

REPAIR PARTS

To minimize delays and insure customer receiving the correct parts, please give the following information.

Lathe and Lot No. stamped on rear end. of Bed in either one of two places as shown below.

For Lead Screw, Bed Rack or Feed Rods give total bed length in addition to lathe and lot number.

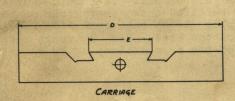
Where serial numbers cannot be found please give dimensions A-B-C-D -E also whether Single Plate or Double Plate Apron - Gear box or Belt feed. Taper Attachment or Plain Bottom Slide.

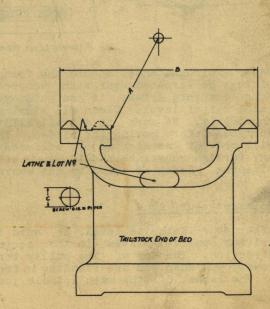
On Cone Belt Drive Lathes state whether 5 Step Single Back Gear or 3 Step Double Back Gear.

On Geared Head Lathes state whether Bronze Spindle Journals or Timken Spindle Bearings. Also if Expanding Ring Friction or Multiple Disc Type Friction is used in the driving pulley of headstock.

On Lathes having special attachments, we will send blue print to be marked for repair part wanted.

Your co-operation on the above points will be repaid by the improved service on your parts inquiries.









INSTRUCTIONS FOR SETTING UP AND OPERATING

BOYE AND EMMES GEARED HEAD LATHES

First, read these instructions through carefully before attempting to operate your new Boye & Emmes Lathe.

How to level up your lathe

Spot your lathe in position and carefully remove the skids. Set the machine on taper wedges. Use four wedges under the headstock leg, two under the tail stock leg, and two under center legs. These wedges are made of hardwood or steel, about 5" long, 1-1/2" or 2" wide, tapered from 1/8" to 1/2" thick. Wedges must be used under the legs for leveling even though the machine is bolted to the floor. Floor bolting is not necessary.

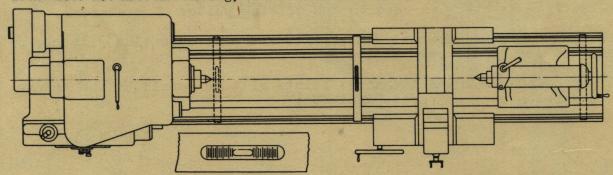
nals through sight feed drip regulated oilers. Start the spindle on the slowest speed. Gradually increase the speed, running the spindle at each speed for about one minute until the spindle runs on highest speed. Be sure the main driving clutch is released by means of the control handle (under front of headstock) before making speed changes.

Oiling - Splash System

Headstock gears and shaft, except main spindle journals are oiled by the splash system. Oil level shows on front of the glass height gauge located on the rear end of the headstock. The headstock is

DIRECTIONS FOR LEVELING LATHES.

Use good Queens or Starret Level (or equal). First level head end of bed by placing level across outer vees, close to head. If level is too short to reach, place on accurate parallel bar. Next level tail end in same manner. - Placing level directly over leg. If lathe has one or more center legs, level center of bed, directly over legs. If lathe does not have center leg, do not level center of bed.



ACCURATE LEVEL READING.

Under no circumstances should the flanges of legs be grouted over with concrete. When concrete dries, it can pull your lathe out of level. Clean all slush off thoroughly. Be sure to oil all sliding surfaces before moving the slides. This will prevent scratching of surfaces if any foreign substance should remain after cleaning. Level as shown by cut above.

To start your lathe

After your lathe is level, be sure the driving pulley rotates in the correct direction. The top of the pulley turns toward you when you are standing in front of the lathe. Oil the main spindle jour-

shipped full of oil. It should be drained and refilled once every four months. Drain plug is on the back side toward front of the head. Use a trough shaped piece of tin from drain plug to bucket.

Control of the Headstock

The headstock spindle can be started or stopped by either one of two levers; one stationary position at headstock, and one lever attached to, and traveling with, the carriage. The spindle has a cast iron to cast iron, cone type brake, located in the Hood which supports the





main driving pulley. This brake is self-adjusting to take up for wear. Always release main driving clutch before shifting levers A, B, C, or D to desired speed locations, shown on Head speed plate. This clutch is operated by the Headstock control handle.

Adjusting Spindle Bearings

On 14" to 24" size lathes, adjust the Timken Spindle Bearings by means of the adjusting nut and lock nut at the extreme rear end of the Headstock, after removing the upper guard.

On 27" to 36" size lathes, adjust the Timken Spindle Bearings by the adjusting nut and lock nut located directly behind the front spindle bearing. Remove the plate on the Headstock cover to get at this adjustment. The rear spindle journals on 27" to 36" sizes are mounted in precision straight roller bearings with end float allowance.

Other Adjustments in Headstock

To compensate for wear in the anti-friction bearings on the initial driving shaft or back gear shaft, remove screws in either end of the adjusting plate; take out one Timken Brass shim and then rebolt the plate back in place.

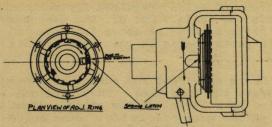
To take up belt slack on motors mounted in leg, adjust the swivel plate; for motors mounted on the rear of the leg or on top of the Headstock, loosen the clamp bolts in the top sliding plate, adjust this plate over by tightening the single adjusting screw in the center of the plate, and reclamp all bolts, tight.

Removing Chuck or Face Plate

To remove chucks or face plate from the screw nose spindle, place the spindle in lowest speed, stop the main driving pulley, and engage the clutch through the head end control lever. Place a tool or piece of steel bar in a chuck slot. Tap the chuck off by tapping toward front of lathe. If tapping does not loosen the chuck, place a block of wood between chuck and rear bed Vee. Pull pulley belt backward, giving the chuck a hard jolt against the block.

Long Taper Key Drive Spindle nose chucks and plates are removed by unlocking the spindle collar nut, and then sliding the chuck off. Always have the key on the spindle nose up when changing plates. To adjust the main driving friction, see cut, below.

TO ADJUST CONWAY DISC. CLUTCH.

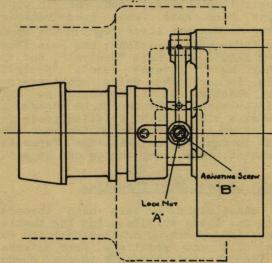


DRIVE PULLEY - FROM REAR OF MACHINA

Push in Spring Latch and turn notched adjusting ring to "right" and let latch snap back into next notch.

Each notched position provides .0045" adjustment.

TO ADJUST SINGLE FINGER CLUTCH-EXPANDING RING FRICTION



Disengage clutch. Loosen Lock Nut "A" with wrench furnished. With screw driver turn Adjusting Screw "B" $\frac{1}{4}$ to $\frac{1}{2}$ turn to the right, see that nut does not turn, then tighten lock nut "A". If this does not give proper tension,

How to Select Proper Feeds

To operate the Gear Box for thread or feed changes, proceed as follows. Front index basket is dropped by the lever marked "Swinging Basket". Place the index handle in any one of the eight holes desired (these are numbered). Then hook up the swinging basket into position. For top index movement, drop the handle





marked "Hook-up". Move the top index handle to the desired, numbered, position. Then hook up the "Hook-up" bracket. The Index attached to the Gear Box shows the positions of holes required for various threads or feeds. Cut of the Gear Box with parts marked as above is shown on repair parts pages in the rear of this book.

Lead Screw and Feed rod cannot both revolve at the same time. They are controlled by a lever at the extreme right side of the gear box, on top. Boss holes are marked "lead screw" and "feed rod".

Control of the Apron

The apron is double walled. All shafts are supported at both ends. Feeds are independent of one another. They are actuated through lever type frictions; one in the lower front of the apron for longitudinal travel and one in upper right for cross feed. Feed reversal lever at extreme lower right of the apron has three hole positions; one hole "Forward Feed", one hole "Neutral", and the other hole "Reverse Feed". "Neutral" hole is used when using the leadscrew for chasing. It is arranged so that half nuts and feeds cannot be engaged at the same time. Both friction feeds can be thrown into operation at the same time and in combination with the Taper Attachment, very steep angles can be cut.

Right or Left Hand Threading

To chase right or left hand threads, stop the lathe spindle. Put the tumbler plate in correct up or down position for hand of thread required. Feed reversal is incorporated directly in the apron, actuated by a lever located at the right hand lower part of the apron as described above.

Friction Adjustment in Apron

To adjust frictions, first remove the small dirt cover with a screw driver; next, tighten the adjusting nut and then lock with lock nut. These adjustments must be made with frictions disengaged.

Apron has built-in Metering Oil Pump

The apron is equipped with a Bijur Pump which is driven by a pinion which engages the bed rack. The pump makes one complete stroke for every 3-1/2" to 6" travel of carriage, depending upon the size of lathe.

The flow of oil is meter controlled. It lubricates all of the journals in the apron, bed ways, carriage dovetail, and the cross feed screw journal. The proper amount of oil is delivered whether the carriage is traveled by hand or fed by power.

Adjustable stem in oil pump plunger

On our design of automatic oil apron lubrication, we furnish an adjustable stem in the pump plunger. This permits the stroke of the pump to be regulated from nothing to full plunge. You can control the setting of this stem to suit average working conditions, thereby avoiding any excess of oil, which can be a disadvantage of automatic oiling. The adjustment of plunger is quickly and simply made. Remove the upper cover of the pump unit as shown on the apron in this book. Turning the adjusting screw clockwise produces more oil. Turning counter-clockwise cuts down the flow.

To clean the oil pump

The whole pump and reservoir can be removed for cleaning or to replace the filter pad. Unbolting the cover and bracket, disconnect one pipe plug, and remove to bench or elsewhere. Meanshile, the lathe can be used on regular work. It is not necessary to drop the apron and take it apart to remove pump or filter pad.

Cross Slide Taper Gib Adjustment

All cross slides are adjustable for wear by means of a tongued taper Gib. An adjusting screw actuates this Gib.

Tail Stock Adjustments

All Tail stocks have wide tongued, screw adjusted, set over arrangements. Spindles are clamped by steel clamping handles in vertical position. The handle actuates a Bronze bush on top half and a bronze nut on lower half. The two are bored at their one end to the radius of the spindle. Both are drawn together to lock the spindle and avoid misalignment.

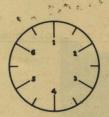
Chasing Dials

Chasing dials are attached, regularly, to the apron, and the following cuts show their use.





14-16-18&20IN. LATHES.



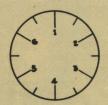
Lead Screw 1-9/16" dia. 4 P.I. R.H. Single Indicator Pinion 24T.

1 Turn of Dial indicates 6" advance on Lead Screw.

Method of Using Dial.

For even threads that are multiples of 4 Half nuts may be engaged at any point,
For even threads not multiples of 4 Half nuts may be engaged at any graduation.
For odd threads Half nuts may be engaged at any numbered graduation.
For fractional threads in halves Use every other graduation, as 1 - 3 - 5.
For fractional threads in fourths Use every fourth graduation, as 1 - 5 - 3.

24-27-30-36 in Lathes DIAGRAM OF THREAD CHASING DIAL.



Lead Screw 2 P.I. R.H. Single Indicator Pinion 12T.

1 Turn of Dial indicates 6" advance on Lead Screw.

Method of Using Dial.

For even threads that are multiples of 2
Half nuts may be engaged at any point.
For odd threads
Half nuts may be engaged at any numbered graduation.
For fractional threads in halves
Use every other graduation as 1 - 3 - 5.
For fractional threads in fourths
Use every fourth graduation as 1 - 5 - 3.

Plain type Taper Attachment with Micrometer Swivel Slide

To place this taper attachment in use, set the swivel to Taper desired by graduations on slide and the micrometer index dial. Lock the bed clamp to bed and lock the taper attachment shoe to the one piece cross slide after setting it for the desired depth of cut. Unlock the cross feed nut with the "T" wrench furnished (this nut is under the swiveling cover of bottom slide). Tool must be set in or withdrawn by using the compound rest top slide.

Telescopic Screw Type Taper Attachment with Micrometer Swivel Slide

To place the telescopic taper attachment in use, set the swivel to the taper desired by the graduations on the slide and the micrometer index dial. Lock the bed clamp to bed and lock the Taper Attachment shoe to the one piece cross slide. Cross movement of the bottom slide is through the regular cross feed screw handle. On light cuts, the shoe need not be locked to the bottom slide for each setting of cut. On heavy cuts,

however, it is necessary to lock and unlock the Taper Attachment shoe with each cut.

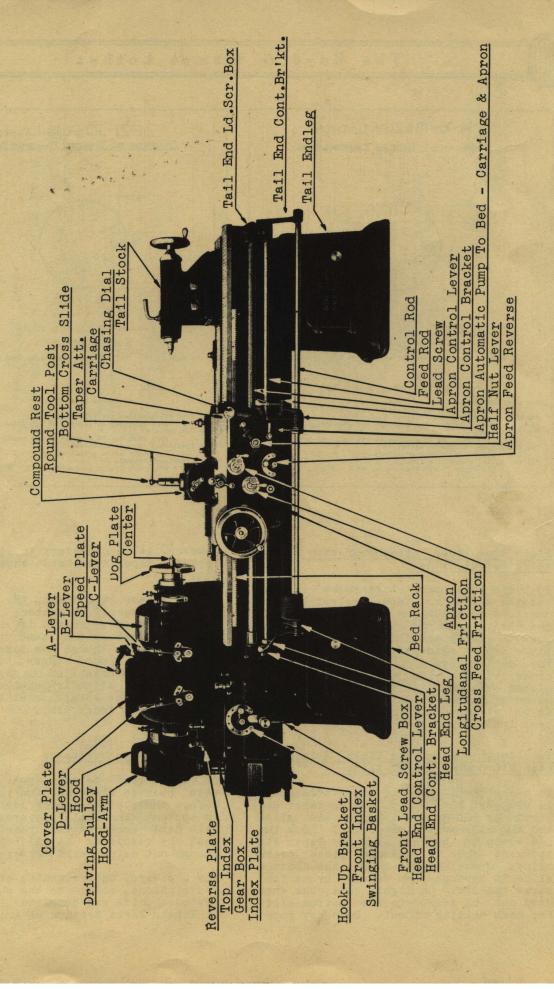
On any Taper Attachment, the tool must be placed exactly on center. If tool is taken out and reground, it must be replaced in exactly the same position for height. Even though the taper was set and giving a good taper bearing, any difference in height of the reground tool setting will slightly change the taper and necessitate readjustment by means of the graduated index dial.

Rapid Traverse Carriages

On rapid traverse carriages, it is always best to withdraw the rack pinion before the rapid traverse lever is placed in contact. The rapid traverse right and left hand screw in the rear of the bed must be revolving at all times, even though not using rapid traverse.

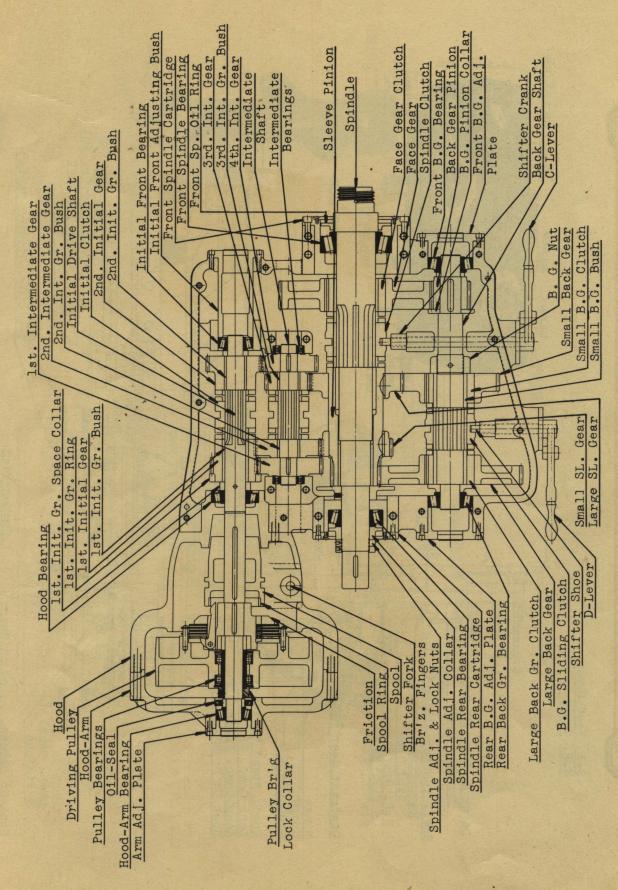
For a clearer understanding of the above descriptions, refer to the cuts of the various units and complete lathe shown in Repair Parts Section of this book.





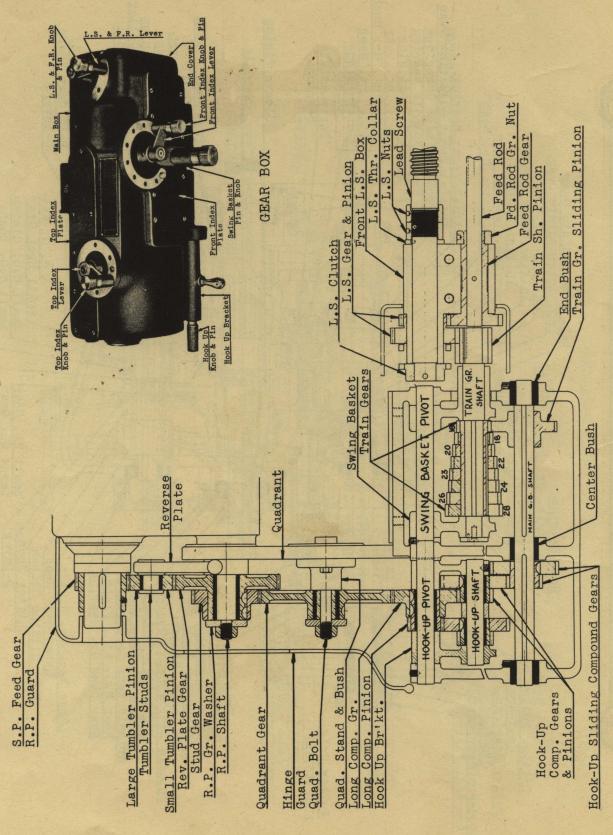






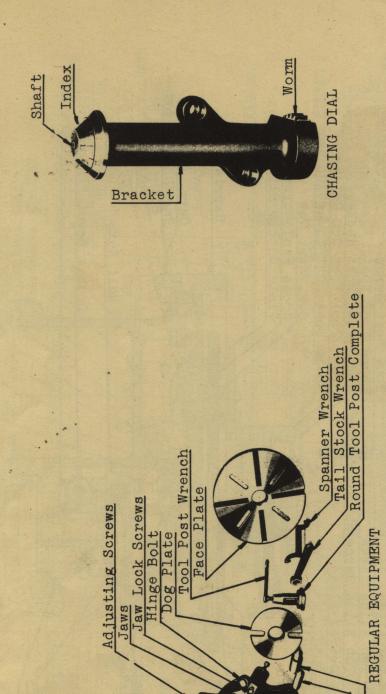
HEAD STOCK





CONNECTION FROM SPINDLE TO FEED CHANGE MECHANISM





Steady Rest Top

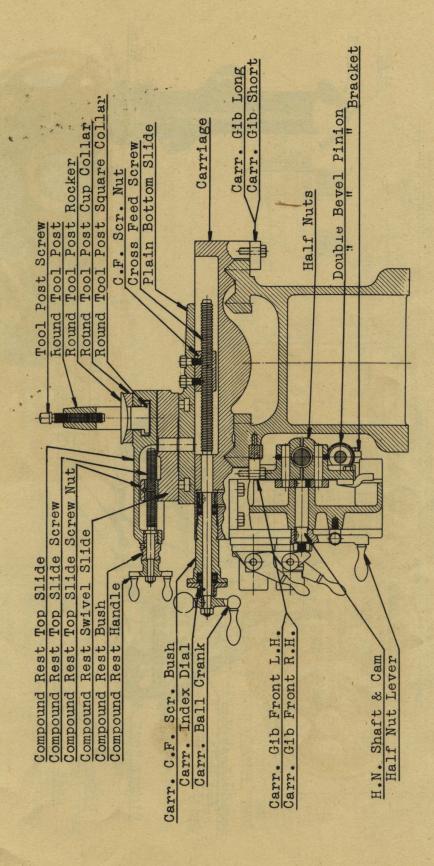
Centers Head Center Bush

Clamp Bolt

Steady Rest Bottom

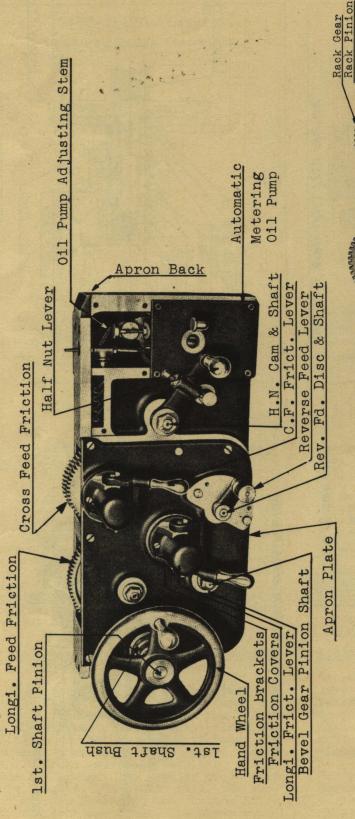




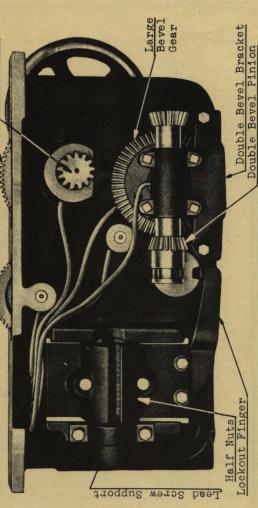


CROSS SECTION





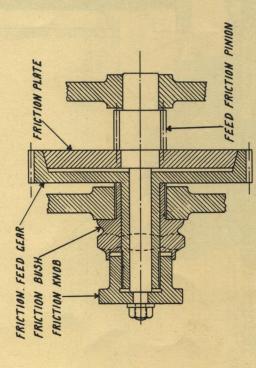
APRON-FRONT VIEW



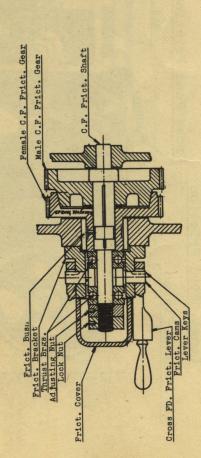
APRON-REAR VIEW

C.F. FRICTION FEMALE CEAR

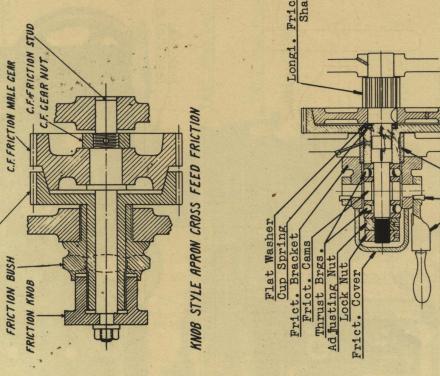




KNOB STYLE LONGITUDANAL APRON FRICTION



LEVER TYPE CROSS FEED FRICTION



QUICK ACTING LEVER LONGITUDANAL FRICTION

Gear

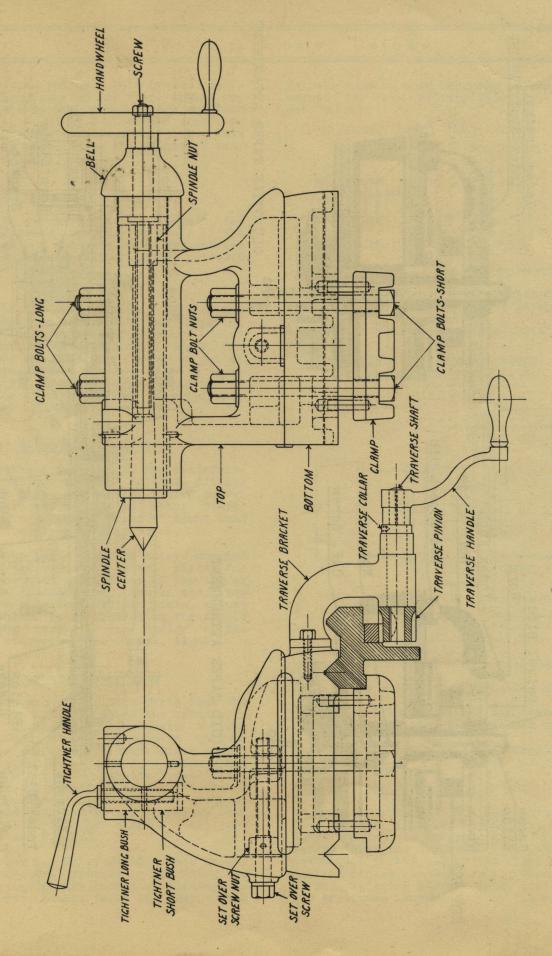
Longi

Frict. Bush

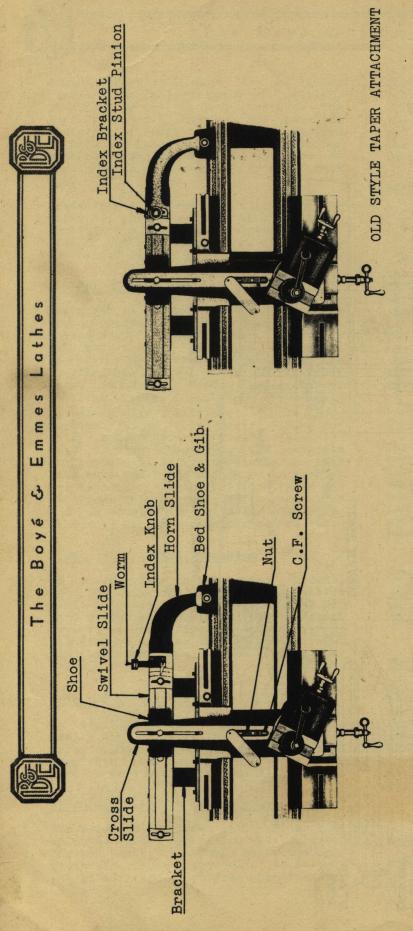
Longi, Frict. Lever

Frict. Plate

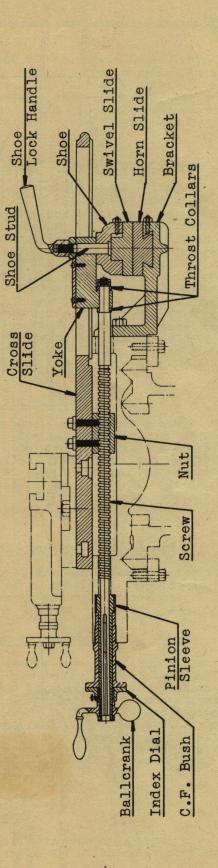




TAILSTOCK



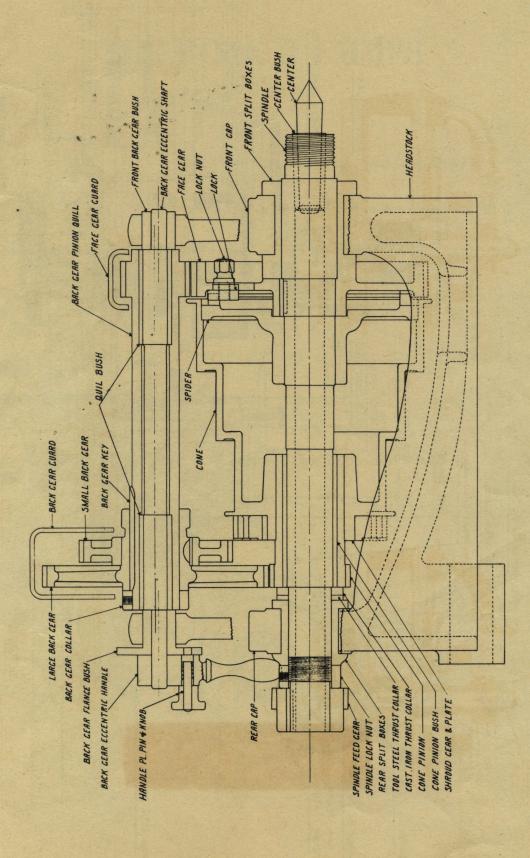
PLAIN RIGID TAPER ATTACHMENT



TELESCOPIC SCREW TAPER ATTACHMENT







CONE DRIVEN-DOUBLE BACK GEAR HEAD STOCK

