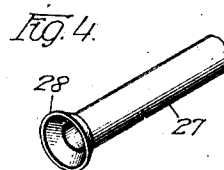
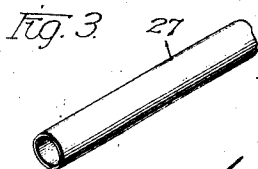
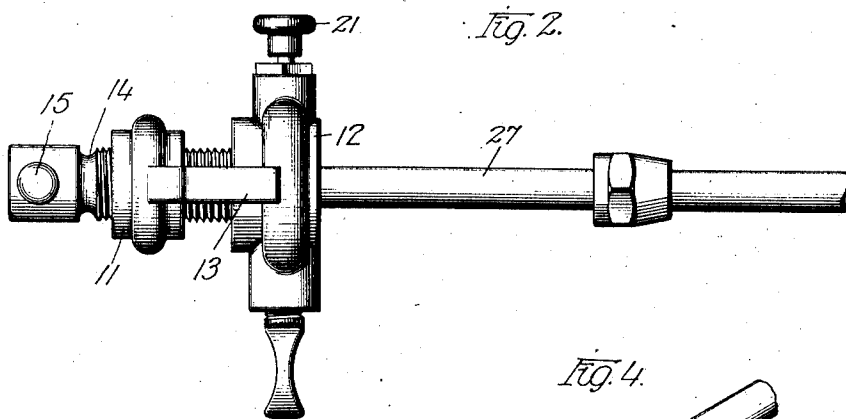
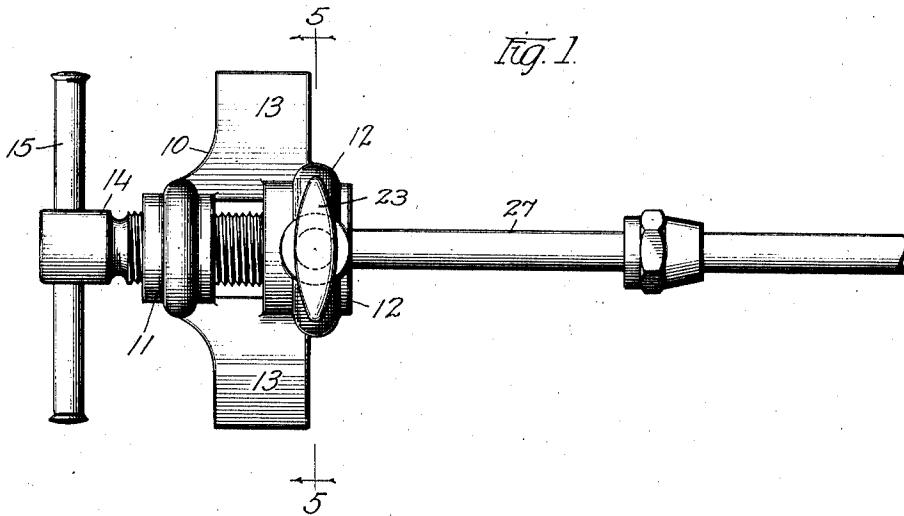


W. J. RUDOLPH.  
TUBE FLARING APPARATUS.  
APPLICATION FILED NOV. 10, 1919.

1,372,197.

Patented Mar. 22, 1921.

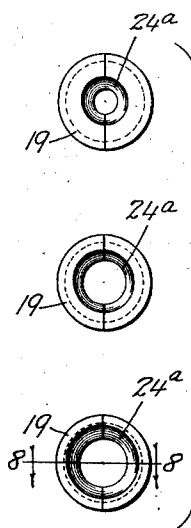
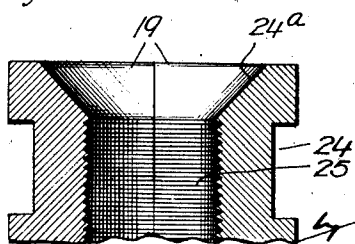
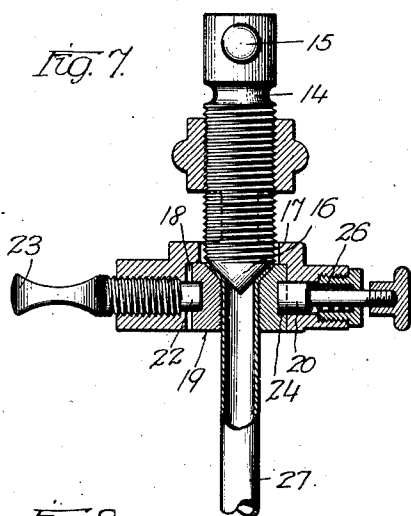
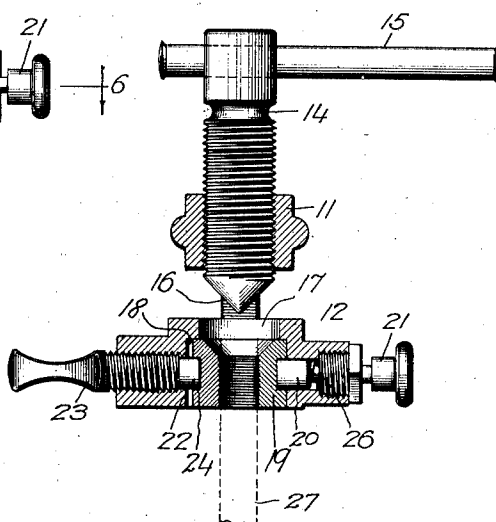
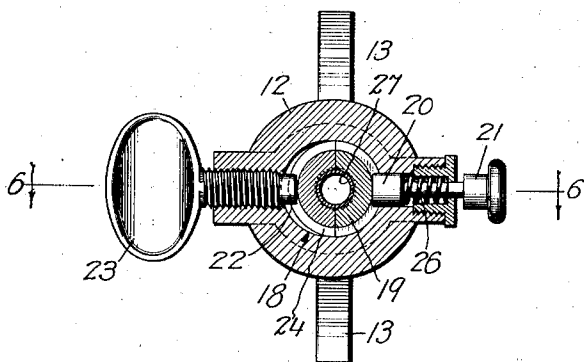
2 SHEETS—SHEET 1.



Inventor:  
Walter J. Rudolph,  
by John Howard McElroy  
his atty.

**1,372,197.**

2 SHEETS--SHEET 2.



Inventor:  
Walter J. Rudolph,  
John Howard McElroy  
his Atty:

# UNITED STATES PATENT OFFICE.

WALTER J. RUDOLPH, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE IMPERIAL BRASS MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## TUBE-FLARING APPARATUS.

1,372,197.

Specification of Letters Patent.

Patented Mar. 22, 1921.

Application filed November 10, 1919. Serial No. 337,070.

*To all whom it may concern:*

Be it known that I, WALTER J. RUDOLPH, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tube-Flaring Apparatus, of which the following is a full, clear, and exact specification.

My invention is concerned with the flaring of the ends of tubes, and is designed to produce a simple device by which the ends of small copper and brass tubes can be readily flared, in any place where they may be located or attached, the only requisite being that the end of the tube can be gotten at with a little free space around it.

To illustrate my invention, I annex hereto two sheets of drawings in which the same reference characters are used to designate identical parts in all the figures of which—

Figure 1 is a plan view of the device with a tube to be flared in place;

Fig. 2 is a side elevation of the same;

Fig. 3 is a perspective showing a portion of the tube before its end has been flared;

Fig. 4 is a similar view showing it after it has been flared;

Fig. 5 is a section on the line 5—5 of Fig. 1;

Fig. 6 is a section on the line 6—6 of Fig. 5;

Fig. 7 is a view similar to Fig. 6 but showing a tube in place in the apparatus after the flaring has been completed;

Fig. 8 is a transverse section through one of the pair of clamps used to hold the tubes on an enlarged scale; and

Fig. 9 is a top plan view of a plurality of the clamps used for flaring different sized tubes.

The framework 10 of the apparatus preferably consists of two annular portions 11 and 12 connected by a pair of webs 13, which are preferably elongated and flattened, as shown, so as to make handles or projections by which the frame may be held either in the hand or clamped in a vise. The annulus 11 is internally threaded, and has mounted therein the flare producing member 14, which preferably takes the form of a bolt having the handle 15 sliding through one end thereof, so that the leverage may be made as great as possible, and also having the conical end 16, which

actually does the work of flaring the end of the tube when the bolt has been screwed into the position shown in Fig. 7.

The annulus 12, as best seen in Figs. 6 and 7 has a passage 17 therethrough concentric with the threaded opening in the annulus 11, and having the annular offset 18 thereon to position the bottom of the clamping members 19, which rest against said bottom and are held in position on one side by the head 20 of the spring pressed plunger 21 mounted in a suitable socket in the side of the annulus 12 and on the other side by the reduced end 22 of the set-screw 23 which is threaded through the opposite side of the annulus 12. The clamping members 19 are semi-annular in their shape, and have on their periphery the channel 24, which is of the proper dimensions just to receive the ends 20 and 22, so that they will be positioned accurately thereof and held in place in the annular holder. The clamping members 19 have the flared annular surface 24<sup>a</sup> of the proper size and angle to receive the outer portion of the flared tube when it is forced against it by the conical tip 16 of the bolt 14. To prevent any slipping of the tube in the clamping members, the internal portions 25 thereof, which have practically the same diameter as that of the external diameter of the tube they coöperate with, are constructed with a series of parallel annular channels so that the tubes being flared will be held from slipping even if they are not exactly uniform in size. The larger portion of the passage 17 is not truly circular in cross-section, as is the smaller portion, but on the side where the set-screw 23 is located it is elongated slightly to produce the shape of two semi-circles separated a short distance, as will be apparent from Fig. 6.

The operation of the apparatus will be readily apparent from Figs. 5 and 6. The pair of clamping members 19, of which there will be several sizes as shown in Fig. 9, of the proper size to coöperate with the particular tube to be flared, are placed in the large portion of the passage 17, the set-screw 23 being screwed out for this purpose and the spring-pressed plunger 20 pulled out against the resistance of the spring 26. With the parts still loose, the tube 27 is thrust into the proper depth, and the clamping members 19 are then forced securely

against it to prevent its slipping by turning the set-screw 23 to the position shown in Fig. 6. Then the handle of the bolt 14 is turned until the point 16 is brought to the position shown in Fig. 7, which flares the end of the tube 27 out, as seen at 28, in Fig. 4.

It will be obvious that this apparatus may be operated rapidly and in a comparatively contracted space, and that if properly manipulated it cannot fail to do a perfect job and produce a flared end that will fit into the customary couplings employed with such tubes.

While I have shown and described my invention as embodied in the form which I consider best adapted to carry out its purposes it will be understood it is capable of modifications, and that I do not desire to be limited in the interpretation of the following claims, except as may be necessitated by the state of the prior art.

What I claim as new, and desire to secure by Letters Patent of the United States is:

1. In a device of the class described, the combination with a rigid frame, of a flare producing member having a conical end movable into one side of the frame, a holder in said frame having a stop flange therein on the side adjacent the flare producing member, and a pair of clamping members having semi-circular opposed recesses flared to correspond with the flare producing member and adapted to be introduced from the other side to engage the stop flange and held in the holder with their center in axial alignment with the flare producing member.

2. In a device of the class described, the combination with a rigid frame, of a flare producing member having a conical end screwed thereinto from one side, a holder in said frame, a pair of clamping members

adapted to be introduced into and held in said holder from the side opposite the flare-producing member with their center in axial alignment therewith, and means for quickly positioning and securing the clamping members in the holder.

3. In a device of the class described, the combination with a frame, of a flare producing member having a conical end movable thereinto, a holder in said frame, a pair of clamping members adapted to be positioned and held in said holder with their center in axial alignment with the flare producing member, and means for quickly positioning and securing the clamping members in the holder, consisting of a spring pressed plunger on one side and a set-screw on the other cooperating with annular grooves in the outside of the clamping members.

4. In a device of the class described, the combination with a frame consisting of two annular portions connected by a pair of webs, one of said annular portions being internally threaded and the other having a passage therethrough with an annular offset, of a flare producing member having a conical end threaded through the first annular portion, a set-screw threaded through one side of the other annular portion, a spring-pressed plunger sliding through the other side of said other portion, and a pair of semi-annular clamping members having an annular channel in their peripheries to be engaged by the ends of the set-screw and screw-threaded plunger.

In witness whereof, I have hereunto set my hand and affixed my seal this 5th day of November A. D. 1919.

WALTER J. RUDOLPH. [L. S.]

Witness:

JOHN HOWARD McELROY.