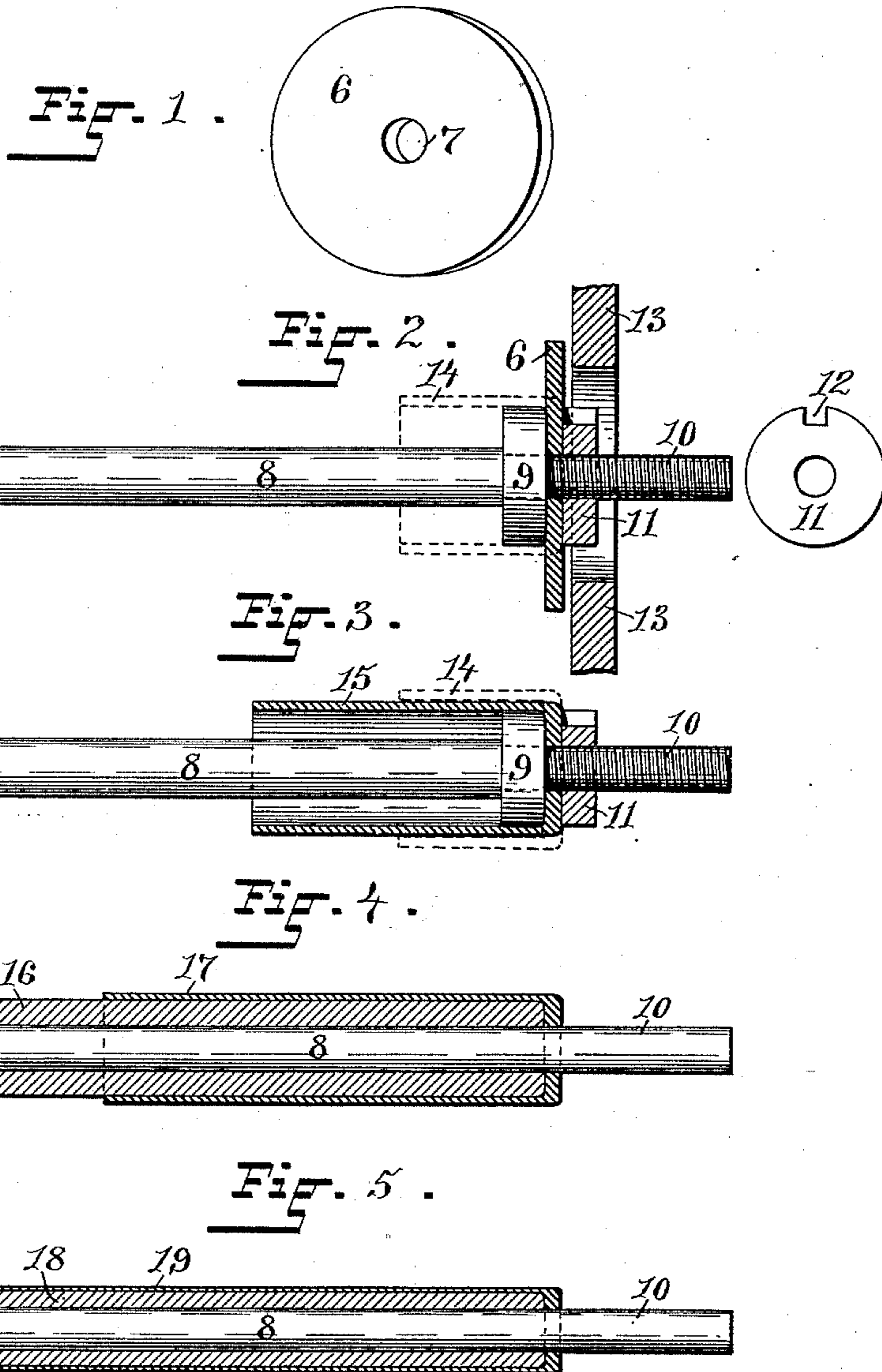


(No Model.)

G. U. MEYER.  
PROCESS OF DRAWING SEAMLESS TUBES.

No. 441,888.

Patented Dec. 2, 1890.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

GEORGE U. MEYER, OF PROVIDENCE, RHODE ISLAND.

## PROCESS OF DRAWING SEAMLESS TUBES.

SPECIFICATION forming part of Letters Patent No. 441,888, dated December 2, 1890.

Application filed September 9, 1890. Serial No. 364,462. (No specimens.)

*To all whom it may concern:*

Be it known that I, GEORGE U. MEYER, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improved Process for Drawing Seamless Tubes; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improved process for drawing seamless tubes from flat sheets of metal; and it consists in cutting the sheet metal into or approximately into a circular disk, perforating the center of the disk with a hole, inserting the end of an arbor provided with a collar, so as to form a shoulder, through the hole in the disk, and drawing the arbor and plate disk through the hole in a draw-plate to form the outer portion of the disk into a tube, as will be more fully set forth hereinafter.

Figure 1 is a perspective view of a sheet-metal circular disk provided with a central hole. Fig. 2 is a side view of an arbor provided with a collar, against the face of which collar a disk of sheet metal is held by a nut, partly in section. Fig. 3 is a side view of the arbor and a sectional view of the tube drawn on the same. Fig. 4 is a side view of the arbor and a longitudinal sectional view of the sleeve and tube drawn on the arbor. Fig. 5 is a side view of the arbor and a sectional view of the sleeve and tube drawn on the same.

Similar numbers of reference indicate corresponding parts in all the figures.

In the drawings, 6 indicates a practically circular disk of sheet metal provided with the central hole 7. The disk may be of any desired metal or composition of metals. It may consist of copper, brass, silver, gold, or any other metal. It may and in practice it frequently does consist of a sheet of inferior metal plated on one side with superior or precious metal, and the disk may consist of a sheet of inferior metal plated on one side with precious metal and on the other side with solder.

For drawing the disk 6 into a tube I use an arbor consisting of the draw-bar 8, on which the collar 9 is secured, so as to form a

shoulder. The draw end 10 of the draw-bar 8 may be screw-threaded, so that the guide-disk 11 may be provided with a screw-thread and used as a nut to secure the disk 6 against the face of the collar 9. By the use of a suitable wrench the guide-disk can be forced against the sheet-metal disk 11, so as to hold the same firmly against the collar 9.

To enable others skilled in the art to practice my invention, I will now describe the process more fully. From a flat sheet of any desired metal or composition of metal I cut the disk 6 and punch in the center of the disk the hole 7. I now place the disk on the drawing end 10 of the arbor, so that it rests against the face of the collar 9, as is shown in Fig. 2, and place the guide-disk 11 on the arbor against the disk 6. I now take the arbor to a draw-bench, used for drawing rods and wire, and draw the disk 6 through a hole in the draw-plate 13 of considerable greater diameter than the collar 9, so as to bend the plate over the collar 9, and then draw the same successively through holes in the draw-plate each of less diameter than the last, until the metal is drawn into the form of the tube indicated in broken lines in Fig. 2. The strain is exerted by the drawing-head or the drawing-tongs on the projecting end 10 of the arbor. The guide-disk 11 enters the hole in the draw-plate in advance of the disk 6, and thus forms a guide by which the concentricity of the disk and hole is insured. The partially-drawn tube 14 is now placed on an arbor, the collar 9 of which is of less diameter than the first, and the tube 15, as shown in Fig. 3, is drawn by drawing the tube 14 through a suitable hole or holes in the die-plate 13. The tube 15 may be reduced in thickness and extended in length without reducing the interior diameter by drawing the tube while on the arbor, as shown in Fig. 3, successively through holes of less diameter in the draw-plates. When the tube is to be still further reduced in thickness and diameter, the tubular sleeve 16 is placed on the arbor provided with the collar 9 to form a shoulder, against which the sleeve 16 bears, the partially-drawn tube is placed on the arbor and is drawn down onto the sleeve 16 by drawing the same through a suitable hole or holes in a draw-plate to produce the tube 17, (shown in

Fig. 4,) and by using a thinner sleeve 18 on the arbor the tube 19 is produced, as is shown in Fig. 5.

During the whole process of drawing the tube the central portion of the disk 6 holds the tube against the strain of the die-plate, and the hole 7, through which the arbor extends, holds the tube in the required position on the arbor. The central portion of the disk 6, when drawn into a tube, retains practically its original thickness and thus secures a firm support of the tube during the process of drawing against the shoulder on the arbor formed by the collar 9 or the sleeve on the arbor.

In this process all the strain exerted on the metal drawn into the tube and on the arbor is tensile strain and is exerted against the thick central portion of the blank from which the tube is drawn. Tubes of any desired length may thus be drawn from a suitable disk with a short arbor, and the tubes may be drawn into seamless tubular wire in the same manner as tubes have heretofore been drawn into such wire. If the original disk 6 consists of what is known in the art as "jewelers' plated stock," consisting of a sheet

of inferior metal plated with superior or precious metal, then the tube drawn by this improved process and the wire drawn or rolled from such tubes will have all the characteristics of the seamless plated tubes or wire produced by the older processes, and such tubes can be produced at greatly reduced cost. A much larger quantity can be produced by this process with simpler, more durable, and less costly devices than can be produced by any of the processes for making seamless tubes heretofore used.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The herein-described process for drawing seamless tubes, the same consisting in perforating the center of a disk of metal or composition of metals, inserting the end of an arbor provided with a collar or shoulder through the hole in the disk, and drawing the arbor and disk successively through the holes of a draw-plate to form the tube, as described.

GEORGE U. MEYER.

Witnesses:

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