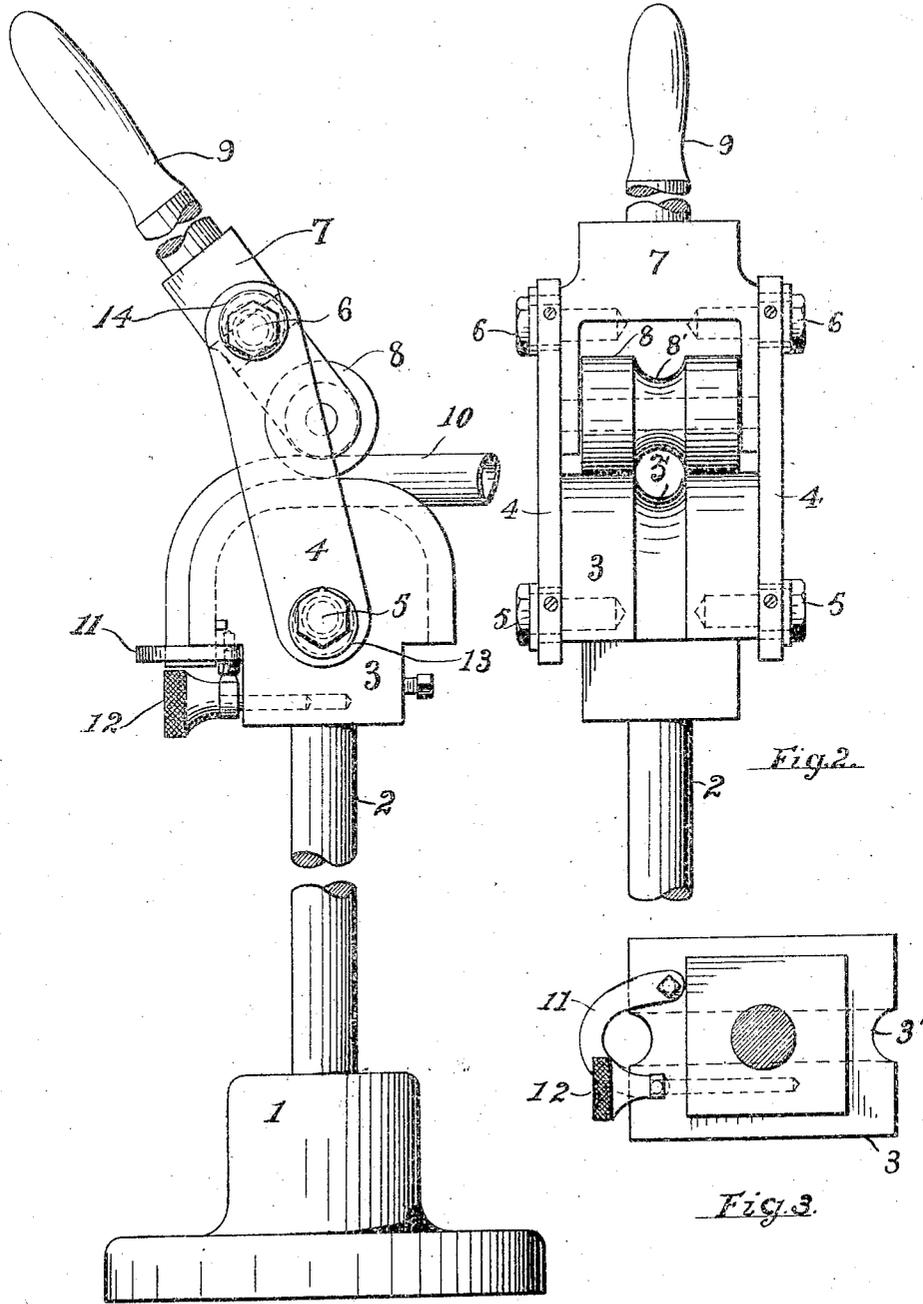


No. 819,545.

PATENTED MAY 1, 1906.

W. J. HERR.  
DEVICE FOR BENDING TUBING.  
APPLICATION FILED SEPT. 30, 1905.



Witnesses  
Edward R. Moore.  
Mary S. Tooker

Fig. 1.

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# UNITED STATES PATENT OFFICE.

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## DEVICE FOR BENDING TUBING.

No. 819,545.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed September 30, 1905. Serial No. 280,791.

To all whom it may concern:

Be it known that I, WILLIAM J. HERR, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented new and useful Improvements in Devices for Bending Tubing, of which the following is a specification.

This invention relates to a new and useful machine for bending tubing, and is especially adapted for the bending of tubes used in musical instruments, but may be used wherever it is desirable to quickly bend a metal tube, so as to prevent any imperfections in the finished product.

The invention consists of the combination and arrangement of parts hereinafter described and claimed.

The objects of the invention are, first, to furnish a machine whereby a tube may be quickly and readily bent into any required form without crimping or wrinkling the tube, and, secondly, to cheapen the work of bending metal and other tubes. These objects I accomplish by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a machine constructed in accordance with my invention, showing a section of tubing partially bent by the machine. Fig. 2 is a front elevation of the machine, showing how the tube is held between the stationary die and the movable die. Fig. 3 is an inverted plan view of the die illustrated in Fig. 1, showing one means of securing the tube to the stationary die and also showing the standard in section.

Similar numerals refer to similar parts throughout the several views.

In the example of my invention shown in the drawings I have mounted the stationary die upon a standard. It will be evident, however, that it may be mounted in any suitable manner.

1 shows the main bed-plate supporting the standard 2. The standard 2 supports the die 3. This die 3 is preferably stationary and supported, so that it will not be moved in the operation of bending the tube.

3' is a curved groove in the stationary die, made of sufficient size to receive a portion of the tube to be operated upon.

4 4 are what might be termed "links," one

end of the links being secured by the bolts 6 to a lever, which lever is provided with a handle or holder 9, the holder for the rotary forming-die being shown by 7.

8 represents the rotary forming-die, which is pivoted to the links by means of the bolts 5. The rotary forming-die is provided with an annular groove. (Shown by 8'.) This groove is adapted to fit upon the tube to be bent, and what I term the "rotary forming-die" is moved by means of the lever, so as to travel along the outer curve of the tube as the same is operated upon. The groove in the stationary die and the groove in the rotary forming-die are intended substantially to encircle the tube to be bent throughout the circumference thereof.

10 represents a section of tubing and is shown partially bent in Fig. 1.

11 is a link-holder for securing the tube to the stationary die. This is done, preferably, by means of the thumb-screw 12, as shown in Figs. 1 and 3.

Inasmuch as tubes differ somewhat in thickness, I deem it advisable to provide means for adjusting the length of the links 4, so as to cause the rotary forming-die to press evenly upon the tube to be bent. Any suitable means may be used for this purpose, but I have used eccentrics or cams, (shown by 13 and 14,) which eccentrics or cams are held in position by the bolts 5 and 6, or said cams may be a portion of said bolts, if desired. In some cases one of said cams might be dispensed with and sufficient adjustment might be obtained by a single cam. In case tubes have a uniformity of thickness and size the cam adjustment is not required.

In using this invention the piece of tube to be bent may be placed in the groove 3' and secured therein by the link 11. When the links 4 are in horizontal position, the lever having been lowered, so as to carry the links and rotary forming-die out of the way, so as to allow for the insertion of the tube by raising the handle 9, the rotary forming-die 8 is pressed in contact with the tube 10, and by continuing to move the handle or lever the tube is compressed firmly between the two dies and is bent into the proper shape or to the exact shape of the stationary die.

By this simple construction any ordinary piece of tubing can be bent into any required

curved form without crimping the inner curved portion and without unduly straining the outer curved portion of the tube.

5 I claim to have invented, and desire to secure by Letters Patent, is—

1. In a machine of the class described, a bed-plate having a standard, a fixed die on said standard and provided with a groove in one of its faces, the latter adapted to determine the bend of the tubing when operated upon, said groove in the fixed die encircling a portion of the tubing when in position on the die, a lever, links for movably connecting the lever to the fixed die, a rotary forming-die provided with a groove encircling the remaining portion of the tubing and supported by said lever, said rotary forming-die adapted to travel on said stationary die when in operative position, and eccentrics carried by the said links for regulating the position of the dies with respect to one another.

2. A machine for bending tubes including a base-plate, a standard thereon, a die car-

ried at the free end of said standard and hav- 25  
ing an annular groove for encircling a portion of the tubing to be operated upon, said die adapted to determine the bend of the tube, a rotary forming-die having a groove for encircling the remaining portion of the tube, and 30  
adapted when in operative position to travel on the stationary die, a lever for said rotary die, links pivotally connected with the lever and the fixed die at opposite sides thereof for movably supporting said holder, eccentrics 35  
carried by said links and in engagement with the pivotal connections of the links to adjust the dies for regulating the pressure thereof, and a locking device carried by the fixed die for securing one end of the tubing in position 40  
on the same.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM J. HERR.

Witnesses:

EDWARD TAGGART,  
MARY S. TOOKER.