

OPERATOR'S HAND BOOK

"TOLEDO"

TRADE-MARK



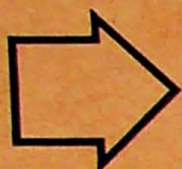
REGISTERED
U. S. PAT. OFFICE

No. 999

SUPER MODEL

POWER PIPE MACHINE

**THE TOLEDO PIPE THREADING
MACHINE CO. • TOLEDO 4, OHIO**



IMPORTANT NOTICE

This "TOLEDO" No. 999 Power Pipe Machine has been designed to give long and satisfactory service providing it is used in accordance with instructions. It is important, therefore, that you read these instructions carefully and have each of your operators do so, so that the correct operation and care of the machine is thoroughly understood.

These detailed instructions are furnished you for your help and guidance and should be followed and kept for future reference.

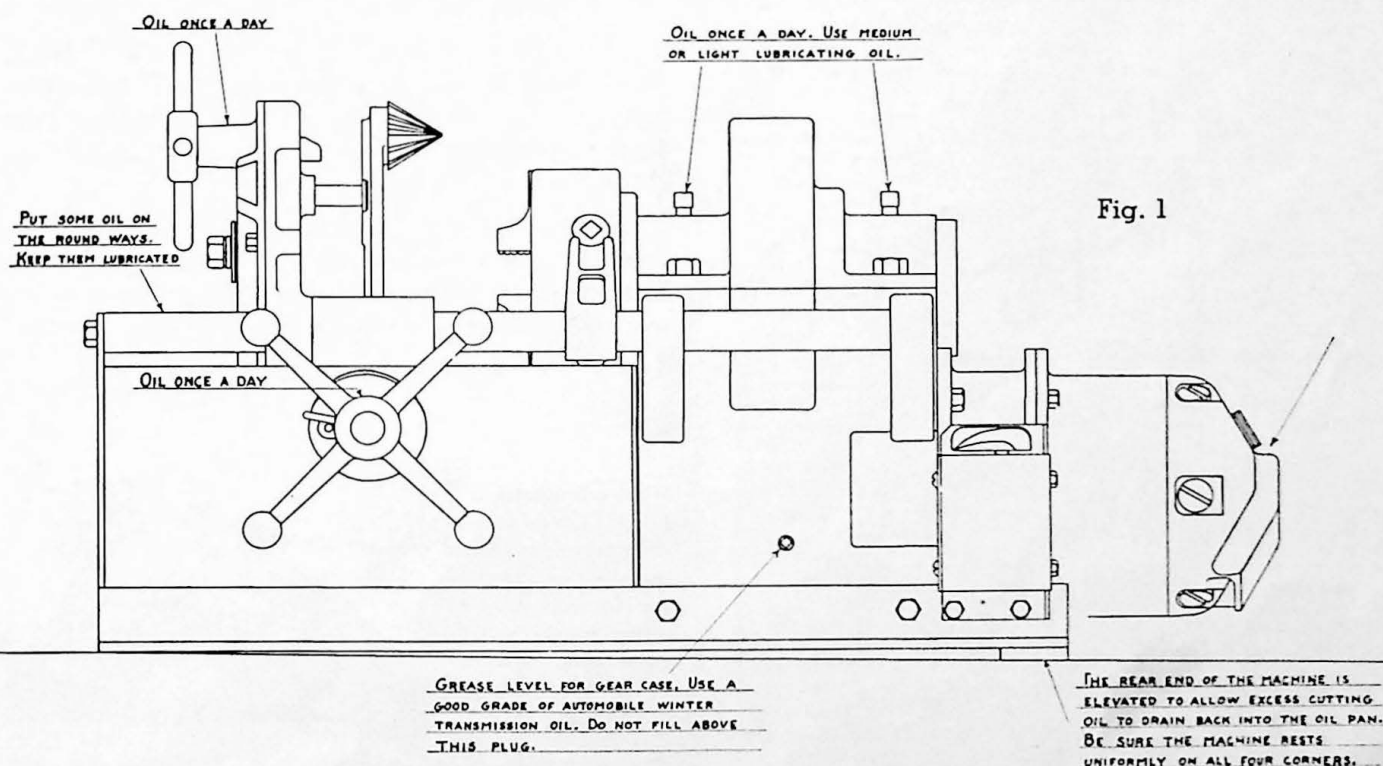
**The
Toledo Pipe Threading Machine Co.
TOLEDO 4, OHIO**

OPERATOR'S HAND BOOK

No. 999 Super Model Power Pipe Machine

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INSTALLATION

Please fill out the postal card showing the machine serial number and return it to us. This will complete our records and enable us to be of greater assistance in case parts or repairs are needed later on. It has also been helpful in recovering stolen machines.

Set the machine up so that it rests evenly on all four corners. If necessary use shims to make it rest uniformly on the four corners. Do not bolt the machine to an uneven surface or it will bend out of line and make the parts move hard.

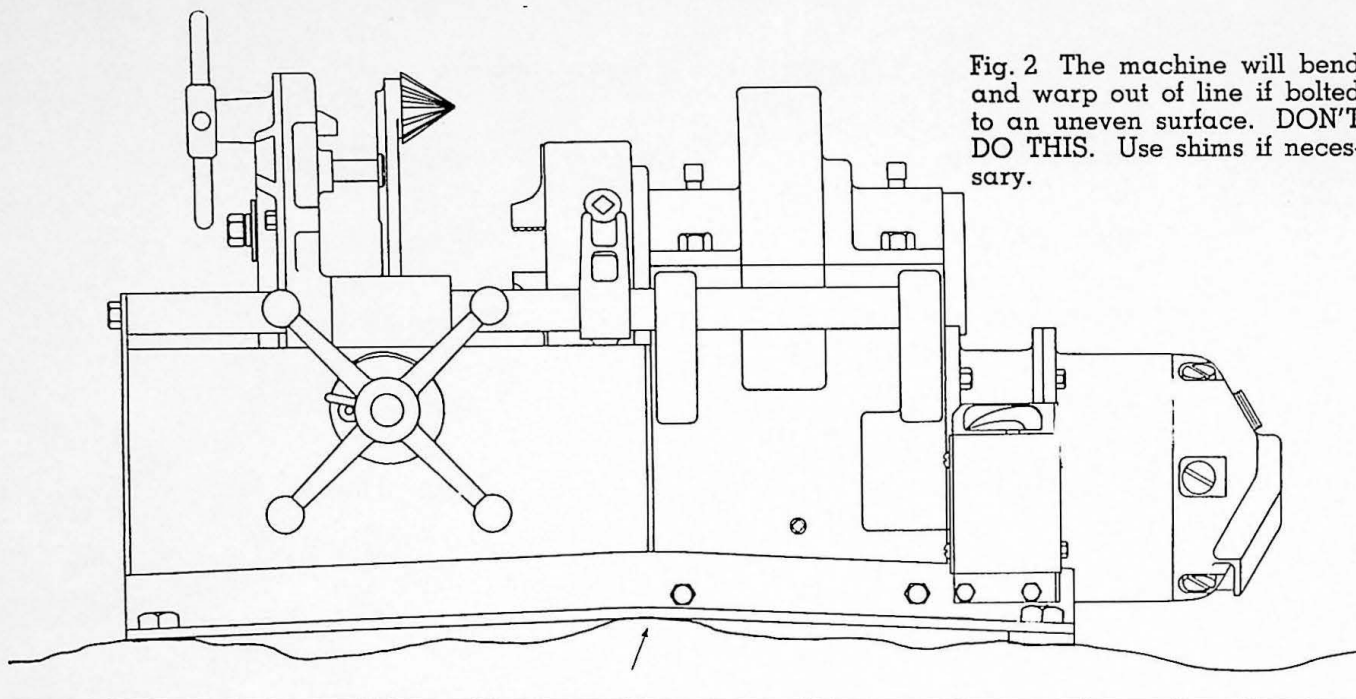
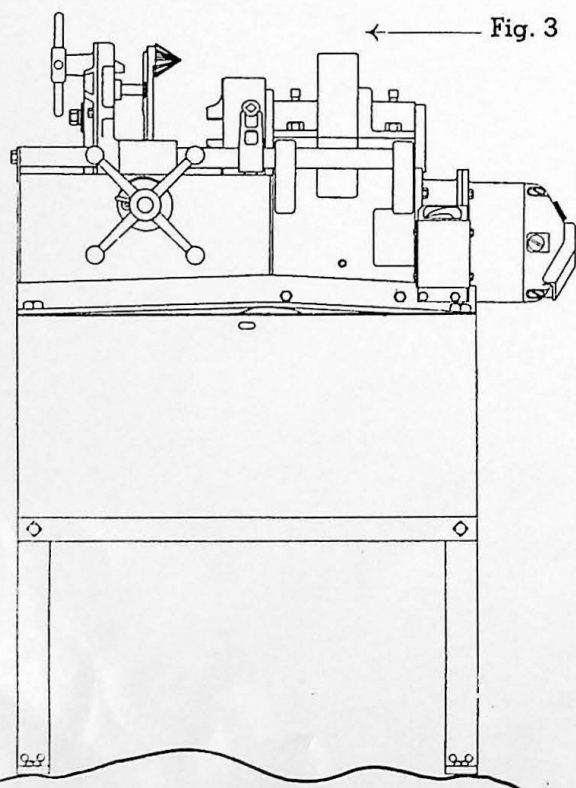
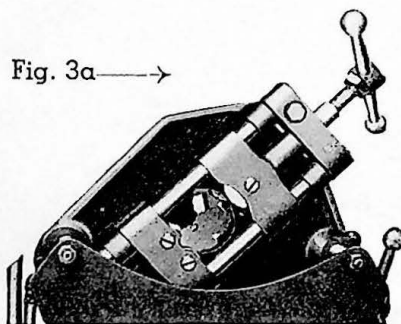


Fig. 2 The machine will bend and warp out of line if bolted to an uneven surface. DON'T DO THIS. Use shims if necessary.



If the carriage moves hard after the machine has been bolted down, it has probably been bent. Loosen the bolts. Use shims if the machine must be fastened down hard. It is seldom necessary to bolt the machine down on all four corners.

If the machine is on a stand, the same precautions must be observed in bolting the stand to the floor. The strain of bolting the stand to an uneven floor will be transmitted to the machine itself. See Fig. 3.



With wheel cut-off, keep cutter wheel backed off as far as possible so as not to damage cutter when pushing pipe through cutter head. Cutter is self centering.

**Keep roller and wheel bearings lubricated.
Turn cutting oil on them for a few seconds.**

Fig. 4

Keep the cutter blades in this position when not in use.

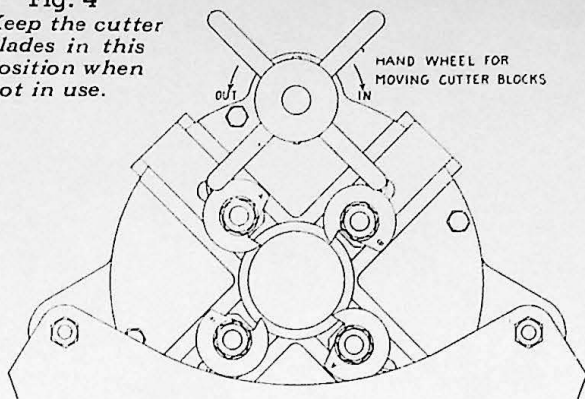
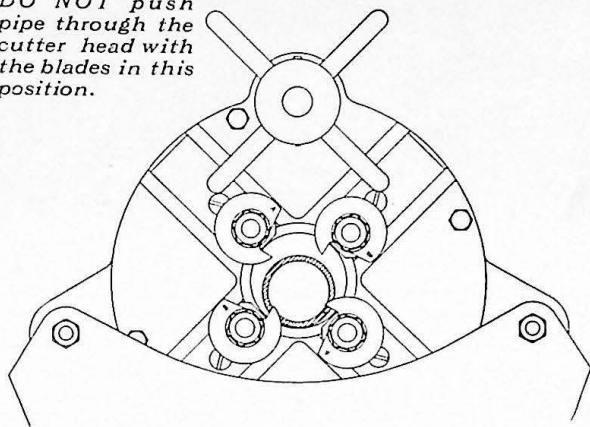


Fig. 5

DO NOT push pipe through the cutter head with the blades in this position.



The No. 999 super model is furnished in 2 ways—either with a 4-knife cut-off or a wheel and roller cut-off. Comply with the directions that follow that apply to the type cut-off you have. The No. 999 standard model with non-opening die heads is supplied with knife cut-off only.

LUBRICATION

Keep the machine well oiled with a good grade of lubricating oil according to Fig. 1. Do not use cutting oil.

The gear case is correctly filled at the factory and does not require much attention. Remove the bearing cap and spindle and add more oil if necessary. Use a good grade of automobile winter transmission oil. Do not fill above the level of the pipe plug. See Fig. 1. The oil will thicken up in cold weather and make the machine operate hard. Use care when operating in extreme cold.

CUTTING OIL

Use only a black sulphur base cutting oil such as the one-gallon sample of "TOLEDO" oil furnished with the machine. Turn the discharge spout up and fill the oil line with cutting oil until it runs out the inlet pipe. This will prime the pump. Pour the rest of the oil in the pan. For best results keep about two inches of oil in the pan.

Too much cannot be said about the importance of proper thread cutting oil. The successful operation of any pipe threading machine can be made or ruined by the type of cutting oil used. The use of crank case drainings, lubricating oil, or any substance that looks like oil will not give good results

and should be avoided. The Toledo Pipe Threading Machine Co. is not primarily in the oil business, but they do sell one of the best grades of thread cutting oils known, simply to help the better operation of their tools.

Pure lard oil is one of the best and oldest known thread cutting compounds, but its cost is too high for general use. There are also a number of low price so-called lard oils which contain only a small percentage of pure lard oil. These are satisfactory for some cutting operations, but they are usually worthless for thread cutting. Do not use lard oil cutting compounds for threading work as these mixtures will not give good results.

There are several soluble type oils which are diluted with water for use. They are in general use in machine shops for different cutting operations and special types are sometimes successful for threading. They are cleaner to operate but they cannot be recommended for general pipe machine use.

Sulphur base thread cutting oil is a later development and is treated with sulphur which gives it desirable cutting oil properties. It is reasonably priced and is the best type of thread cutting oil now produced. "TOLEDO" black sulphur base oil is one of the best of this type and has been thoroughly tested out for a long time. It can be safely recommended for any type of pipe machine. In addition it is sterile, that is, germs which might cause infection cannot live in it. Also "TOLEDO" oil has been improved so that it will still remain liquid in extreme cold. For best results use "TOLEDO" black sulphur base oil and avoid trouble. (See page 19)

ELECTRIC MOTOR AND CONNECTIONS

The motor supplied with the No. 999 Super Model Power Pipe Machine is a rugged, heavy duty type, capable of a high output of power (not a drill motor). It is available in a range of types to suit your current requirements.

Be sure that the current to which you connect the machine is the same as that specified on the motor name plate of your machine. Otherwise, you will experience difficulties, resulting in blown fuses and the possibility of a burned out motor.

The most generally used and recommended type of motor is the compensated wound Universal Motor. This motor is available in 115 volt, single phase that will operate on any cycle current, from direct current to 60 cycle alternating current. It is also available in 230 volt, single phase current, operating on any cycle from direct current to 60 cycle alternating current.

In addition to these motors, a dual voltage motor to operate on either 220 or 440 volt, 3 phase, 60 cycle is available. (50 cycle motors are also available). This motor is a constant speed type and requires a special wiring diagram, as well as a special instruction sheet.

Best results will be obtained by operating the motor as near to the required voltage as possible. However, the motor will perform on currents with voltages that vary plus or minus 10% from the voltage listed on the motor name plate.

On portable equipment (especially on temporary wiring), low voltage is often caused by the use of long lead cords of insufficient size. The size of wire used for lead cord should not be less than No. 14 wire.

The connector plug on the lead cord on your machine will vary with the type of current on which it is to be used.

The plugs for use on 115 volts are of the two parallel blade and ground prong type, while that for use on 230 volt are the two horizontal blade and ground prong type.

These plugs are of the latest approved design and must be used to conform to Underwriters' Standards. Your outlet connection may be of the old style two blade type, with pig-tail ground wire, and not suited to the new approved plugs. If so, an adaptor is available to convert your old style outlet to accommodate the new plugs. **In either case—be sure that your machine is properly grounded.**

OPERATION

If the machine has been properly set up, lubricated, filled with cutting oil and electrically connected, it is ready to operate.

Put the die head on the cutter head. Open the die head.

Move the cutter blades or cutter wheel out as far as possible. See Fig. 4 or Fig 3a.

Mark the pipe where it is to be cut, open the chuck jaws, and put the pipe in the machine. Run the cutter head as close to the chuck as possible. Place the mark on the pipe opposite the cutter blades. Tighten the chuck.

Remove the chuck wrench. Start the machine forward. Turn the cutting oil on where the pipe will be cut. Move the cutters in by means of the hand wheel until the pipe is cut off. Keep the cutting edges wet with cutting oil while the cutting is being done.

Move the cutter head away from the chuck until the die head clears the pipe. Close the die head. Turn on the oil. Set the thread length indicator at zero. See Fig. 8 Hold it in this position with the left hand. Move the die head on to the pipe with the right hand. See Fig. 9. As soon as the dies engage the pipe release the thread length indicator.

The thread length indicator will show the length of thread being cut. When the desired length is cut, lift the die head handle and **open the die head while the machine is still running.** Do not stop the machine first. Do not back the die head off in reverse. See Fig. 10.

Move the die head away from the chuck, pull the reamer down and ream the pipe. Only a slight cut is needed. See Fig. 11. Reaming can be done either before or after threading. Reaming must be done only with a die head in place.

The cutting oil should be turned on for all of these operations. Keep the cutting edges wet with cutting oil. If the oil pipe is properly placed, it will not have to be moved for the different operations.

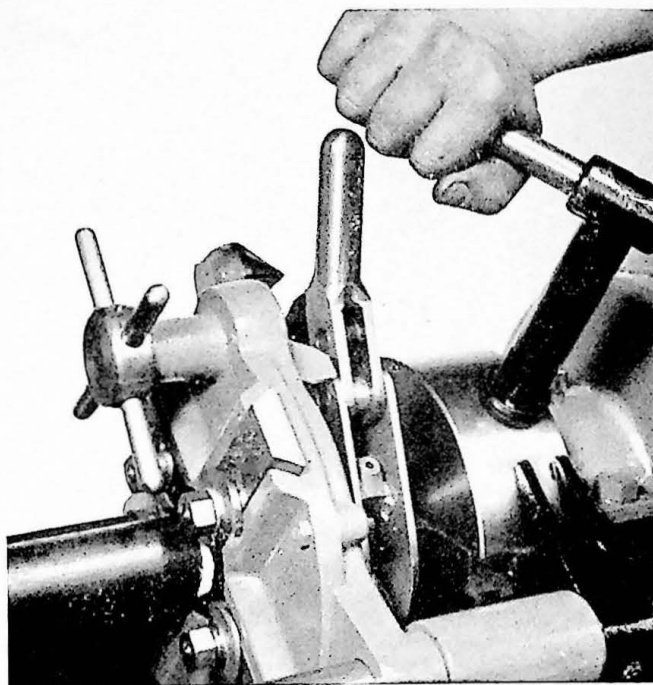


Fig. 6

Cut off as close to the chuck as possible. This leaves room for the other operations of threading and reaming. The safety throwout fingers will remove the chuck wrench if it is left in the chuck when the machine is started. Don't do this.

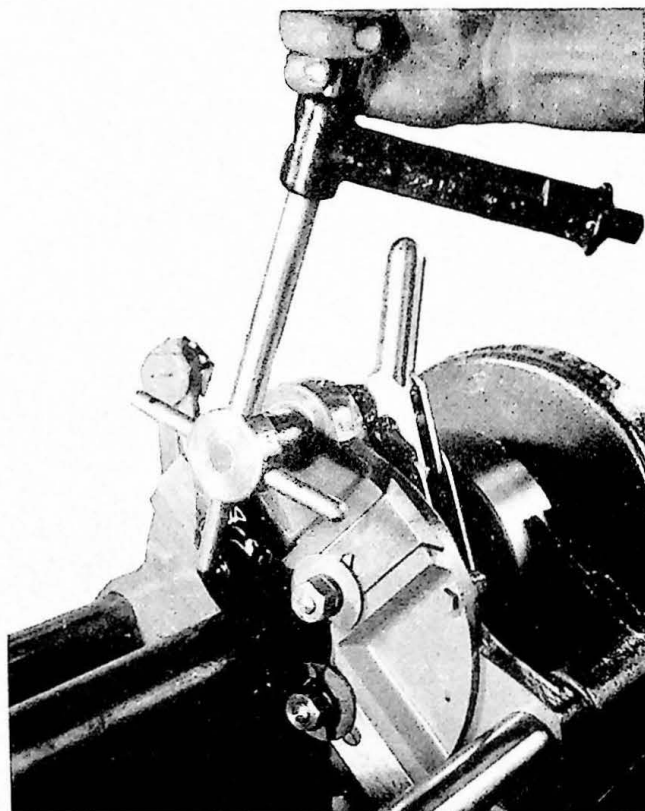


Fig. 7

Cutting off pipe. Go easy at the start until the cut extends all around the pipe and also just before the blades break through.

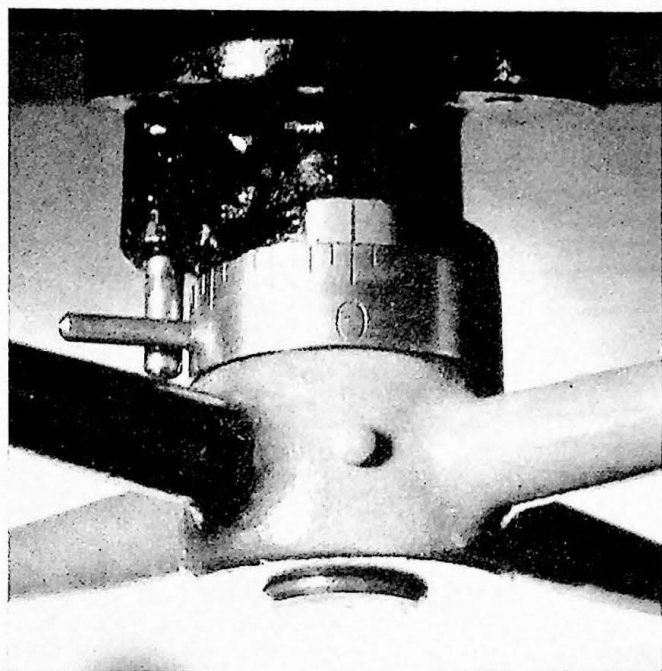


Fig. 8
Thread length indicator set at zero.

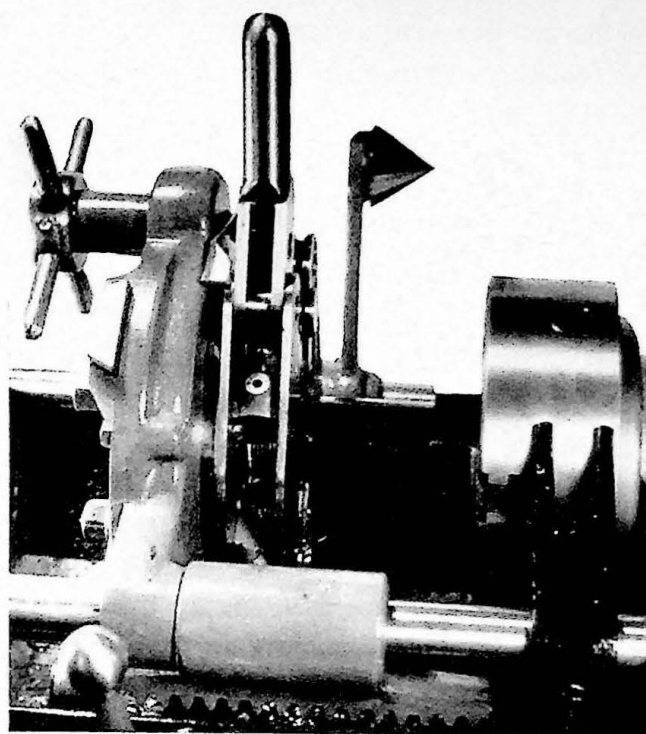


Fig. 10
Open the die head while the machine is still running.

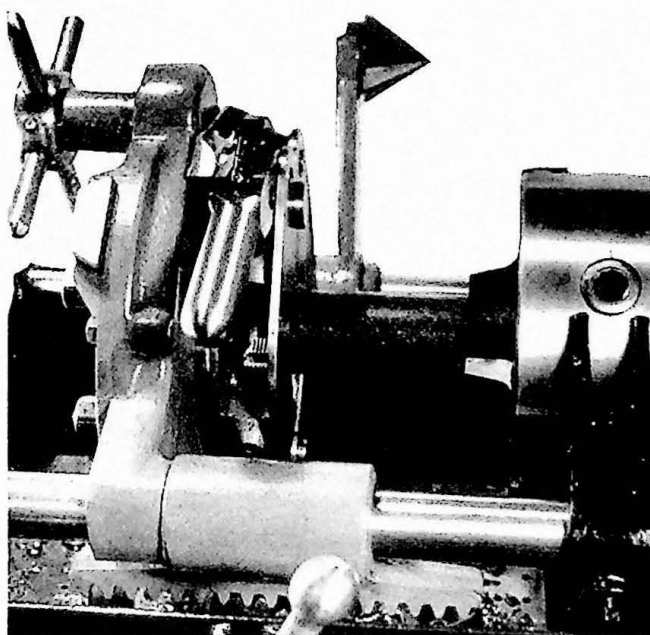


Fig. 9
Starting the thread.

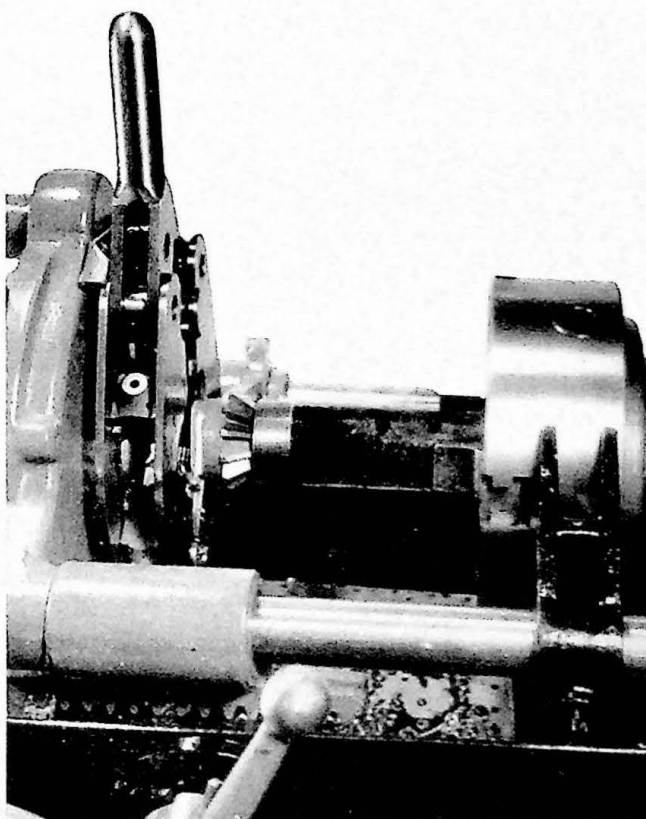


Fig. 11
Reaming. Only a light cut is needed.

Use the bushings and a pipe support. See Fig. 12. A complete set of bushings is furnished with each machine. A strong, light weight, adjustable pipe support can be obtained at a slight extra cost.

A pipe support should be used whenever a long length projects from the machine, either in front, in back, or both front and back. (See Fig. 38).

All operations are done in forward speed. Do not use reverse. Reverse should only be used for making up fittings, for left hand threads, or for special work.

Left hand dies can be used in the regular die heads, but the die head must be turned over so the handle points away from the operator. This may be satisfactory for a few threads, but a regular left hand head is recommended. See Fig. 13.

The nipple chuck is used to hold short half finished nipples that cannot be held in the regular chuck. The piece of pipe must be cut off smooth and square on both ends and with a thread on one end.

The half finished nipple is screwed loosely into the nipple chuck. A hardened steel plug is screwed in from the rear to jam the nipple tight in the threads. The second thread is cut, the plug is unscrewed, and then the nipple is unscrewed by hand. Fig. 14 shows the different parts. The actual operations are performed as follows.

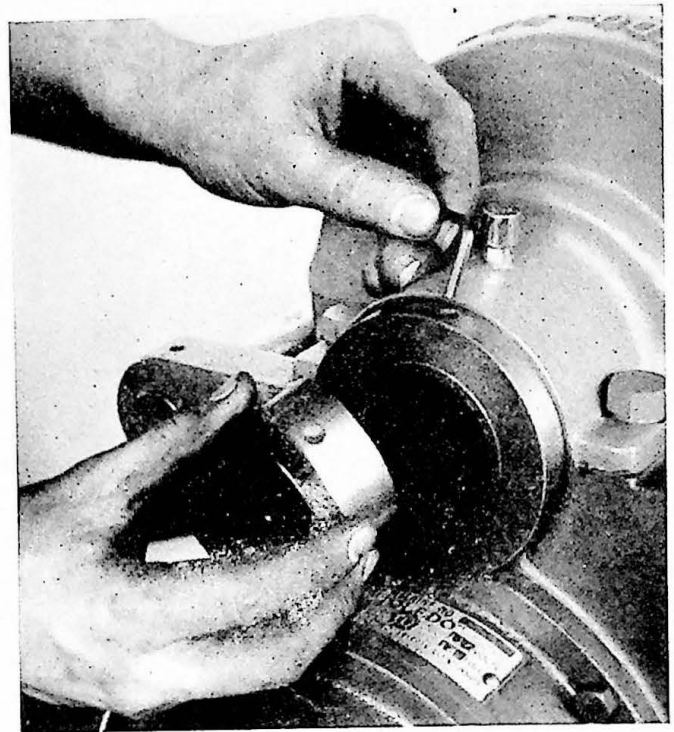


Fig. 12

Use bushings for long lengths of pipe. Do not let the bushing set screw project outward or it will hit the machine when started.

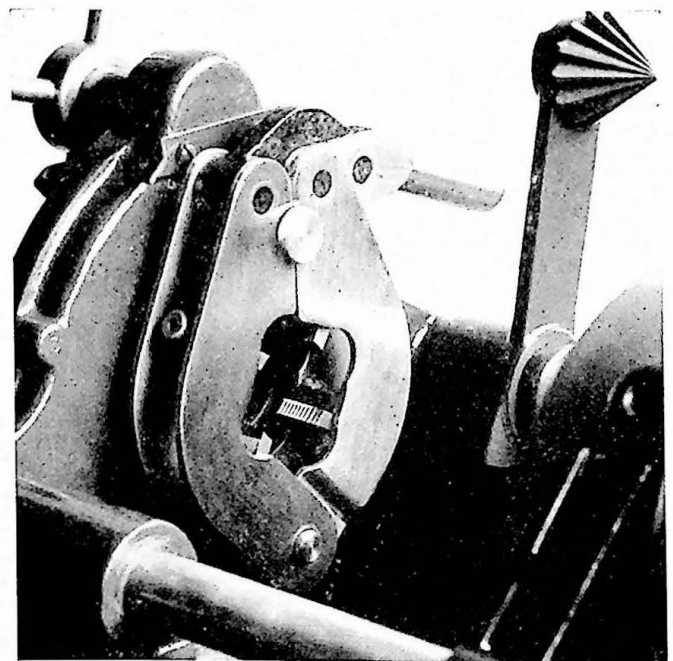


Fig. 13

Left hand dies can be used in a right hand head.

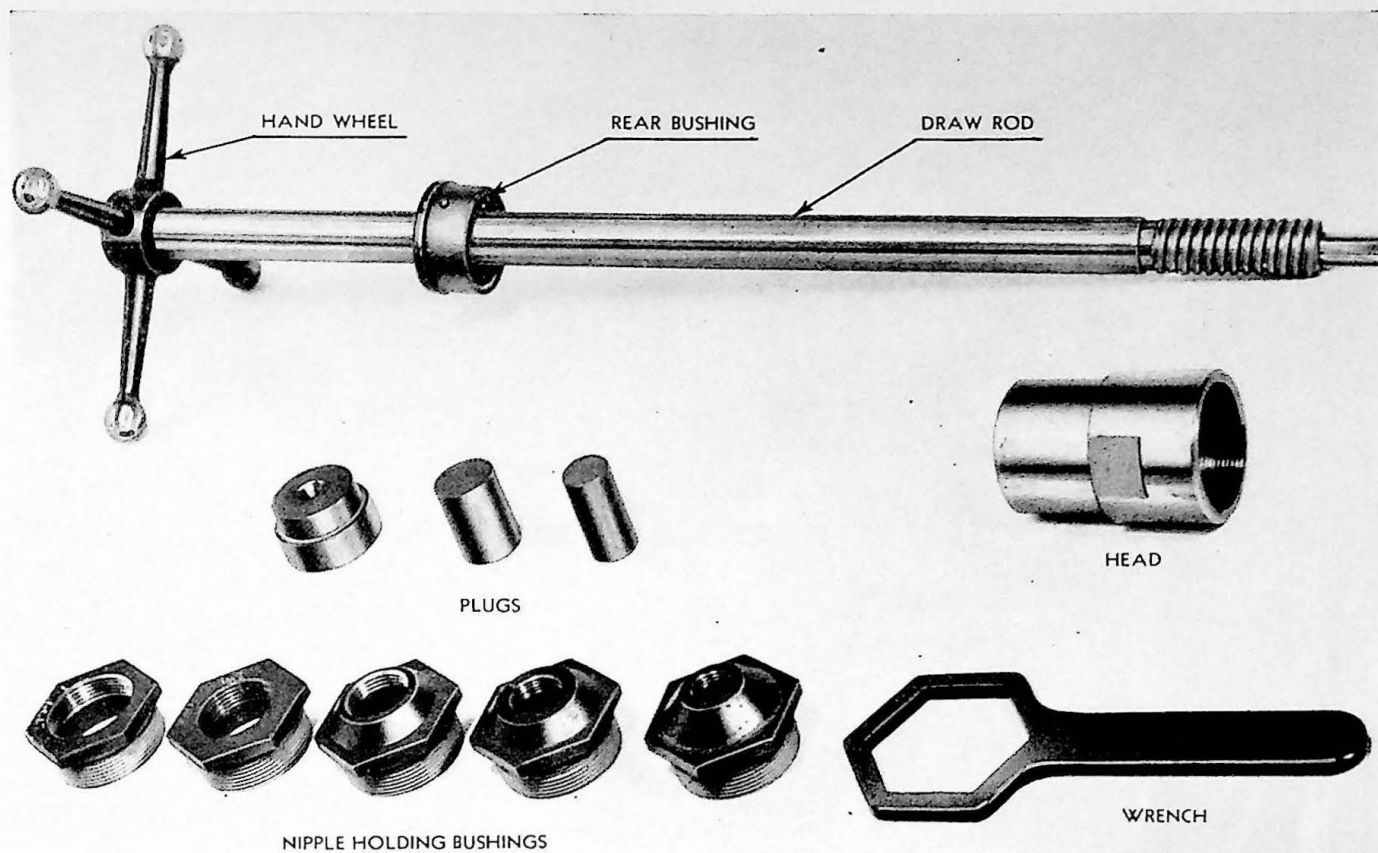
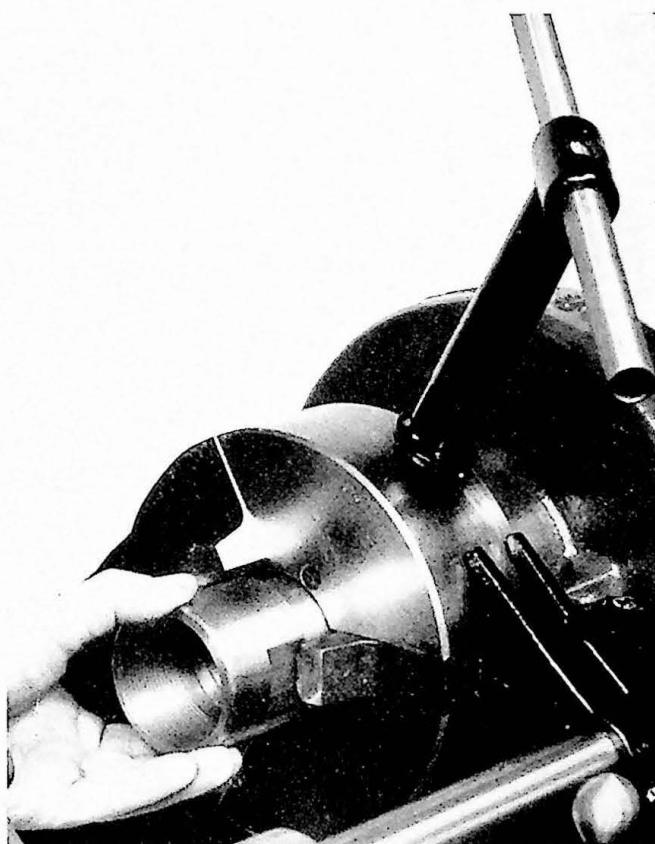


Fig. 14. Nipple Chuck Parts.



Thread one end, ream lightly and cut the nipple to length. This is done in the regular manner.

Place the nipple chuck head in the chuck. See Fig. 15. Put the chuck jaws on the three flat spots on the head.

← Fig. 15

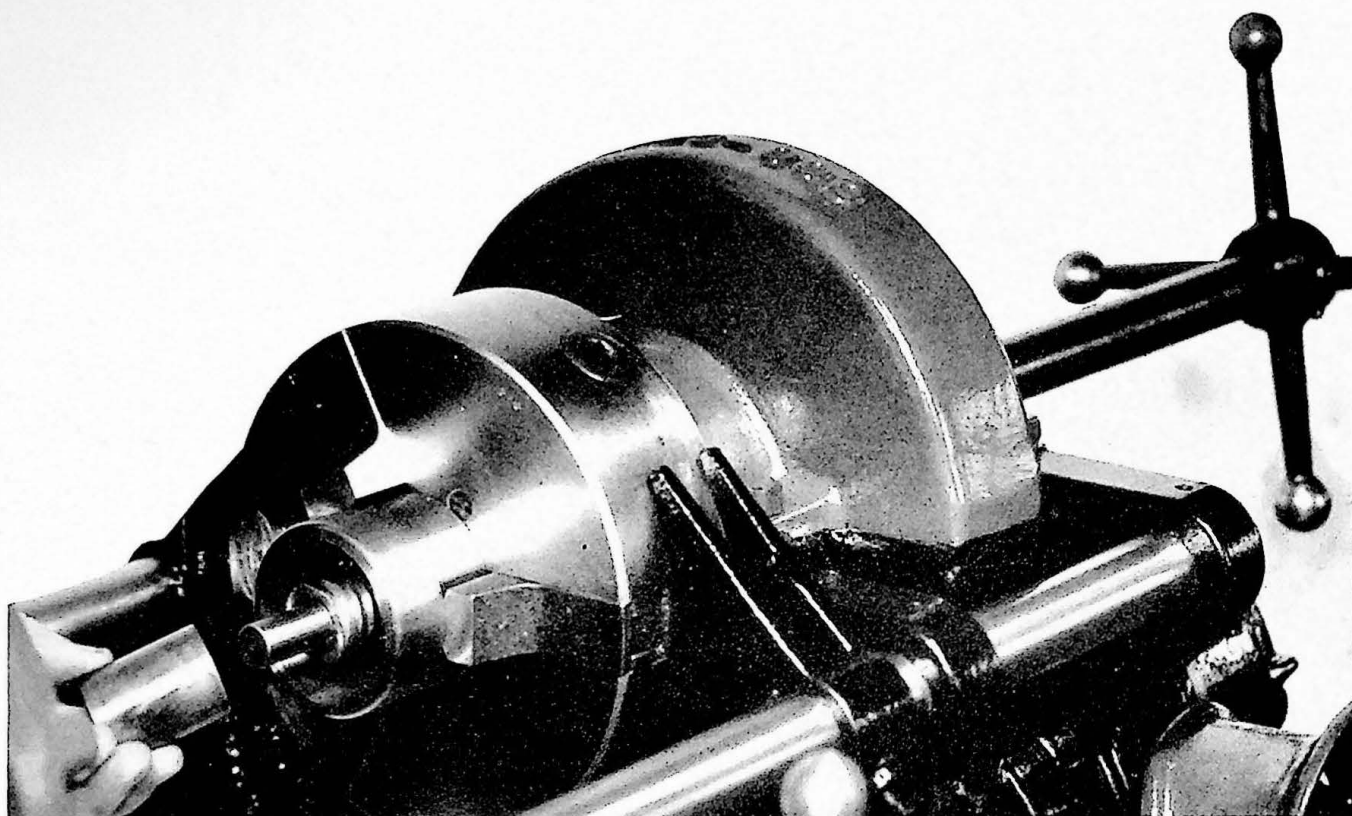


Fig. 16

Push the draw rod in from the rear and screw it into the head. (Left hand thread.) Put the proper size plug on the end of the draw rod. See Fig. 16. Be sure it goes on straight all the way and is not cocked to one side. Screw in the proper size bushing. Screw it up tight to the shoulder. See Fig. 17. (No bushing for 2-inch. Use the head itself.)

Screw the unfinished nipple into the bushing until it is finger tight and not bearing against the plug. Unscrew about half a turn. See Fig. 18.

Put on the die head and close it. Then move it gently towards the chuck until the unfinished end of the nipple is wedged in between the dies. See Fig. 19.

Tighten the draw rod while the nipple is centered in the die head. This clamps the nipple in place. Cut the thread in the regular manner. Ream. Loosen the draw rod. Unscrew the finished nipple with the fingers.



Fig. 17
Screw the Bushing up tight

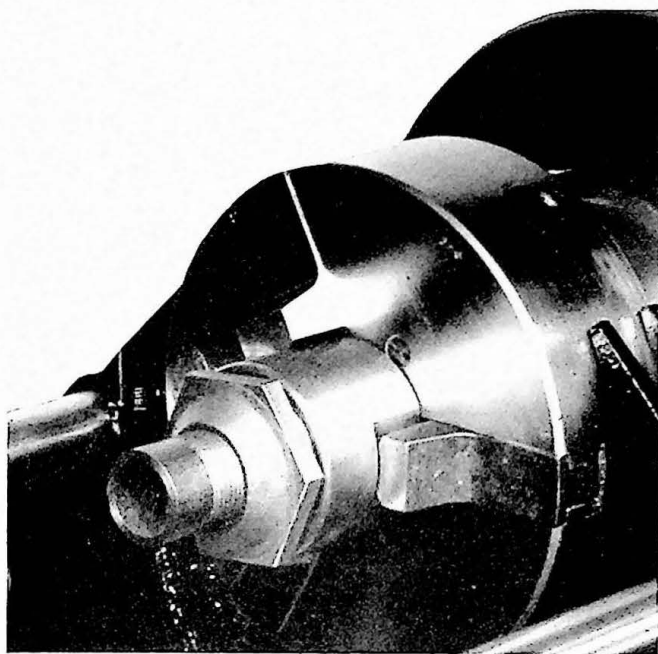


Fig. 18

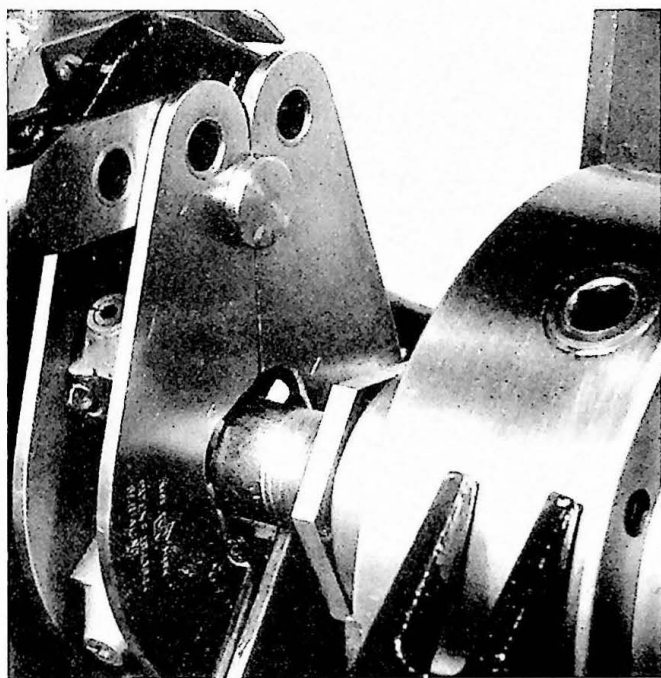


Fig. 19

Wedge the end of the nipple gently into the die head **before** tightening the draw rod.

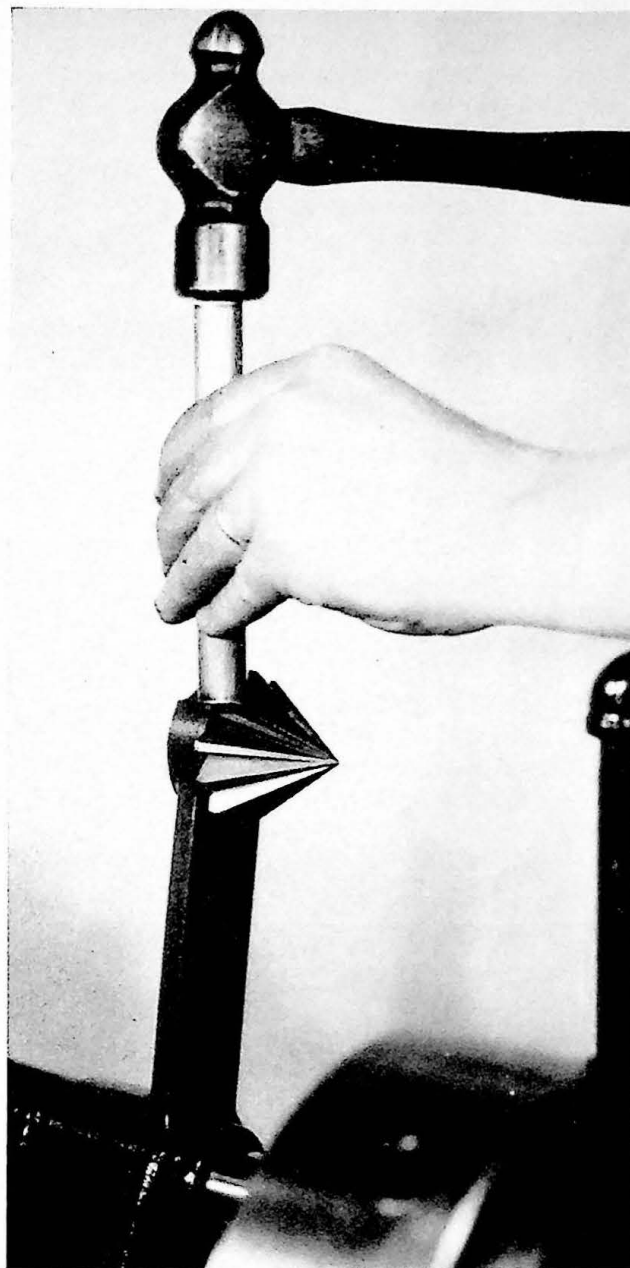


Fig. 21

To remove the cone reamer drive lightly on the back side of a tooth with a small piece of brass pipe.

MAINTENANCE

Lubricate the machine regularly as shown in Fig. 1. Use "TOLEDO" black sulphur base thread cutting oil at all times for every operation. Keep the cutting edges wet with oil while the work is being done.

Keep the machine clean. Keep the chips cleaned out of the die heads and the chip pan. A die head clogged with chips will prevent the cutting oil from reaching the dies. This will cause trouble. An excessive amount of chips in the chip tray and down below in the oil pan will also retard the oil flow. Keep these places cleaned out.

The dies and cutter blades must be kept sharp and in adjustment. Any cutting tool will become dull with use and will need to be reground or replaced.

If your machine is equipped with a wheel cut-off replace wheel when dull or nicked.

Dies or blades can be reground by any competent mechanic or they can be returned to the factory for regrinding at a small charge. Keep the cutting edges sharp and wet with cutting oil.

Dies should be ground only on the face. Do not grind between the teeth or on the curved part. Follow the original factory grinding. Grind all dies of one set the same. If in doubt return the dies to the factory.

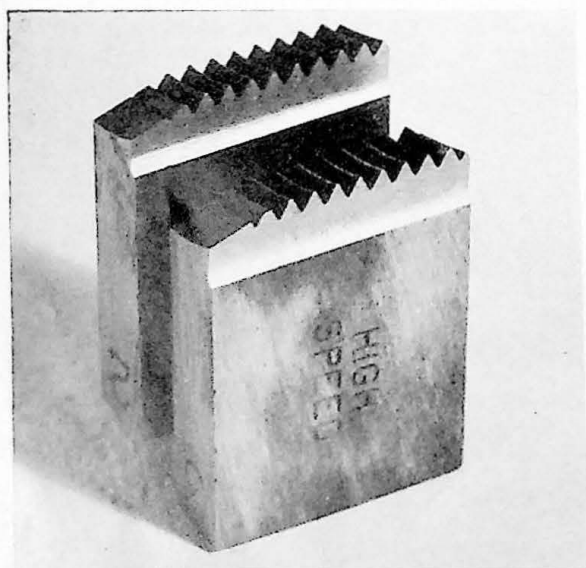


Fig. 24

Sharp Dies. Keep your dies like these. Have them reground as soon as they are noticeably dull.

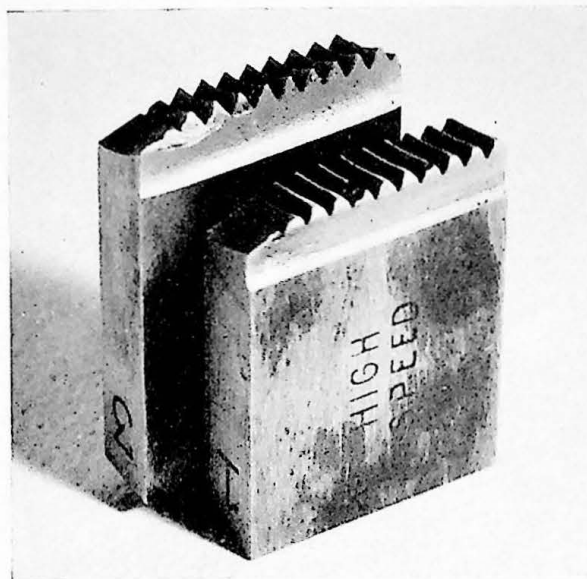


Fig. 25

Dull Dies. Note the dull, rounded, and chipped cutting edges. Dies cannot do good work in this condition. Regrind your dies before they get this bad.

Dies will sometimes pick up stickers. A sticker is a small piece of metal which has become fused to the die at the bottom of the tooth. It looks like a small lump in the bottom of the die teeth. A sticker will tear the threads the dies are cutting.

Stickers are usually caused by cutting threads without enough cutting oil or with an improper cutting oil. A die head or an oil pan clogged with chips can cause stickers by keeping the oil from the cutting edges. If in doubt use plenty of "TOLEDO" black sulphur base thread cutting oil.

Stickers cannot be brushed out. They must be removed with a small punch and a hammer. This must be done carefully.

Place the dies in their proper numbered slots in the die head. Clean the die slots first. The dies are easily pushed in or out of the die slots, without disturbing the adjusting screws. Be sure the dies are pressed back firmly against the adjusting screws.

The die heads are adjustable for different size threads by means of individual adjusting screws back of each die segment (See Fig. 26). The lines on the screws and the die head indicate standard setting. A quarter of a turn on all four adjusting screws will change the depth of $\frac{1}{2}$ " and $\frac{3}{4}$ " pipe threads by $4\frac{2}{3}$ turns (as screwed into a fitting). 1" to 2" pipe threads will change $3\frac{7}{8}$ turns.

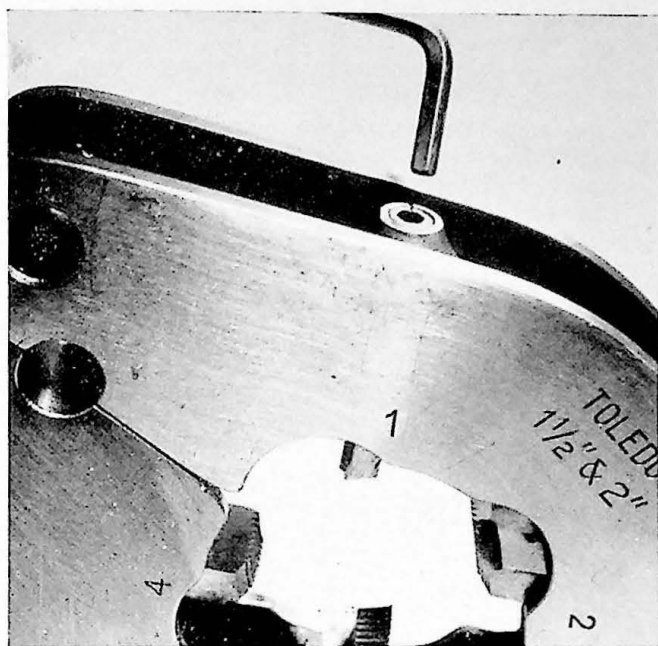


Fig. 26

Die head with adjusting screw set at standard position.

If adjustment is needed move all four adjusting screws the same distance from the lines. If necessary, make further minor adjustments so that all four die segments cut approximately the same size chip.

Cutter Wheels

Do not use dull cutter wheels. Replace when dull or chipped. It might be well to keep an extra wheel or two on hand. Rollers should be replaced when they become grooved or worn.

Cutter Blades

The cutter blades must also be kept sharp and in adjustment. They can be easily ground by hand or they can be returned to the factory. Grind the cutting edge in a straight line that would miss the hole by $\frac{1}{8}$ ". See Fig. 27.

Keep the cutter blades in adjustment with the cutter gage. Place the gage on the four washers as shown in Fig. 28. Move the cutter blades against the pins of the gage as shown in Fig. 29. Clamp the cutter blades in this position.

The cutter blocks, blades, and washers must not have any dirt or burrs between them or the blades will slip out of adjustment. Clean or file these parts smooth. A smooth flat contact between the cutter blade and block gives the best results.

The cutter blades should be placed alternately on the cutter blocks with the letters facing out. The two A blades will be opposite each other, and the two B blades will be opposite each other.

If desired, four A blades can be used with all the letters facing out. This combination will remove the slight fin on the piece of pipe that falls off, but the cutting action may not be as free as if a regular set of A and B blades were used.

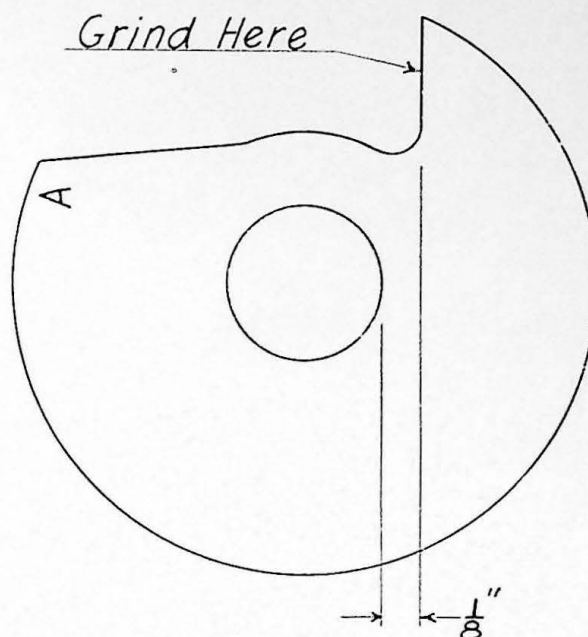


Fig. 27

This grinding applies both to the Type A and B blades.

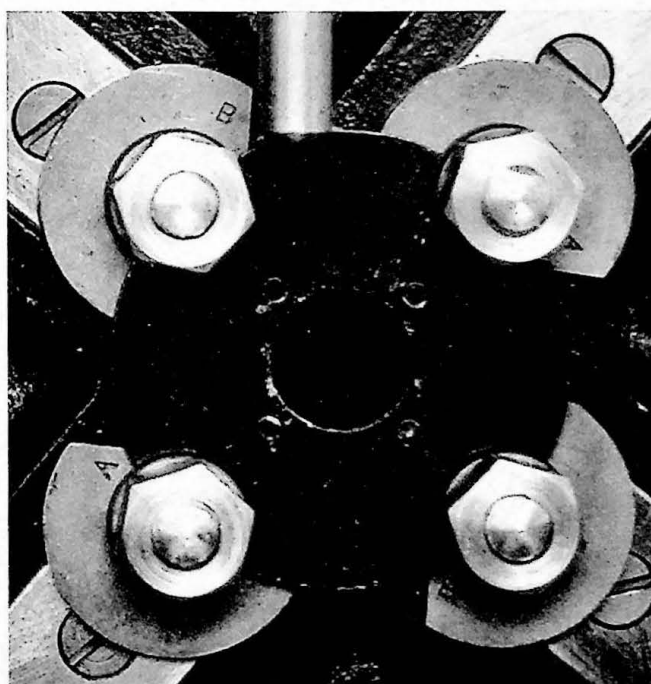


Fig. 28

Front view of cutter gage in position.

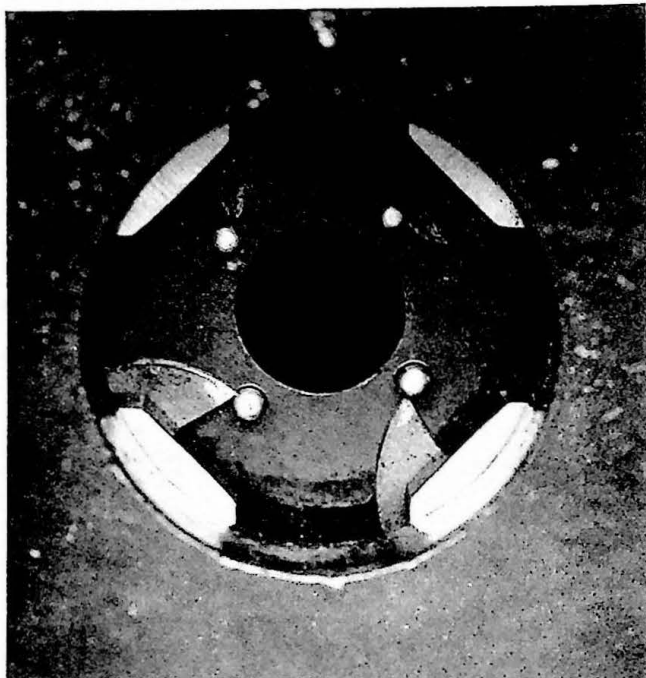


Fig. 29
Rear view of cutter gage in position.

The machine is protected from overload by the safety friction spindle gear which will slip in case of overload. This gear is clamped to the spindle and can be reached by removing the top of the gear case. It can be adjusted for different loads by tightening or loosening the clamping screws. See Fig. 30. If this gear slips, investigate and see what is causing the trouble. If the dies are dull, sharpen them instead of tightening the safety gear too much.

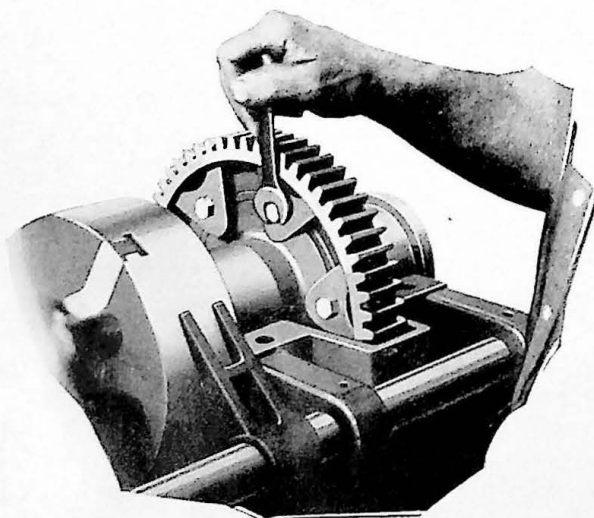


Fig. 30
Friction Gear.

The chuck wrench ejector fingers will remove the chuck wrench if it is left in when the machine is started. Keep these fingers in working order. They will save a lot of trouble.

Do not work so close that there is danger of the tools touching the chuck. A die head can be bent out of shape by running into the chuck. The cutting edges of the reamer will be broken if they touch the moving chuck jaws.

CARE OF THE MOTOR

Keep the motor clean. Do not allow oil or dirt to accumulate on it.

Remove the brush holder caps (6 caps) and carefully remove the brushes for inspection. If worn to within $\frac{3}{8}$ " long, replace with set of six new brushes. Clean brushes and brush holders so that the brush slides freely in the brush holder and bears evenly on the commutator. **CAUTION:** Be sure to replace brushes in exactly the same position and manner from which they were taken. To do this, mark one side of brush and corresponding side of brush holder, identifying the brush holder positions as the brushes are removed.

Dirt on the brushes or in the brush holders will cause the brushes to stick and result in excessive arcing and loss of power.

The brushes and commutator can readily be inspected by removing the large plug on the tapered surface at the rear end of the motor housing.

Excessive arcing can often be corrected by smoothing the commutator with a piece of fine (00) sandpaper (never emery cloth or paper) secured to the end of a small piece of wood.

TO TAKE THE MACHINE APART

TO REMOVE MOTOR FROM MOTOR BRACKET

First, remove the drum switch cover. The switch has six wires leading to it, two from the lead cord and four from the motor. Disconnect the four wires coming from the motor bracket, so that they can be pulled through the opening in the motor bracket.

Next, remove the four cap screws that hold the motor to the motor bracket and pull the motor straight out of the bracket.

CAUTION: BEFORE YOU REPLACE THE MOTOR IN BRACKET, BE SURE TO READ AND THOROUGHLY UNDERSTAND THE DIRECTIONS FOR ASSEMBLING THE MACHINE.

TO REMOVE MOTOR BRACKET

CAUTION: The base of the machine holding the gears is about one quarter full of heavy oil. This level is considerably above the opening for the motor bracket.

Before attempting to remove the motor bracket—first, drain the gear lubricating oil from the base, or tilt the machine so that the oil level at the end attached to the motor bracket is below the motor bracket opening.

Do not attempt to reassemble the motor bracket gear assembly to the base until you have read and understood the directions for assembling the machine.

TO REMOVE BEARING CAP

Take out four cap screws and lift cap straight up.

TO REMOVE SPINDLE

Take off bearing cap and lift spindle out.

TO REMOVE THE CUTTER HEAD

Remove the two nuts that clamp the ends of the $1\frac{1}{4}$ " round ways to the front of the machine. Loosen the four hollow head set screws that clamp the $1\frac{1}{4}$ " round ways to the gear housing. Pull the round ways back to the rear of the machine. Lift the cutter head out.

TO REMOVE THE OIL PAN

Remove the cutter head. Remove the oil pipe connections. The oil pan is welded to the base angles. Remove the four cap screws that hold the base angles to the gear housing. Pull the oil pan and base angles off towards the front of the machine.

TO REMOVE OIL PUMP CAP

Remove oil pan. Take out four cap screws and lift off.

TO REMOVE OIL PUMP IMPELLER AND SHAFT

Remove oil pan and oil pump cap. Pull impeller and shaft straight out.

CAUTION: Do not put this part back until you have read and understood directions for assembling machine.

TO REMOVE OIL PUMP FRAME

Take off motor bracket. Take out most of grease in base. Remove cap, spindle, oil pump piping and oil pan. The oil pump frame is held in place by four $\frac{3}{16}$ " U.S.S. cap screws which can be reached by a long socket wrench thru the opening for the motor bracket.

Remove the four screws, then pull oil pump frame straight out through opening for motor bracket.

TO ASSEMBLE MACHINE

NOTICE: Be sure you read and understand these directions thoroughly before attempting to assemble any part of the machine. Clean all metal surfaces where they bear against each other. If the parts do not fit together freely and easily, do not force them, but make sure first that they are not bound or caught against some other part. There are several places where it is very easy to get the parts in wrong, and forcing in this condition will be sure to cause breakage.

After assembling, the moving parts should turn over freely and without binding or sticking. Try it first by hand by moving the motor commutator with fingers. To assemble spindle, bearing cap, oil pump frame, internal gear, oil pan or oil pump piping, simply put them back in the same manner as they were taken off.

In assembling the motor, motor bracket, helical gears, oil pump cap, or oil pump shaft and impeller there are several points which must be followed absolutely or the machine will not go together.

The two 48-tooth helical gears with the straight tooth pinions attached to them must be set in proper position so they will mesh with the motor pinion and the internal gear.

The tongue on the end of the oil pump shaft should fit properly into the slot in the end of the motor shaft. The wires from the motor and switch must be properly placed and not jammed between other parts of the machine.

TO SET THE TWO HELICAL GEARS

Turn the helical gears until the punch marked tooth of one gear is exactly opposite the punch marked tooth of the other gear according to Fig. 31 or Fig. 32. Hold the two helical gears in this position and assemble the motor to the motor bracket. Turn the motor pinion if necessary to make it mesh with the two helical gears.

The two straight 16-tooth pinions are now in position to mesh correctly with the internal gear. They will fit into the internal gear in several ways, but the only correct way is when the motor bracket lines up exactly with the base of the machine and the gears mesh and turn freely. If the motor bracket does not line up with the base, disengage the pinions complete from the internal gear, turn the internal gear

slightly, and try again until the assembly meshes and lines up correctly.

TO FIT OIL PUMP SHAFT TO MOTOR SHAFT

Fig. 33 shows how the tongue of the oil pump shaft fits into the groove in the end of the motor shaft. If for any reason the motor has been taken off the machine or even slightly moved, so that the tongue is out of the slot, it is absolutely necessary to have the tongue back in the slot before tightening down the motor or oil pump cap.

If the machine is completely apart, first assemble the oil pump frame, internal gear, motor bracket, motor, and helical gears to the main gear housing. Then put the oil pump impeller and shaft in from the front end. Turn the pump shaft gently until it engages in the slot in the motor shaft. Put on the oil pump cap. The boss should be on top. Put shellac or pipe dope on the flat joint.

When everything is put together and tightened down, check the assembly by turning the motor commutator with fingers. It should turn over easily. If it sticks or binds, loosen up the parts one at a time and locate

the trouble. The parts must move freely before the power is turned on.

If only the motor, or the assembly of the motor, motor bracket, and gears has been removed, they can be replaced directly, if the gears and the oil pump shaft are properly engaged. Turn the motor commutator with the fingers until the motor shaft properly engages the pump shaft. **This must be done before tightening the screws.** When everything is tightened, check by turning the motor commutator with the fingers.

WIRING

Fig. 34 shows a switch wiring diagram. To change motor rotation, interchange the two yellow wires at the switch.

In assembling the motor to the motor bracket be sure that no wires are caught and jammed between the motor and motor bracket. If they are jammed it will cause a ground and give anyone who touches the machine a shock. To avoid this, tie the motor leads down to the back end plate with some string as shown in Fig. 33.

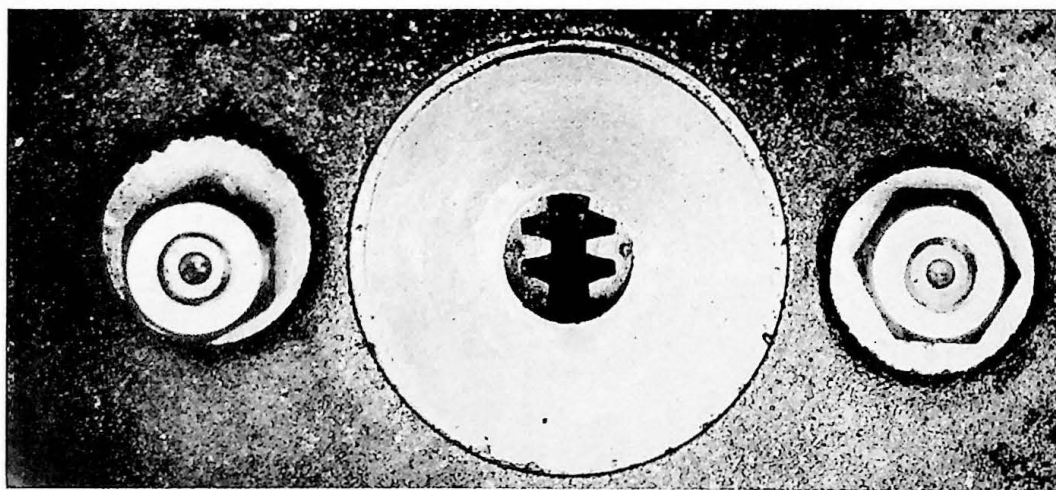


Fig. 31

Looking at shaft hole in motor bracket from motor side.
Showing helical gears in correct position for assembly.

Fig. 32

Looking at machine side of motor bracket. Showing helical gears in correct position for assembly.

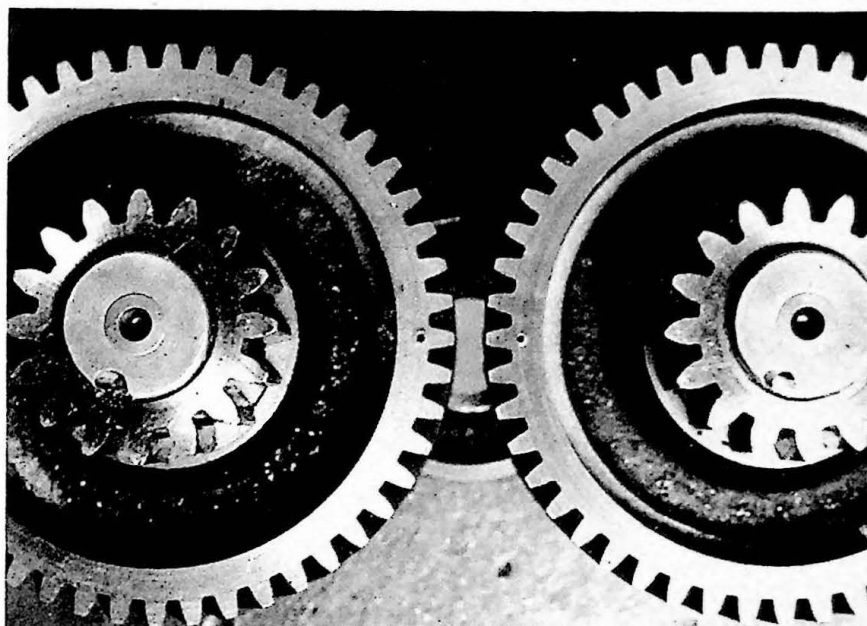
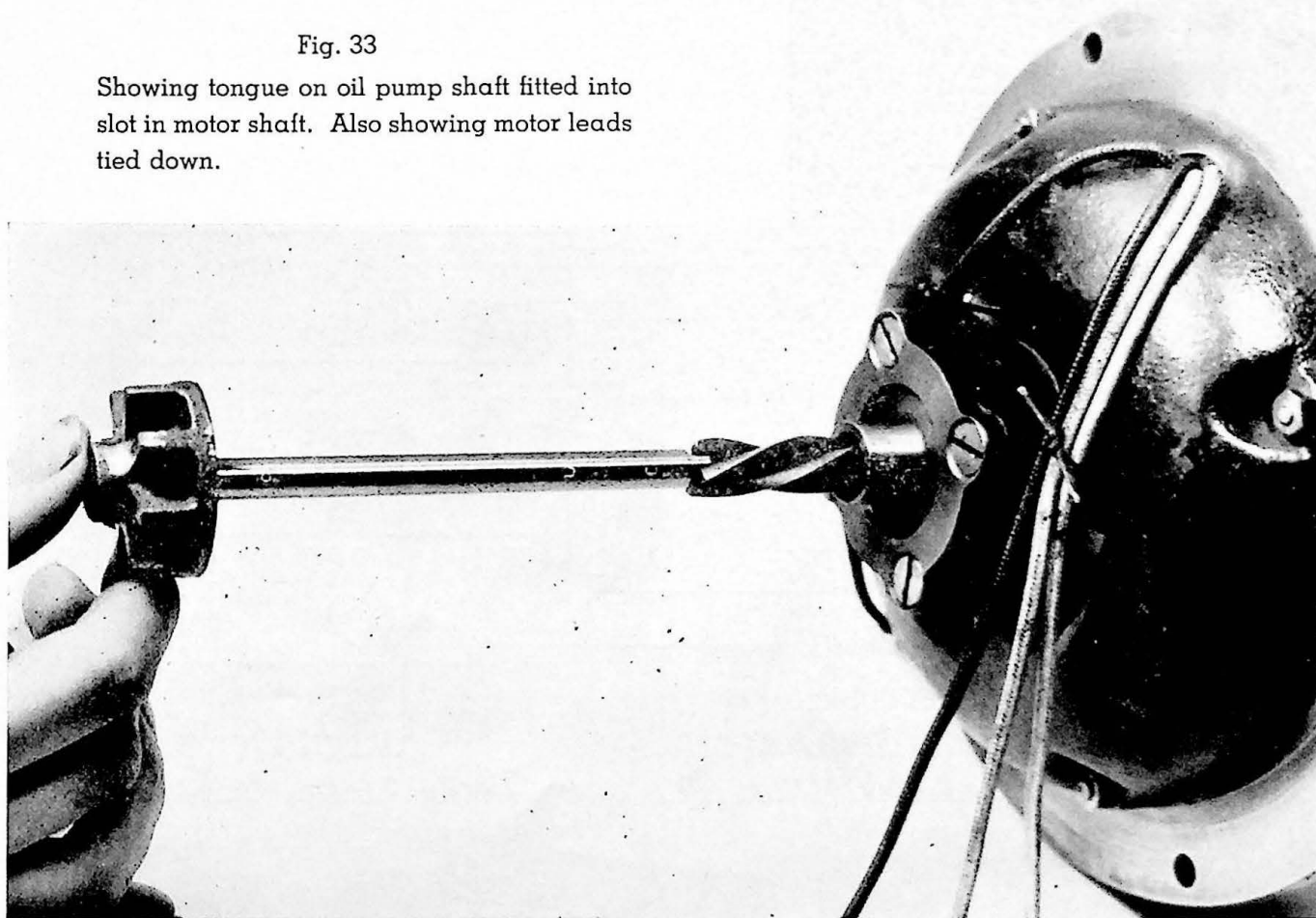
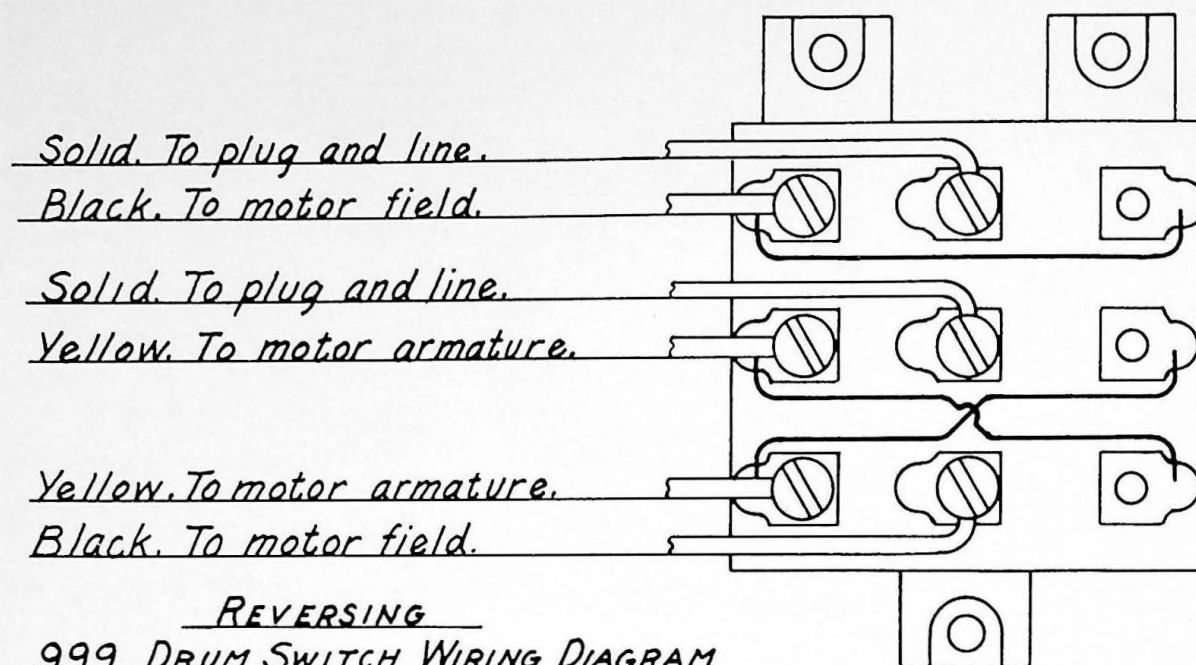


Fig. 33

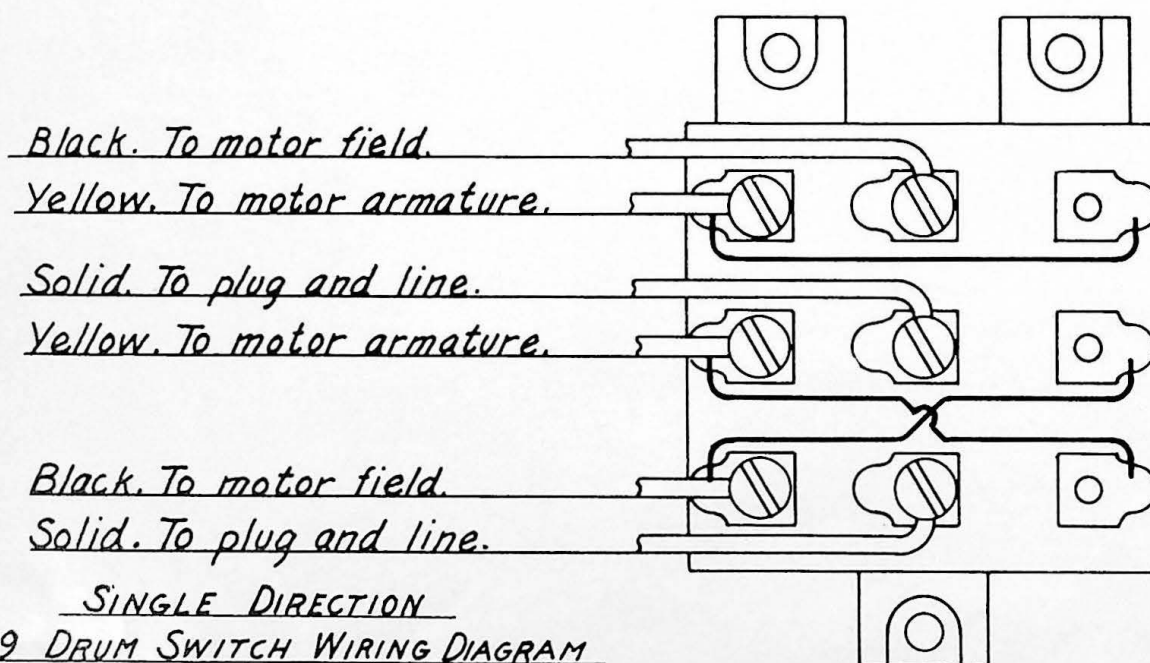
Showing tongue on oil pump shaft fitted into slot in motor shaft. Also showing motor leads tied down.





999 DRUM SWITCH WIRING DIAGRAM
TOLEDO PIPE THREADING MACHINE CO.
TOLEDO, OHIO.

For universal motors. To reverse interchange the yellow leads.



999 DRUM SWITCH WIRING DIAGRAM
TOLEDO PIPE THREADING MACHINE CO.
TOLEDO, OHIO.

For universal motors. To reverse interchange the yellow leads.

Fig. 34

UNIVERSAL MOTOR ASSEMBLY

The motor on the "TOLEDO" No. 999 Super Model Power Pipe Machine is the result of years of testing and proving. It is a rugged, heavy duty motor with ample reserve power, designed to suit the requirements of the particular electric current to which it will be applied.

Improvements have been made from time to time in the motor design, and as they become available through testing and field uses, they are incorporated in production motors.

For this reason, if repair work is required on the motor, it is important that you specify the name of the motor manufacturer and the model of the motor used. This information can be secured from the motor name plate.* (See Footnote) **Be sure to include the current specifications, including the volts, cycles and phases.**

If repairs to the motor are required, return the complete motor to the factory, as this motor has a special winding, and repairs outside the factory are not recommended.

However, if repairs, such as replacing the armature, must be made outside the factory, be sure to have the work performed by an experienced electric motor repair man in a careful manner. Use the proper size wrenches to disassemble the motor. **Do not use a pipe wrench or pliers**, as they will mar and damage the parts.

Before attempting any repairs to the motor, first determine the proper manufacturer and the model. **This is important.** Your motor will be one of a number of models made, either by the Howell Electric Motor Company or The Lamb Electric Company.

The assembly and electrical characteristics of these motors differ and it is important that you select the proper instructions for your motor.

1. The Howell UY-50, UZ-50, UZ-53 and UZ-54 motors, for 220/440 volt, 3-phase, 50 or 60 cycle current, are constant speed (3600 R.P.M.) induction motors with no commutators or brushes.

To remove the armature (or rotor) from this motor follow these instructions:

- a. Remove the four nuts, holding the thru bolts, on pinion end of motor housing.
- b. Remove the three screws from the bearing boss on the end of the motor opposite the pinion.
- c. Remove the small cap that covers the shaft on the end of the motor opposite the pinion end. (Pry off with a screw driver)
- d. Place a soft brass rod against the end of armature shaft, exposed by removal of cap, and tap lightly. This will separate the armature (or rotor) and motor end bell (pinion end) from the motor housing.
- e. To remove the armature (or rotor) from the end bell, remove the four screws holding the plate over the pinion end of the shaft.
- f. Next bend back the "ears" of the retaining washer on armature shaft sleeve and remove the sleeve and washer. (The sleeve is mounted on the shaft with a left hand thread)
- g. The armature and shaft can now be removed from the end bell by a slight pressure on the end of the shaft. **Be sure to insert a wood block, brass or lead plate between the shaft and pressure means, to protect the end of the shaft or pinion.**

2. The Howell UY-50, UZ-50, UZ-53 and UZ-54 motors for either 115 volt or 230 volt, single phase current will operate on any cycle current from direct current to 60 cycle alternating current, and are six pole compensated wound, Universal Type motors with commutators and brushes. The speed of these motors will vary as the loads (i.e.) the larger the diameter of the pipe to be threaded the greater the circumference, the greater the load, and the slower the speed.

Important Notice: While the mechanical parts of these motors are interchangeable, the armature of a UZ-54 motor must not be run with the field of a UZ-53, UZ-50 or UY-50 motor and vice versa, for these motor parts are not electrically interchangeable. Neither can the 115 volt armature be used with a 230 volt field or vice versa.

To remove the armature from this motor, follow these instructions:

- a. First remove the six brush holder caps and brushes from the commutator end of the motor, marking each brush and its corresponding brush holder, so that the brushes can be replaced in exactly the same manner as before removal.
- b. Remove the four nuts holding the thru bolts on the pinion end of the motor housing.
- c. Remove the three screws in the bearing boss end of the frame on the commutator end of motor.
- d. Remove the small cap in the end bell (commutator end) that covers the end of the armature shaft. (Pry off with a screw driver)
- e. Place a soft brass rod against the end of armature shaft, exposed by removal of cap, and tap lightly. This will separate armature and motor end bell on pinion end from motor housing.
- f. To remove armature from end bell, remove the four screws holding the plate over the pinion end of the shaft.
- g. Next bend back the "ears" of the retaining washer on the armature shaft sleeve and remove the sleeve and washer. The sleeve is mounted on the shaft with a left hand thread.
- h. The armature and shaft can now be removed from the end bell by a slight pressure on the end of the shaft. **Be sure to insert a wood block, brass or lead plate between the shaft and pressure means, to protect the pinion end of the shaft.**

In case the opposite end bell (commutator end) becomes disengaged from the field housing, care must be taken in its reassembly. **Be sure to replace the end bell, so that the register mark on the end bell matches that on the field housing.** This is important to enable the motor to operate at its peak efficiency, as this mark controls the relation of the brushes to the field coils.

Next be sure that the brushes are properly connected. Facing the commutator end of the motor, the black wire coming from the field coil should connect with alternate brush holders located at 1 o'clock, 5 o'clock and 9 o'clock. The yellow wire must be connected with alternate brush holders located at 3 o'clock, 7 o'clock and 11 o'clock.

The motor running idle at 115 volts should draw about 6 amperes.

If necessary, rotate the front end plate (with brushes) so as to make the speed or line current equal in both directions. Moving the end plate in the direction of rotation will reduce the speed and the current.

The motor must be assembled so that it will conform to the specifications shown in Fig. 35. These specifications must be followed or the motor may not work properly on the machine. Use a dial test indicator to check the run out of the shaft and shoulder. Check all of these points, as an improper assembly can easily throw the motor out of line.

3. Motors manufactured by the Lamb Electric Company will be either I.S. No. 14335 for 115 volts, I.S. No. 14716 for 115 volts or I.S. No. 14781 for 230 volts. These motors are single phase and will operate on any cycle current from direct current to 60 cycle alternating current. These motors are six pole compensated wound, Universal Type with commutators and brushes. These motors are identical with the Howell motors in performance. However, they differ in the mechanical parts and windings and cannot be mixed with them. Neither can the Lamb 115 volt armature be run with the 230 volt field or vice versa, nor the 14335 parts be run with 14716 parts.

To remove the armature from this motor, follow these instructions:

- First remove the six brush holder caps and brushes from the commutator end of the motor, marking each brush and its corresponding brush holder so that the brushes can be replaced in exactly the same manner as before removal.
- Remove the four nuts holding the thru bolts on the pinion end of the motor housing.
- Remove the three screws in the bearing boss cover plate, on the commutator end of the motor. This will expose the armature shaft lock nut and lock washer.
- Bend back the "ears" of the retaining washer and then remove nut and washer. This nut has a right hand thread.
- Place a soft brass rod against the end of the armature shaft, exposed by removal of this nut, and tap lightly. This will separate armature and motor end bell on pinion end from motor housing.
- To remove armature from end bell, remove the four screws holding the plate over the pinion end of the shaft.
- Next bend back the "ears" of the retaining washer on the armature shaft sleeve and remove the sleeve and washer. The sleeve is mounted on the shaft with a left hand thread.

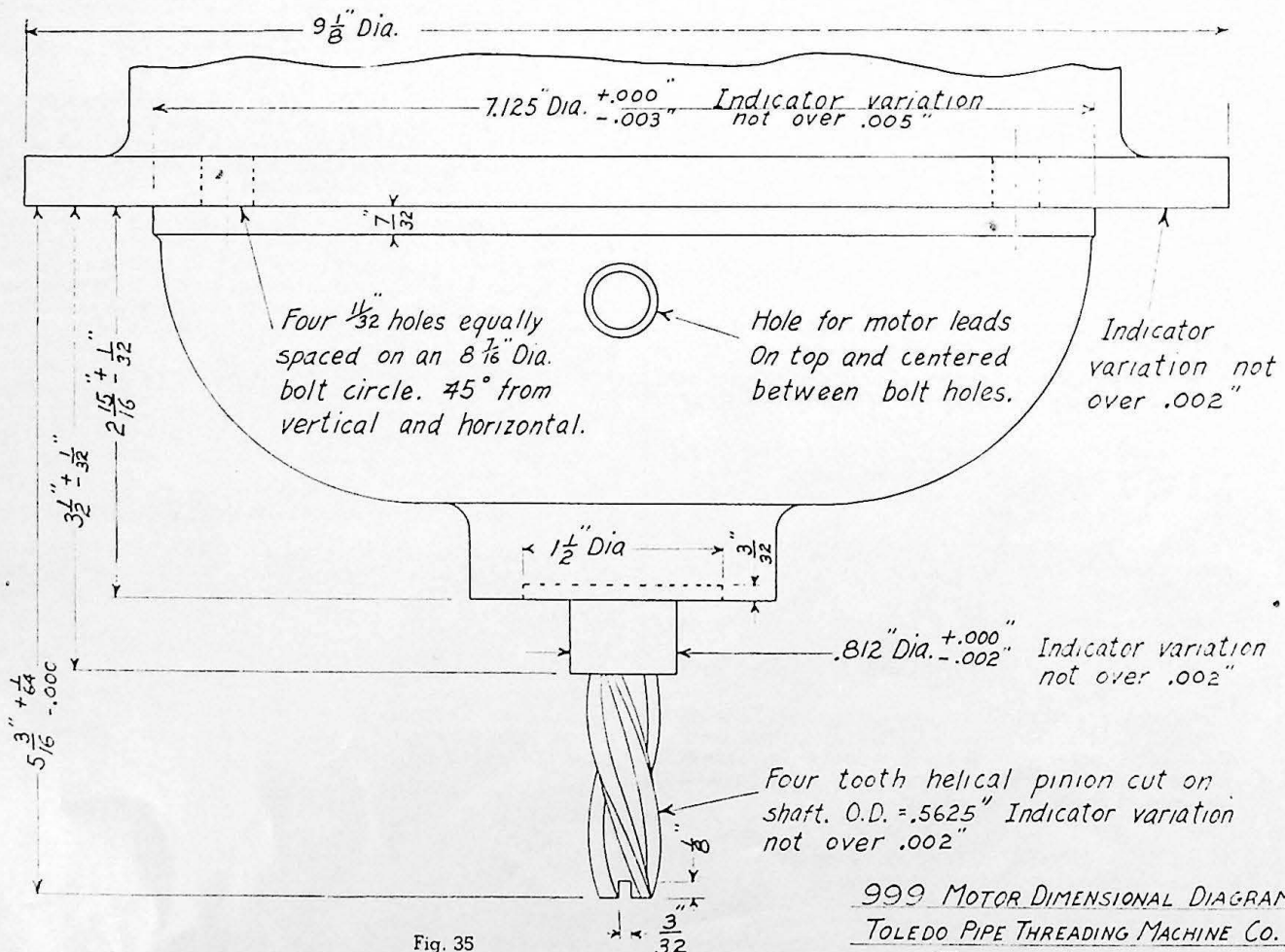
- The armature and shaft can now be removed from the end bell by a slight pressure on the end of the shaft. **Be sure to insert a wood block, brass or lead plate between the shaft and pressure means, to protect the pinion end of the shaft.**

In case the opposite end bell (commutator end) becomes disengaged from the field housing, care must be taken in its reassembly to see that the brush lead wires are in their proper places. **Be sure to replace the end bell so that the register pin and hole lines up with that on field.** This is important to enable the motor to operate at its peak efficiency, as this locator controls the relation of the brushes to the field coils.

Next be sure that the brushes are properly connected. Facing the commutator end of the motor, the black wire coming from the field coil should connect with alternate brush holders located at 11 o'clock, 3 o'clock and 7 o'clock. The yellow wire must be connected with alternate brush holders located at 9 o'clock, 5 o'clock and 1 o'clock.

To reassemble the Lamb motor, use the same care and instructions as prescribed for the Howell motors.

*On the older model machines, which do not have motor name plates attached, or on motors on which the name plates are lost, motor identification can be secured from data stamped on the rim of motor mounting flange. This information is necessary to us to determine the proper replacement parts.



REGULAR EQUIPMENT

Each machine unless otherwise specified is furnished complete with six quick-opening die heads, one head for each size pipe $\frac{1}{2}$ " to 2" inclusive; six sets of pipe dies, one set for each size pipe $\frac{1}{2}$ " to 2" inclusive; five bushings $\frac{1}{2}$ " to $1\frac{1}{2}$ "; wrenches; 10 feet of cable with connectors; and one gallon of "TOLEDO" black sulphur base thread cutting oil. No cable furnished with 3 phase machine.

ADDITIONAL EQUIPMENT

The following additional equipment, priced on the No. 999 Parts List may be furnished on special order: Special quick opening left hand die heads and $\frac{1}{2}$ " to 2" left hand dies; N.C. or N.F. $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{9}{16}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1", $1\frac{1}{8}$ ", $1\frac{1}{4}$ ", $1\frac{3}{8}$ " or $1\frac{1}{2}$ " right hand bolt dies. $\frac{1}{2}$ " to 2" electric conduit dies.

The machine can also be furnished at the same price with special high speed gearing. It operates approximately twice as fast as the regular machine but can be used only up to and including 1" pipe.

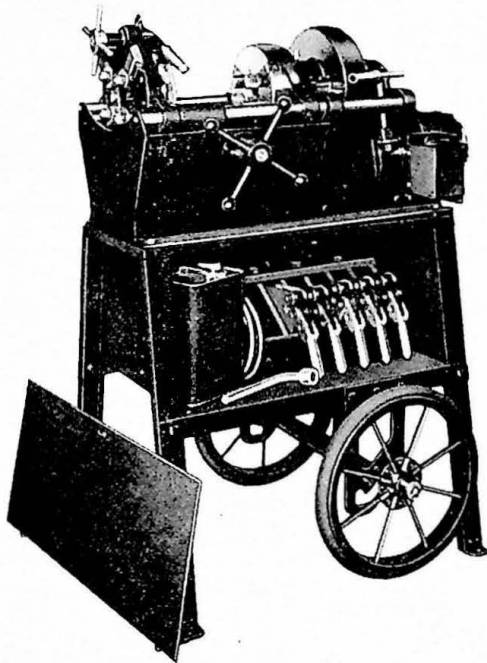


Fig. 37

Machine on enclosed steel stand with partitioned die head box and large rubber tired wheels easily moved by one man. Sets firmly on four legs when in operation.

The machine can also be furnished with either plain or enclosed steel stand, and either without wheels or with 16" steel tired or with 16" rubber tired wheels. Partitioned die head box is furnished with enclosed stand. The wheels are so placed that the machine balances easily and may be readily moved about by one man even over rough uneven floors. When machine is in use it rests on all four legs.



Fig. 38

Pipe support, as illustrated, for long lengths of pipe may be furnished on special order.



Fig. 39

"TOLEDO" black sulphur base thread cutting oil is recommended for use in this machine. It is antiseptic, will not turn rancid, assures smoother, cleaner threads, tighter joints and increased die service. It is sold only in sealed, red lithographed, one-gallon trade marked cans, or sealed, red lithographed five-gallon trade-marked pails or 54-gallon drums.



Fig. 40

"TOLEDO" UNIVERSAL DRIVE SHAFT

Designed to operate geared threading and cutting tools with power pipe machine. The chuck shaft has three flat sides to facilitate holding in the three-jaw chuck of the machine. It is extra long, measuring 20", which permits inserting thru the spindle of the

"TOLEDO" No. 999 and operating the tools from the rear of the No. 999. The overall length is 64½". The socket is fitted with set screw and adjustable for large or small driving pinions.

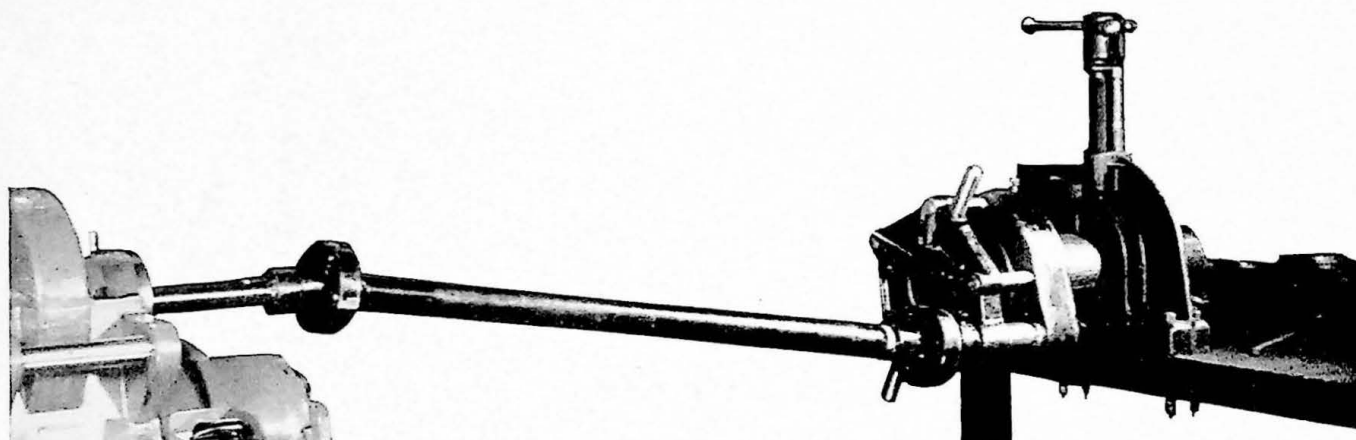
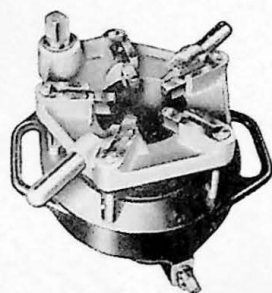
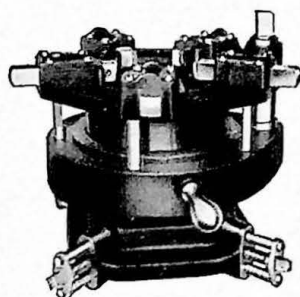


Fig. 41

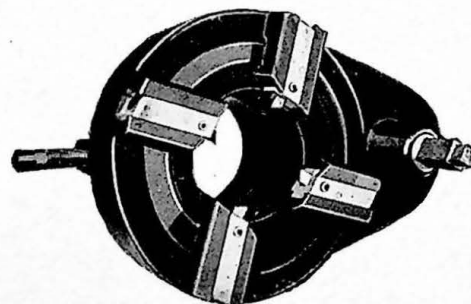
"TOLEDO" Universal Drive Shaft operating a "TOLEDO" No. 2 tool threading 2½" to 4" pipe.



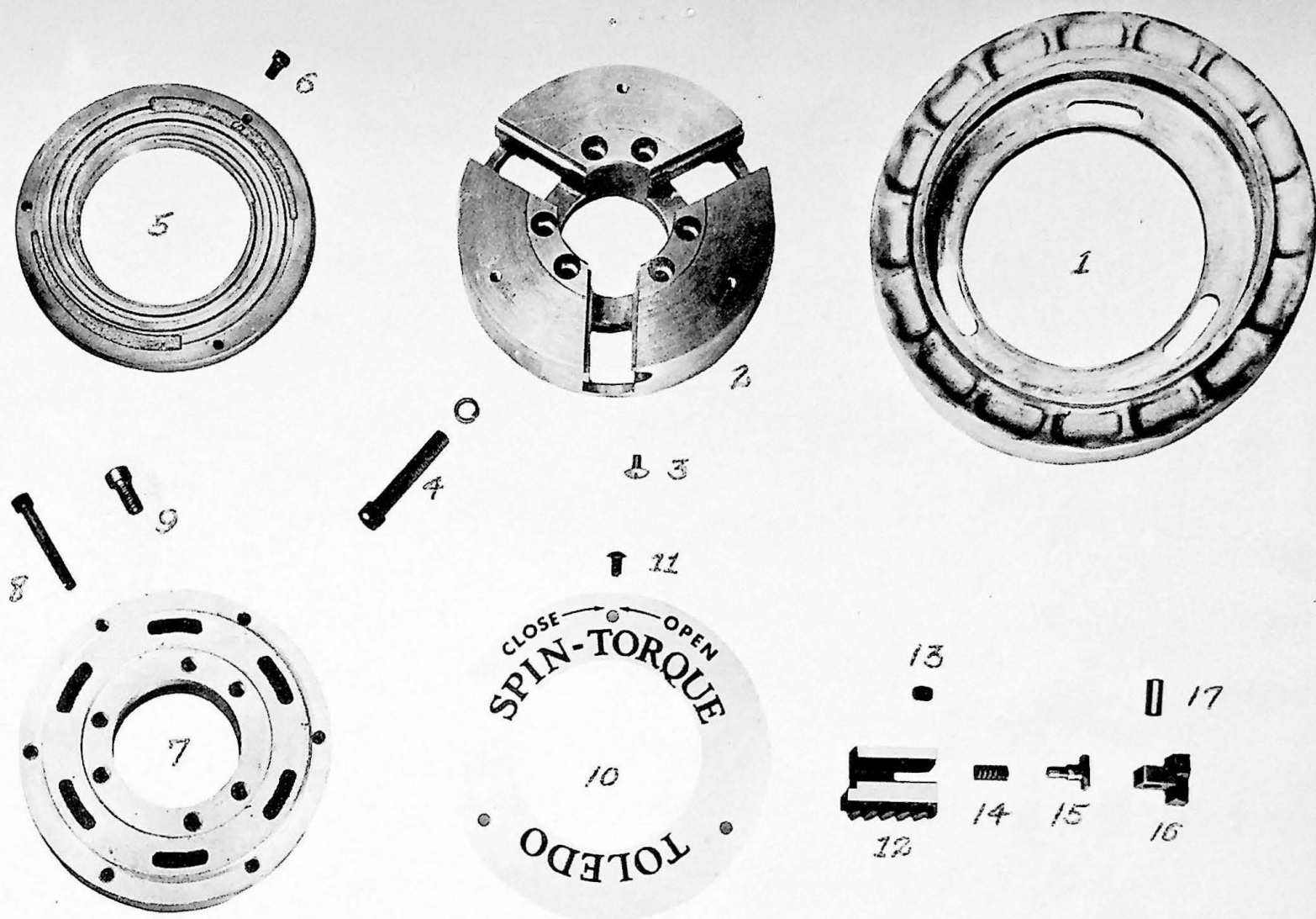
"TOLEDO" No. 2BR
Geared Adjustable
Threader 2½" to 4"



"TOLEDO" No. 25BR
Geared Adjustable
Threader 2½" to 6"



"TOLEDO" No. 40 Automatic
Pipe Cutter 2" to 4"



"TOLEDO" SPIN-TORQUE CHUCK REPAIR PARTS



Effective November 25, 1957
(SUPERSEDES 9-25-56 PRICES)

CODE	PART NAME	PART NUMBER	QUANTITY USED	USERS' NET PRICE
1	Hand Wheel.....	9733	1	\$29.95
2	Body.....	9731-1	1	40.00
3	Jaw Stop Screw.....	10150	1	.10
4	Body Mounting Screws.....	8388	6	.40 ea.
5	Scroll.....	9417	1	17.60
6	Scroll Actuating Screws.....	8538	3	.15 ea.
7	Adaptor to fit No. 88.....	9434	1	11.65
8	Adaptor to fit No. 999.....	9414	1	11.65
9	Adaptor Attaching Screws for No. 88.....	8388	6	.40 ea.
10	Adaptor Attaching Screws for No. 999.....	4508	6	.25 ea.
11	Name Plate.....	10625	1	1.25
12	Name Plate Screws.....	10965	3	.10 ea.
13	Chuck Jaws (SPECIFY NUMBER).....	9735	3	9.90 ea.
	(1-2 or 3).....		per set of 3	29.75 per set
14	Gripper Hinge Pin Retaining Screw.....	10049	3	.15 ea.
15	Gripper Shoe Spring.....	4962	3	.05 ea.
16	Gripper Shoe.....	9597	3	1.00 ea.
17	Gripper (SPECIFY NUMBER).....	9734	1	5.85 ea.
	Gripper (SPECIFY NUMBER).....	9788	2	5.85 ea.
			per set of 3	17.50 per set
			3	.55 ea.

MANUFACTURED BY
THE TOLEDO PIPE THREADING MACHINE COMPANY
1445 SUMMIT STREET, TOLEDO 4, OHIO

"TOLEDO"

TRADE - MARK



REGISTERED
U. S. PAT. OFFICE