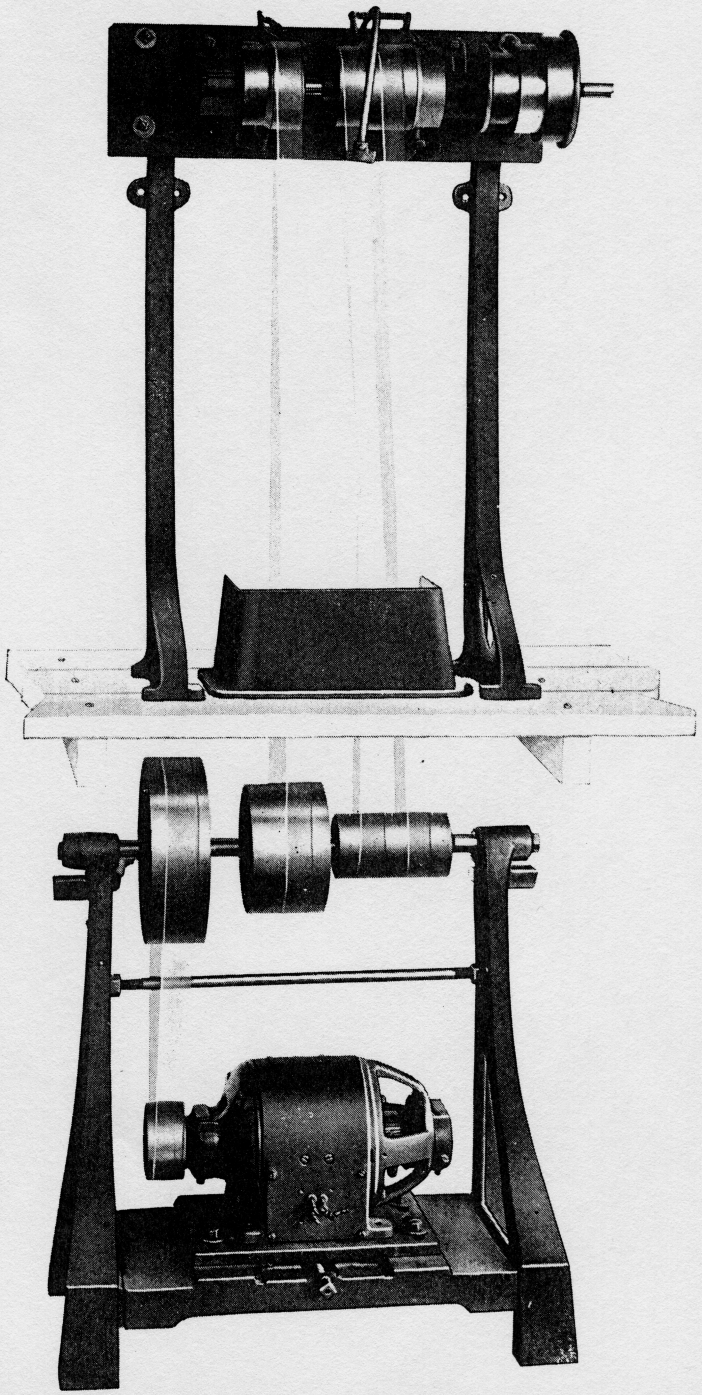
THREE SPEED COUNTER-CHAFT
Made to be attached to either wall or ceiling.
Supplied with Self-Oiling Cups.



THREADLES FOR COUNTER-SHAFT
With Vertical Screw Adjustment



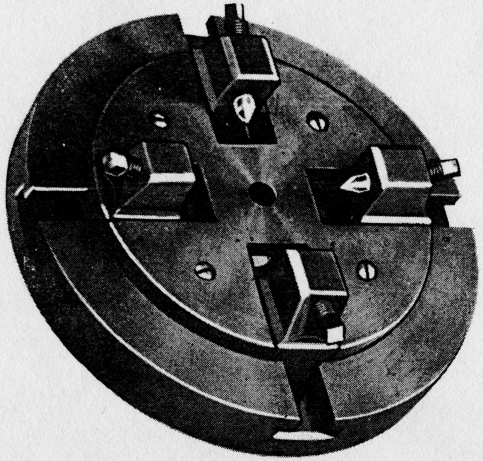
ALUMINUM PULLEY
Used with grinding attachment.
Diameter 14 inches.



Upper picture shows Counter-Shaft Frame.

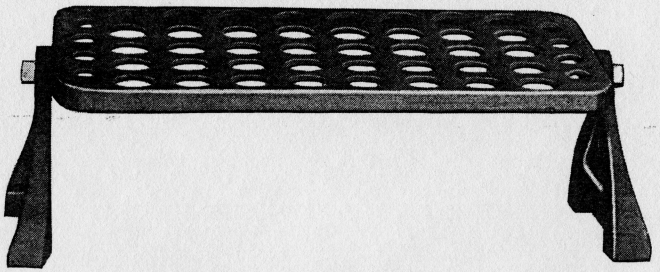
Lower picture shows Motor Stand with Jack-Shaft.

Note, Counter-Shaft, mounted with Bracket, can also be used with Lathe with Over-Head Jack-Shaft.



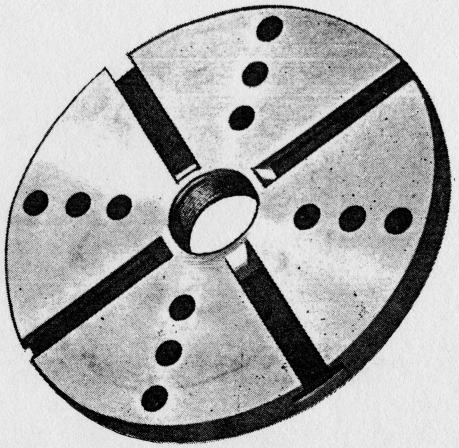
EIGHT INCHES SLOTTED FACE PLATE

With Angle Adjustable Bevelpointed Screws in jaws, for turning of flat work of uniform thickness.

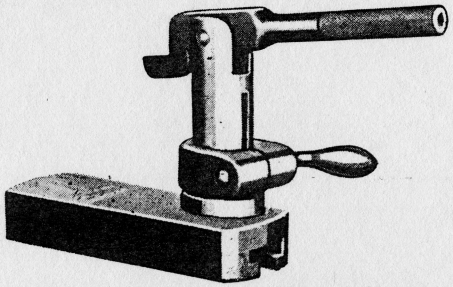


COLLET OR CHUCK STAND

For Wall or Bench.



EIGHT INCHES SLOTTED FACE PLATE



DRILL STARTING STEADY REST

Company

Hjorth Lathe & Tool Company

Hjorth "B-Ver" Reamers

—Always on the Job—

These reamers have revolutionized the art of finishing many thousands of holes with a single tool, and with an absolutely accurate size and finish.

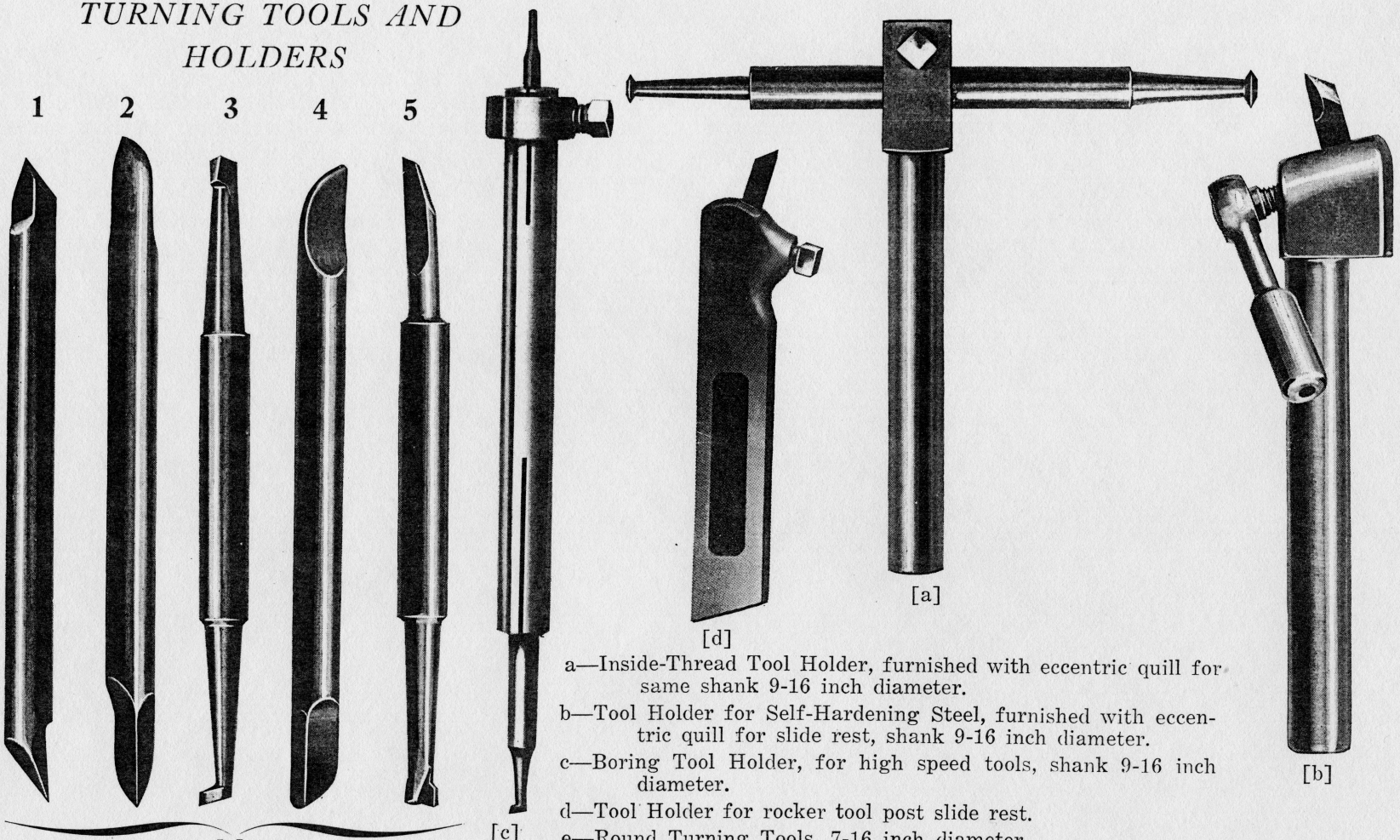
POINTS

It is a Solid Expansion Reamer, which represents:—

Simplicity in design.
Maximum life in operation.
Extreme accuracy in manufacture.
All the advantages of the loose blade type.
Quick and accurate adjustment.

Requiring no special wrenches, screws or other small parts which are so much in evidence in all other types of adjustable reamers for their proper maintenance and care. (See page 55).

TURNING TOOLS AND HOLDERS



a—Inside-Thread Tool Holder, furnished with eccentric quill for same shank 9-16 inch diameter.

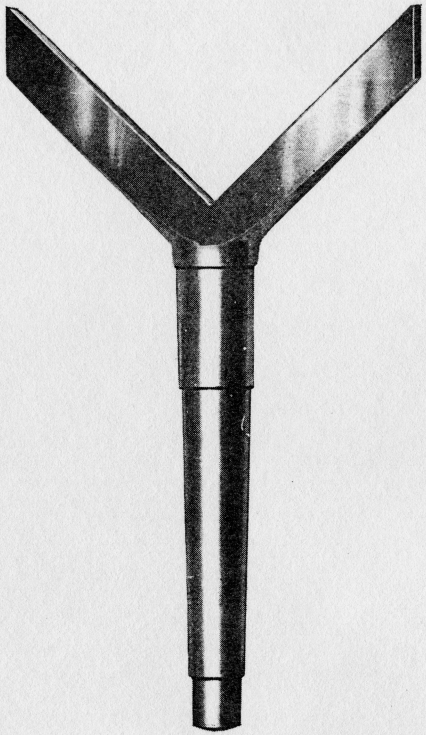
b—Tool Holder for Self-Hardening Steel, furnished with eccentric quill for slide rest, shank 9-16 inch diameter.

c—Boring Tool Holder, for high speed tools, shank 9-16 inch diameter.

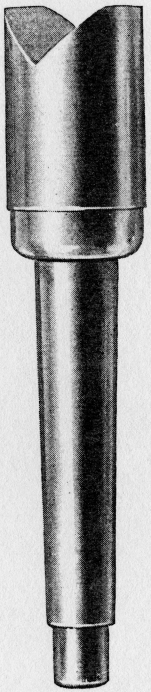
d—Tool Holder for rocker tool post slide rest.

e—Round Turning Tools, 7-16 inch diameter.

[b]

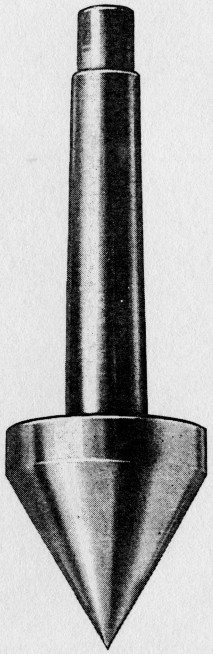


LARGE V CENTER



REVOLVABLE V CENTER

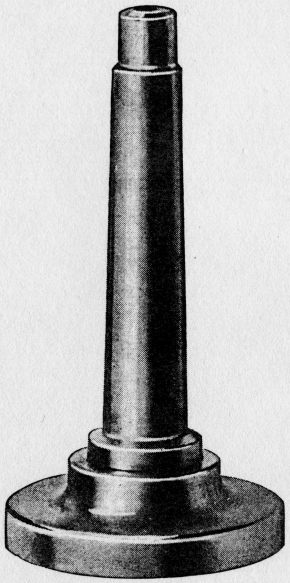
PLAIN V CENTER



LARGE CENTER
Hardened and ground.

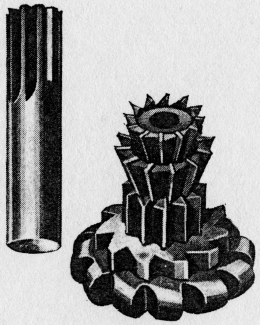
HALF CENTER

SPRING TENSION CENTER
Male or Female



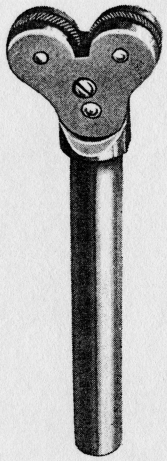
DRILL PLATE

KNURLS

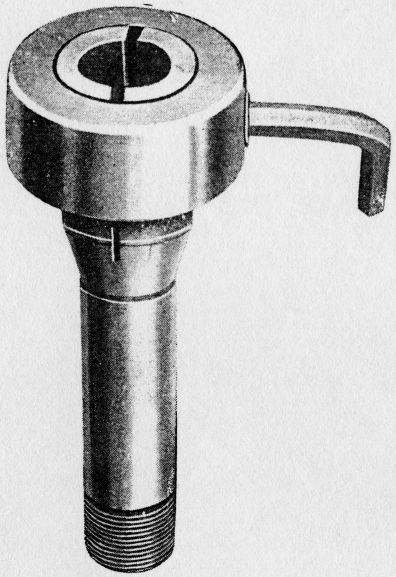


CUTTERS FOR MILLING ATTACHMENT

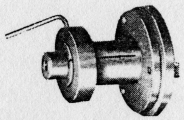
STRAIGHT KNURLING TOOL
For Combination Slide Rest, made with Flat Shank for Rocker Tool Post Slide Rest.



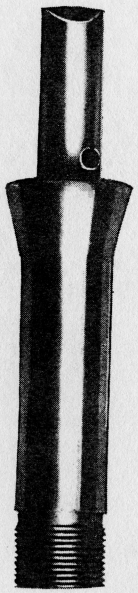
DIAMOND KNURLING TOOL
For Combination Slide Rest.



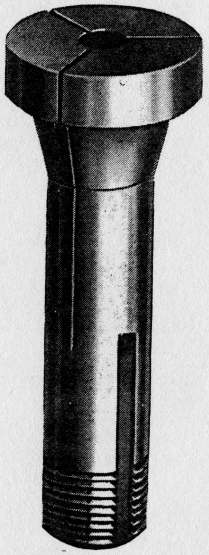
CLAMP COLLET
Of over $\frac{5}{8}$ inch capacity.



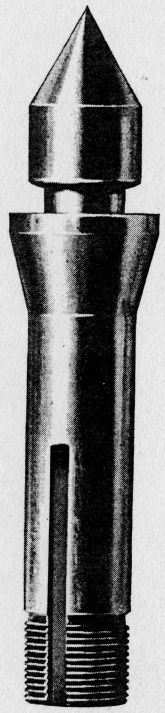
CLAMP COLLET
Mounted on Face Plate.



BORING COLLET

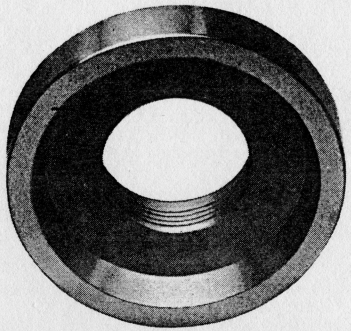


STEP COLLET

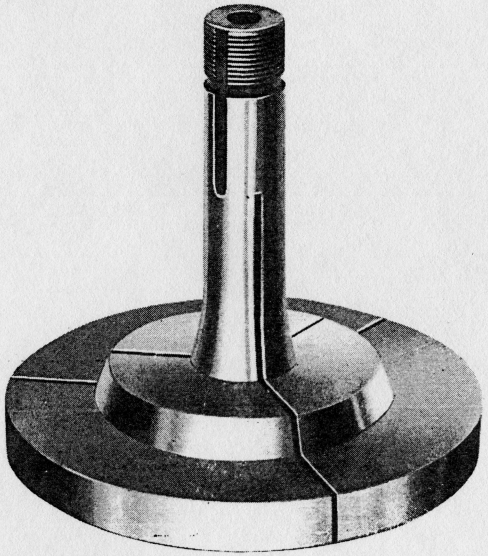


CENTER CHUCK

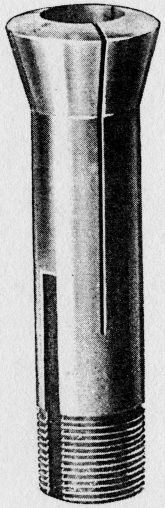
ARBOR CHUCK



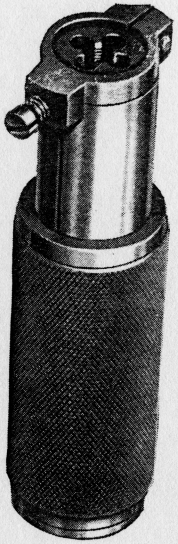
STEP CHUCK CLOSER



STEP CHUCK

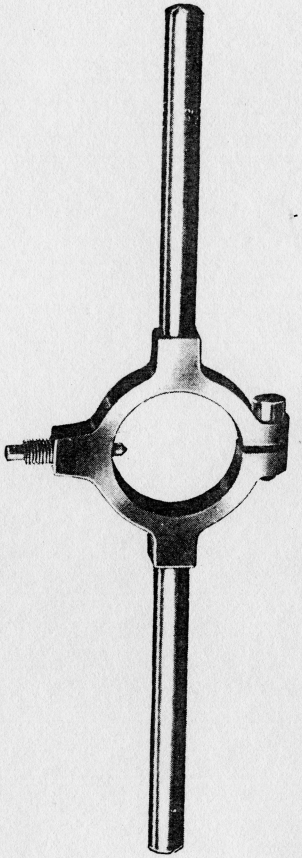


NO. 4 SPRING CHUCK
From 1-64 to 5-8 inch.
For No. 5 Head-Stock, from 1-64 to 7-8 in.

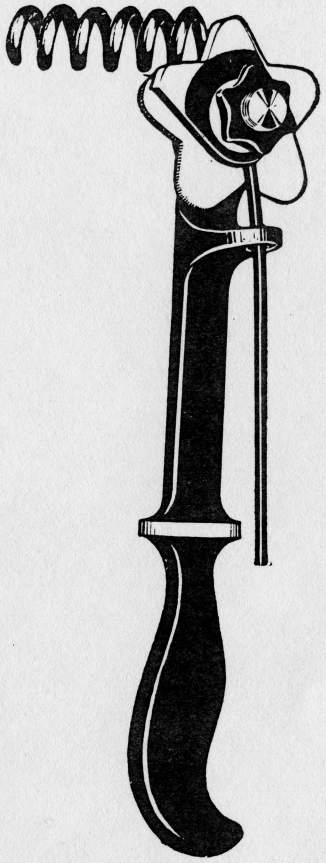


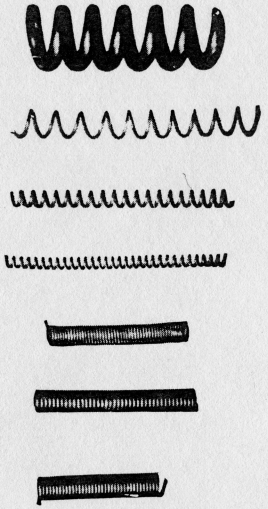
SLEEVE DIE HOLDER

For Tail-Stock Spindle, made of steel. By movable Taper Screw Nut Die is adjustable in Holder and accurately centered.



ELASTIC HAND DIE HOLDER





HJORTH PERFECTION SPRING WINDER
(Patented)
(Send for Circular)

Gear table for the Hjorth Lathe

For compound A use gears 60 and 120.
For compound B use gears 30 and 120.
When metric threads are to be cut add gears 100 and 127.
(Lead Screw has 10 Threads per inch)

No. of Threads	Stud	Compound	Screw
10	15		30
11	15		33
12	15		36
13	15		39
14	15		42
15	15		45
16	15		48
17	15		51
18	15		54
19	15		57
20	15		60
22	15	A	33
24	15	A	36
26	15	A	39
28	15	A	42
30	15	A	45
32	15	A	48
34	15	A	51
36	15	A	54
38	15	A	57
40	15	A	60
44	15	B	33
48	15	B	36
52	15	B	39
56	15	B	42
60	15	B	45
64	15	B	48
68	15	B	51
72	15	B	54
76	15	B	57
80	15	B	60

CHANGE GEAR TABLE

FOR THE

HJORTH RELEIVING BACKING-OFF ATTACHMENT

No. of Divisions	Spindle Gear	Composite Gear	Intermediate Gear	Cam Gear
4	150	48 x 96	Any	75
6	"	48 x 96	"	50
8	"	24 x 96	"	75
10	"	24 x 96	"	60
12	"	24 x 96	"	50
15	"	24 x 96	"	40

Gears furnished as follows: 24-40-48-50-60-75-96-150

Special Gear Table for the Hjorth Lathe for cutting threads 3 to 204 per inch.

No. of Thread	Stud	COMPOUND Inside	Outside	Screw	No. of Thread	Stud	COMPOUND Inside	Outside	Screw
3	30	..	...	18	64	15	30	120	48
4	30	..	...	24	68	15	30	120	51
4½	20	..	...	18	72	15	30	120	54
5	30	..	...	30	76	15	30	120	57
5½	30	..	...	33	80	15	30	120	60
6	30	..	...	36	84	20	30	120	84
7	30	..	...	42	88	20	30	120	88
8	30	..	...	48	92	20	30	120	92
9	30	..	...	54	96	20	30	120	96
10	15	..	...	30	100	20	30	120	100
11	15	..	...	33	104	20	30	120	104
11½	20	..	...	46	108	20	30	120	108
12	15	..	...	36	112	20	30	120	112
13	15	..	...	39	116	20	30	120	116
14	15	..	...	42	120	20	30	120	120
15	15	..	...	45	124	20	30	120	124
16	15	..	...	48	128	20	20	160	64
17	15	..	...	51	132	20	20	160	66
18	15	..	...	54	136	20	20	160	68
19	15	..	...	57	140	20	20	160	70
20	15	..	...	60	144	20	20	160	72
22	15	60	120	33	148	20	20	160	74
24	15	60	120	36	152	20	20	160	76
26	15	60	120	39	156	20	20	160	78
27	20	60	120	54	160	20	20	160	80
28	15	60	120	42	164	20	20	160	82
30	15	60	120	45	168	20	20	160	84
32	15	60	120	48	172	20	20	160	86
34	15	60	120	51	176	20	20	160	88
36	15	60	120	54	180	20	20	160	90
38	15	60	120	57	184	20	20	160	92
40	15	60	120	60	188	20	20	160	94
44	15	30	120	33	192	20	20	160	96
48	15	30	120	36	196	20	20	160	98
52	15	30	120	39	200	20	20	160	100
56	15	30	120	42	204	20	20	160	102
60	15	30	120	45					

(Lead Screw has 10 Threads per inch)

Gear Table for Rack-Cutting Attachment.

This table gives the index gears to be used for the most common pitches of racks, running from 10 to 48.

—o—

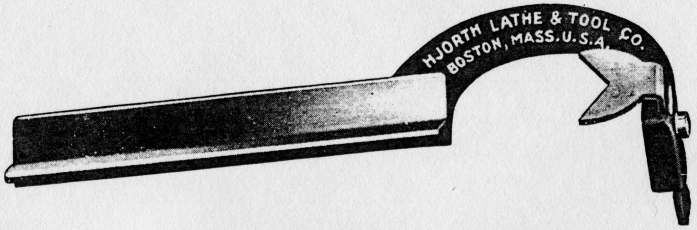
(Lead Screw has 10 Threads per inch)

Lead Screw Gear	Pitch of Rask or Diameter Pitch of Pinion	Number of Teeth on Index Gear	Number of Turns of Index Gear
100	10	157	2
100	11	143	2
100	12	131	2
100	14	112	2
100	16	98	2
100	18	175	1
100	20	157	1
100	22	143	1
100	24	131	1
100	26	121	1
100	28	112	1
100	30	105	1
100	32	98	1
100	36	87	1
100	40	79	1
100	48	65	1

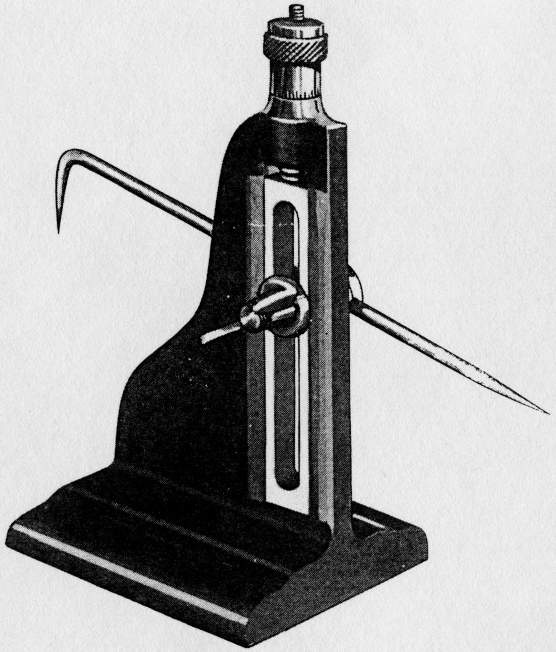
Extra index gears will be furnished to order.

When ordering extra index gears give pitch of rack to be cut.

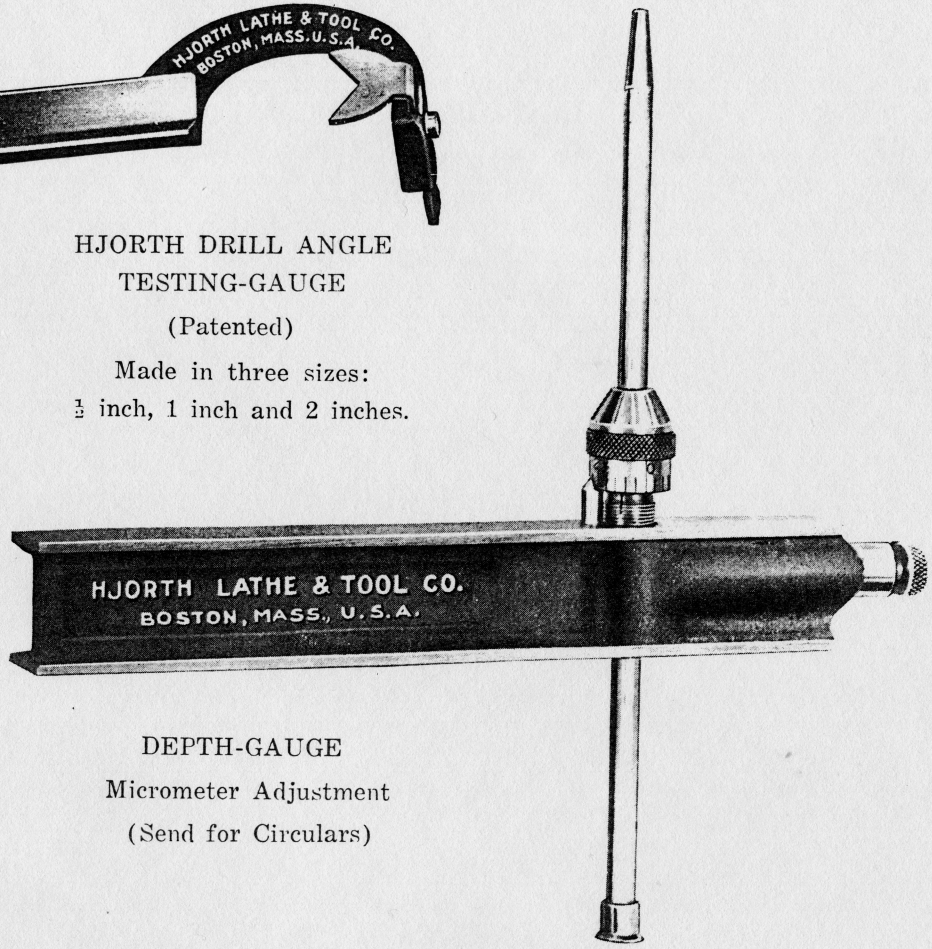
Gears furnished as follows: 98-87-79-65.



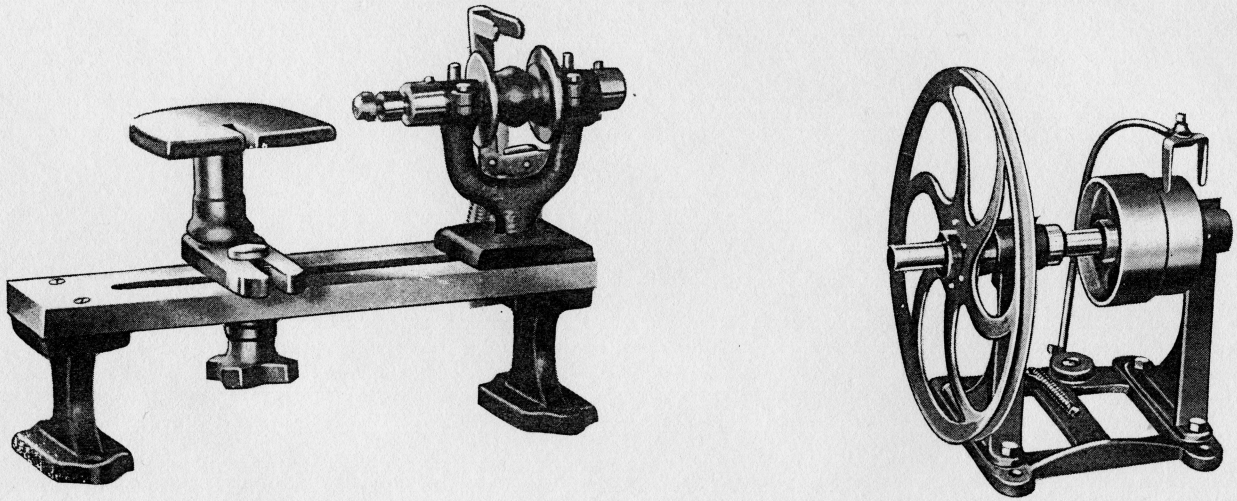
HJORTH DRILL ANGLE
TESTING-GAUGE
(Patented)
Made in three sizes:
$\frac{1}{2}$ inch, 1 inch and 2 inches.



SURFACE-GAUGE
(Patented)
Micrometer Adjustment.



DEPTH-GAUGE
Micrometer Adjustment
(Send for Circulars)



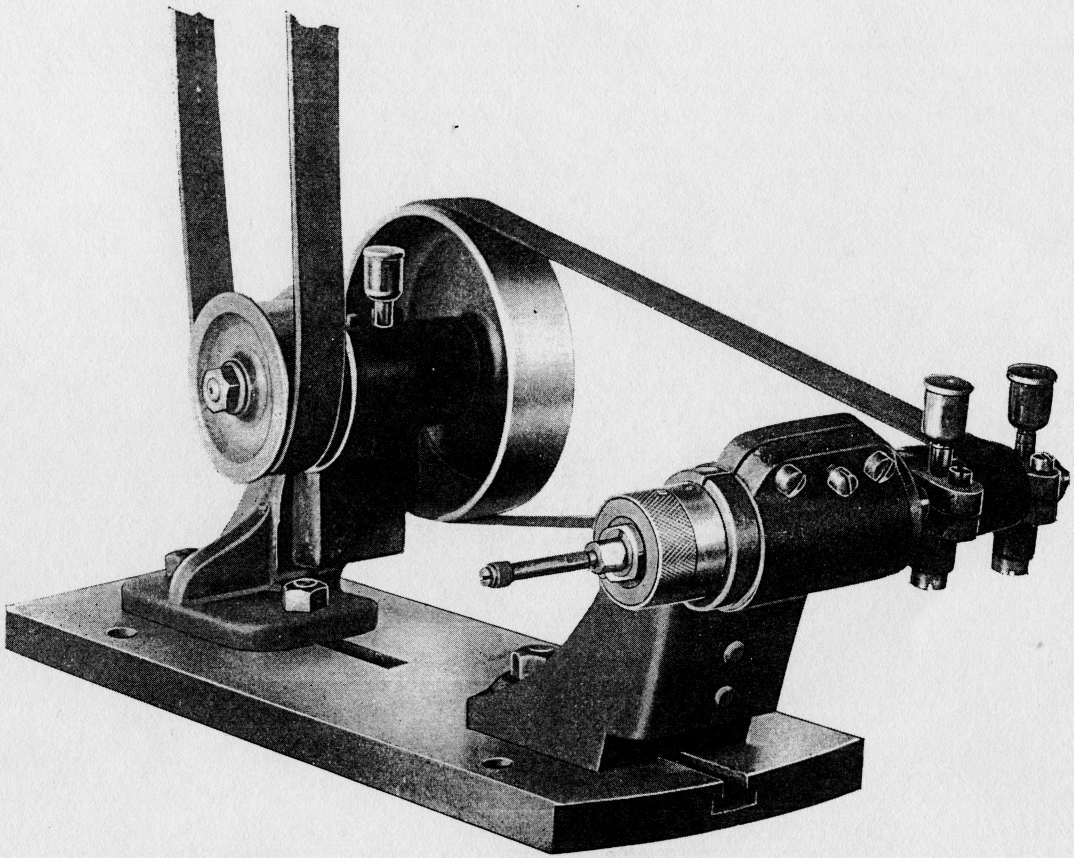
TOOL GRINDER WITH COUNTER-SHAFT

HJORTH INTERNAL GRINDER ATTACHMENT

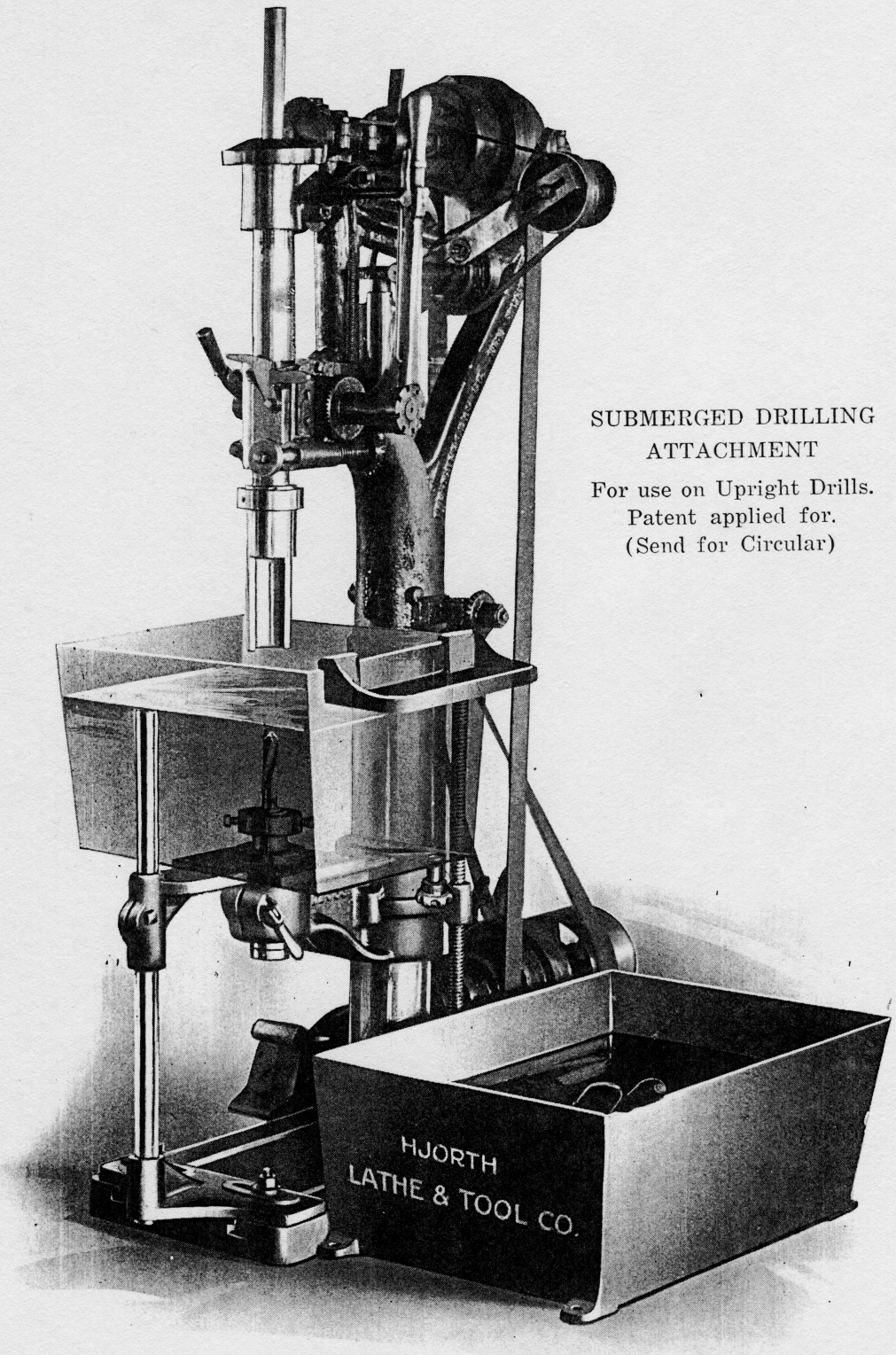
The Hjorth Grinding Attachment for Internal Grinding can be used on most all plain or universal grinders now on the market. It has the ceiling countershaft belt adjustment, and a table center adjustment of two and one-half inches for accommodating different center heights, also its own countershaft belt adjustment between quill bracket and countershaft. The quill spindles are of two different types, one for deep and large holes, and one with taper arbors for smaller holes, accommodating smaller emery wheels and diamond grinding plugs.

Each quill spindle has two adjustable bearings, lubricated by oil chambers and a separate adjustable end thrust bearing. The countershaft spindle is well supplied with oil chambers and with two bearings of its own and is driven by a clutch to live spindle, thereby releiving all strain from live spindle.

This attachment has one crosswise and two lengthwise open slots in base, thereby facilitating easy adjustment and firm holding, irrespective of position of T slots or grinders of different makes.



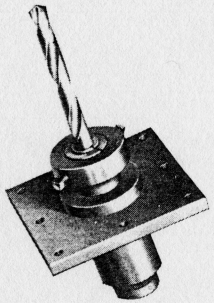
HJORTH INTERNAL GRINDER ATTACHMENT (Patented)



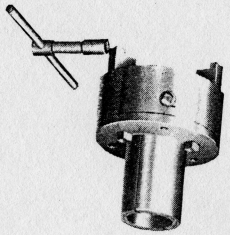
SUBMERGED DRILLING
ATTACHMENT

For use on Upright Drills.
Patent applied for.
(Send for Circular)

Quadruple Production
with Hjorth Submerged Drilling Attachment



DRILL HOLDER
With Taper-Socket



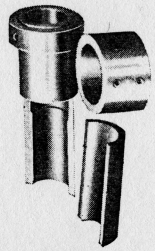
CHUCK
For Disk-Work

You can accomplish four times as much chucking work of the kind that is usually done on a lathe with the Hjorth Submerged Drilling Attachment, which introduces a method that is a complete departure from that now in use. Drill during this process remains stationary while the stock revolves. Consider these advantages: No heating of work; no wear on cutting edge of drill; drill constantly lubricated; circulation of compound in tank keeps chips from sticking to drill; revolving of stock keeps it perfectly centered.

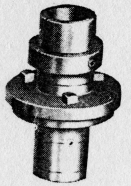
This attachment is for use on any make of upright drilling machine. It can be raised up and down to accomodate the size of work.

Write for complete information.

BUSHINGS
With Drills



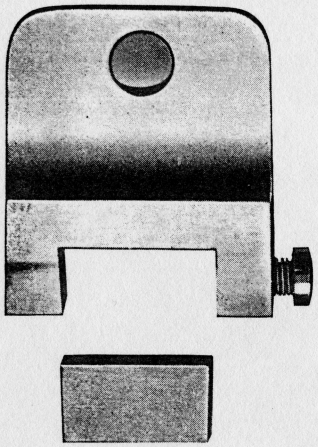
SIDE OPEN HOLDER
For Long Work



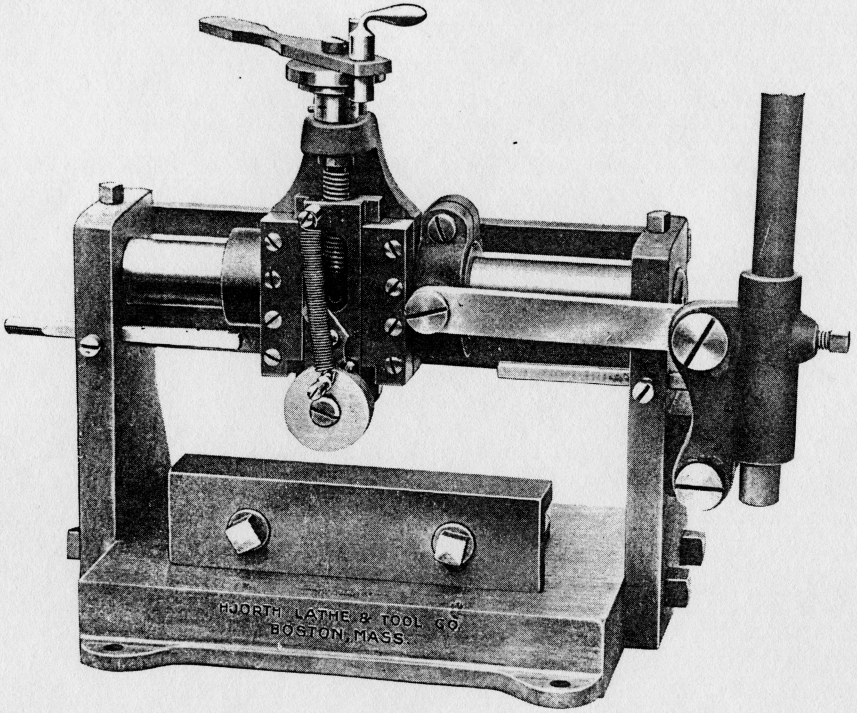
LIVE SPINDLE
RECESSED HOLDER
With one attached, to take other Holders of different diameter.

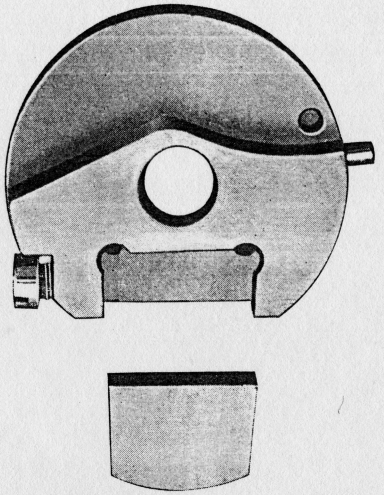
Hjorth Lathe & Tool Company

MARKING MACHINE

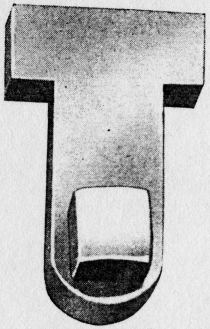


HOLDER
FOR FLAT DIE BLANKS
Up to $\frac{3}{4}$ inch in length.





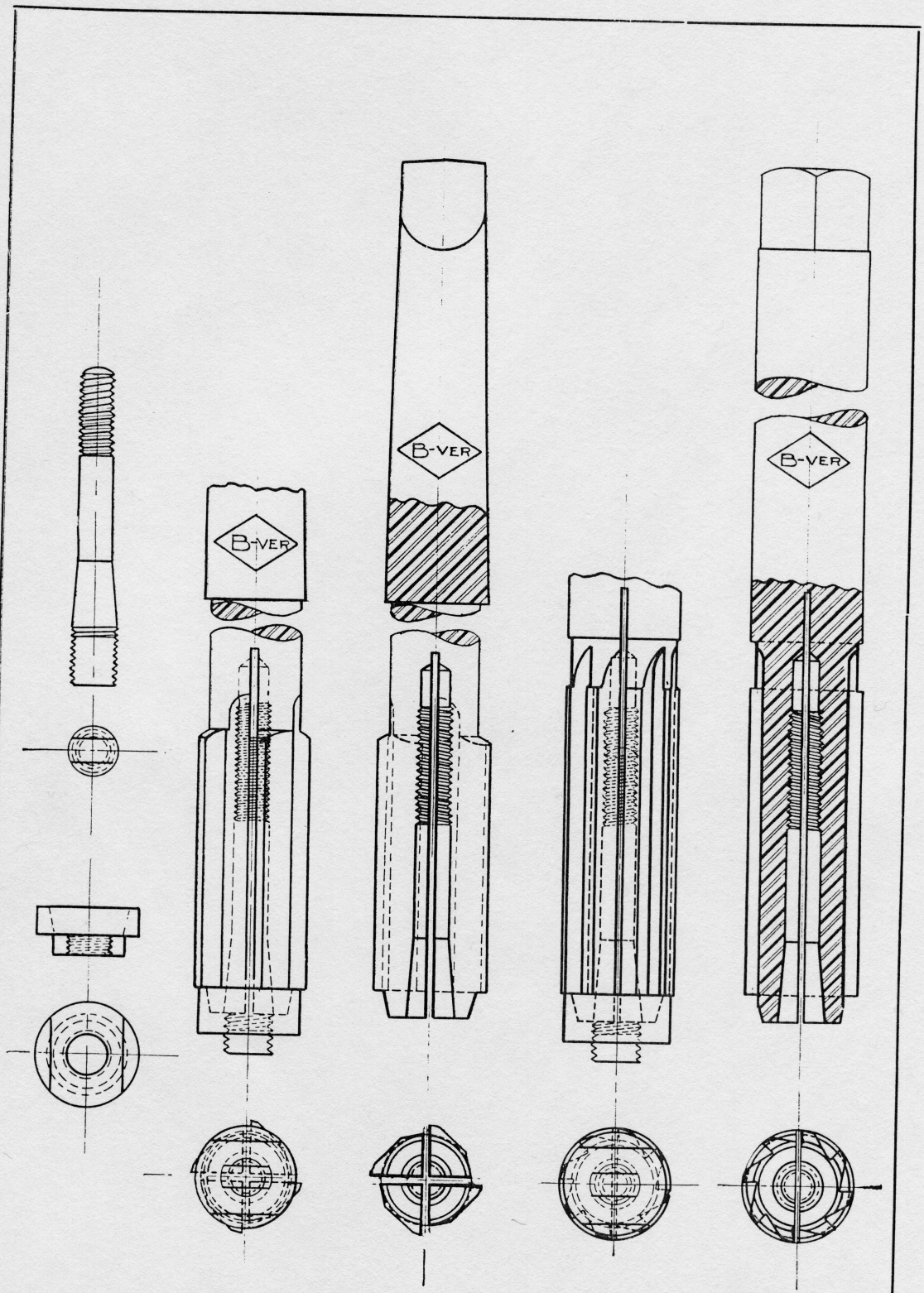
FOR ROUND DIE BLANKS
Up to $\frac{3}{4}$ inch in length.



FLAT DIE BLANK
$1\frac{3}{4}$ inches in legnth.

Round dies mark flat work and flat dies mark round work. When round die is used, die is allowed to roll over the work, and when flat die is used work is allowed to roll under the die.

Observe arrow on face of round die blank. Tail of arrow indicates starting point of name to be engraved and point indicates the direction to be followed in engraving.



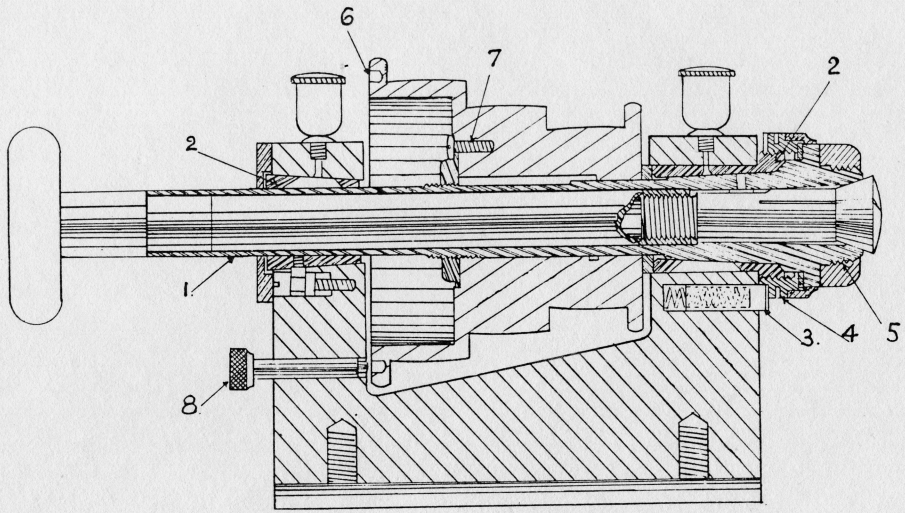
CONSTRUCTION OF THE HJORTH

B-VER REAMER

Construction and details of the Hjorth

Headstock Pat Apr. 11. 1911.

(half size.)

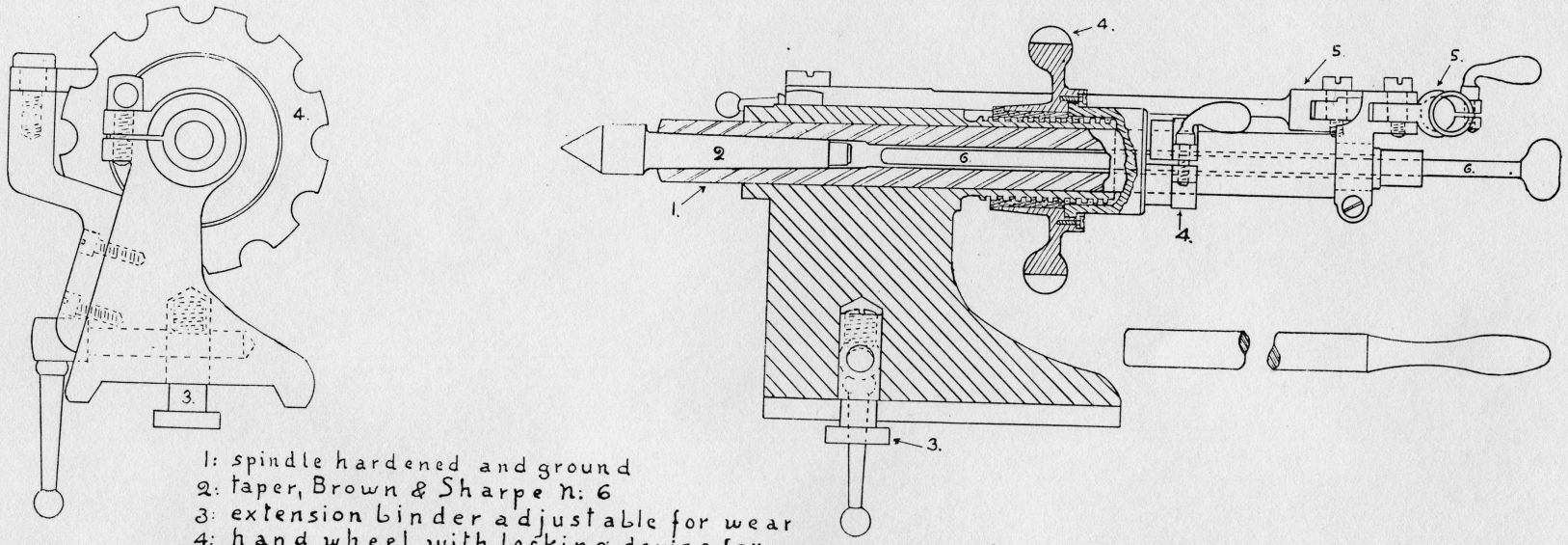


1: spindle, made of best tool steel, hardened and ground.
2: bearings, also made of best tool steel hardened ground and lapped.
3: compression pin, for engaging adjusting collar.
4: end thrust device to relieve the strain and hugging in heavy drilling and turning between the centres.
5: front thread of the spindle: ground to gauge after hardening
6: cone pulley: with an index of sixty
7: locking screw, for adjusting nut.
8: index pin.

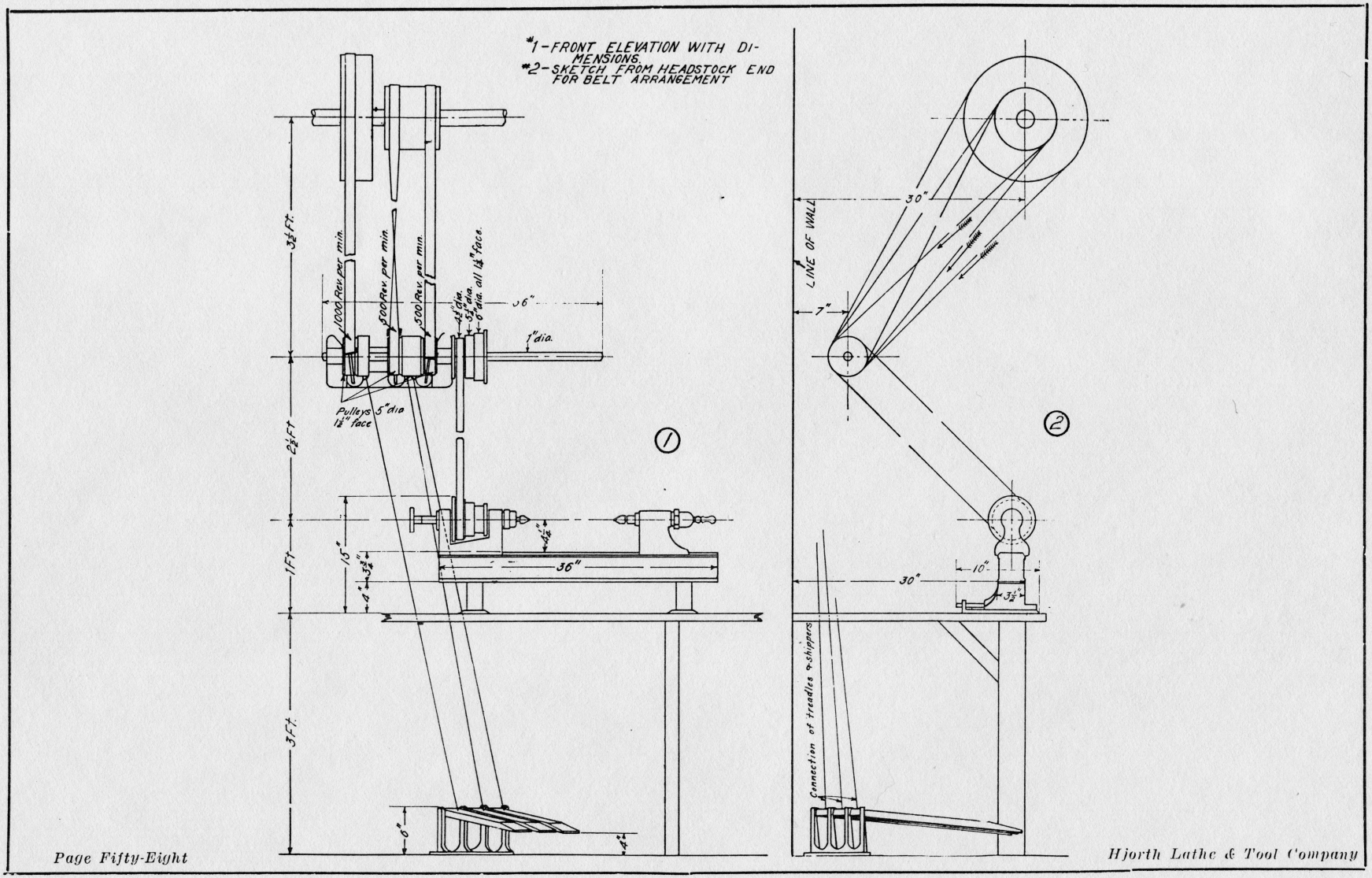
Hjorth Lathe & Tool Company

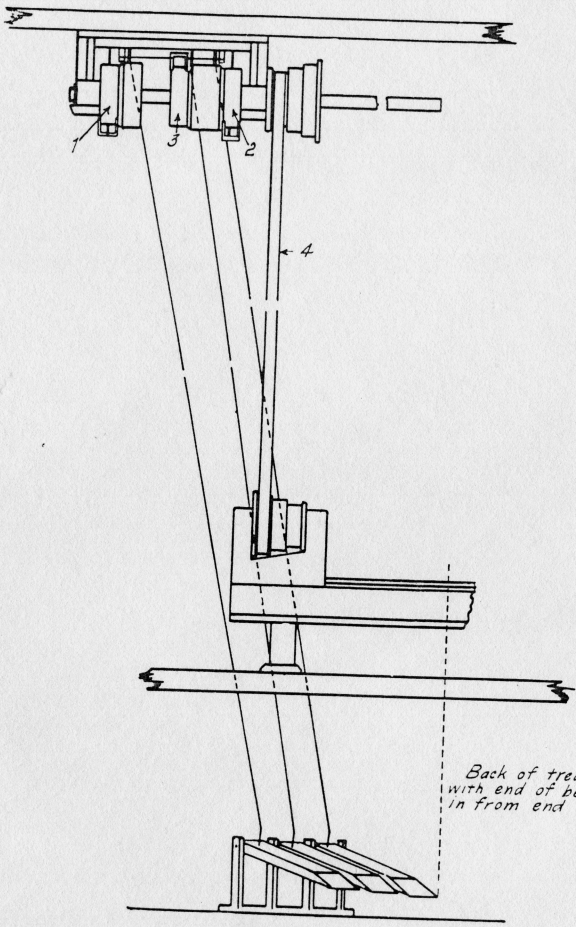
Construction and details of the Hjorth combination (lever and screw) tail stock Pat. Jan. 10-1911.

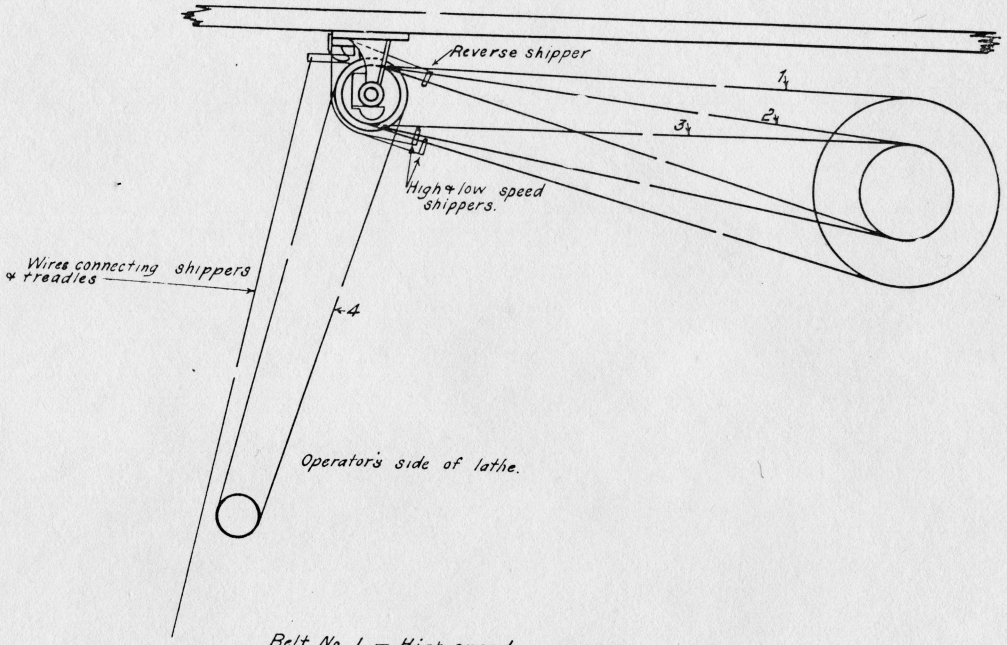
(half size)



1: spindle hardened and ground
2: taper, Brown & Sharpe N: 6
3: extension binder adjustable for wear
4: hand wheel with locking device for centre adjusting.
5: adjustable lever handle.
6: rod for removing the centre.

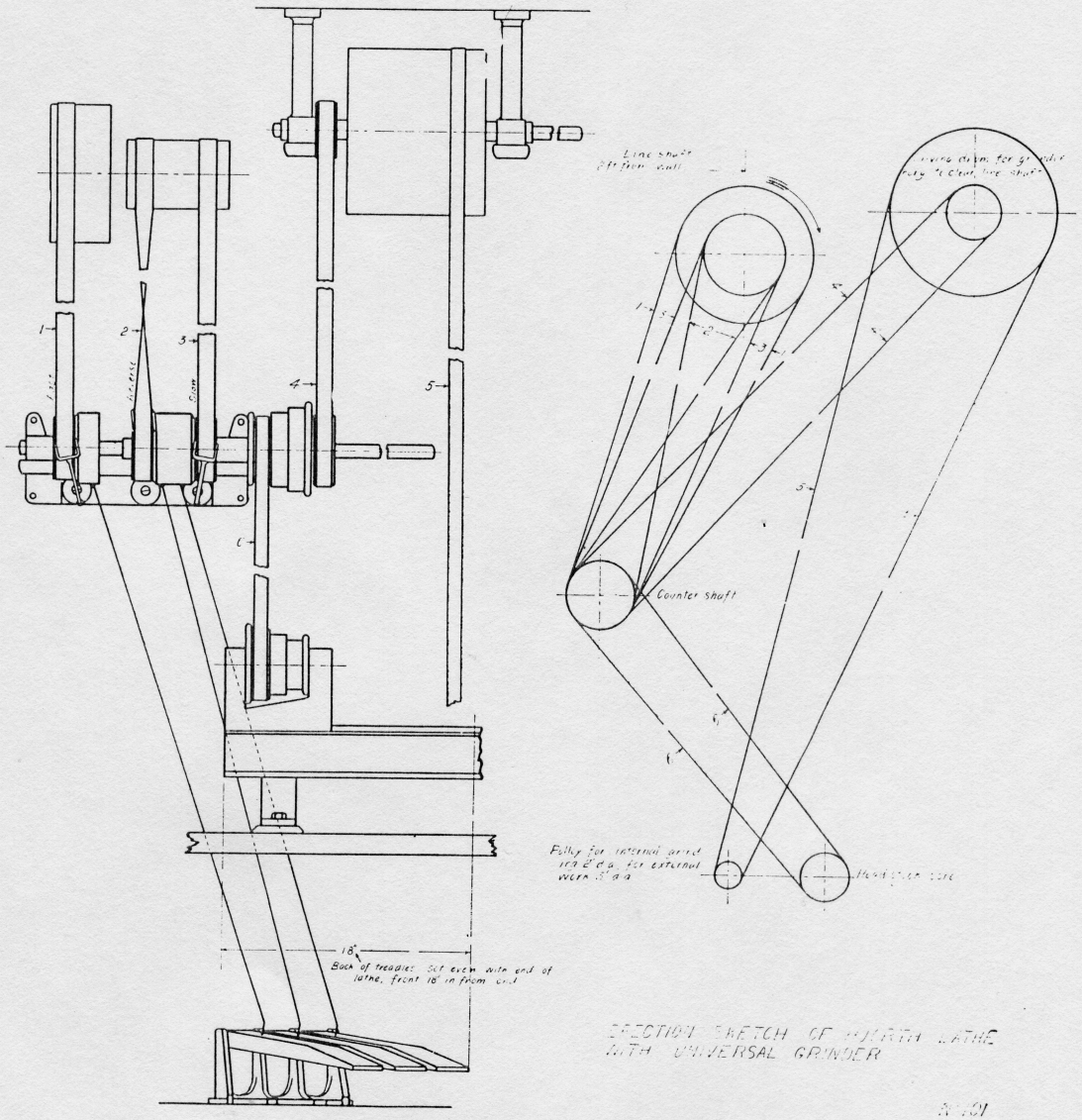

#1-FRONT ELEVATION WITH DIMENSIONS.
#2-SKETCH FROM HEADSTOCK END FOR BELT ARRANGEMENT
3½ Ft.
2½ Ft.
1 Ft.
3 Ft.
1000 Rev. per min.
500 Rev. per min.
300 Rev. per min.
4½" dia.
3½" dia.
6" dia. all 1¼" face
6"
1" dia.
Pulleys 5" dia 1¼" face
15"
4"
36"
6"
1
2
30"
LINE OF WALL
7"
10"
Connection of treadles & shippers





Belt No 1 — High speed 1000 rev. per min.
" " 2 — Low speed 500 " " "
" " 3 — Reverse 500 " " "
" " 4 — From counter shaft cone to headstock cone.

ARRANGEMENT OF BELTING FOR CEILING COUNTER SHAFT



DIRECTION SKETCH OF WORK LATHE WITH UNIVERSAL GRINDER

No. 101