MAY TOOL CO.

42" RING AND CIRCLE SHEAR

SERVICE MANUAL AND PARTS CATALOG

MAY TOOL CO.

SERVICE MANUAL AND PARTS CATALOG FOR MTC42 SERIES MACHINES

INDEX

MAY TOOL CO.

INSTALLATION INSTRUCTIONS
Section 1

1. Check for shipping damage before removing from crate.

2. If the machine is found to be damaged in any way, report all damages to the freight line immediately. **MAY TOOL COMPANY** accepts no responsibility for damages incurred during transit or thereafter.

3. After examining the machine and it is found free of damage, remove the machine from the crate and clean it thoroughly of all dirt and grime accumulated from transportation. Be sure to loosen special swivel base socket set screw #71 Fig. 6 Page 8 and slide the tailstock of #2 fig. 6 Page 8 all the way back and forth cleaning and oiling beneath the slide.

4. Prior to operation, oil the machine at points indicated in Fig. 1 Page 3 with a few drops of S.A.E. 30W oil and periodically thereafter depending on use of the machine.

5. The **MAY TOOL COMPANY** 42" ring and circle shear should be bolted to a table, bench or legs and the legs lag screwed to the floor prior to operation. The machine must be leveled from front to back and end to end to assure no twist in the bed and headstock for smooth trouble free operation.

6. Attach the back gauge to the back of the machine using hole #E Fig. 2 Page 5 for back gauge installation see Section 2 Page 4.

7. Loosen special swivel base socket set screw #71 Fig. 6 Page 8 on tailstock and move the tailstock to desired diameter you wish to cut, using scale on the front of the machine for approximate diameter. "Note" for real close diameters you will have to measure the cut ring or circle and move the tailstock accordingly. All other bolts on the tailstock carriage are for alignment only and should not be loosened except to adjust alignment. Refer to following paragraph 8.

8. The machine may have slipped out of alignment during shipment and should be checked for correct alignment prior to operation. Check Fig. 3 & 4 Page 7 for correct procedure for aligning the **MAY TOOL COMPANY** ring and circle shear. See Section 3 Page 6.

9. Prior to placing material to be cut in machine, check for proper clearance between upper and lower cutting blades by cranking upper blade down 1/16" past top of lower blade, then check between the rear face of the lower blade and the front face of the upper blade with a feeler gauge. Clearance should be 10% of material thickness with a minimum of .002 thousands between blades. "Caution" - Make sure upper blade does not touch lower blade or the blades will chip and have to be reground before using. See Page 12 for blade adjustment.

10. Place material to be cut in clamping plates #45 & 50 Fig. 7 Page 10 centering material in clamping plates for minimum runout. On first few trials, material should be at least 1" larger than diameter to be cut.

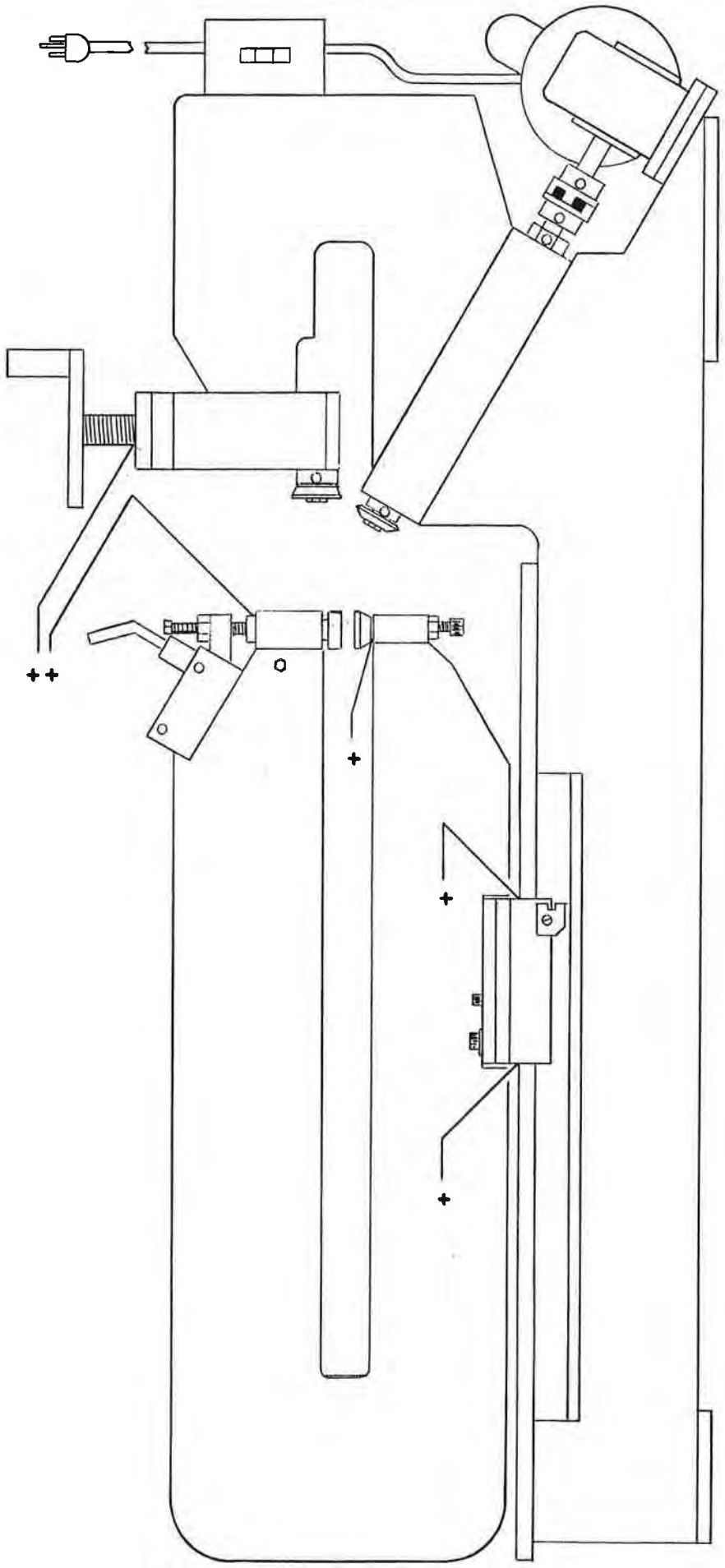
11. Check to be sure that blank material is resting level on lower cutting blade #36 Fig. 7 Page 10; use adjusting screw #49 Fig. 7 Page 10 to raise or lower material blank to desired height.

12. #56 adjusting screw controls the clamping pressure of the upper clamp plate #50 Fig. 7 Page 10. Make sure that clamping pressure is not too tight or this will cause the bearings to bind and the material will not turn freely, also the material will raise off the lower cutting blade and distort; if the material is too loose it will pull from between the clamping plates #45 & 50 Fig. 7 Page 10 creating several diameter rings on top of the material as it creeps out. The material should spin freely by hand with a slight amount of back pressure when the pressure is right.

13. The machine is now ready to cut circles. Make sure that no one is working on, or examining the machine, then plug the electrical plug into 110V-120V 60 cycle AC outlet and turn on switch.

14. Now crank the upper cutting blade down till it touches the material and starts to revolve like the lower cutting blade, continue cranking 1/8 to 1/4 turn per revolution of the material until the ring is parted off. Return the upper cutting blade to its upper position. Stop machine and remove your finished part. Also remove the trimmed outer material piece from the machine as this part may hang up on the next material blank and chip the cutting blades.

15. If the finished part meets with your approval you should be ready for production, if not recheck paragraph 7 thru 12 and trouble shooting guide.



+ LIGHTLY OIL PERIODICALLY

FIG. 1

Section 2
BACK GAUGE INSTALLATION AND USE

The **MAY TOOL COMPANY** circle shear is shipped with the back gauge off the machine and in the crate.

To install the back gauge, after you remove it from the crate, remove the nut #A Fig. 2 Page 5 and lockwasher #B Fig. 2 Page 5 from the short stud bolt #C Fig. 2 Page 5 on the plate #D Fig. 2 Page 5, next insert the stud bolt #C into the hole #E Fig. 2 Page 5 from the back side of the tail-stock, then put the nut #A and the lockwasher #B back on the stud #C and tighten the nut with the plate #D turned toward the headstock end of the machine, as shown in Fig. 2 Page 5.

The swing arm assemble #F Fig. 2 Page 5 must be on the long rod #G Fig. 2 Page 5 so that it swings toward the motor on the machine. If it does not swing toward the motor, loosen the socket head cap screw #H Fig. 2 Page 5, remove it from the long rod, turn it around and replace it on the long rod.

To set the back gauge, the simplest way of setting it, is to put a material blank, of the size you will be cutting, in the clamping plates on center, then loosen and move the swing arm to barely touch the material blank and tighten the socket head cap screw.

The long rod #G of the back gauge must be on the center line of the clamping plates or slightly the other side of the center line of the clamping plates toward the headstock to function properly. If the nut #A becomes loose and allows the plate #D and long rod #G to pivot up or down it will fall behind the center line and your material blanks will hang up on the swing arm #F.

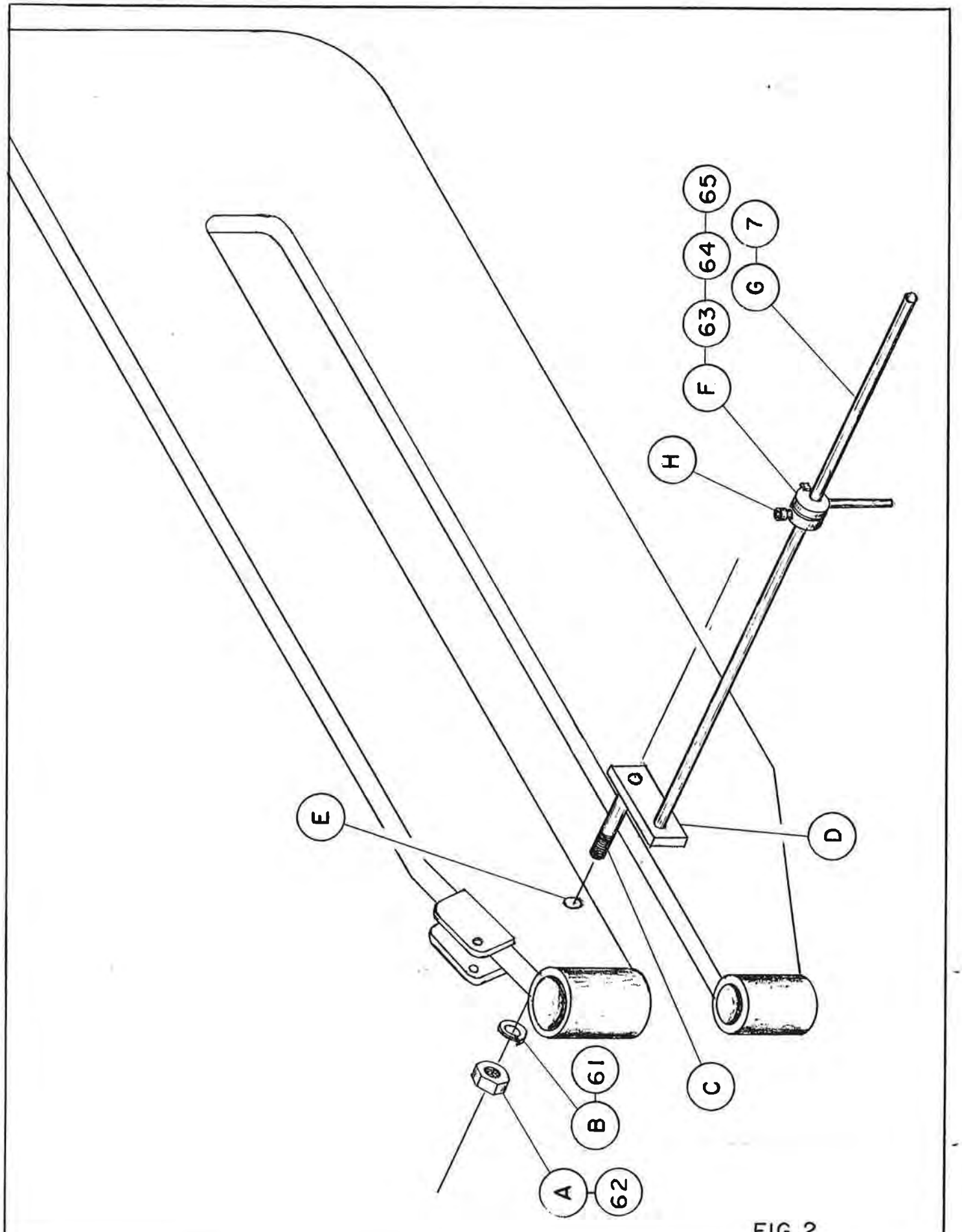


FIG 2

Section 3

ALIGNING TAILSTOCK-LOCATION OF TAILSTOCK CLAMP ADJUSTING THE TAILSTOCK GIB SCREWS

The alignment of the tailstock clamping plates with the headstock and cutting blade or flanging rollers is a very important step in the set up and operation of the **MAY TOOL COMPANY CIRCLE SHEARS.**

Looking at page 7 we see how the clamping plates #45 & 50 can be in line, Fig. 4 or out of line Fig. 3 with the cutting blades. **MAY TOOL COMPANY** suggest using a 12" scale #K (1) from a combination set for the alignment procedure. The vee in one side of the scale (1) is turned down and placed on the lower clamping plate #45 (1) with the center point in the vee and approximately 6 or 7 inches of scale protruding out toward the cutting blades or flanging rollers #33 & 36 (1) now clamp the scale tight using the upper clamp plate #50 (1) then loosen the tailstock clamp bolt #71 (2) and move the tailstock up till the scale touches the upper cutting blade or flanging roller and retighten the tailstock clamp bolt.

If the end of the 12" scale is square against the upper cutting blade or flanging roller the tailstock is aligned on the center line. However, if there is a small gap on one edge or the other, of the end of the 12" scale, the tailstock is out of align from the center line of the machine and cutting blades or flanging rollers.

To align the tailstock and clamping plates, loosen the two alignment bolts #70 (2) on the base of the tailstock, (**NOTE:** Do not loosen clamp bolt #71 (2)), and move the end of the tailstock away from or toward you until the end of the 12" combination scale is square against the cutting blade or flanging roller, then tighten both alignment bolts making sure that you do not move the tailstock back out of alignment. Your machine is aligned and ready to cut.

As you are moving the tailstock to different diameters, you notice a lot of side play in the tailstock clamping and aligning unit #L (2) the gib screws #73 (2) will need adjusting.

To adjust the gib screws #73 (2) loosen the clamping bolt #71 (2) then the lock nuts #72 (2) on the gib screws. Now tighten both gib screws tight to get all the slack out of the side movement of the tailstock unit. Back both screws out approximately 1/16 to 1/8 of a turn, check side play by wiggling the tailstock back and forth, also see that it will move horizontally up and down the way of the machine bed. If the tailstock is found satisfactory, hold the gib screws and tighten the gib screw lock nuts. If it is not satisfactory, repeat the process either loosen the gib screws more or not as much.

NOTE: After adjusting the gib screws, the tailstock clamping plates will have to be aligned with the cutting blades or flanging rollers.

(1) See Fig. 5 Page 8 (2) See Fig. 6 Page 8

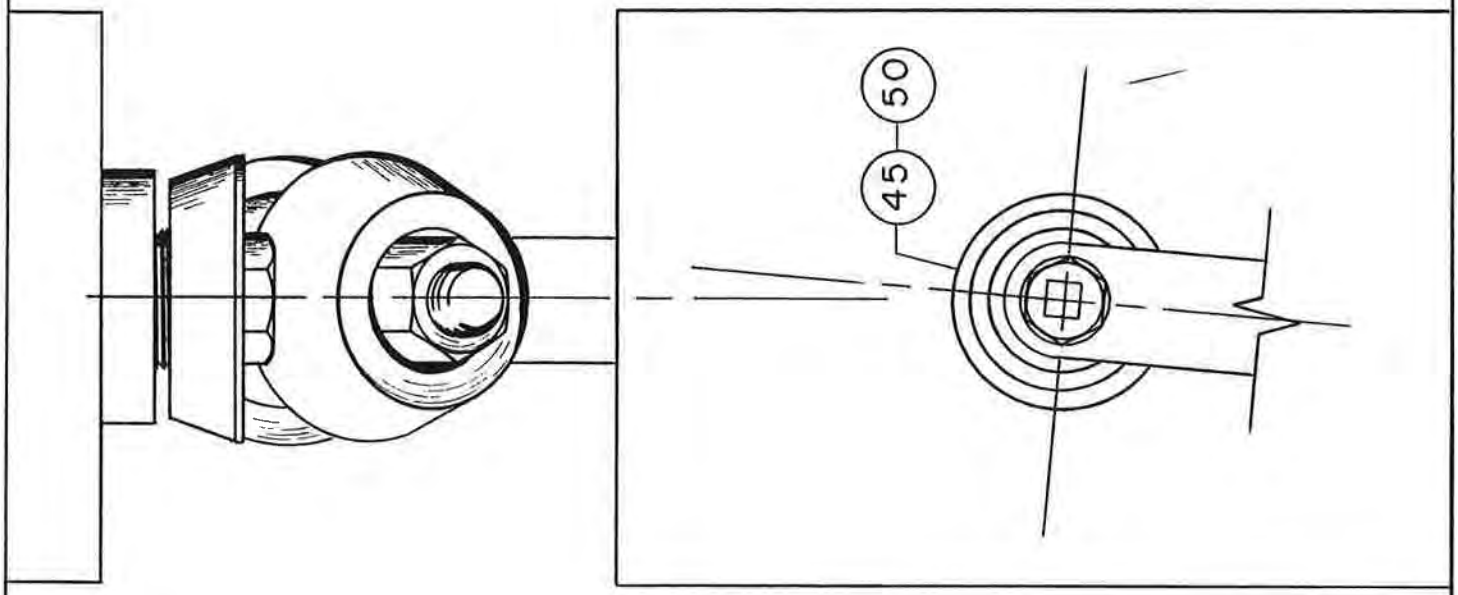


FIG. 3

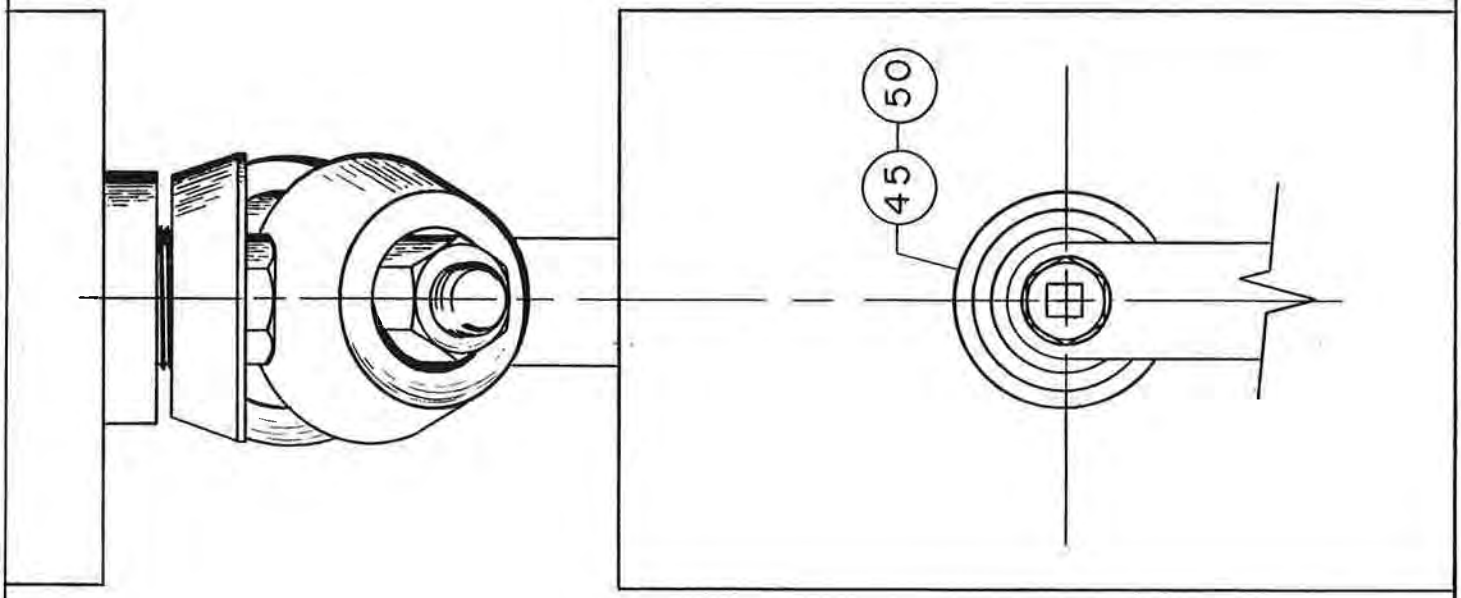


FIG. 4

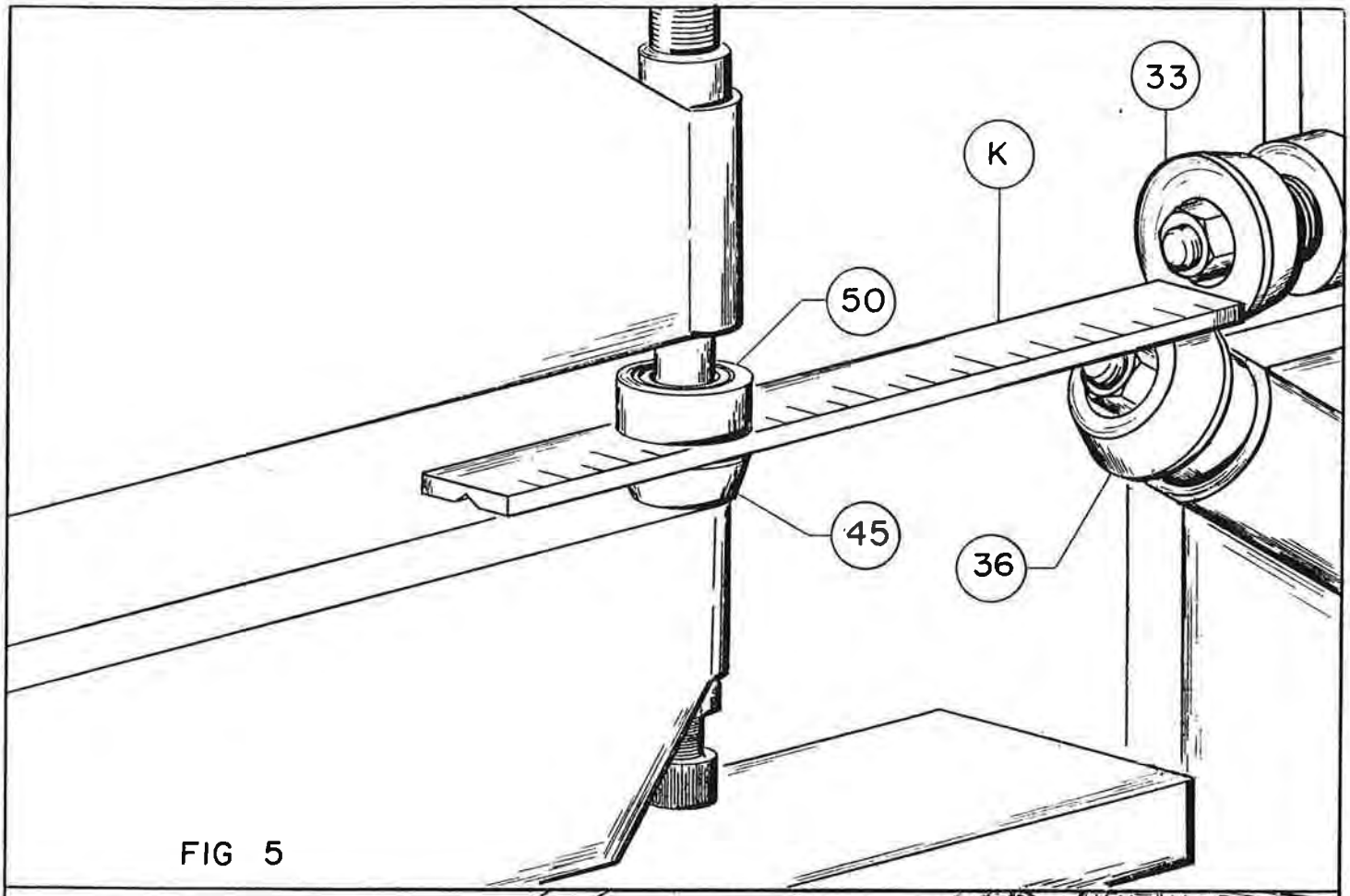


FIG 5

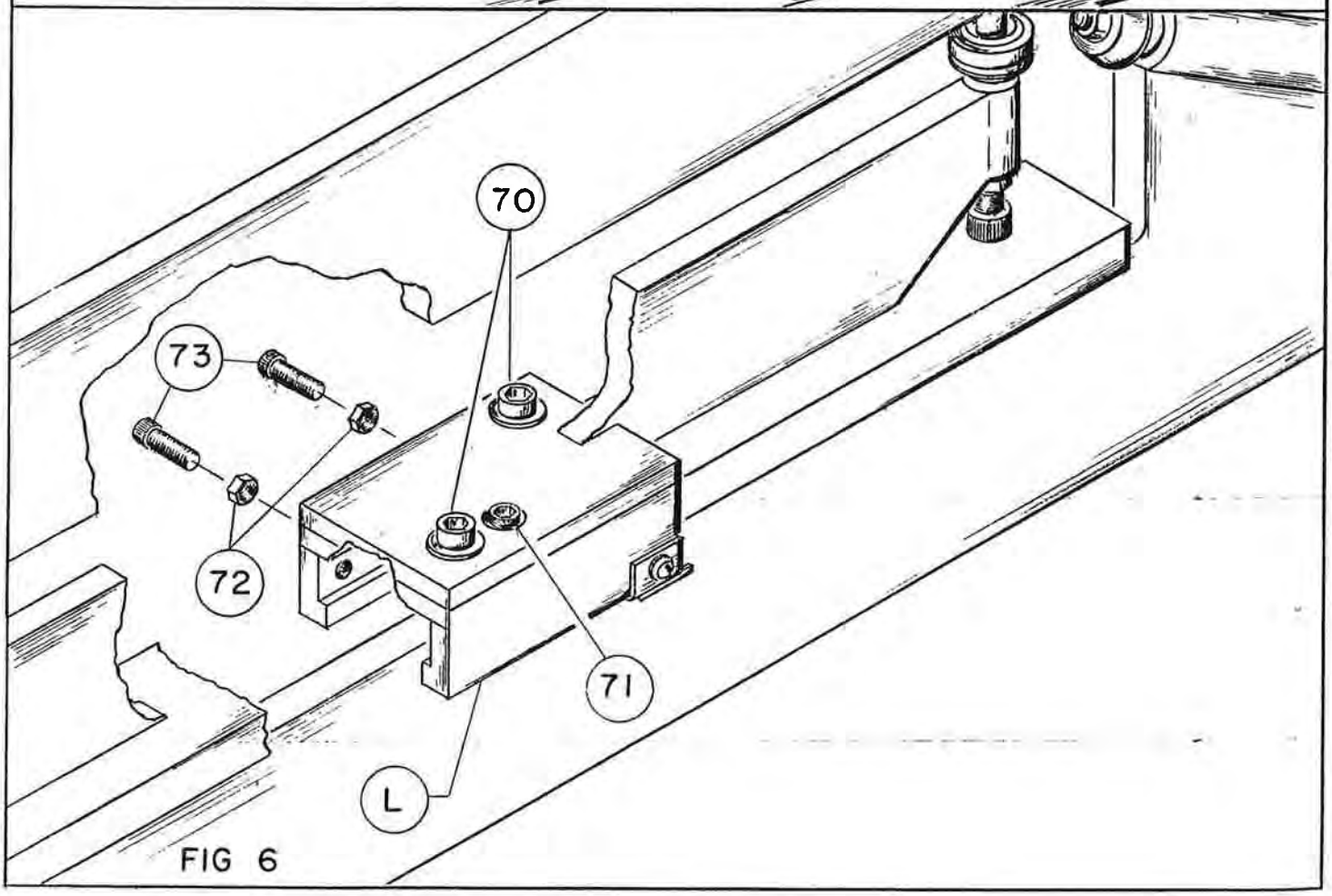


FIG 6

Section 4
ADJUSTING THE CLAMPING PLATES

To adjust the clamping plates you should start with the lower clamping plate #45 (1).

Loosen the lower clamp plate locknut #48 (1) then turn the socket head cap screw adjusting screw #49 (1) right to raise the clamping plate and left to lower it. By adjusting the lower clamp plate screw #49 (1) up or down, you can get the material to rest on the lower cutting blade or flanging roller as shown in Fig. 7 Page 10, this is a very important step in setting the machine up for operation. After the material blank is resting on the lower cutting blade #36 (1) as shown in Figures 7 & 8 Page 10 & 11 tighten the adjusting screw locknut #48 (1) while holding the adjusting screw #49 (1) to keep the clamp plate from getting out of align with the lower cutter or flanging roller.

Next using the hand actuated cam on the top of the tailstock clamping unit, which exerts pressure on the cam arm #54 (1) and through the upper adjusting screw #56 (1) to the upper clamping plate shaft #53 (1) to the clamp plate #50 (1) bring the upper clamp plate down on the material blank until it touches, then with a little more pressure it should clamp in place and stay with the cam handle in the down position. If it does not clamp, loosen the locknut #55 (1) and tighten or loosen the upper clamp plate screw #56 (1) until it does clamp tight.

CAUTION: Do not exert too much pressure on the clamping plates as you can damage the clamp plate bearings.

ADJUSTING THE CLAMPING PLATES FOR FLANGING

To adjust the clamping plates for flanging is exactly the same as cutting, except for the upper clamping plate.

The procedure for adjusting the upper clamping plate is the same as for cutting except, between the material blank and the upper clamping plate #50 (2) you should use a blank round pad #M (2) approximately 3 to 4 inches in diameter and the same thickness as the depth of the flange, i.e., a 1/4 inch flange part would need a 1/4 inch thick pad.

The pad will have to be removed with each finished part and put back on with each new material blank, but it will give you the clearance to remove the 1/4 inch finished flange from between the clamping plates.

(1) See Fig. 7 Page 10

(2) See Fig. 8 Page 11

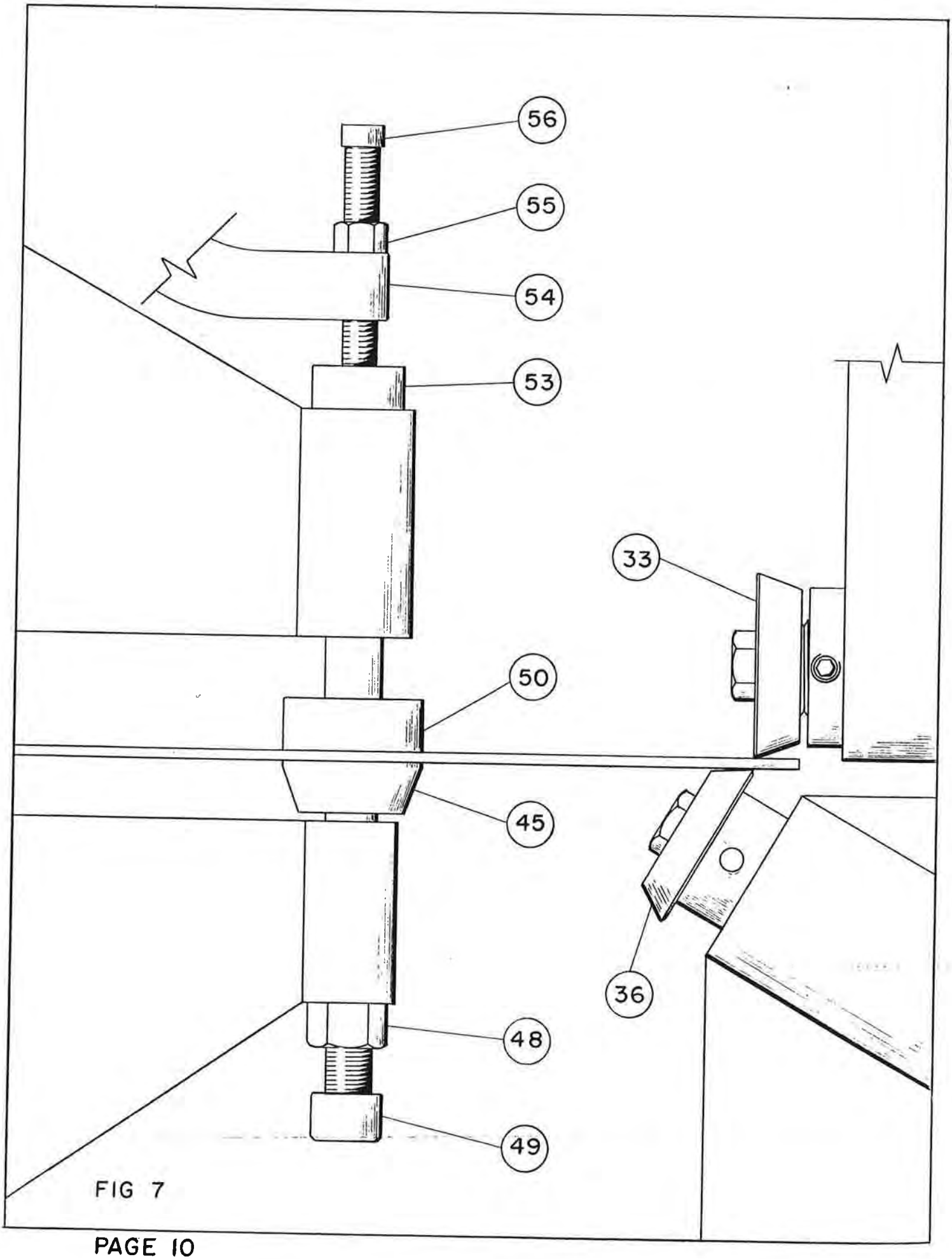


FIG 7

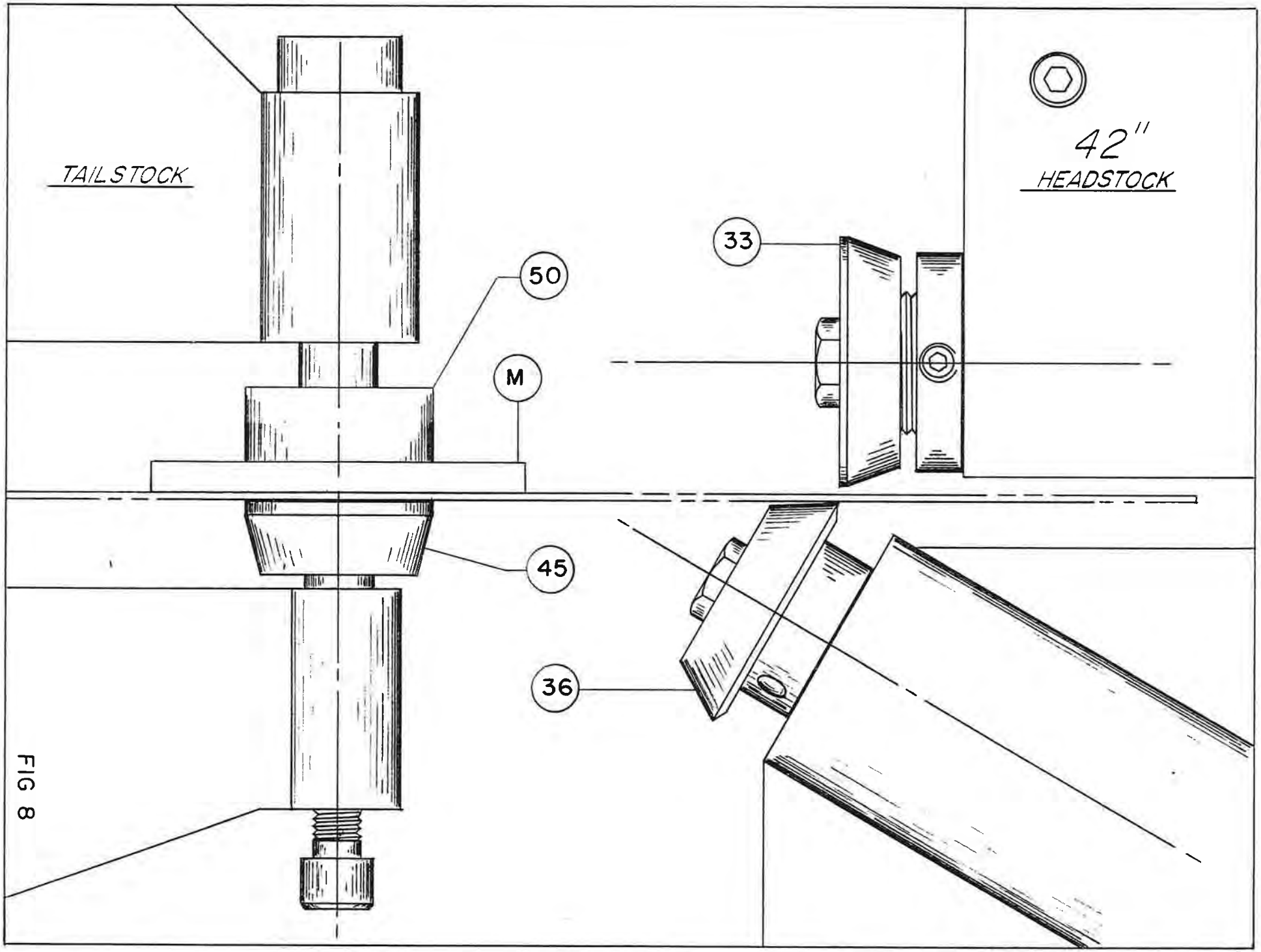


FIG 8

Section 5
ADJUSTING CLEARANCE BETWEEN CUTTING BLADES OR FLANGING ROLLERS

To adjust the clearance between the cutting blades or the flanging rollers you will need a socket hex key to fit the 5/16 inch set screws, a lead hammer, two adjustable wrenches, and a feeler gauge #P Fig. 10 Page 13.

The first step is to bring the upper cutting blade #33 (1) down approximately 3/32 to 1/8 inch past the top of the lower cutting blade #36 (1) making sure there is clearance between the cutting blades. If there is not clearance between the cutting blades, follow the steps outlined below.

Next loosen both thrust nut set screws #32 & 27 (1). Check between the cutting blades with a feeler gauge as shown in Fig. 10 Page 13 to determine the clearance between the cutting blades. If the clearance is more than needed, approximately 10% of your material thickness, i.e., material .060 thousands equals .006 thousands clearance, you need to loosen the rear thrust nut #25 (1) by turning it to the left, as it is a right hand thread, then tighten the front thrust nut #31 (1) by turning it to the right, it is a right hand thread also, checking the clearance with your feeler gauge, as you turn the nut. Once you have determined the correct clearance, tap lightly on the front cutting blade retaining nut #34 (1) with your lead hammer, then tighten your front thrust nut set screw #32 (1). Now tighten the rear thrust nut #25 (1), while holding the shaft by the square at the rear of the shaft, making sure you do not tighten it too much and bind the bearings, see **"ADJUSTING END PLAY IN UPPER SPINDLE"** Page 18. Once again check the clearance between the cutting blades, if it is satisfactory, tighten the rear thrust nut set screw #27 (1).

Your machine is now ready for cutting. After cutting the first blank circle you may have a burr on the blank, there is too much clearance between the cutting blades. Readjust.

Adjusting the flanging rollers is done exactly the same as adjusting the cutting blades after the initial **"CHANGING OVER FROM CUTTING TO FLANGING"**page 22, except you can use a small piece of the material that you will be flanging, for a feeler gauge instead of a feeler gauge. Naturally the 10% of the material does not apply to flanging. The gap should be the material thickness plus approximately 10% of the material thickness more.

Be sure to deburr your blank small piece of material that you use for a feeler gauge or you will get a false reading on the gap between the flanging rollers.

Also, check **"CHANGING OVER FROM CUTTING TO FLANGING"** Page 22 before adjusting the flanging rollers.

(1) See Fig. 9 Page 13

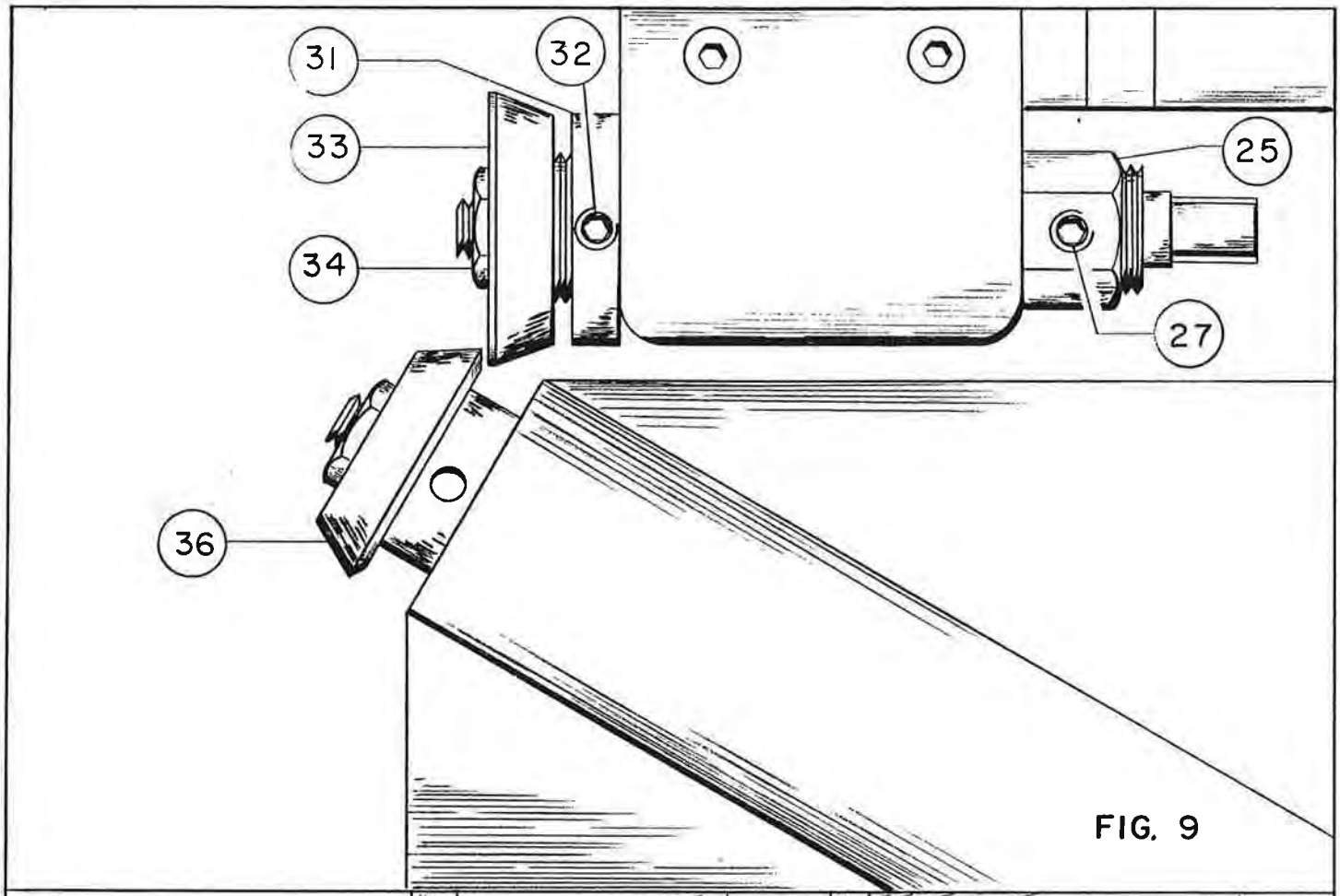


FIG. 9

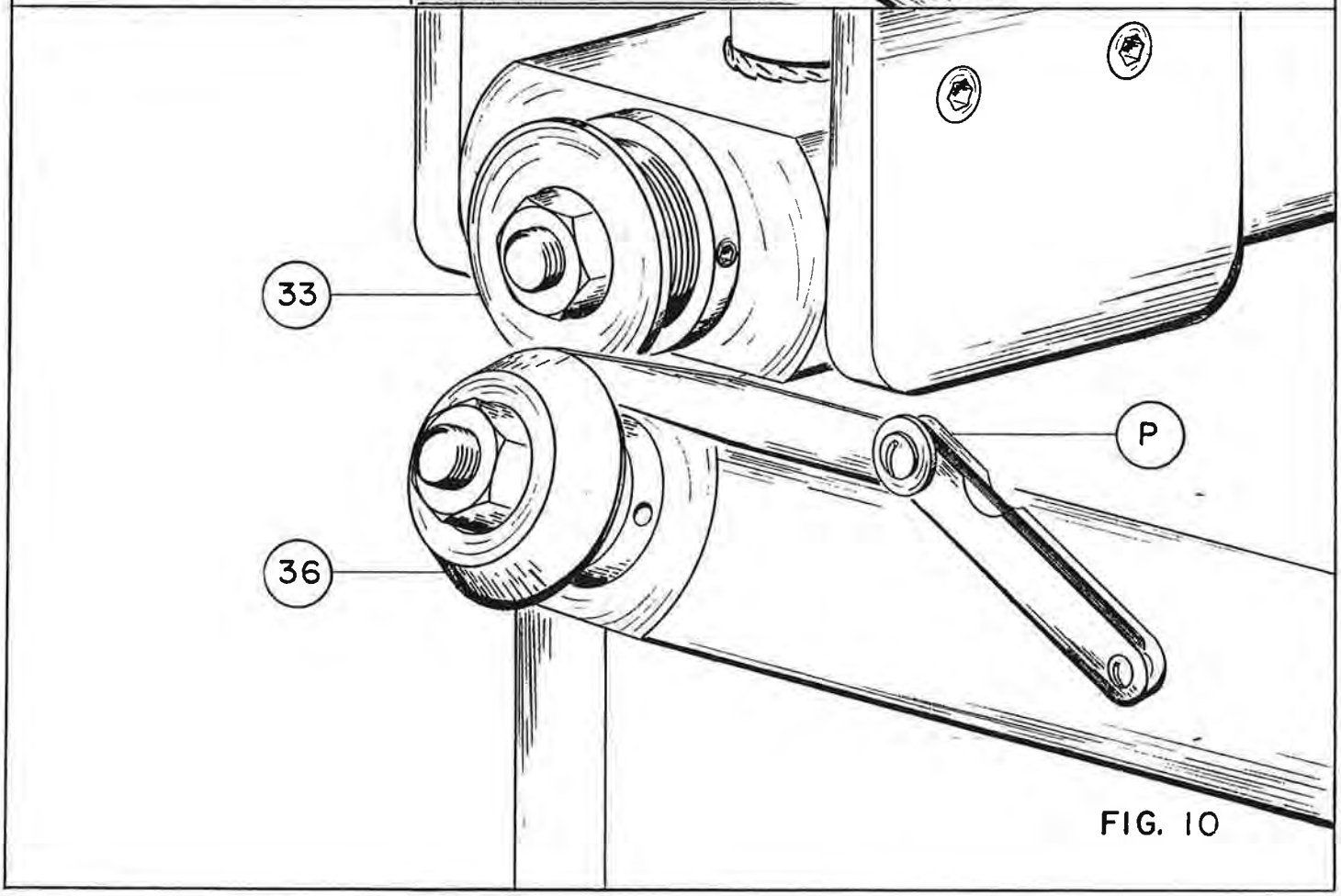


FIG. 10

Section 6
ALIGNING THE CUTTING BLADES VERTICALLY

It is just as important for the cutting blades to be aligned as it is for the tailstock to be aligned to the cutting blades.

Looking at Page 15 Fig. 12 we see the cutting blades in perfect alignment and in Fig. 11 the four head locking bolts #16 (1) which are used to align and hold the head in alignment.

To align the head, first loosen the four head locking bolts #16 (1) just enough so the head will move if you tap on it lightly with a soft hammer (preferably a lead hammer). Now place a straight edge, or the 12 inch scale from a combination set that you use to align the tailstock, on the side plate #12 (2) of the head and use another 6 inch scale to measure from the straight edge to the outer edge of the upper cutting blade #33 (2). Next pivot the straight edge down until you can measure to the outer edge of the lower cutting blade #36 (2) the dimension should be the same as to the upper cutting blade provided both cutting blades have been ground to the same diameter. If the dimension is off, you can tap the head gently one way or the other to bring the dimension in to correspond with the upper cutting blade. As you move the cutting head make sure it stays perpendicular with the bed of the machine so that it does not feed down on an angle. Once the head is aligned, tighten the four head locking bolts evenly to prevent distortion.

If the upper and lower cutting blades are not the same diameter, subtract the smaller of the two diameters from the other and divide the answer by two, this answer is the dimension that you add or subtract to the distance between the straight edge and the cutting blades. Example: The upper cutting blade measures 2 inches on the outer diameter and the lower cutting blade measures 1-7/8 inches, substracting the lower cutting blade from the upper cutting blade we have 1/8 inch, now divide 1/8 by 2 and we get 1/16 inch, so you add 1/16 inch to the measurement from the straight edge to the lower cutting blade.

(1) See Fig. 11 Page 15

(2) See Fig. 12 Page 15

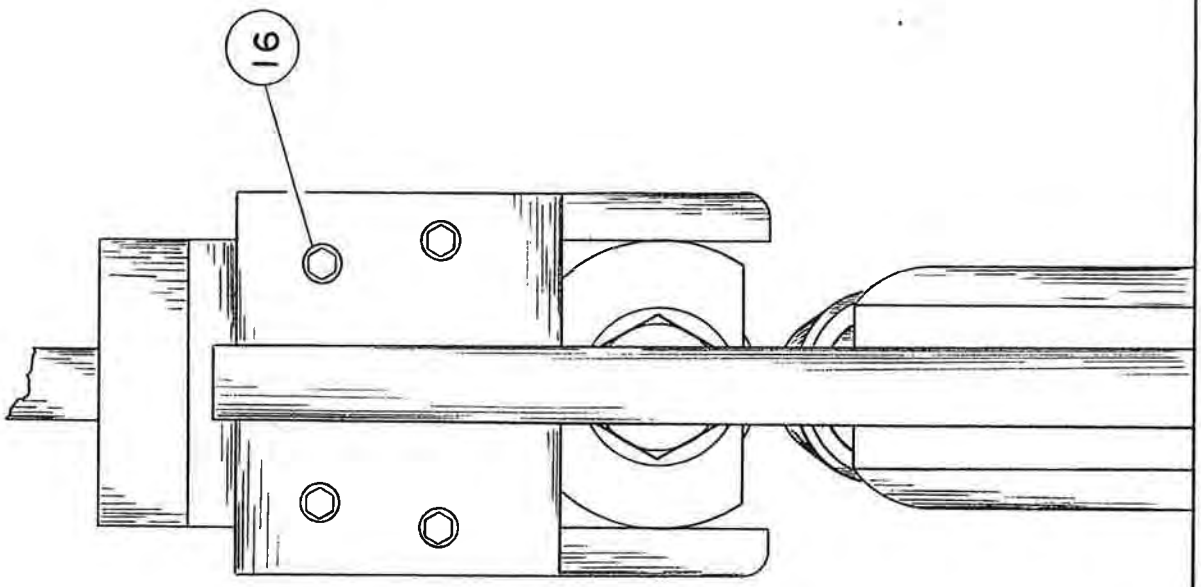


FIG. 11

CUTTING BLADES ALIGNED

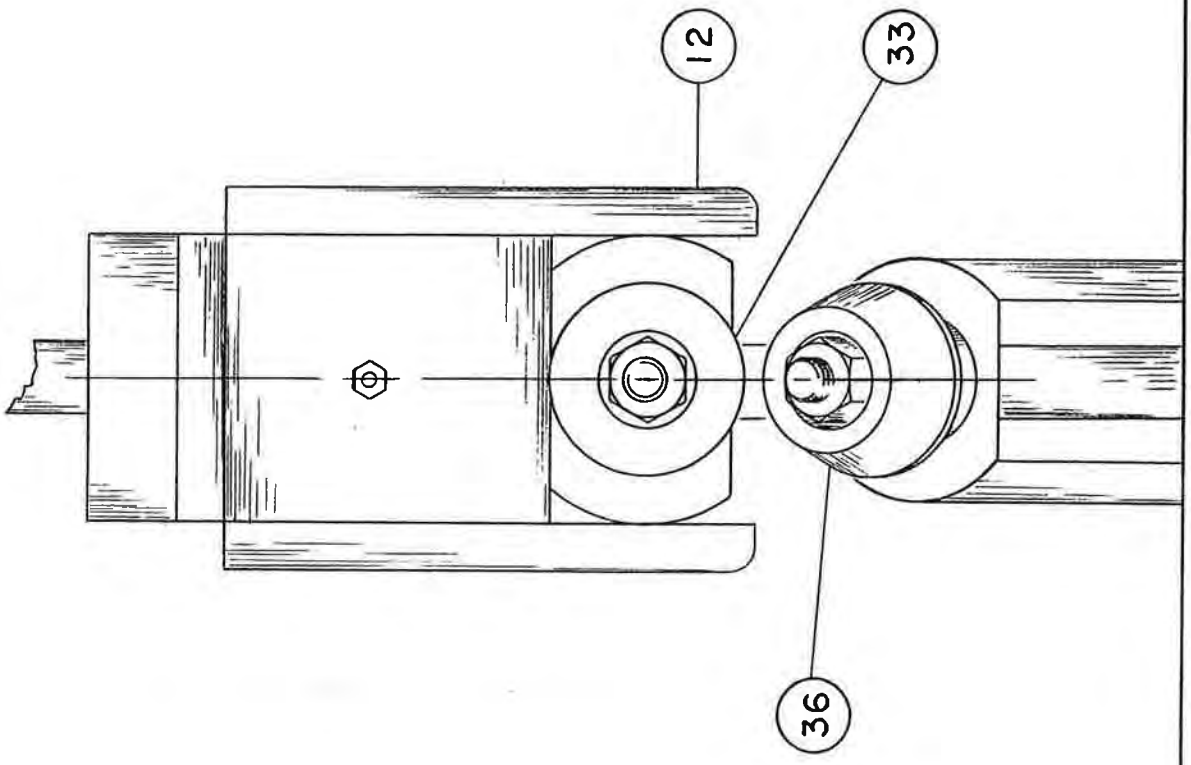


FIG. 12

Section 7
REPLACING CUTTING BLADES & FLANGING ROLLERS

The **MAY TOOL COMPANY** ships all 42" circle shears with a set of cutting blades installed and ready to cut material. We strongly recommend however, that the customer purchases a minimum of two extra sets of cutting blades with the purchase of the **MAY TOOL COMPANY** circle shear or shortly thereafter.

The cutting blades can be reground several times before the diameter becomes too small for cutting. In some cases, if the cutting blades are chipped, they will not clean up with regrinding and will have to be discarded and replaced with new cutting blades. Also, it is beneficial to have an extra set of cutting blades on hand, so as not to lose that very important production time.

To remove the cutting blades or flanging rollers, first raise the head to its extreme upward position. Then hold the upper spindle #30 (1) on the square #N (1), at the rear of the head, with a wrench, now using another wrench loosen the front cutting blade retaining nut #34 (1) by turning it to the left, as it is a right hand thread, and remove the nut, now slip the cutting blade #33 (1) off the upper shaft. **MAY TOOL COMPANY** recommends a gear puller be used to remove the cutting blades, rather than beating on them with a hammer.

CAUTION: If you do tap on the cutting blades or flanging roller with a hammer be sure that you use a soft hammer. The cutting blades and flanging rollers are very hard, which also makes them brittle, and a ballpeen or other hard hammer could cause them to chip and fly into the "eyes".

After you have removed the cutting blade #33 (1) clean the upper shaft #30 (1) and the new cutting blades then reverse the procedure above to install it.

The lower cutting blade #36 (1) can be removed without holding the lower shaft #35 (1) because of the gear reduction in the gear box providing torque against the lower shaft.

Place a wrench on the lower cutting blade retaining nut #37 (1) and turn it to the right, as the lower shaft has a left hand thread, to loosen and remove the nut. Remove the cutting blade using the same method as the upper cutting blade #33 (1). Be sure to clean the lower shaft and the new lower cutting blade, then install the lower cutting blade by reversing the above procedure.

CAUTION: Once again be sure to use a soft hammer if it is necessary to use a hammer to remove the cutting blade. **NOTE:** After replacing the new cutting blades you must check the clearance between the rear face of the lower cutting blade and the front face of the upper cutting blade. See Page 12 for adjusting clearance between blades. If the upper cutting blade is brought down and hits the lower cutting blade you will chip the blades.

The procedure for changing the flanging rollers is exactly the same as changing the cutting blades after the initial change over from cutting to flanging. See Page 22 for **"CHANGE OVER FROM CUTTING TO FLANGING"**.

(1) See Fig. 13 Page 17

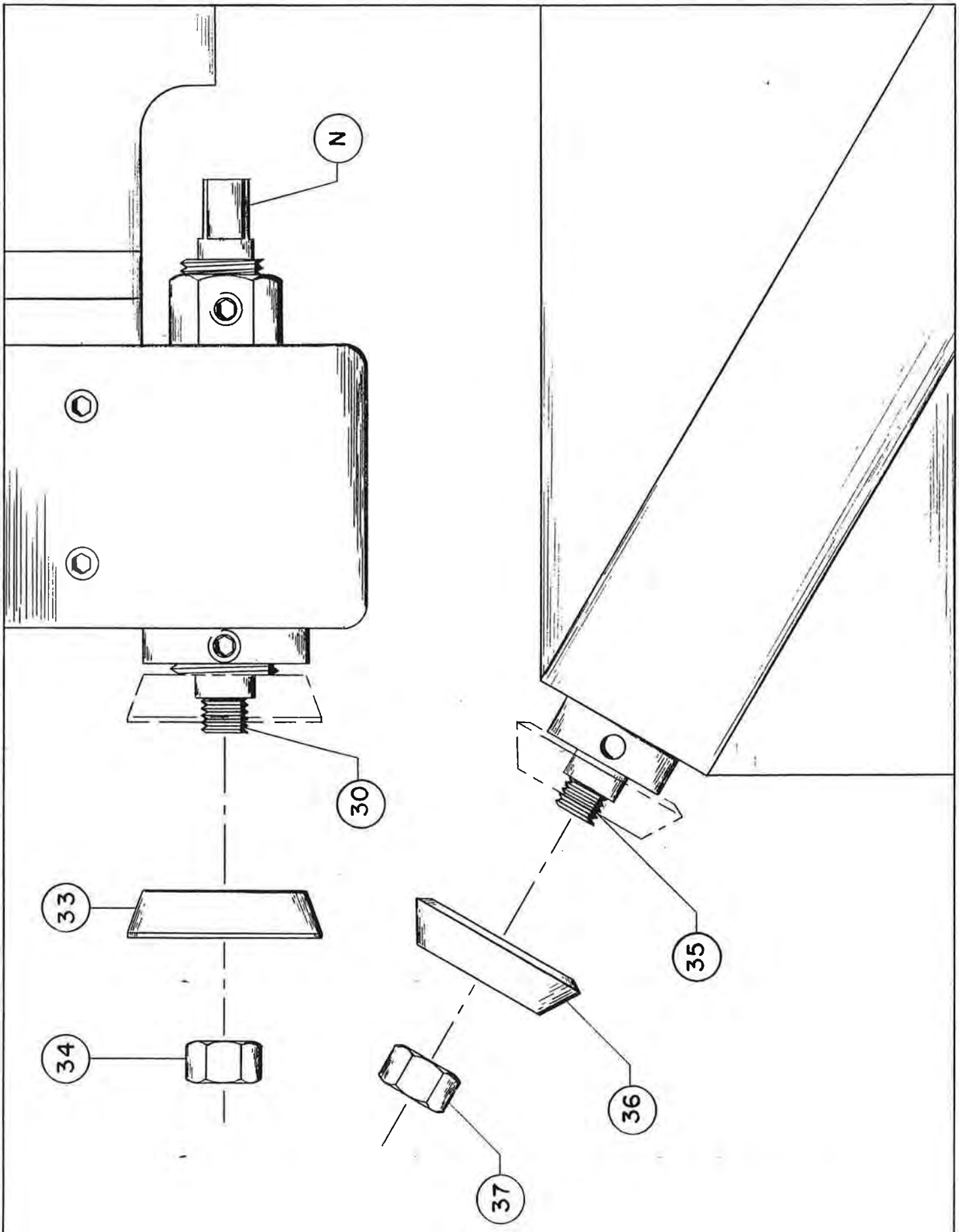


FIG 13

Section 8
ADJUSTING THE END PLAY IN THE UPPER SPINDLE

Since the upper spindle is changed from cutting to flanging quite often and the upper spindle is adjusted for cutting blade gap often, it is important for a person to become acquainted with adjusting the end play in the upper spindle.

To adjust the end play in the upper spindle #30 (1), you can read the section on **"ADJUSTING CLEARANCE BETWEEN THE CUTTING BLADES"** Page 12. Then when it is necessary to adjust the end play in the upper spindle you would start by tapping lightly on the top blade retaining nut #34 (1) with a soft hammer (preferably a lead hammer) as this will remove the end play from between the front thrust nut #31 (1) and the front upper spindle bearing #28 (2). Be sure the socket set screw #32 (1) is tight in the front thrust nut #31 (1). Now tighten, by turning it to the right, the rear thrust nut #25 (1) until it is seated lightly against the rear upper spindle bearing #28 (1). Once more tap lightly on the front end blade retaining nut #34 (1) while you are tightening the rear thrust nut by hand. Now take a wrench and tighten the rear thrust nut turning it very slightly, just enough to seat it, also tighten the rear socket set screw #27 (1) in the rear thrust nut. You may find it necessary to hold the upper spindle by the square provided on the rear of the upper spindle, with a wrench while tightening the rear thrust nut. The gap between the two cutting blades or flanging rollers may have changed while you were **"ADJUSTING THE END PLAY IN THE UPPER SPINDLE"**, so be sure to recheck it.

The end play in the upper spindle is important because it can cause you to chip cutting blades, cut egg shape parts, mark rings on the material blanks and various other reasons.

Be sure to check the end play, each time you change the cutting blades or the spindle location.

(1) See Fig. 14 Page 19.

(2) See Fig. 15 Page 19

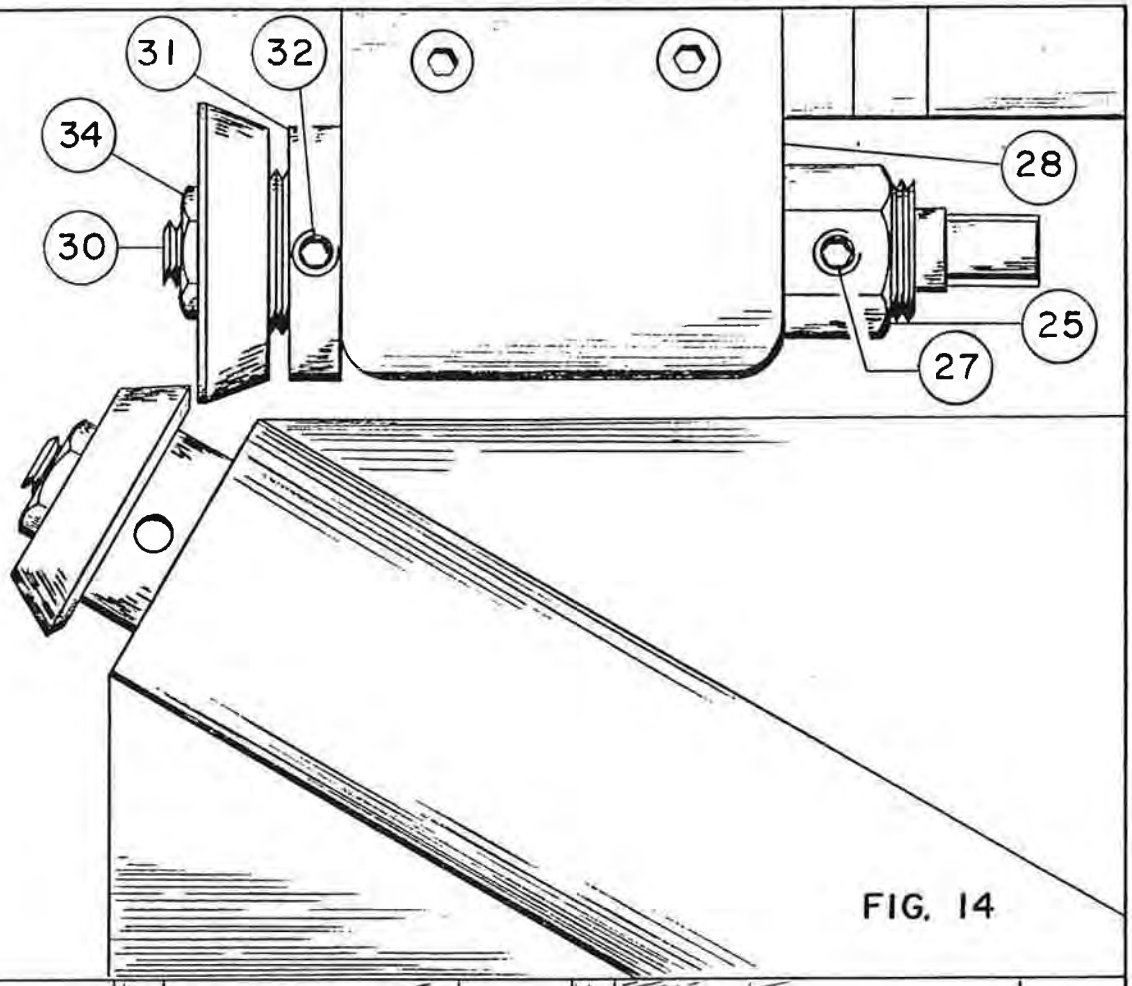


FIG. 14

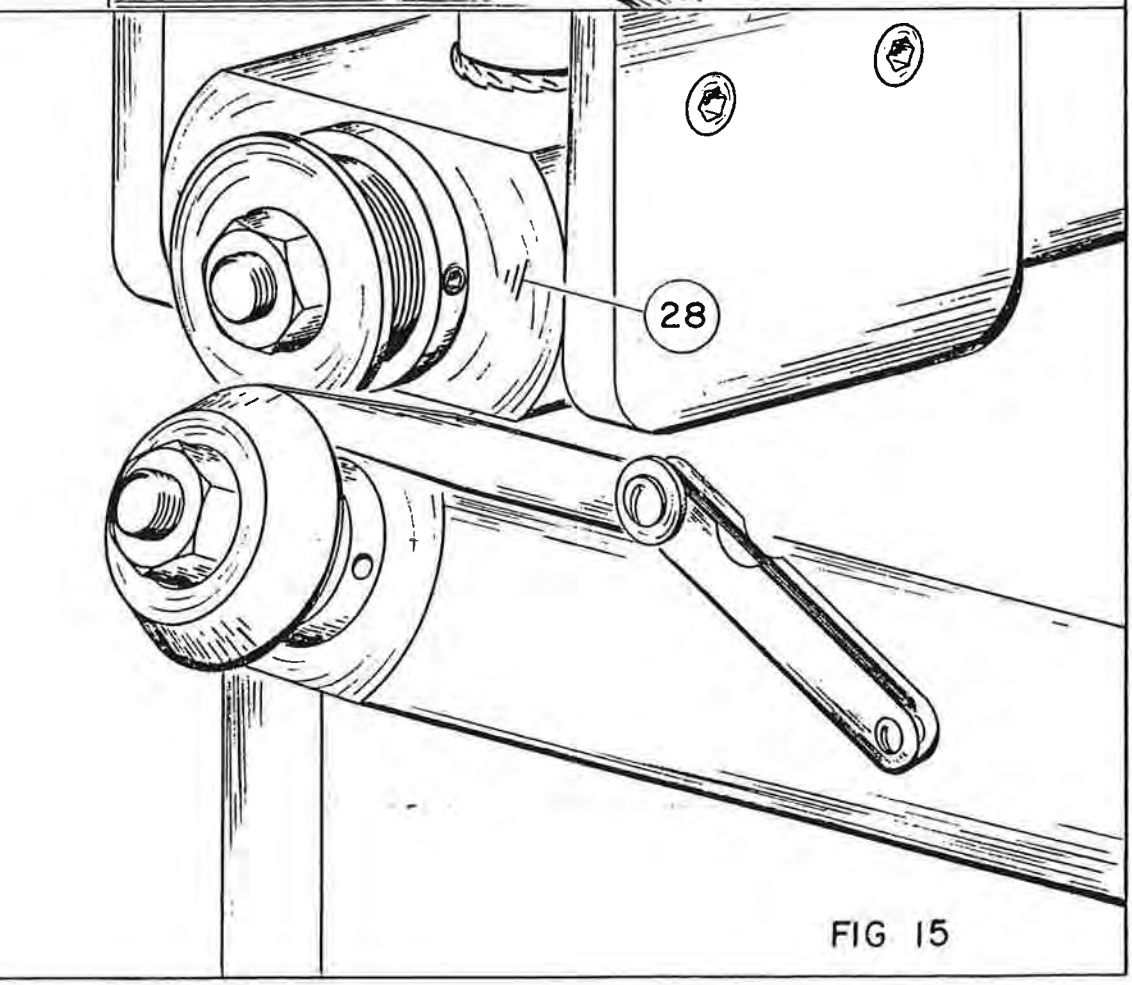


FIG 15

Section 9
ADJUSTING THE END PLAY IN THE LOWER SPINDLE

The lower spindle will require very little adjustment. Changing from cutting to flanging or just changing cutting blades or flanging rollers will not affect the lower spindle. If the lower spindle has end play it is generally because the rear thrust nut has worked loose.

To adjust the lower spindle #35 (1), loosen the socket set screw #40 (1) in the lower rear thrust nut #39 (1) and tighten the lower rear thrust nut by turning it to the right, until it seats against the lower rear bearing #38 (1). As with the upper spindle you will need to tap on the cutting blade retaining nut #37 (1) with a soft hammer (preferably a lead hammer) while turning the lower rear thrust nut #39 (1) to get the end play out of the spindle. It is just as important on the lower spindle, as it is on the upper spindle, not to tighten the lower rear thrust nut too tight and bind the bearings.

As with the upper spindle just slightly tighten the lower rear thrust nut #39 (1) with a wrench, after seating it by hand, then tighten the socket set screw #40 (1) in the lower rear thrust nut.

If you have to adjust the lower spindle, be sure to recheck the gap between the cutting blades or flanging rollers. Check the section **"ADJUSTING THE END PLAY IN THE UPPER SPINDLE"** and recheck your upper spindle.

NOTE: If your lower spindle is loose and you have been cutting thin material, be sure to check that the upper cutting blade does not come down on the lower cutting blade, after you tighten the rear thrust nut or you will chip the cutting blades.

(1) See Fig. 16 Page 21

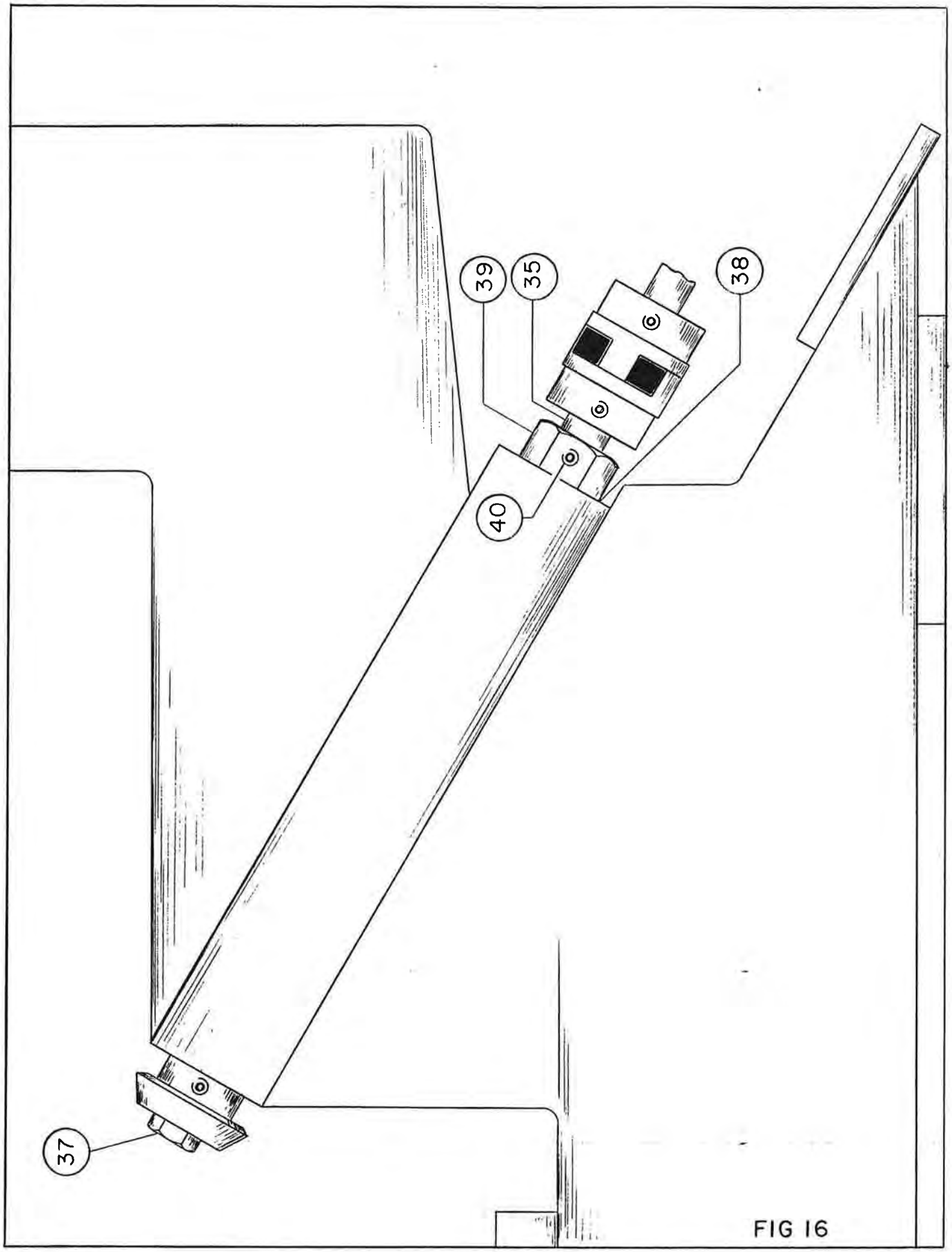


FIG 16

Section 10
CHANGING OVER FROM CUTTING TO FLANGING

Changing over from cutting to flanging is not simply replacing the cutting blades with flanging rollers. The upper spindle has to be removed, then reassembled as described below for flanging. The spacer gives you the extra amount of adjustment needed, because of the wider gap needed between the flanging rollers.

First loosen the front thrust nut #31 (1) and turn it to the left until it is approximately in the middle of the threaded area. Then loosen and remove the rear thrust nut #25 (1) from the upper spindle #30 (1) turning it to the left also, you may need to hold the spindle with a second wrench by the square provided on the rear of the spindle while loosening and removing the thrust nut. Next use a soft hammer (preferably a lead hammer) to tap on the rear of the upper spindle #30 (1) and remove the spindle from the upper spindle carrier #8 (1). If the front upper spindle bearing #28 slides out with the upper spindle, while removing the upper spindle, be sure to clean both the upper spindle carrier and the upper spindle bearing before reinstalling the bearing. Now remove the flat spacer #29 (1) that is between the upper spindle front thrust nut #31 (1) and the upper spindle front bearing #28 this will allow you a larger gap between the flanging rollers when you reinstall the upper spindle. If the upper front spindle bearing slides out with the spindle you will need to remove the bearing before you can remove the flat spacer #29 (1), then replace the bearing in the upper spindle carrier.

Next reverse the above process and reinstall the upper spindle in the upper spindle carrier. Once again be sure to check the section on **"ADJUSTING END PLAY IN UPPER SHAFT"** to make sure you do not tighten the rear thrust nut #25 (1) too tight.

The machine will now be ready to flange your material.

When you are ready to change over to cutting, you will have to replace the flat spacer as you will not have sufficient travel with the adjusting nut to compensate for the flat spacer thickness.

(1) See Fig. 17 Page 23

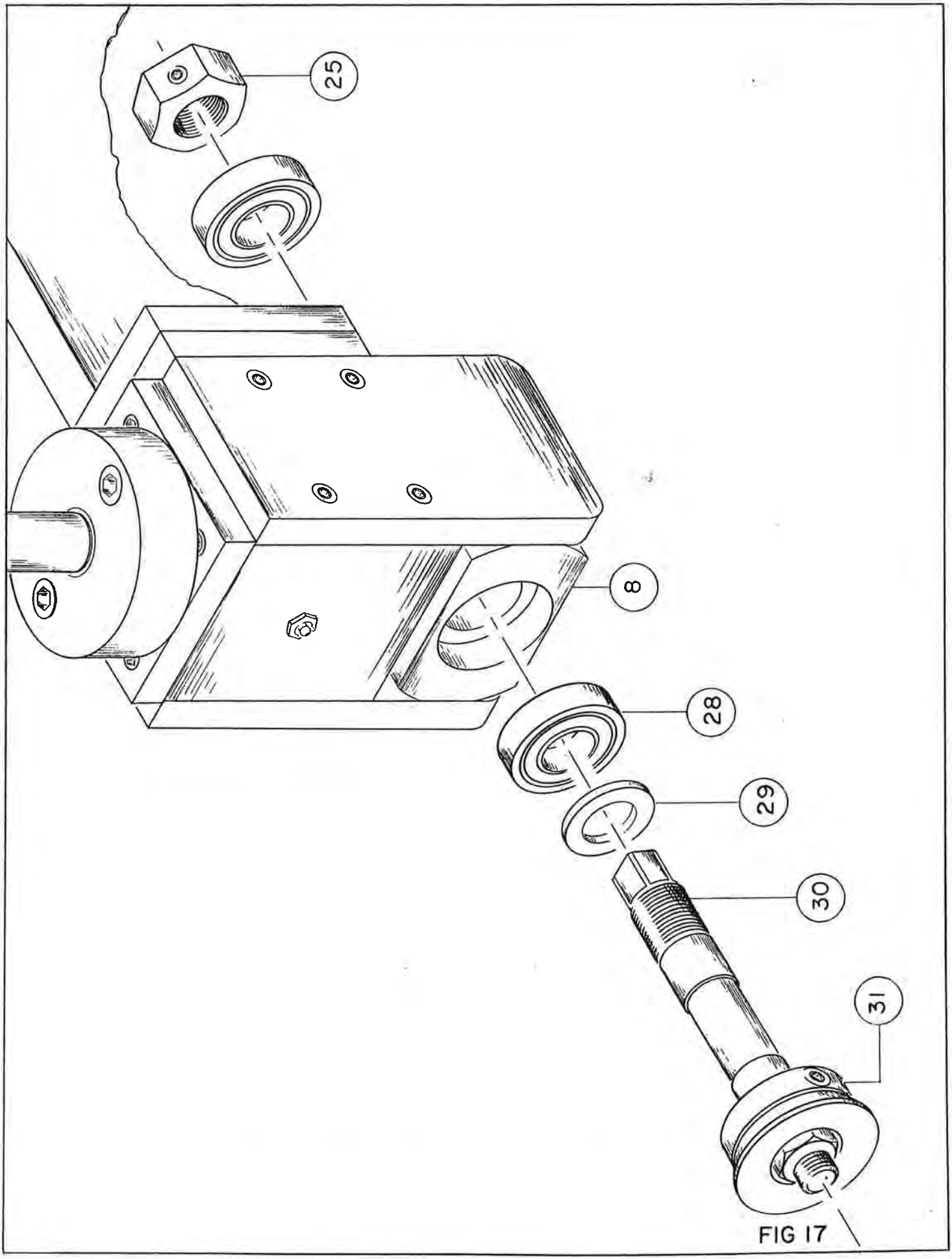


FIG 17

Section 11
FORMING WITH THE FLANGING ROLLERS

The first step is to change over from cutting to flanging. See the section: **"CHANGING OVER FROM CUTTING TO FLANGING"**.

When the machine is ready to flange you place a material blank between the clamping plates, with a pad on the top of the material and under the upper clamping plate, that is as thick as the depth of the flange. This enables you to easily remove the finished flanged part from the clamping plates. The material blank should be twice the depth of the flange larger than the finished diameter of the finished part, plus a little extra material for the radius of the bend. Example: If you need a 1/4 inch flange with a finished diameter of 10 inches, the material blank would need to be approximately 10-9/16 inches in diameter allowing approximately 1/16 inch for the radius loss and twice the 1/4 inch flange depth or 1/2 inch. The allowance for the bend will vary depending on the material thickness, diameter of the finished part and the inside radius of the flange.

Next feed the upper roller down against the material blank, as in Fig. 18 Page 25, then continue feeding the upper roller down and forming the flange, as in Fig. 19 Page 25, you may have to decrease the feed rate to keep the material from cupping in front of your upper roller, giving it a chance to form around the lower roller instead of bending around the lower roller. Continue feeding down until the flat on the face of the upper roller is just past the edge of the flange, as in Fig. 20 Page 25, and then return the upper roller to its uppermost position, release the clamping plate, remove the pad and your finished flanged part.

During the flanging process it is beneficial to add a few drops of oil to the upper flanging roller. This helps to keep the material from galling during the forming process.

When you are flanging a large diameter with a maximum flange depth, a backup plate on top of the material will help to keep the material blank from warping out of shape. The backup plate can be steel or wood as it is just a stiffener. The backup plate should be a minimum of 1/8 inch thick out of steel, 1/4 inch thick wood and approximately 1-1/2 inches smaller than your material blank or just enough smaller to clear the upper spindle and flanging rollers.

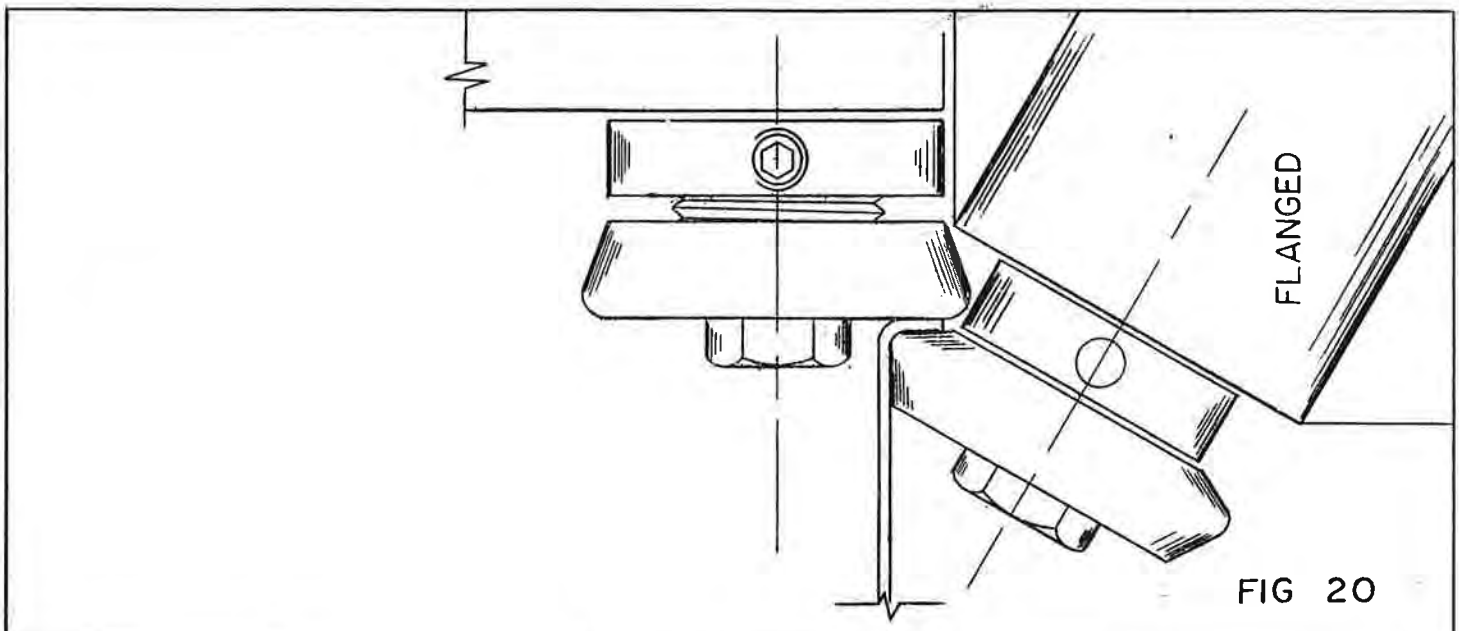


FIG 20

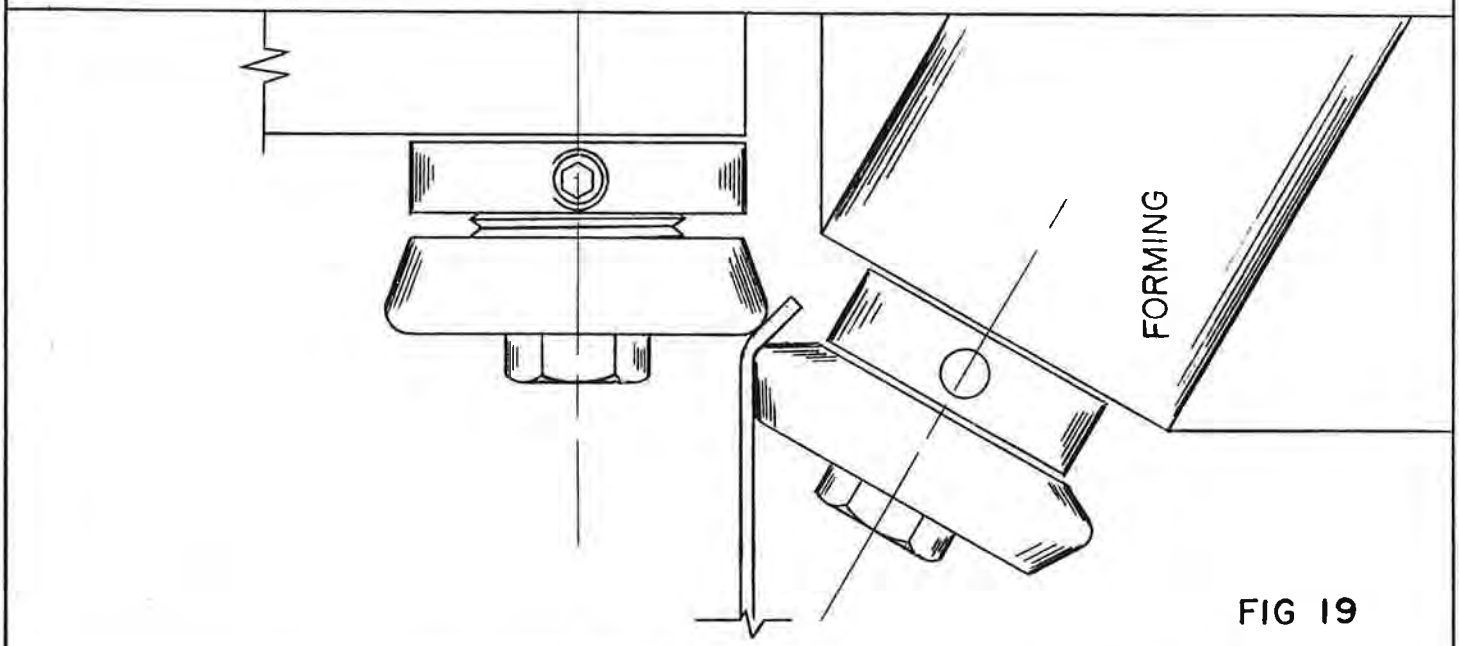


FIG 19

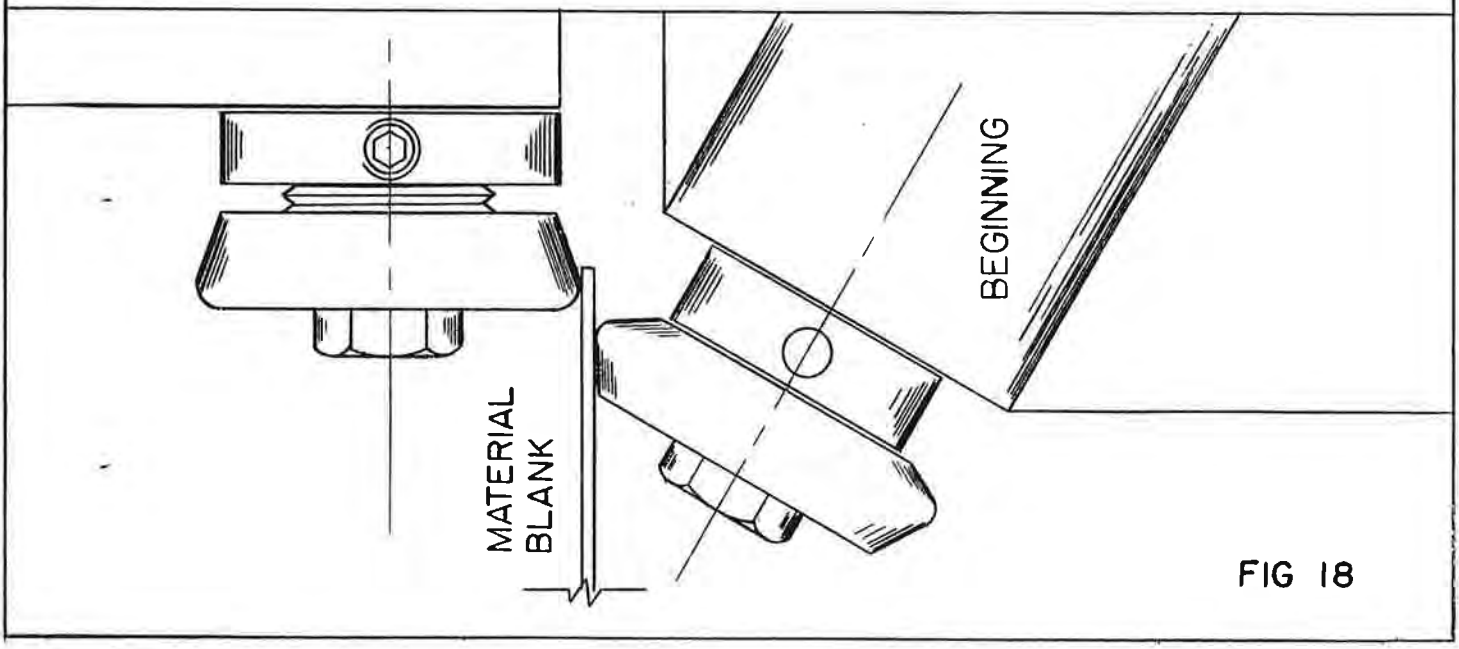


FIG 18

Section 12
DISASSEMBLING THE UPPER CLAMPING UNIT

The need to disassemble the upper clamping unit, will depend entirely on the working conditions and how often the dirt and grime accumulate in the upper clamping plate shaft socket #2B (1) and the rest of the unit. After the unit is disassembled it should be cleaned in solvent and dried before putting it back together. Oiling the unit is not necessary and just causes the dirt and grime to accumulate.

To disassemble the unit, start with backing the adjusting screw #56 (1) clear out and removing the adjusting screw lock nut #55 (1). Next remove the 1/4 inch bolt #58 (1) that retains the cam #57 (1) and remove the cam. Now remove the 1/4 inch bolt #58 (1) that holds the cam arm #54 (1) and remove the cam arm. Next remove the upper clamp plate #50 (1) then lift the clamp plat shaft #53 (1) out of the clamping plate shaft socket #2B (1) and also remove the clamp plate shaft compression spring #52 (1). Now all the parts can be cleaned, dried and reinstalled by reversing the above procedure.

(1) See Fig. 21 Page 27

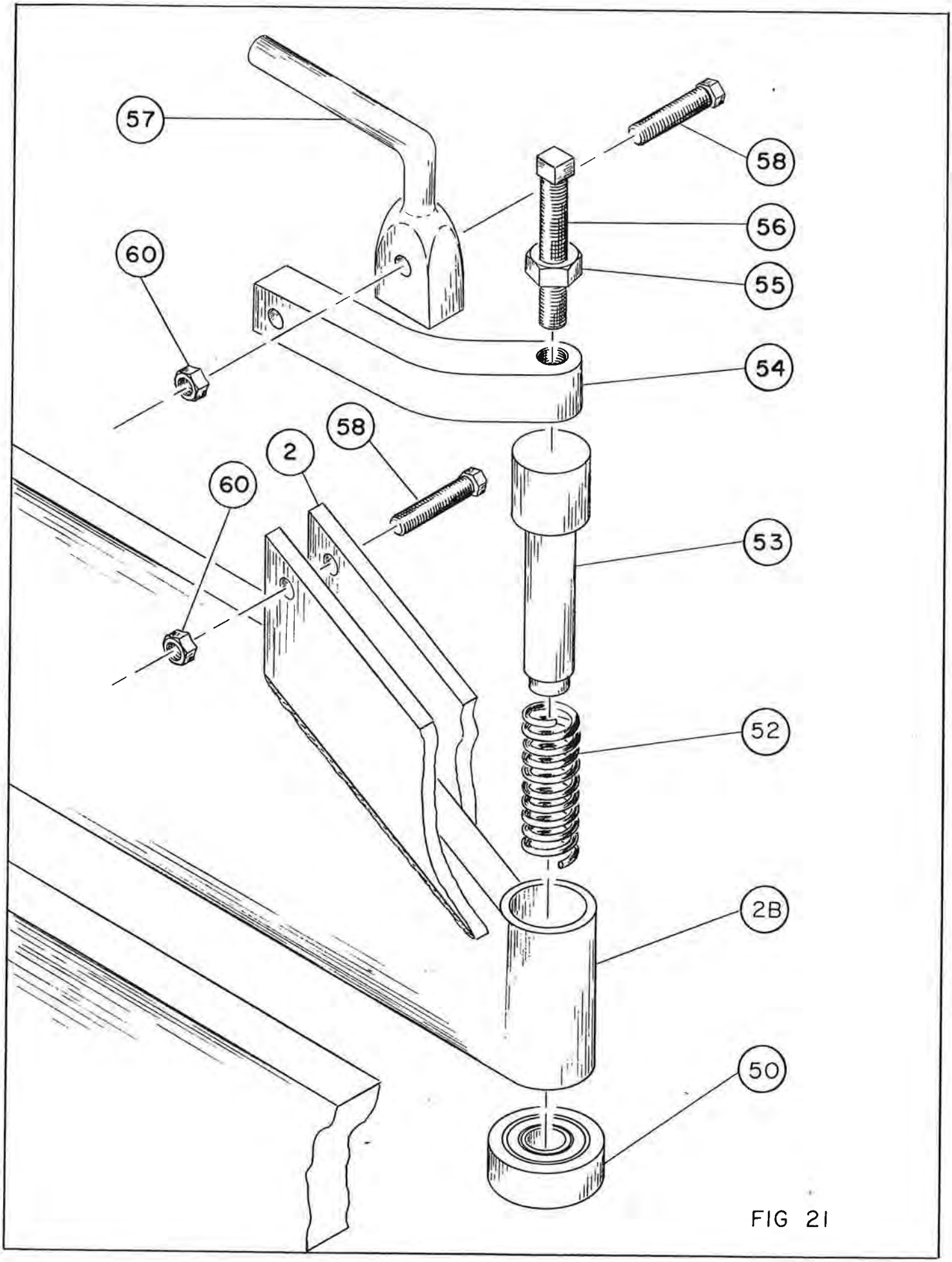


FIG 21

Section 13
DISASSEMBLING THE LOWER CLAMPING UNIT

The lower clamping assembly will most likely get dirtier than the upper clamping assembly and have to be cleaned more often than the upper clamping assembly. Here again it depends on the working conditions and the care exercised in the operation of the machine.

To disassemble the lower clamping unit, first raise the upper clamping assembly as high as it will go, then remove the lower clamp plate #45 (1) from the lower clamp plate shaft #47 (1) and remove the clamp plate shaft, also remove the clamp plate reversible center #44 (1) being careful not to break the sharp point, as it is hard and somewhat easily broken. Next remove the adjusting screw #49 (1) from the bottom of the lower clamp plate shaft socket #2C (1) then remove the adjusting screw lock nut #48 (1). The parts are now ready to clean in solvent, dry and reassemble. To reassemble the lower clamping unit, reverse the above procedure. Once again do not oil the parts as you reassemble them.

(1) See Fig. 22 Page 29

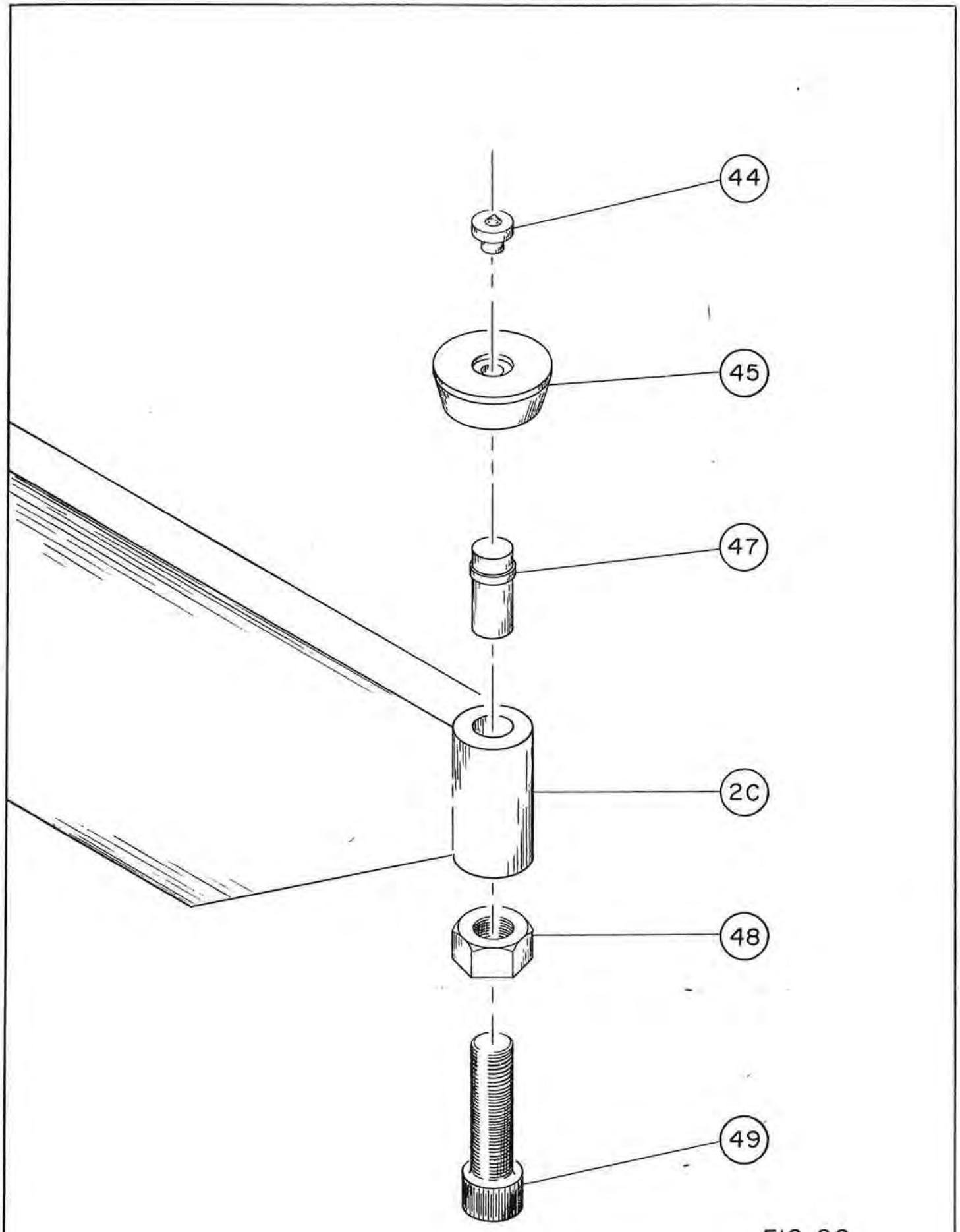


FIG 22

Section 14
ALIGNMENT OF DRIVE COUPLING

The problem of the drive coupling working loose is not a common problem and is simple to take care of, however, when it is out of align it is a more serious problem. The only way the coupling can get out of alignment is if the motor and gearbox are removed or if they are hit with a sharp blow. If the machine is operated for an extended length of time with the coupling out of align, it will put undue stress on the lower spindle bearings, the gearbox bearings and gears.

To adjust the drive coupling #41 Fig. 23 Page 31 loosen the two socket set screws #42 Fig. 23 Page 31 then slide the two halves together and tighten the two socket set screws.

If there is any suspicion that the coupling is out of alignment, place a six inch scale on the side of the coupling and eyeball the space on each end of the scale, also put the six inch scale on the top and do the same thing. If one end is out of alignment with the other, you will have to loosen the four socket head cap screws that hold the gearbox down to the machine, and move the gearbox slightly one way or the other to line up the coupling. After the coupling is aligned, tighten the four socket head cap screws that hold the gearbox down to the machine, then tighten the two socket set screws in the coupling. Now the coupling should be aligned and should not give you any problem for quite awhile.

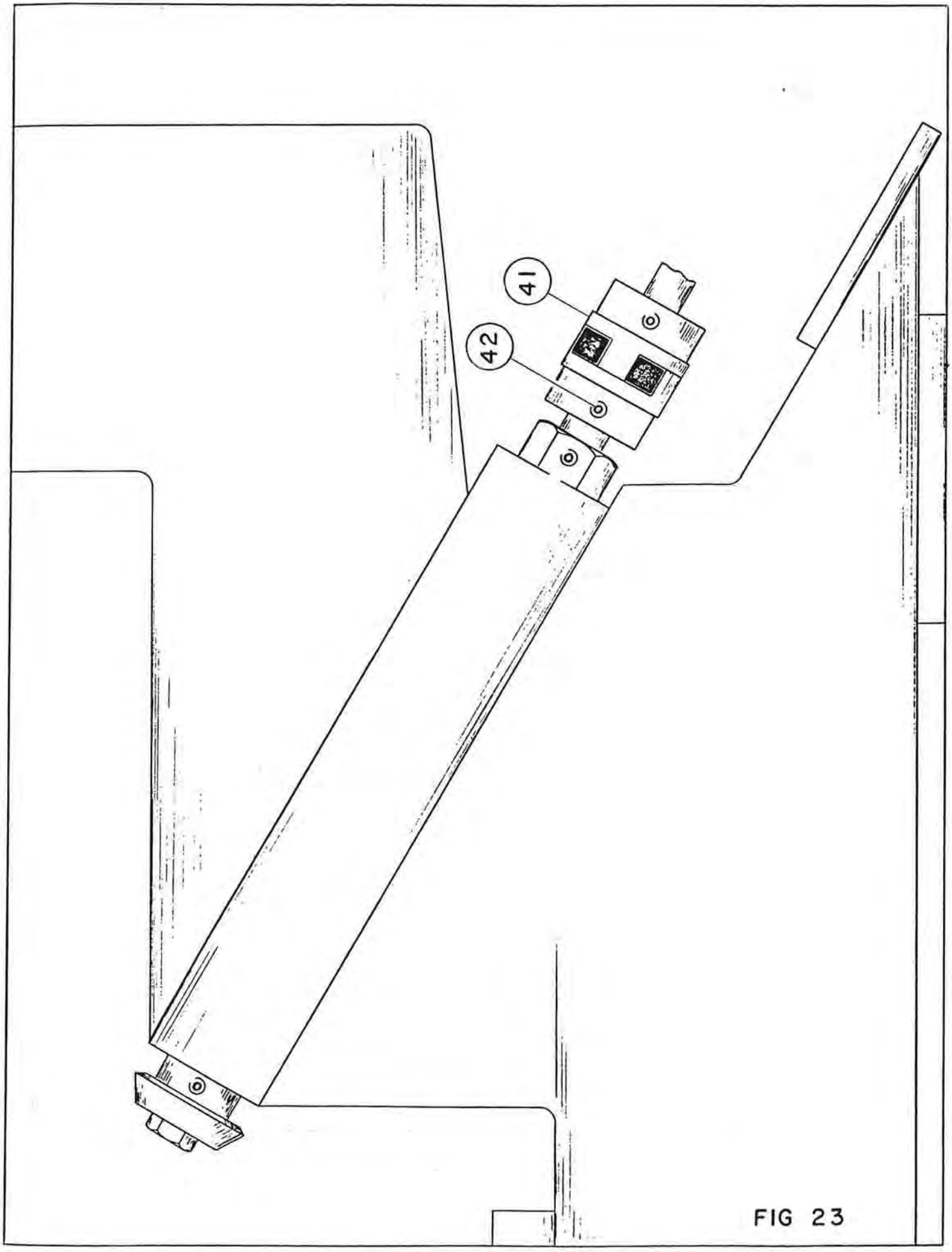


FIG 23

Section 15
ALIGNING THRUST PLATE AND DISASSEMBLY OF CUTTING HEAD

The feed screw in the head will never get out of alignment unless the two bolts holding the thrust bearing plate work loose or are loosened for some reason. If the head becomes hard to feed up or down, it may be because the feed screw #14 (1) has gotten out of alignment with a feed screw nut #8 (1).

To align the feed screw #14 (1) with the feed screw nut #8 (1) loosen the two socket head cap screws #21 (1) and allow the thrust bearing plate #20 (1) to find its own center, then holding it tightly in place, tighten the two socket head cap screws.

If it ever becomes necessary to replace the two thrust ball bearings #18 (1) on the feed screw, loosen and remove the two socket head cap screws #21 (1) and by turning the hand wheel #23 (1) to the left, back the feed screw all the way out of the feed screw nut #8 (1), you can now remove the lower thrust bearing #18 (1). To remove the upper thrust bearing, remove the top jam nut #22 (1) and loosen the lower jam nut #22 (1), screw the handwheel off the feed screw, then the lower jam nut. Now slide the thrust bearing plate off the top of the feed screw and you will be able to replace the upper thrust bearing. To reassemble reverse the above procedure.

To replace the aluminum bronze bearing, first remove the four head locking bolts #16 Fig. 11 Page 15 and remove the head from the machine. Follow the same procedure as for replacing the thrust bearings, only remove the spindle carrier and feed screw nut unit from the head, then remove the cutting head top plate #11 (1) and you will be able to see both ends of the aluminum bronze bearing #9 (1). The aluminum bronze bearing is pressed into the steel head #10 (1) and will have to be pressed out of the head and a new one pressed in. The new aluminum bronze bearing must be honed to fit the feed screw nut after it is pressed into the steel head. To reassemble the head, reverse the above procedure.

MAY TOOL COMPANY can perform the rebuilding of the cutting head for you, simply by giving us a call and shipping by "U.P.S.", the entire cutting head, or any portion of, to us for repair.

(1) See Fig. 27 Page 33

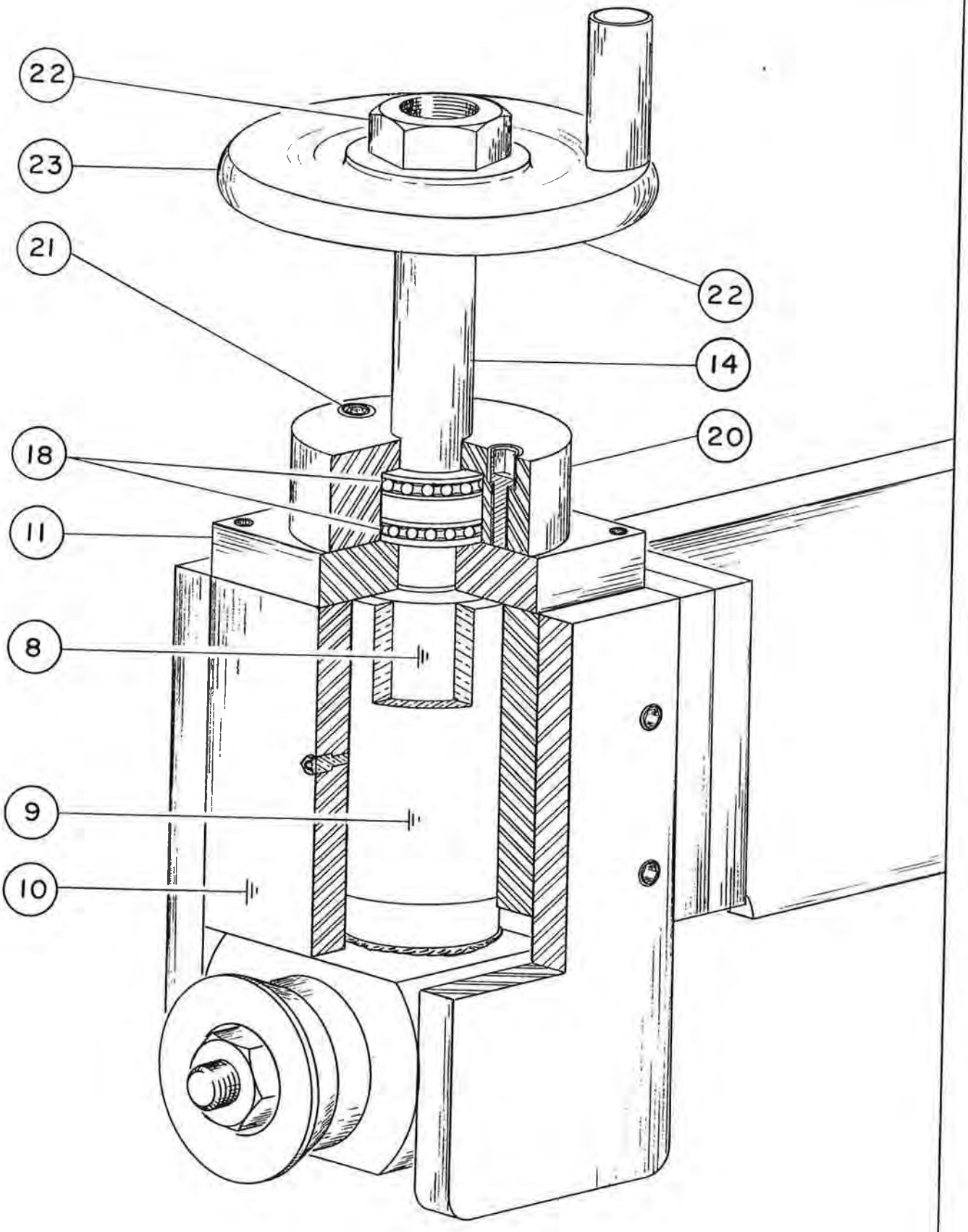


FIG 24

Section 16
REPLACING BEARINGS IN THE CLAMPING PLATES

The bearings in the clamping plates are both prepacked bearings and will not need lubricating, in fact they are sealed bearings and cannot be lubricated. These small bearings will last indefinitely with the proper use and care, but if they are subject to continued abuse will have to be replaced quite often.

To replace the bearings #46 & 51 (1) in either the upper #50 (1) or lower #45 (1) clamping plate, remove the clamping plate from its shaft and place it on a vise, with the opening of the vise large enough to catch the outside edge of the clamping plate with the working side of the clamping plate facing up. Use a 3/32 inch drift punch, as shown in Fig. 25 Page 35, to drive the bearing out of the clamping plate, through the 1/8 inch holes in the working side of the clamping plates. Drive a little at a time on either side of the bearing, through the 1/8 inch holes, until the bearing is out of the clamping plate.

Be sure to clean the new bearing and the inside of the clamping plate before installing the new bearing. To install the new bearing, turn the clamping plate over with the working side down, and place it on a solid steel plate. Tap the bearing on the outside edge evenly to get it started "be careful not to hit the shield that is between the outer and inner race", as this will cause a short bearing life, then it is best to use a tubular driver to drive the bearing the rest of the way in. Something that is just smaller than the outside diameter of the bearing and will not hit the shield or the inner race of the bearing. Next place the clamping plate back on the upper #53 (1) or the lower #47 (1) clamping plate shaft with the tapered clamping plate #45 (1) on the bottom and the straight clamping plate #50 (1) on the top. Next adjust the lower clamping plate as per page 9 and then adjust the upper clamping plate and you will be ready once again to cut or flange material.

(1) See Fig. 25 Page 35

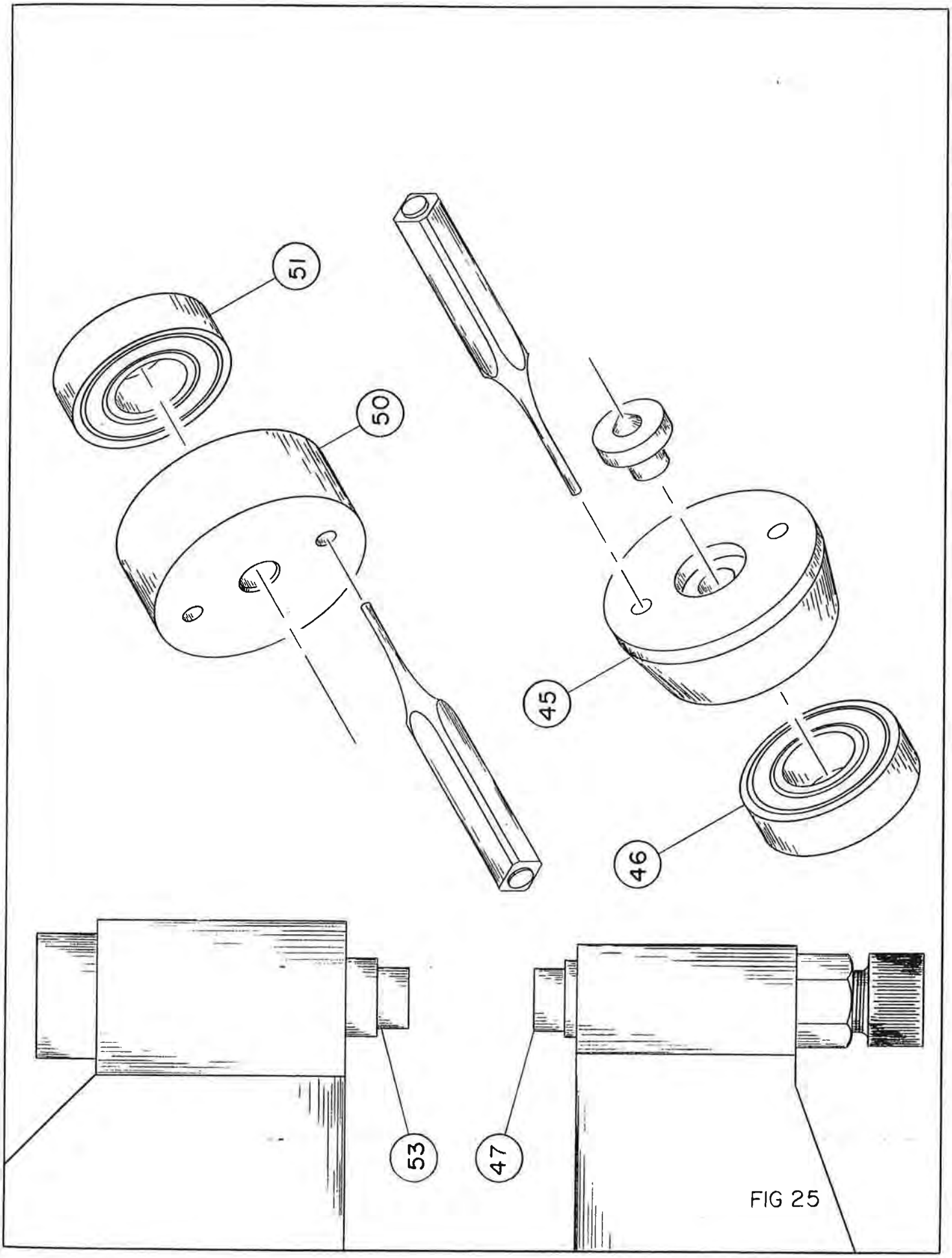


FIG 25

Section 17
REPLACING THE UPPER SPINDLE BEARINGS

The upper spindle bearings, like the lower spindle bearings, will give a long life provided they are not abused. The upper spindle bearings are a prepacked and sealed bearings the same as the lower spindle bearings.

To replace the upper spindle bearings #28 (1) first loosen the socket set screw #27 (1) in the rear thrust nut #25 (1) then loosen and remove the thrust nut. Next, using a soft hammer (preferably a lead hammer) tap gently on the rear end of the upper spindle #30 (1), the very end of the square on the spindle, to remove the spindle. Now use an aluminum rod 5/8 or 3/4 inches in diameter and 8 or 10 inches long to drive the bearings out. Start with the rear bearing, by inserting the aluminum rod through the front bearing to the inner race of the rear bearing, then alternating tap on each side of the inner race until you remove the bearings. Next insert the aluminum rod from the rear of the upper spindle carrier #8 (1) and tap gently on the inner race of the front spindle bearing alternating from one side to the other the same as the rear bearing, until the bearing is out of the spindle carrier.

To install the new bearings, clean both the spindle carrier and the bearings thoroughly before installing them, then place the bearing against the spindle carrier, where it belongs and gently tap on the outside edge of the bearing to get it started. Make sure it is started straight, then using something tubular that is just smaller than the outside diameter of the bearing and does not hit the inner race or particularly the shield on the bearing. Drive the bearing into the shoulder, being extremely careful not to damage the shield on the bearing, as this will greatly reduce the bearing life. Once you have both bearings installed you can install the upper spindle by reversing the aforementioned procedure.

Be sure to check for end play in the spindle and make sure the upper cutting blade does not come down on top of the lower cutting blade. After changing bearings you will most likely have to readjust the upper spindle for clearance between the blades.

(1) See Fig. 26 Page 37

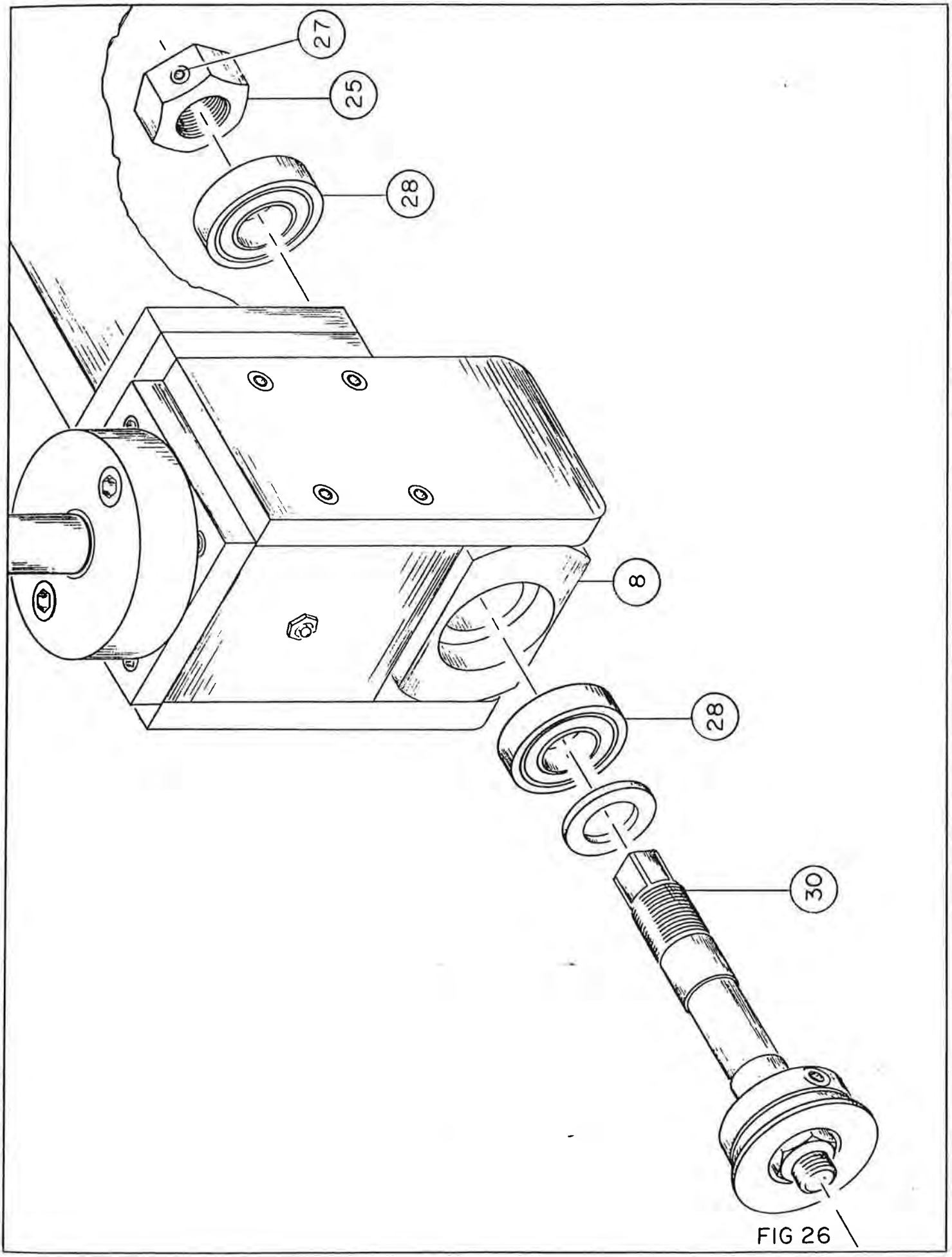


FIG 26

Section 18
REPLACING THE LOWER SPINDLE BEARING

The lower spindle bearings are a prepacked, sealed bearings and will last a long time, unless the lower spindle is subject to a lot of abuse.

To replace the lower bearings #38 (1) you start by loosening the socket set screw #42 (2) in the upper half of the coupling #41 (2) then loosen the socket set screw #40 (1) in the lower spindle thrust nut #39 (1) and back the lower spindle thrust nut off the lower spindle #35 (1) as far as it will go. Now using a large drift punch and a lead hammer, gently tap against the inside edge of the lower cutting blade #36 (1) on each side of the lower spindle housing #1B (1) alternately to move the lower spindle upward and out of the bearings enough to remove half of the coupling and the 3/16 inch key in the coupling half, also the lower spindle thrust nut. Now tap, with the lead hammer on the lower end of the spindle until it is out of the bearings.

To remove the bearings, use a 5/8 or 3/4 inch diameter aluminum rod approximately 16 inches long, insert it through the top, or front, bearing down until it reaches the lower bearing inner race, once again use the lead hammer and tap each side of the inner race until the bearing is out. Now remove the aluminum rod and insert it up from the bottom of the spindle housing to the top or front bearing inner race and tap it out the same as the lower bearing.

To install the new bearings, be sure to clean the spindle housing and the bearings. Place the bearing against the spindle housing, where the bearing goes and gently tap each side of the bearing to get it started. Make sure it is started straight, then using something tubular, just slightly smaller than the outside diameter of the bearing, tap the bearing the rest of the way in. Make sure you do not hit or otherwise damage the seal on the bearing, as this will greatly reduce the bearing life, and make sure the bearing seats against the shoulder in the spindle housing. Once you have the bearings installed you can install the spindle by reversing the aforementioned procedure.

(1) See Fig. 27 Page 39

(2) See Fig. 23 Page 31

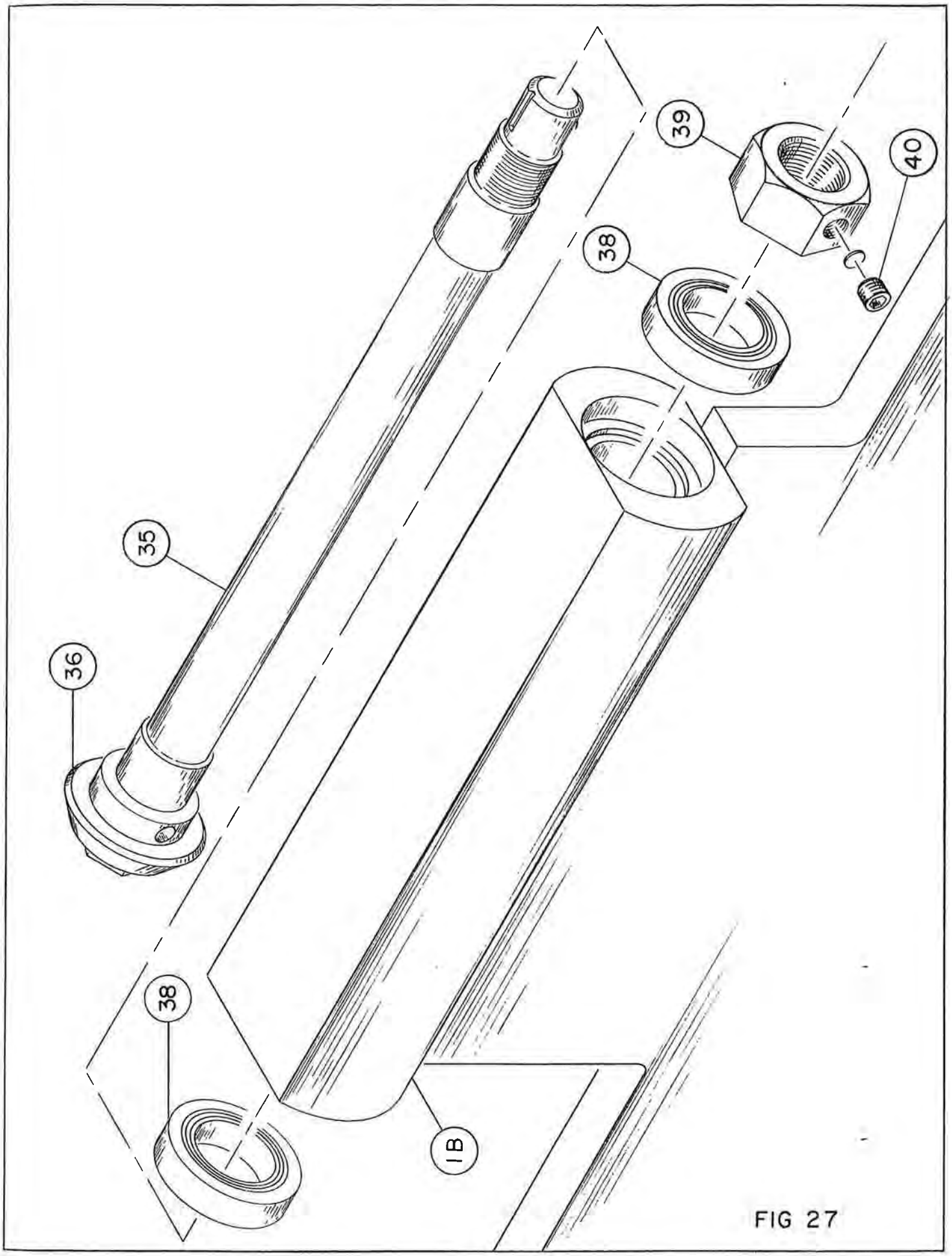


FIG 27

Section 19
TROUBLE SHOOTING GUIDE FOR CUTTING

1. Material being cut pulls out of clamping plates.

1. Clamping plate pressure not sufficient.
   Adjust upper clamp plate, see Page 9
2. Tailstock (clamping plates) out of alignment with cutting blades.
   Align, see Page 6
3. Cutting blades dull.
   Remove and replace, see Page 16
4. Upper and lower cutting blades out of alignment.
   Align, see Page 14
5. Too much clearance between cutting blades.
   Adjust blade, see Page 12
6. Center pin in lower clamp plate broken.
   Replace, see Page 28
7. Tailstock loose on bed.
   Tighten, see Page 6

2. Material being cut does not turn when blades come together or stops turning during the cutting operation.

1. Tailstock (clamping plates) out of alignment with cutting blades.
   Align, see Page 6
2. Material being cut is not resting on bottom blade.
   Adjust clamping plates, see Page 9
3. Flat spot or large chip in cutting blades.
   Replace cutting blade, see Page 16
4. Lower blade is loose on drive spindle.
   Tighten lower blade retaining nut, see Page 16
5. Set screws in the drive coupling are loose and coupling has separated.
   Reassemble, see Page 30
6. Bearing is frozen in clamping plate.
   Replace bearing, see Page 34
7. Upper blade is hitting lower blade and binding.
   Adjust blades, see Page 12
8. Too much pressure on top blade, stalled motor.
   Backoff on feed wheel, trying to cut too fast
9. Material is hitting on headstock or tailstock.
   Improper alignment or blade clearance, see Page 6 or Page 12
10. Swing arm on backgauge is on backward.
    Remove and turn around, see Page 4
11. Square too large for machine, hitting tailstock.
    It may be possible to trim corners of square
12. Cutting small diameter in square, square too large for headstock throat.
    Need deep throated headstock machine
13. Upper cutting blade is over the edge of square material blank.
    Recenter blank - blank too small for circle diameter.

14. Stalled motor, blown fuse or tripped circuit breaker at the main panel.
    Check main panel
15. Machine equipped with 3/4 H.P. drive, speed turned too low, motor stalls under load.
    Increase speed
16. Machine equipped with 3/4 H.P. drive, motor stops.
    Check fuse on control panel of vari-speed drive.
17. Material blank turning too slow, feed rate high, upper blade pops through and stops material blank.
    Increase speed, decrease feed.
18. Upper spindle bearing frozen or damaged.
    Replace bearing, see Page 36
19. Lower spindle bearing frozen or damaged.
    Replace bearing, see Page 38

3. The ring or circle cut has burr or flanged edge.

1. Tailstock (clamping plates) out of alignment with cutting blades.
   Align, see Page 6
2. Improper blade clearance.
   Adjust blades, see Page 12
3. Too much end play in upper spindle.
   Adjust, see Page 18
4. Lower drive spindle has end play.
   Adjust lower drive spindle, see Page 20
5. Clamping plate pressure insufficient.
   Adjust clamping plates, see Page 9
6. Cutting blades dull.
   Remove and replace, see Page 16
7. Material blanks soft material.
   Increase speed and decrease feed near end of cut.
8. Material blanks hard material, material breaking off 1/3 to 1/2 of the way through.
   Decrease feed and increase speed
9. Tailstock loose on bed.
   Tighten tailstock lock, see Page 6
10. Material blank not large enough, cutting blades coming too close to edge of material.
    Increase material blank size

4. Finish part oval or egg shape.

1. Tailstock loose on bed.
   Tighten tailstock lock, see Page 6
2. Aligning socket head cap screws left loose on tailstock.
   Realign and tighten tailstock, see Page 6
3. Clamping plate bearing frozen.
   Replace bearings, see Page 34
4. Upper spindle loose.
   Tighten thrust nut, see Page 18
5. Lower drive spindle loose.
   Tighten thrust nut, see Page 20
6. Excessive wear in clamping plate shafts.
   Replace shafts, see Page 26 and 28

5. Material wrinkles or curls during cutting.

1. Clamping plates too tight.
   Adjust clamping plates, see Page 9
2. Cutting blades dull.
   Remove and replace, see Page 16
3. Real soft material.
   For special jobs **MAY TOOL COMPANY** can furnish special back up rollers that will correct or lessen the problems.
4. Feed rate too high for material.
   Reduce feed.
5. Feed rate too high for R.P.M. of machine.
   Increase speed or decrease feed.

6. Large diameter circles, thin material, hard to handle.

1. **MAY TOOL COMPANY** suggest a backup board underneath the material blank on top of the lower clamping plate.
2. For special problems, please call **MAY TOOL COMPANY** as we can furnish special tables, extensions, rollers, etc.

7. Head feeds hard up or down.

1. Dirt or chips inside head on bronze bearing.
   Disassemble head, clean and oil, reassemble, see Page 32
2. Burr or bruised feed screw.
   Remove feed screw and repair, clean, oil and reinstall, see Page 32
3. Sliver of steel or dirt lodged between spindle housing and side plates.
   Remove side plates, clean, oil and replace
4. Top thrust bearing plate out of alignment with spindle housing nut.
   Align plate, see Page 32
5. Bent feed screw.
   Remove and replace feed screw, see Page 32
6. Thrust bearings damaged or dirty.
   Remove thrust bearings and inspect, see Page 32

8. Upper clamping plate sticks or will not release.

1. Dirt or grime in upper socket.
   Remove upper clamping assembly, clean and replace, see Page 26
2. Upper clamping plate shaft damaged.
   Remove and replace, see Page 26
3. Spring tension gone.
   Replace spring, see Page 26
4. Clamping cam shaft bound.
   Remove, clean and replace, see Page 26

9. Lower clamp plate shaft sticks or binds.

1. Clamp plate shaft socket dirty.
   Remove, clean and replace, see Page 28
2. Adjusting screw bent or bruised.
   Remove and replace, see Page 28
3. Clamp plate shaft damaged.
   Remove and replace, see Page 28

10. Upper Spindle turns hard.

1. Rear adjusting thrust nut too tight.
   Adjust rear thrust nut, see Page 18
2. Spindle bearing damaged.
   Replace spindle bearing, see Page 36
3. Spindle has been damaged, bent.
   Replace spindle ,see Page 36

11. Lower drive spindle clicks or jumps.

1. Rear thrust nut too tight.
   Adjust thrust nut, see Page 20
2. Drive spindle bearings are damaged.
   Replace bearings, see Page 38
3. Lower drive spindle has been damaged.
   Replace spindle, see Page 38

12. Drive motor or gear box overheats.

1. Gear box is low or out of gear oil.
   Check oil level, add 90W gear oil if low.
2. Prolonged cutting of material above machine capacity.
   Machine needs larger power unit or larger machine.
3. Thrust nut on lower drive spindle too tight.
   Adjust rear thrust nut, see Page 20
4. Check coupling alignment on drive unit.
   Adjust and align coupling, see Page 30
5. Check upper spindle for free movement.
   Adjust rear thrust nut, see Page 18
6. Clamping plate bearings frozen or worn out.
   Replace bearings, see Page 34
7. Low incoming voltage.
   Check voltage at main panel, if low call power company.
8. Low voltage at machine, machine on drop cord, wires too small from main panel, too many outlets on same circuit in use.
   Correct cause
9. Prolong use with dull cutting blades.
   Replace blades, see Page 16
10. Repeated stopping of machine from overfeeding or other causes.
    Slow down feed, check for other reasons.
11. Internal gears in gear box damaged.
    Replace gearbox

13. Each time tailstock is moved it is out of alignment.

1. Bed of machine is in a twist.
   Relevel machine
2. Tailstock gib screws are loose.
   Adjust gib screws, see Page 6
3. Tailstock alignment bolts left loose.
   Align tailstock and tighten bolts, see Page 6

14. Upper spindle moves sideways at beginning of cut.

1. Head clamping and aligning bolts loose.
   Align head and tighten bolts, see Page 14

2. Side plates on head are loose.
   Tighten side plate bolts
3. Aluminum bronze bearing excessively worn.
   Replace bearing, see Page 32
4. Upper spindle housing and elevating nut excessively worn.
   Replace, see Page 32
5. Front spindle bearing, rear spindle bearing or both worn out.
   Replace bearings, see Page 36

15. Upper spindle has play in vertical movement.

1. Feed screw worn out.
   Replace feed screw shaft, see Page 32
2. Elevating nut and spindle housing unit worn out.
   Replace unit, see Page 32
3. Elevating thrust bearings worn out.
   Replace bearings, see Page 32
4. Thrust bearing plate or housing loose.
   Align with nut and tighten, see Page 32
5. Hand wheel has worked loose.
   Tighten jam nuts on either side of handwheel.

16. Clearance between cutting blades keeps changing.

1. Upper spindle thrust nut loose.
   Adjust and lock thrust nut, see Page 18
2. Lower spindle thrust nut loose.
   Adjust and lock thrust nut, see Page 20
3. Upper spindle bearings damaged or worn out.
   Replace bearings, see Page 36
4. Aluminum bronze bearing excessively worn.
   Replace bearing, see Page 32
5. Upper cutting blade loose.
   Tighten blade, see Page 16
6. Lower cutting blade loose.
   Tighten blade, see Page 16
7. Upper and or lower cutting blades have dirt behind them.
   Remove and clean blades and spindles, see Page 16
8. Spindle where cutting blades seat is damaged or worn.
   Replace spindle, see Pages 36 and 38
9. Lower spindle bearings damaged.
   Replace bearings, see Page 38
10. Cutting head clamping bolts loose.
    Align head and tighten bolts, see Page 14
11. Cutting head side plates loose.
    Tighten bolts, see Page 48

17. Backgauge does not position blank the same each time.

1. Lock screw in back gauge collar loose.
   Tighten lock screw, see Page 4
2. Nut on back gauge arm, for holding it in place is loose.
   Tighten nut, see Page 4
3. Center pin in lower clamping plate is loose.
   Replace center pin, see Page 28
4. Swing arm on back gauge is sticking or binding.
   Remove, clean and oil swing arm, see Page 4
5. Excessive pressure against swing arm when loading.
   Move swing arm slightly outward and tighten.

Section 20
TROUBLE SHOOTING GUIDE FOR FLANGING

1. Material being flanged pulls out of clamping plates.

1. Clamping plate pressure insufficient.
   Adjust, see Page 9
2. Tailstock out of alignment with flanging rollers.
   Align, see Page 6
3. Upper and lower flanging rollers out of alignment.
   Align, see Page 14
4. Clearance insufficient between upper and lower flanging rollers.
   Adjust, see Page 12
5. Center pin in lower clamping plate broken.
   Replace, see Page 28
6. Tailstock loose on bed.
   Tighten, see Page 6

2. Material being flanged stops turning or does not turn when flanging rollers come together.

1. Tailstock out of alignment with flange rollers.
   Align, see Page 6
2. Material being flanged is not resting on lower flanging roller.
   Adjust, see Page 9
3. Lower flanging roller is loose on drive shaft.
   Tighten, see Page 16
4. Set screws in drive shaft coupling have worked loose, coupling has separated.
   Adjust coupling halves and tighten set screws, see Page 30
5. Bearing is frozen in clamping plates.
   Replace bearings, see Page 34
6. Machine is equipped with 3/4 H.P. drive--speed turned too low--motor stalls under load.
   Increase speed.
7. Machine equipped with 3/4 H.P. drive -- motor stops.
   Check fuse in control panel on circle shear
8. Machine stops -- stalled motor.
   Check fuse or circuit breaker in main panel at electrical source.
9. Upper spindle bearing damaged or frozen.
   Replace bearing, see Page 36
10. Lower spindle bearing damaged or frozen.
    Replace bearing, see Page 38

3. Material wrinkles or curls during flanging.

1. Clamping plates too tight.
   Readjust pressure, see Page 9
2. Insufficient clearance between rear face of lower flanging roller and front face of upper flanging roller.
   Adjust, see Page 12
3. Real soft material.
   For special jobs consult **MAY TOOL COMPANY,** we will be happy to work out your problems.
4. Feed rate too high for R.P.M. of material blank.
   Reduce feed rate - increase R.P.M. of material blank

5. Thin, soft material blank.
   Use back up plate
6. Flange too large for capacity of machine hitting lower shaft.
   MAY TOOL COMPANY may be able to solve your problem on special order.

4. Large diameter circles - thin material hard to handle and flange.

1. We would suggest a back up board underneath the blank material on top of the lower plate.
2. For special problems please call **MAY TOOL COMPANY,** as we can furnish special extensions, tables, etc.

5. Flange lip is uneven.

1. Material blank not properly centered in clamping plates.
   Deepen center in material blank.
2. Material blank pulling out of clamping plates.
   Increase clamping pressure - check center for breakage, see Page 9
3. Material blank cut oval or egg shape prior to flanging.
   Check material blank.

6. Finish part is oval or egg shape.

1. Tailstock is loose on bed.
   Tighten, see Page 6
2. Alignment set screws left loose.
   Tighten, see Page 6
3. Clamping plate bearing frozen.
   Replace bearing, see Page 34
4. Upper spindle loose.
   Tighten, see Page 18.
5. Lower drive shaft loose.
   Tighten, see Page 20
6. Excessive wear in clamping plate shafts.
   Replace shafts, see Pages 26 and 28

7. Flanged lip too thin.

1. Insufficient clearance between back face of lower roller and front face of upper roller.
   Adjust, see Page 12

8. Flanged lip is not 90 degrees.

1. The gap between flanging rollers is too large.
   Adjust, see Page 12
2. Hard material - like spring steel.
   Flange will probably stay with heat, use torch while flanging.
3. Upper spindle is loose.
   Adjust and tighten, see Page 18
4. Lower spindle is loose.
   Tighten, see Page 20
5. Aluminum bronze bearing excessivley worn.
   Replace bearing, see Page 32

6. Cutting head clamping bolts loose.
   Align head and tighten, see Page 14
7. Upper flanging roller is not being cranked down far enough.
   Feed upper flanging roller down to its limit.
8. Flange is too large for machine.
   MAY TOOL COMPANY may be able to solve your problem on a special order.

9. Flanged lip is not straight for entire length of flange.

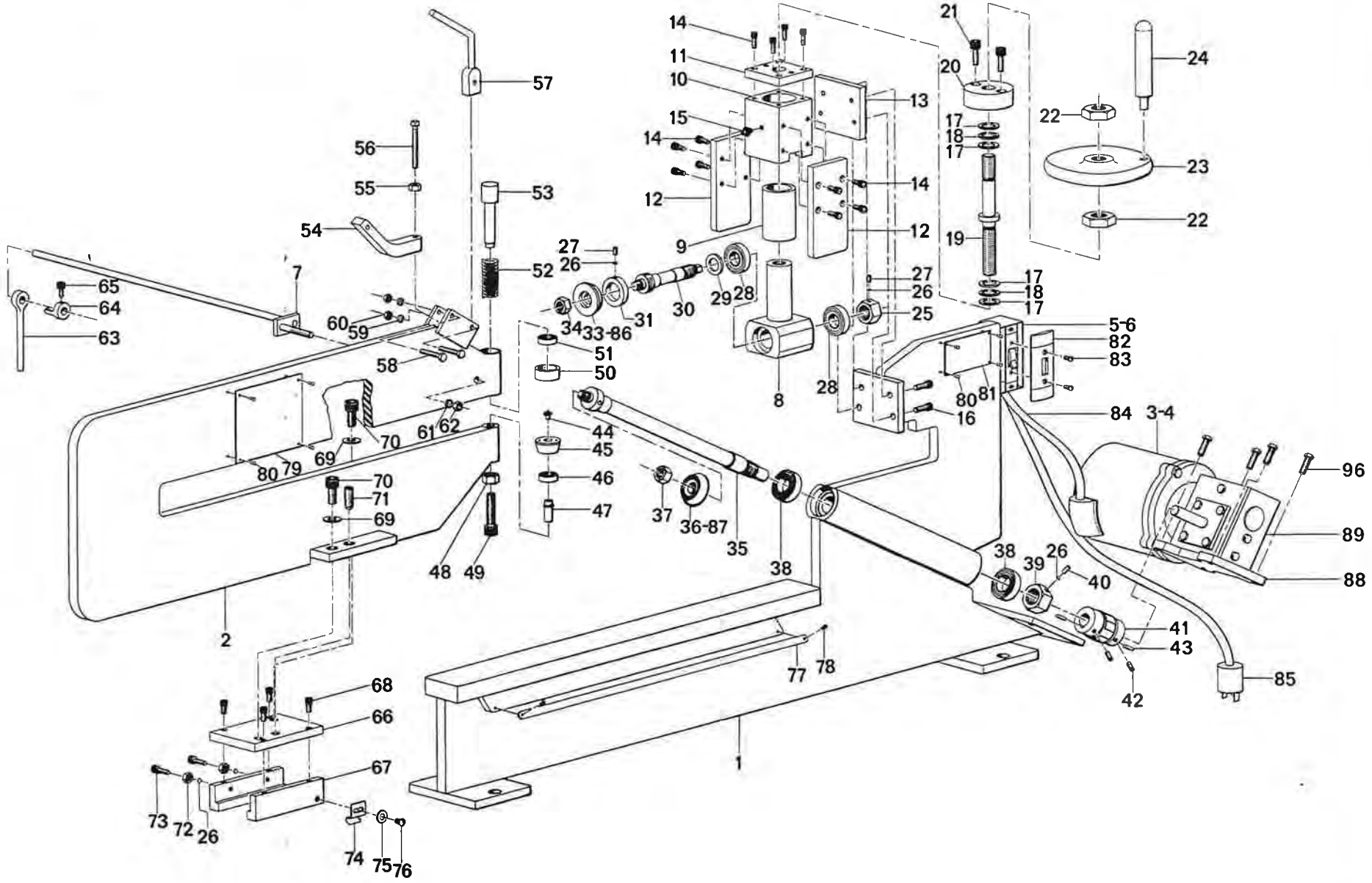
1. Upper spindle is not traveling down far enough to complete flange.
   Feed upper flanging roller down to its limit.
2. Lower drive spindle is loose.
   Tighten, see Page 20
3. Upper spindle is loose.
   Adjust and tighten, see Page 18
4. Lower flanging roller is worn on back side.
   Replace flanging roller, see Page 16
5. Dirt between flanging roller and spindle.
   Remove roller, clean, oil and replace, see Page 16

10. Material cracks at corner of flange.

1. Hard material - forming cold.
   Apply heat as forming.
2. Reduce feed rate.
   Allow material to generate heat itself, from friction, as you form.
3. Insufficient clearance between rear face of lower flanging roller and front face of upper flanging roller.
   Adjust, see Page 12
4. Lower flanging roller worn - flanging too sharp of a corner.
   Replace flanging rollers, see Page 16
5. Tailstock out of alignment
   Align, see Page 6

11. Drive motor or gear box overheat.

1. See #12 trouble shooting guide cutting.



MAY TOOL CO.
42" CIRCLE SHEAR ASSEMBLY

Section 22
MTC 42" CIRCLE SHEAR PARTS LIST

Ref. No.	Part No.	Description	Qty
1	42337	Frame (Base)	1
2	42344	Frame (Tailstock)	1
3	42353	1/3 H.P. Motor	1
4	42354	3/4 H.P. Motor	option
5	42355	Switch	1
6	42356	3/4 H.P. Varispeed Control	option
7	42317	Backgauge (Rod Assembly)	1
8	42350	Top Spindle Carrier & Elevating Nut Assembly	1
9	42306	Bushing	1
10	42305	Head - Block	1
11	42304	Top Plate (Head)	1
12	42307	Side Plates (Head)	2
13	42301	Head Attaching Plate	1
14	42379	Bolts	12
15	42380	Zerk Fitting	1
16	42381	Bolts	4
17	42369	Bearing Races	4
18	42370	Bearings	2
19	42310	Elevating Screw	1
20	42303	Thrust Plate	1
21	42382	Bolts	2
22	42383	Jam Nuts	2
23	42313A	Handwheel	1
24	42313B	Handle	1
25	42312B	Top Spindle Rear Thrust Nut	1
26	42318	Brass Soft Plug	5
27	42384	Set Screw	1
28	42371	Bearings	2
29	42372	Bearing Race (Thrust Washer)	1
30	42311	Top Spindle	1
31	42312A	Top Spindle Adjusting Nut	1
32	42385	Set Screw	1

Section 22
MTC 42" CIRCLE SHEAR PARTS LIST CONTINUED

Ref. No.	Part No.	Description	Qty
33	42315A	Top Cutting Blade	1
34	42386	Top Spindle Retaining Nut	1
35	42319	Bottom Spindle	1
36	42315B	Bottom Cutting Blade	1
37	42387	Bottom Spindle Blade Retaining Nut	1
38	42373	Bearings	2
39	42320	Bottom Spindle Thrust Nut	1
40	42388	Set Screw	1
41	42374	Coupling	1
42	42389	Set Screws	2
43	42377	Keys	2
44	42321	Reversible Center Point	1
45	42322	Bottom Clamp Plate	1
46	42375	Bearing	1
47	42323	Lower Clamp Shaft	1
48	42390	Locknut	1
49	42391	Adjusting Screw	1
50	42324	Top Clamp Plate	1
51	42376	Bearing	1
52	42392	Spring	1
53	42325	Top Clamp Shaft	1
54	42326	Cam Arm	1
55	42393	Locknut	1
56	42394	Top Adjusting Screw	1
57	42327	Cam	1
58	42395	Bolts	2
59	42396	Lockwashers	2
60	42397	Nuts	2
61	42398	Lockwasher	1
62	42399	Nut	1
63	42328	Backgauge Swing Arm	1
64	42329	Swing Arm Holder	1

Section 22
MTC 42" CIRCLE SHEAR PARTS LIST CONTINUED

Ref. No.	Part No.	Description	Qty
65	42400	Bolt	1
66	42330	Tailstock Swivel Plate (Lower)	1
67	42331	Tailstock Slide - Side Plates	2
68	42401	Bolts	4
69	42402	Flatwasher	2
70	42403	Bolts	2
71	42404	Tailstock Lock Bolt	1
72	42405	Nuts	2
73	42406	Gib Bolts	2
74	42332	Pointer (Scale)	1
75	42407	Flatwasher	1
76	42408	Screw	1
77	42333	Scale	1
78	42409	Drive Screws	2
79	42334	Emblem Plate	1
80	42410	Drive Screws	8
81	42335	Serial No. Plate	1
82	42357	Switch Cover Plate	1
83	42358	Screws	2
84	42359	Electrical Cord	1
85	42360	Electrical Cord Wall Plug	1
86	42336A	Top Flanging Roller	1
87	42336B	Bottom Flanging Roller	1
88	42361	Base Plate (Gearbox)	1
89	42362	Gearbox	1
90	42363	Flex Conduit	option
91	42364	Flex Conduit End Connectors	option
92	42365	#16 Wire	option
93	42366	Electrical Cord	option
94	42367	Electrical Cord End Connectors	option
95	42351	Legs (Floor)	option
96	42412	Bolts	4

MAY TOOL CO.

GENERAL BLACKSMITHING AND
MACHINE TOOL BUILDERS

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