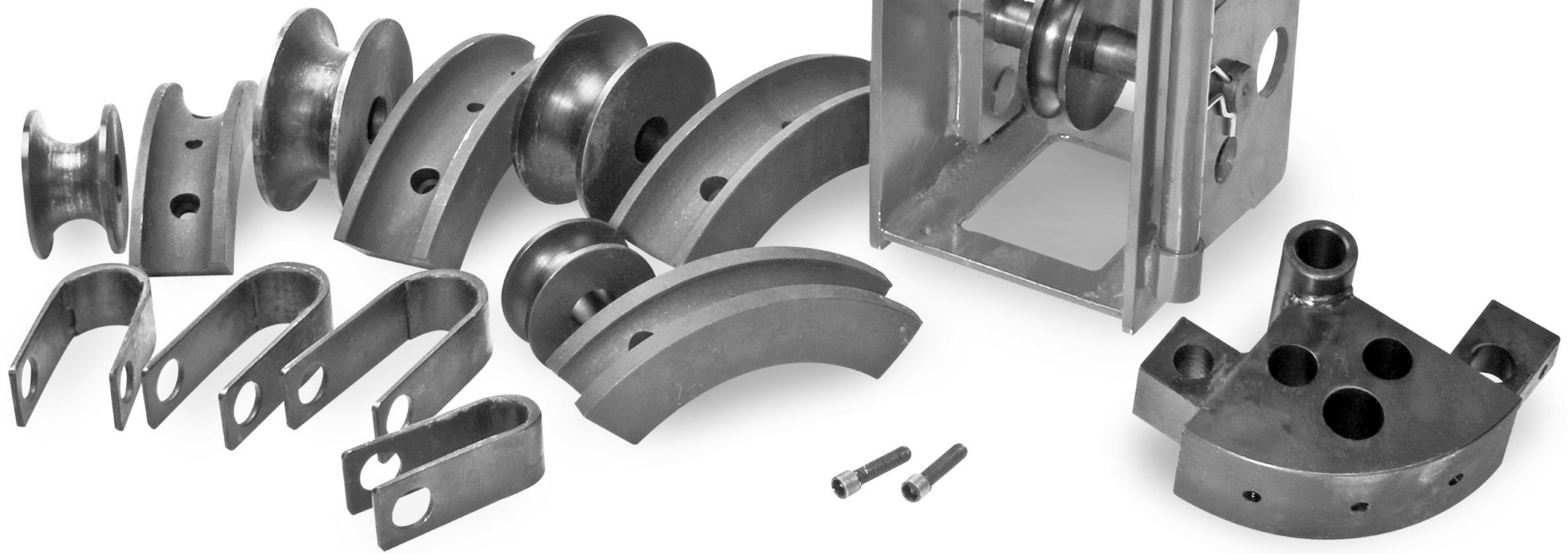


Tubing Bender is designed around a rigid welded steel frame, iron/aluminum die and roller along with a 8 ton jack that will handle up to 1.75" chromoly tubing in 0.090" wall thickness.

- Our steel "cage" type frame offers secure usage while also focusing the bending force into the dies.
- The 8 ton jack effortlessly bends steel tubing with wall thickness up to 0.090".
- Quick change dies allow you to work with multiple tubing diameters; dies change in minutes saving time and offering the flexibility to use one machine for various tubing sizes.
- While not all tube diameters and wall thickness can be bent a full 90 degrees, the machine will accurately bend 45 degrees pieces, which can easily be MIG/TIG welded to form 90 degree pieces.



SET UP

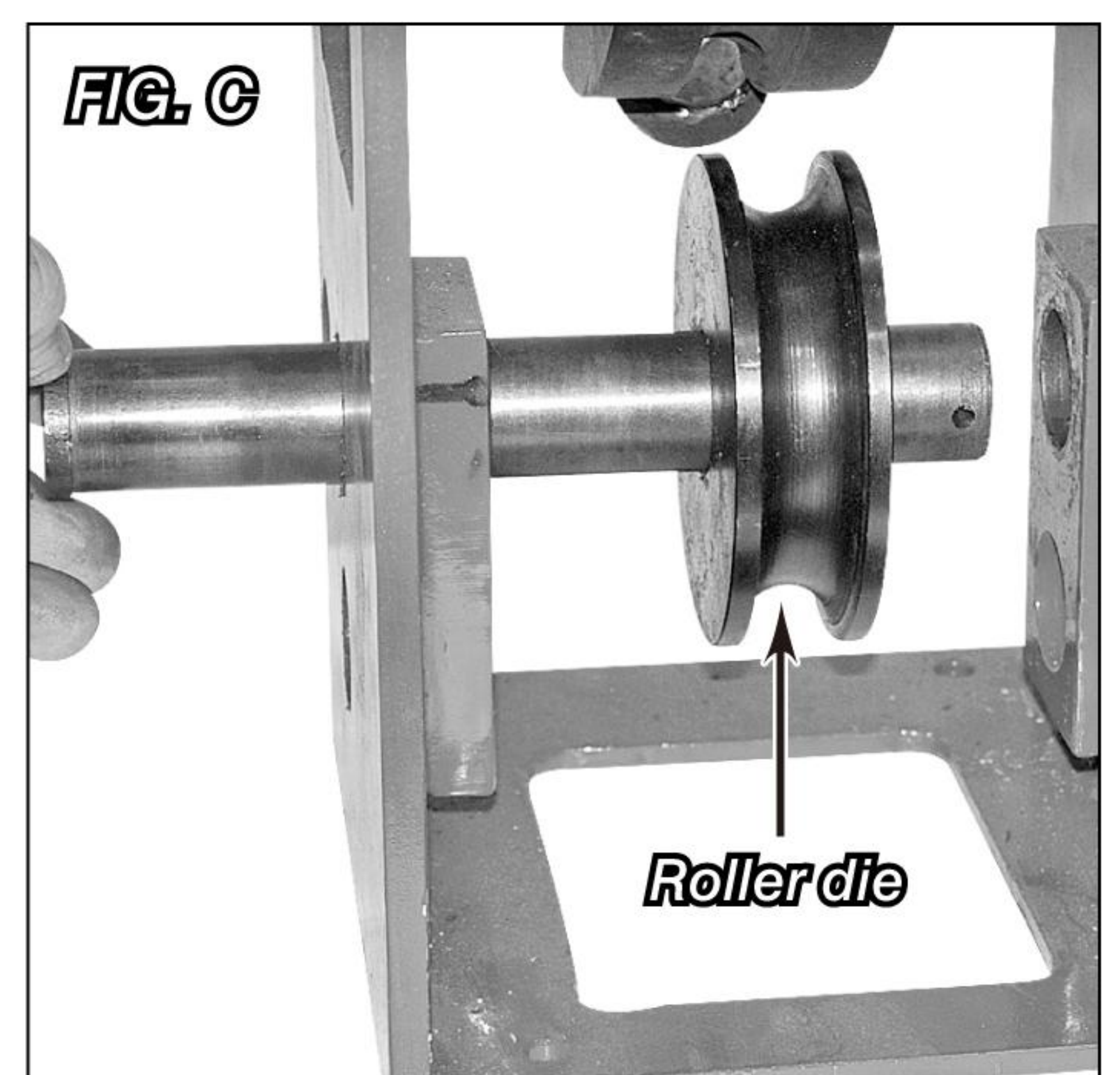
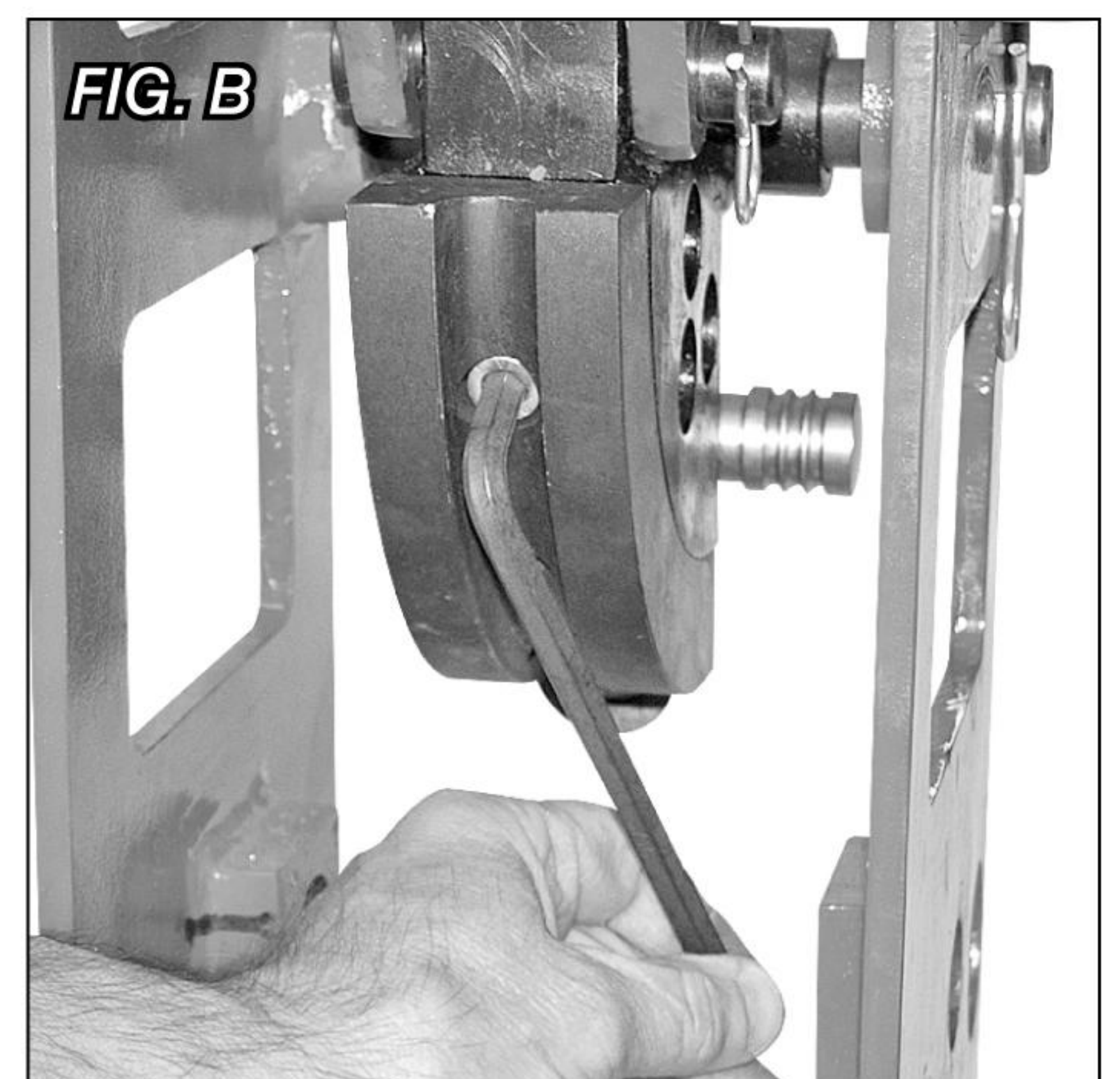
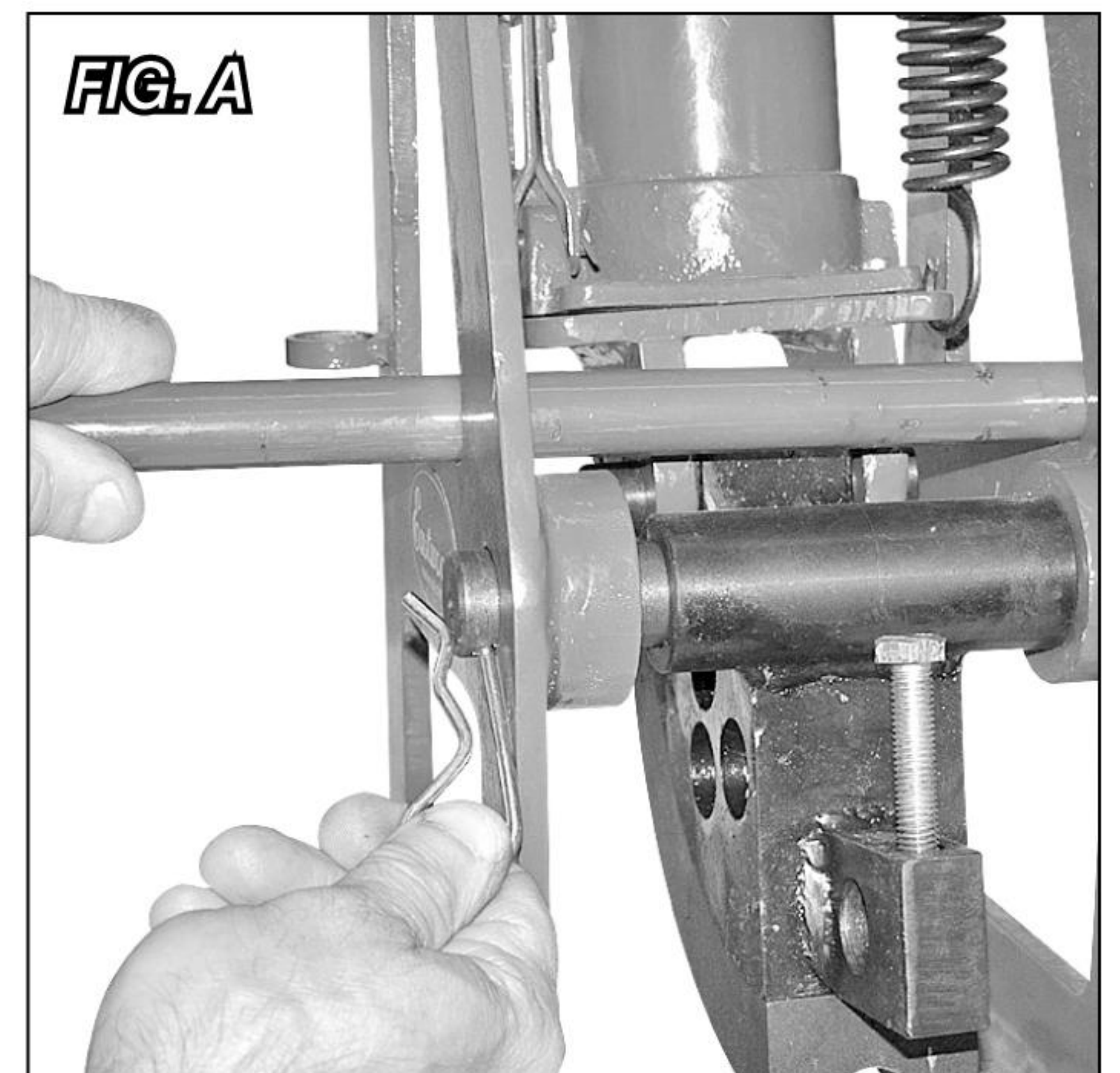
⚠ WARNING

BEFORE BEGINNING ANY WORK WITH THIS TOOL, IT IS ABSOLUTELY NECESSARY THAT IT BE SECURELY BOLTED TO A FLOOR OR A HEAVY, STURDY WORKBENCH. WARNING: THIS TOOL CAN NOT BE OPERATED WITHOUT ADEQUATE SUPPORT OR SEVERE PERSONAL INJURY OR DAMAGE CAN OCCUR.

1. Be sure there is sufficient working room around the tool to allow for safe handling of various lengths of tubing.
2. Note that the unit is shipped with the 1" Die & Roller set installed. To work with 1" tubing, go to the Operation section of these instructions.

INSTALL 3/4" OR 1-1/2" DIES AND ROLLERS

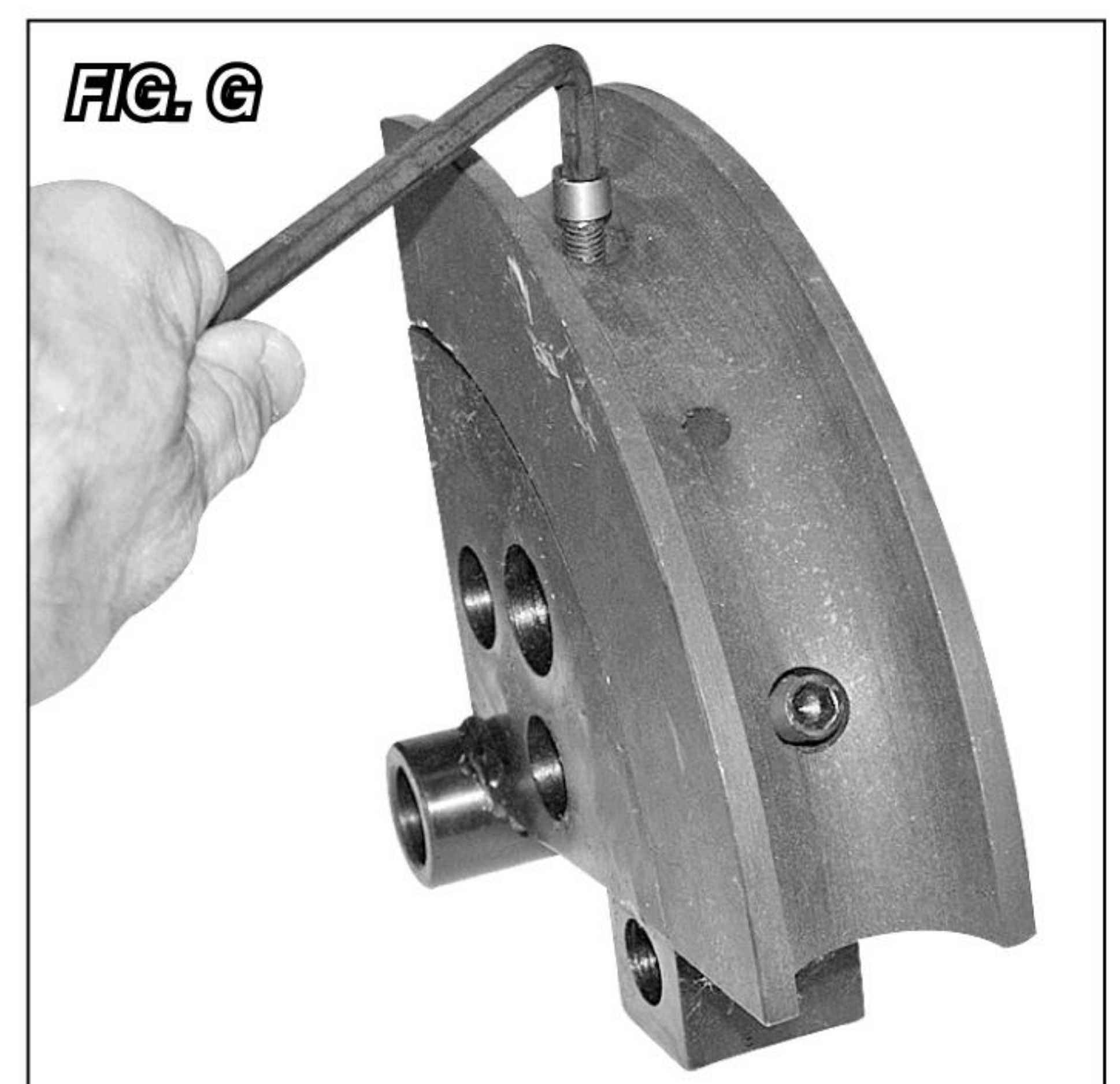
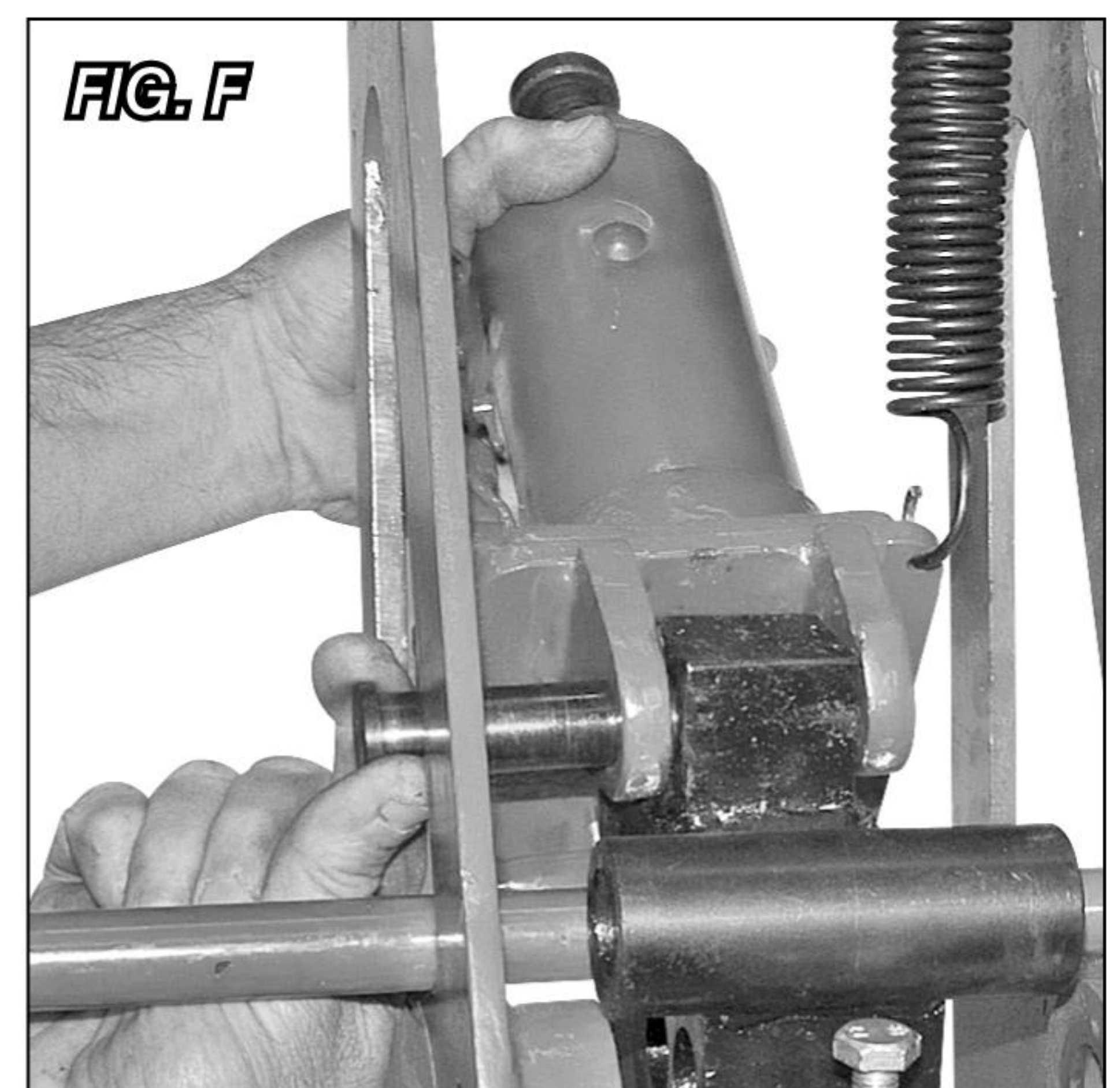
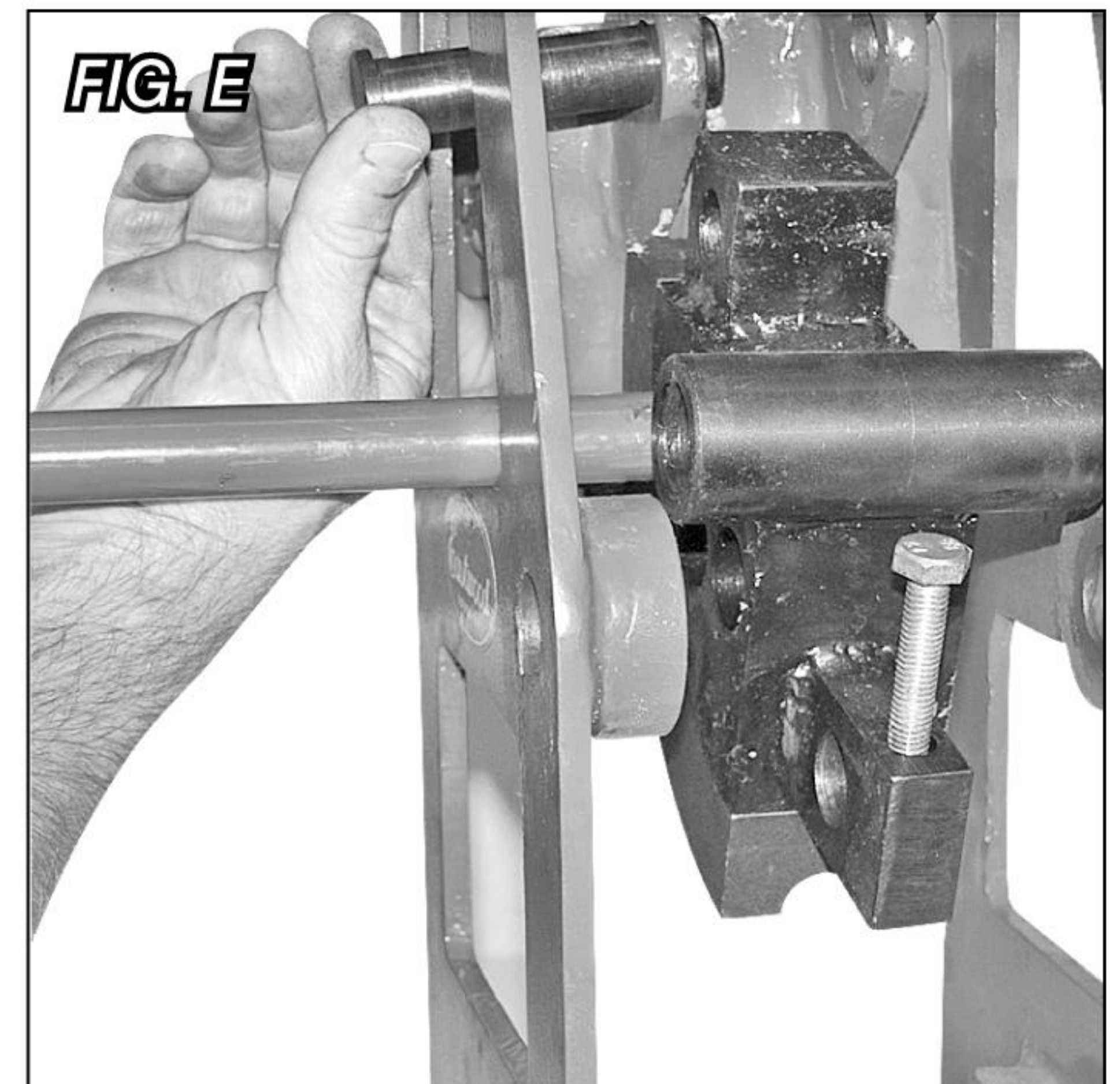
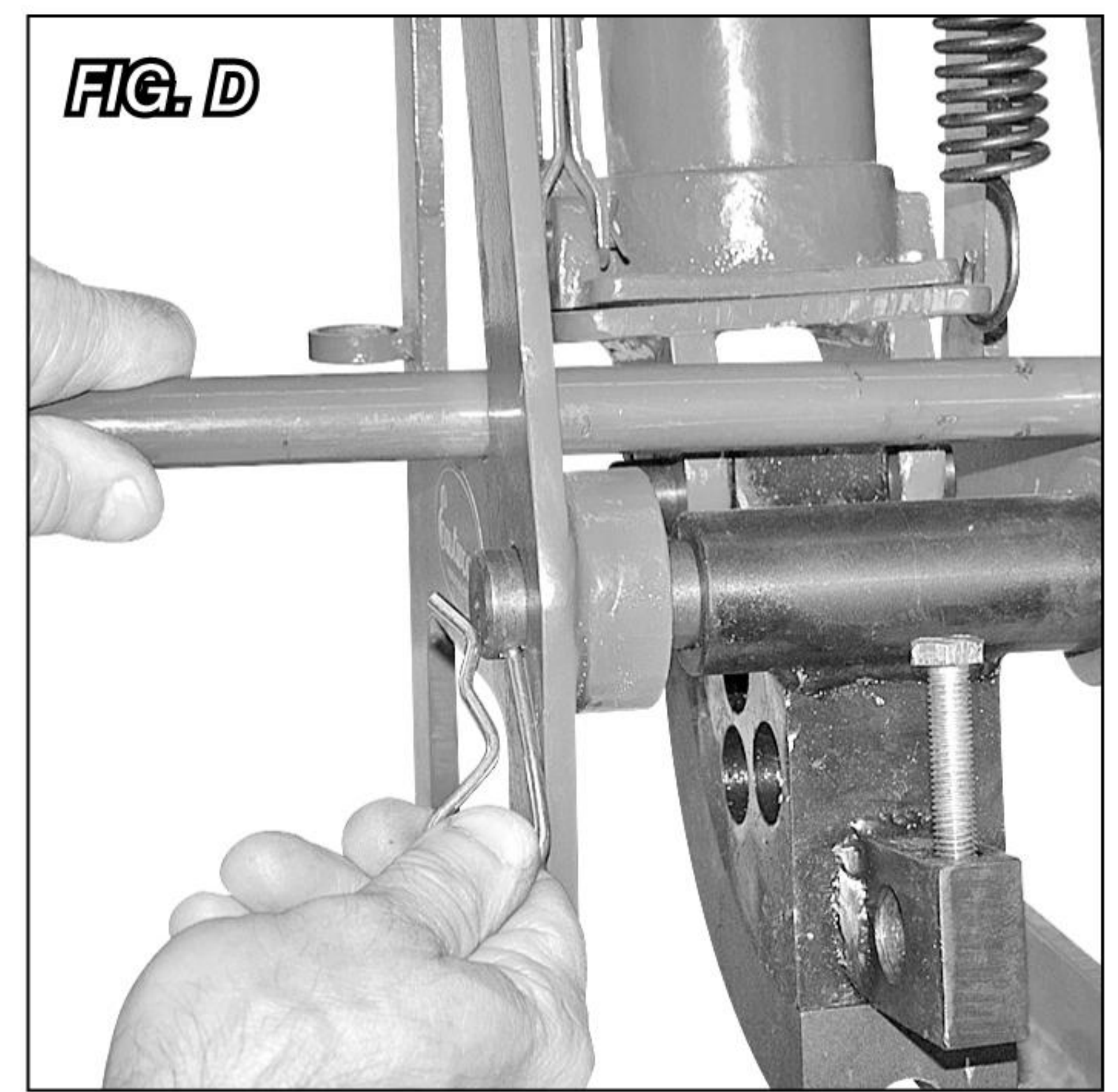
1. Pull Retaining Pin from Lower Roller Shaft, remove shaft and Roller Die (Fig. A).
2. Loosen and remove 2 socket head cap screws from Forming Die face with a 5/16" hex key wrench (Fig. B).
3. Place the selected size Forming Die over the Die Block, replace the 2 socket head cap screws and tighten with a 5/16" hex key wrench.
4. Holding the selected size Roller Die (matched to Forming Die size), slide Roller Die Shaft through the upper of two frame holes, through the Roller Die then through opposite hole in frame (Fig. C).
5. Replace retaining pin.



INSTALL LARGER 1-5/8" OR 1-3/4" DIES AND ROLLERS

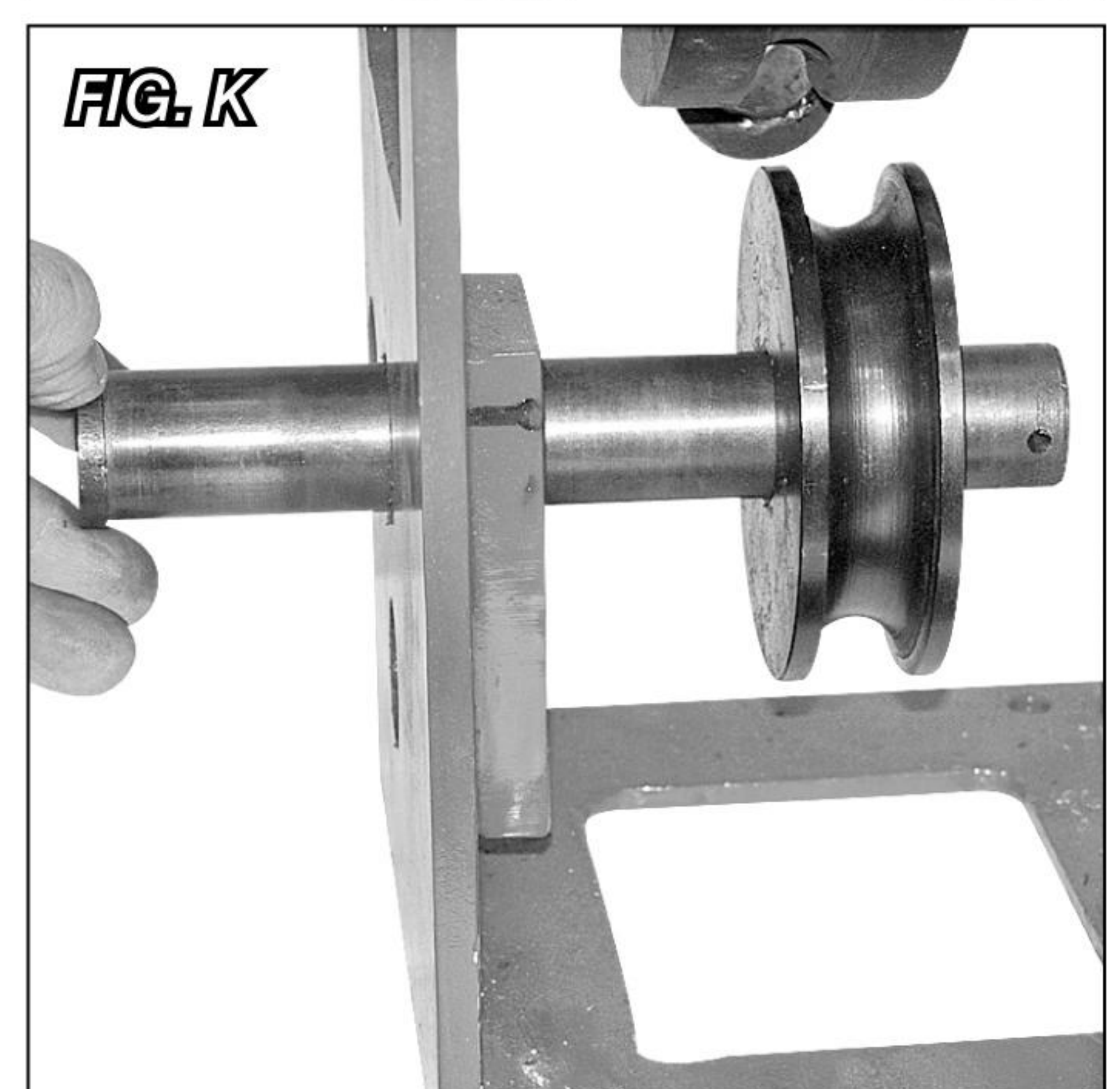
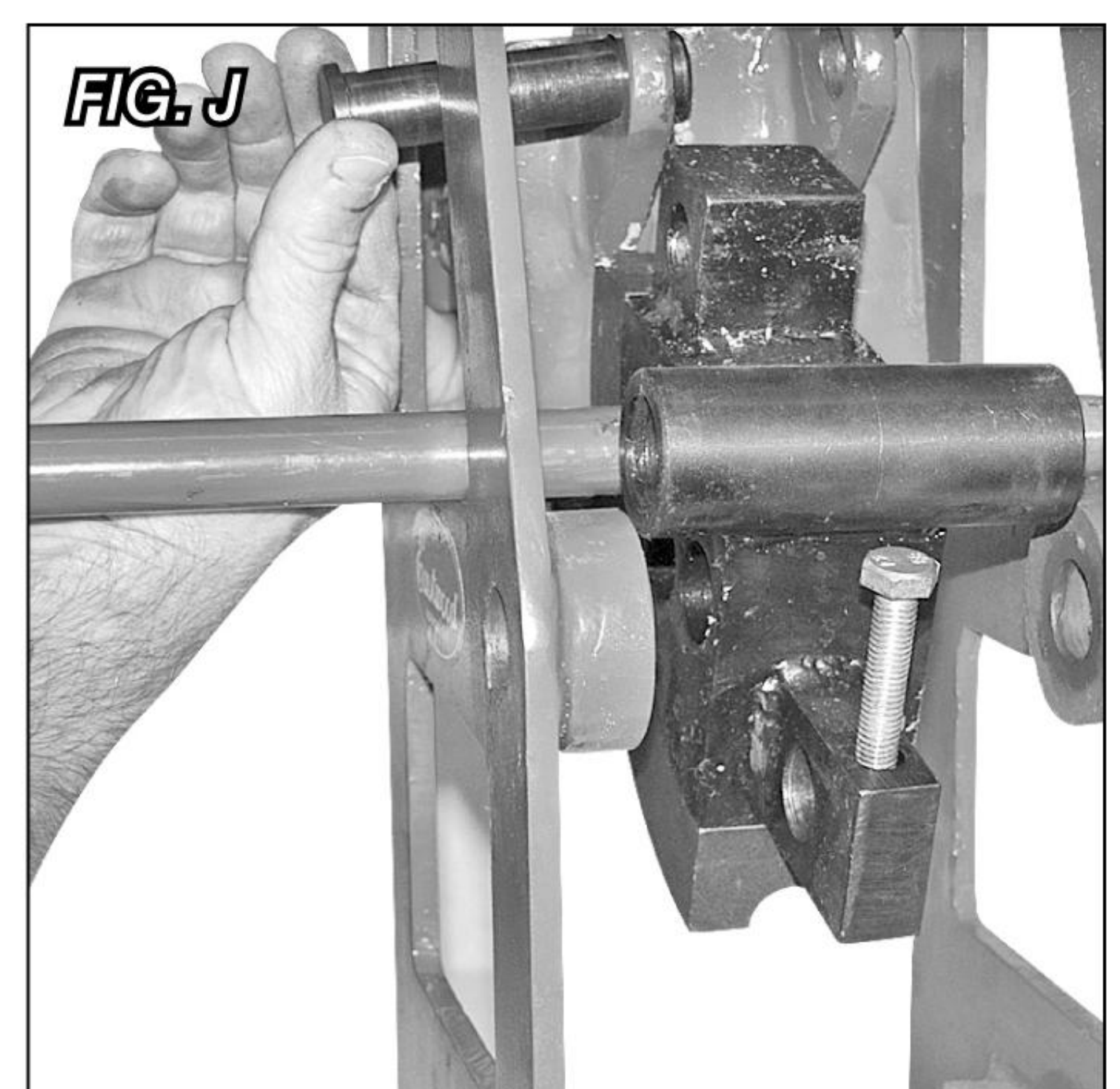
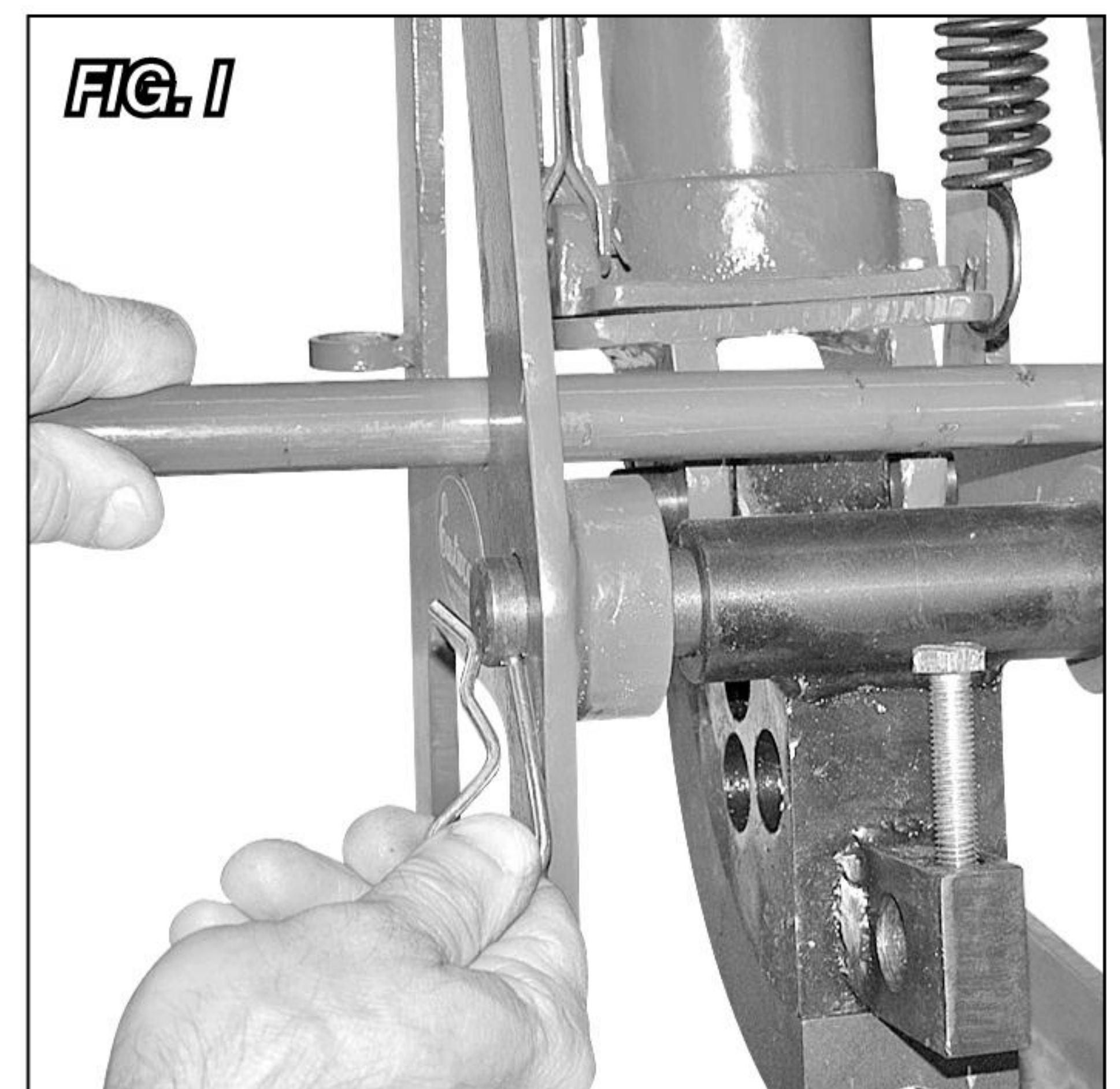
Disassembly For Removal

1. Pull Retaining Pin from Lower Roller Shaft, remove shaft and Roller Die. (Fig. D).
2. Place Jack Handle through the triangular openings of the frame toward the angled side and in front of the Jack Pivot Pin (Fig D.).
3. While supporting the Die Block with your opposite hand, remove Retaining Pin and Shaft from Frame and Die Block (Fig. E.).
CAUTION: the Die Block assembly is heavy.
4. Continue to support the Die Block with your hand while removing the Jack Pivot Shaft Retaining Pin and Shaft from the Jack Base (Fig. F).
5. The Die Block will be free and The Jack will now be supported by hanging from the Tension Spring.
6. Loosen and remove 2 socket head cap screws from Forming Die face with a 5/16" hex key wrench (Fig. G).
7. Place the selected size Forming Die over the Die Block, replace the 2 socket head cap screws and tighten with a 5/16" hex key wrench.



Reassembly

1. Be sure the Top Pad of the Jack post is in place in the Socket at the top of the Frame (Fig H.).
2. While supporting the Die Block in your hand, Slide the Die Block Shaft through the hole in the Frame, through the Die Block and through the opposite Frame hole (Fig. I). Replace Retaining Pin.
3. Keep the Die Block rotated in the up position and slide the Jack Pivot Shaft through the Jack Base and Die Block (Fig J.) then replace Retaining Pin.
4. Holding the selected size Roller Die (matched to Forming Die size), slide Roller Die Shaft through the upper of two frame holes, through the Roller Die then through opposite hole in frame (Fig. K). Replace Retaining Pin.



TUBING LAYOUT DATA

Use this chart when laying out your project to help determine the amount of tubing needed.

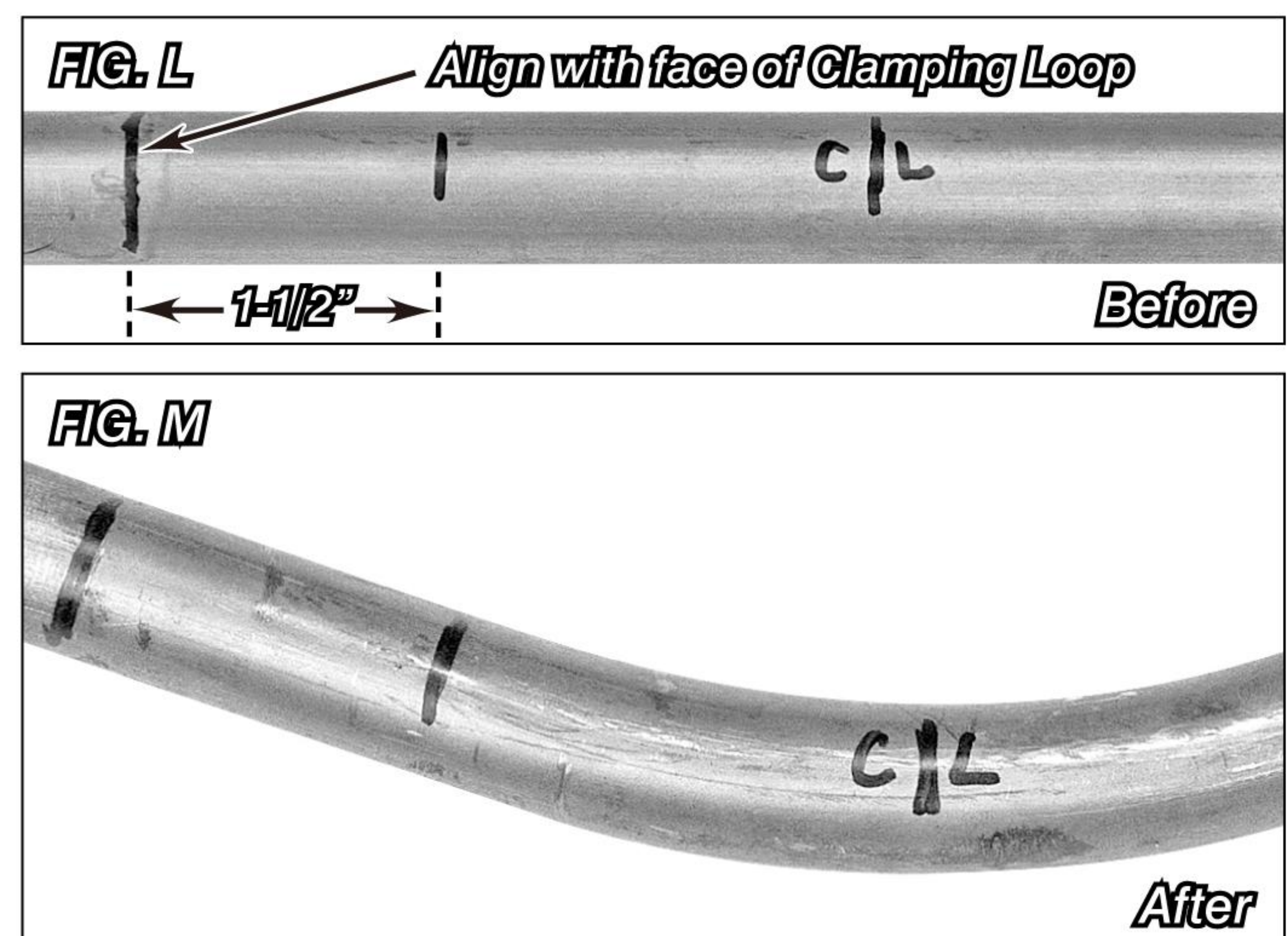
▲ NOTICE

The following figures are representative of the average linear amount of tubing required for a given size and the bend radius it will yield at a maximum angle of 90°. Please note that 90° is not achievable on all tubing and is dependant upon the particular wall thickness, diameter and hardness of the tubing used. These figures are for the Length of the bend portion only. An additional 1-1/2" of straight section per bend is required as it is clamped in the Die Block.

Tubing Layout Length Chart						
Size	Bend Radius	90°	60°	45°	30°	22.5°
3/4"	5-5/16"	8-1/8"	5-1/2"	4-1/16"	2-3/4"	2"
1"	5-3/8"	8-1/2"	5-5/8"	4-1/4"	2-7/8"	2-1/8"
1-1/2"	5-7/16"	9-3/8"	6-1/4"	4-3/4"	3-1/8"	2-3/8"
1-5/8"	6-1/2"	10-1/4"	6-3/4"	5-1/8"	3-3/8"	2-5/8"
1-3/4"	6-5/8"	10-3/8"	6-7/8"	5-3/8"	3-1/2"	2-3/4"

TUBING BEND LOCATION MEASURING DATA

The following chart provides a means to measure your tubing before bending to determine the location of the center of the bend. The dimensions below are applied to a straight section of tubing. You simply place a mark on the tubing exactly where you want the center of the final bend to be, then measure back and place a second mark on the tubing with the appropriate dimension taken from the chart below (Fig. L). The second mark is aligned with the outward face of the Clamping Loop (Fig. N). Please keep in mind that these dimensions are approximate and will vary based on the wall thickness and hardness of the particular tubing being used. Thinner, softer tubing may require less length while thicker or harder tubing may require slightly more length.



Bend Location Measuring Chart					
Size	90°	60°	45°	30°	22.5°
3/4"	5-1/8"	4-1/4"	3-5/8"	3"	2-1/2"
1"	5-3/4"	4-3/8"	3-3/4"	3-1/8"	2-3/8"
1-1/2"	6-1/4"	4-3/4"	4"	3-1/4"	2-3/4"
1-5/8"	6-5/8"	5"	4-1/8"	3-3/8"	2-7/8"
1-3/4"	6-3/4"	5-1/8"	4-1/4"	3-1/2"	3"

OPERATION

1. **BEFORE BEGINNING ANY WORK WITH THIS TOOL**, it is absolutely necessary that it be securely bolted to a floor or a heavy, sturdy work-bench.

⚠ WARNING

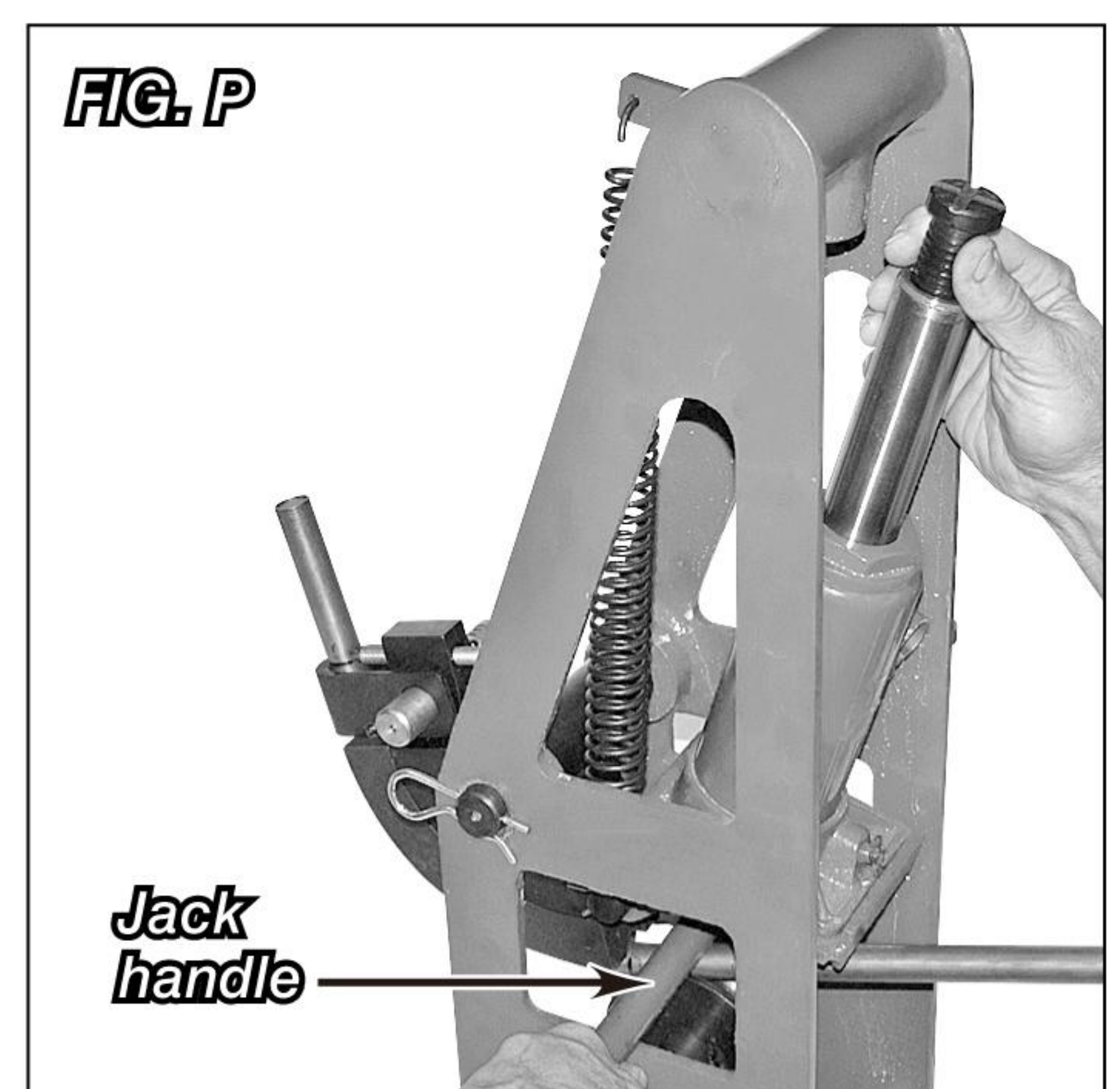
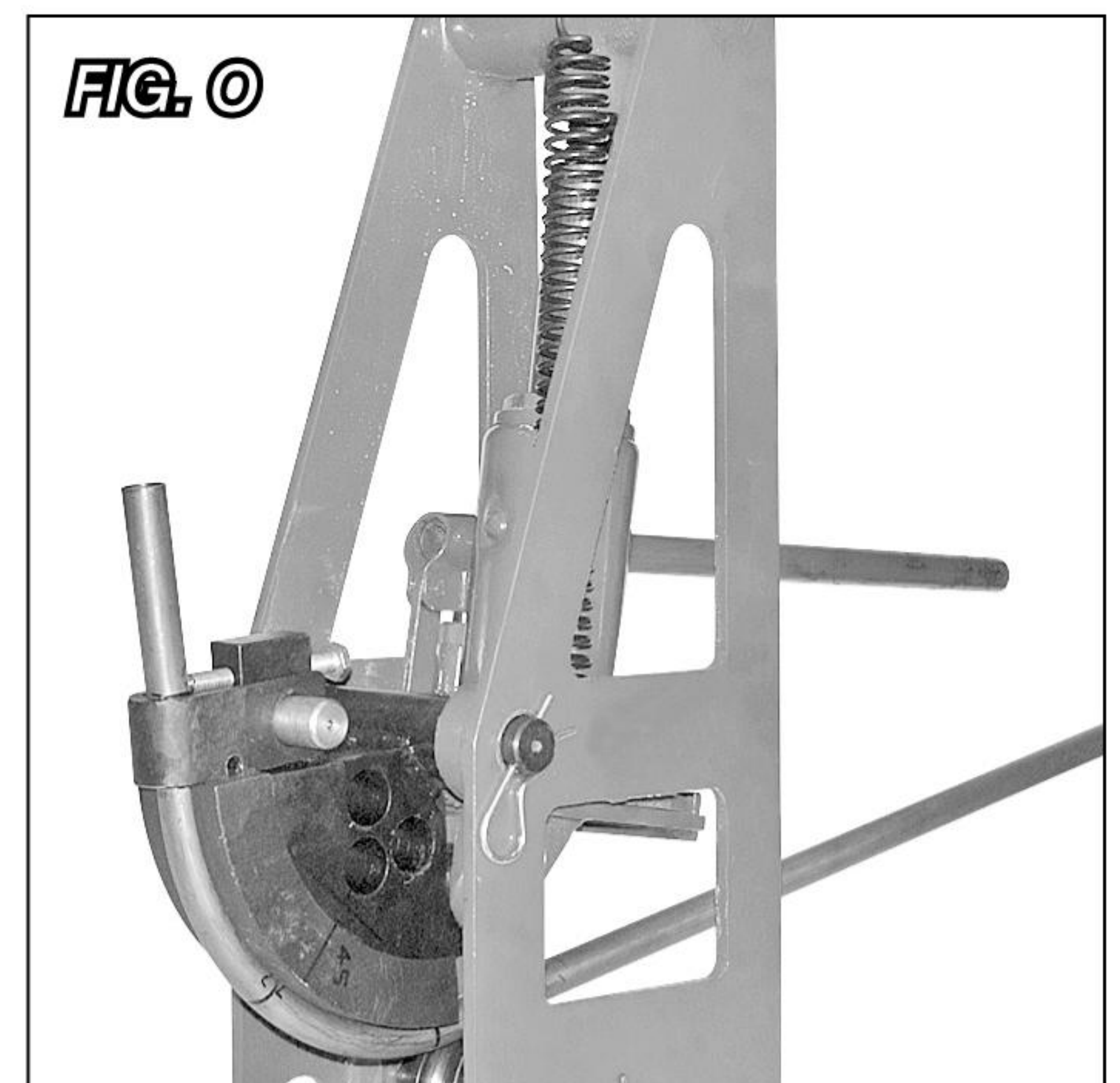
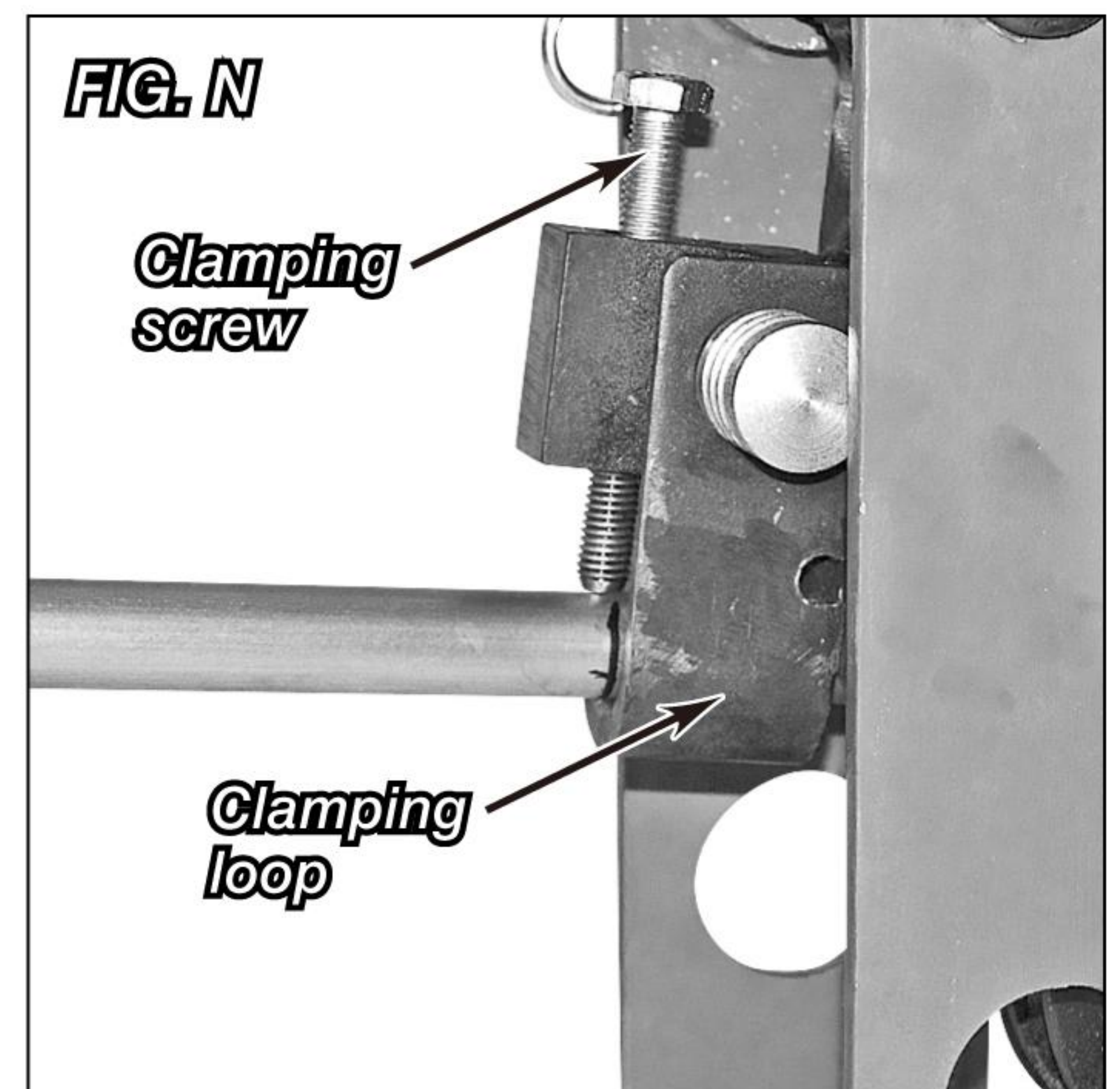
This tool can not be operated without adequate support or severe personal injury or damage can occur.

2. It is extremely important to practice bending several pieces of tubing in each size used in your project. This will allow you to become familiar with the tool and the particular limitations of the tubing being used.
3. It is highly recommended to have the Tubing Bender mounted to a level surface and use a magnetic angle finder to check your progress.
4. Using the Bend Location Measuring Chart on previous page, place a mark on your section of tubing at a point where you want to begin.
5. Place Tubing between the Die Block and Roller Dies and extend through the Hold Down Clamp (Fig. N).
6. Align your previously made mark with the leading edge of the Hold Down Clamp. Tighten the Clamping Screw (Fig. N). Tighten sufficiently to hold clamp securely, being careful not to over-tighten and crush tubing.
7. Make sure the Jack Rod is in the fully retracted position and the valve is closed.

NOTE: Place the notch of the Jack Handle over the “T” fitting on the Jack, (open is Counter Clockwise, closed is Clockwise).

8. Place the Jack Handle in the receptacle and **VERY SLOWLY** pump the Jack rotating the Die Block and bending the tubing.
9. At some point during the forming process, the jack will reach the limit of its travel (Fig. O). At that point, release the jack valve slightly to reduce some pressure then place the jack handle through the square window of the frame and through the nearest hole in the Die Block (Fig. P). Pry downward against spring tension and pull the Jack post out of the Socket. Thread the post outward to extend jack travel then replace the jack rod in the socket, remove the jack rod from the window and close the valve.
10. Resume jacking until the desired angle is achieved. For some alloys, it may be necessary to bend several degrees beyond your desired final angle to allow for springback. A magnetic angle finder is very helpful for this process.
11. When complete, release the jack valve, loosen the Hold Down Clamp bolt and remove the pin (Fig. N). To fully free the tubing, it may be necessary to utilize the procedure in step 10 and remove the jack post from the frame and pull the Jack post from the Socket.

You are now ready to create professional tubing bends enabling you to create projects in steel tubing to your individual design.



Assembly Drawing

