Oct. 2, 1923. 1,469,489

A. VASSELLI

MEANS FOR DISTORTING TUBES

Filed June 6, 1919

Fig. 1

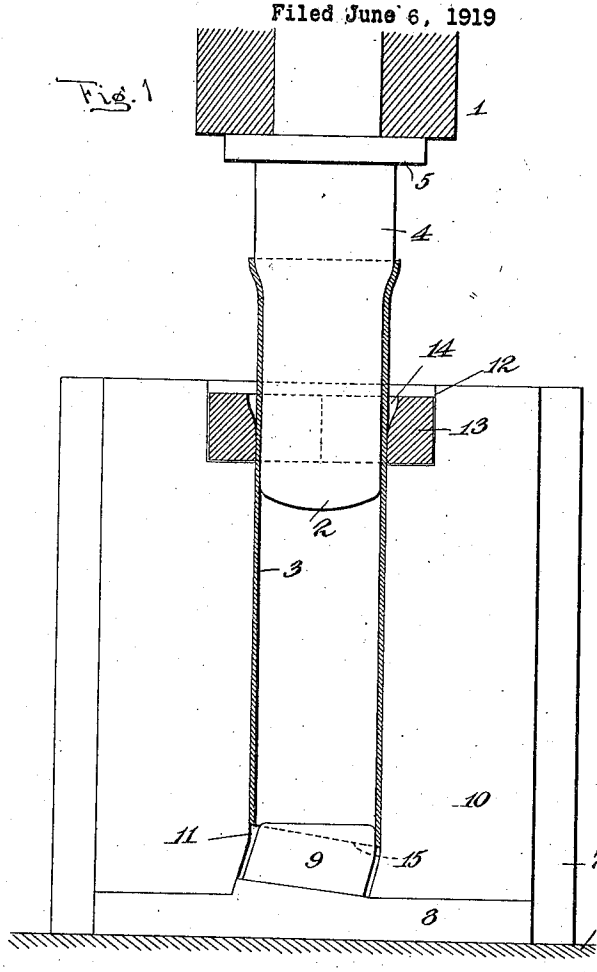


Fig. 3

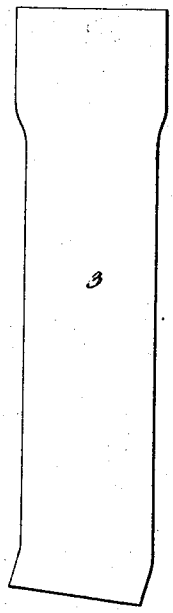
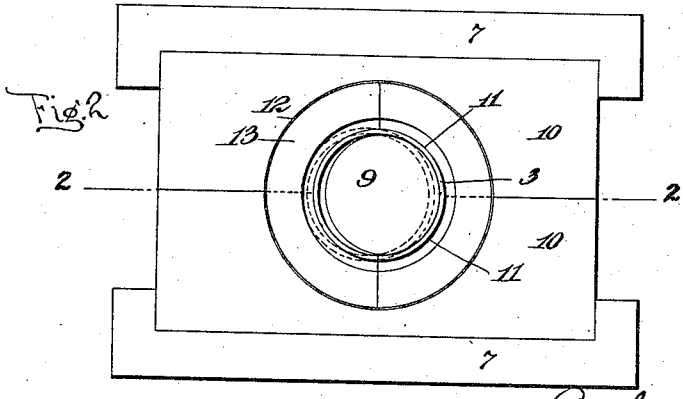


Fig. 2



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UNITED STATES PATENT OFFICE.

ANTHONY VASSELLI, OF NEWARK, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HARRIMAN NATIONAL BANK OF THE CITY OF NEW YORK, TRUSTEE.

MEANS FOR DISTORTING TUBES.

Application filed June 6, 1919. Serial No. 302,329.

To all whom it may concern:

Be it known that I, ANTHONY VASSELLI, a citizen of the United States, and a resident of the city of Newark and State of New Jersey, have invented a certain new and useful Means for Distorting Tubes, of which the following is a specification.

My invention relates to the bending and expansion of tubes, and more particularly to constructing tone-arms for talking machines, and has for its object the production of efficient means for forming a slight, obtuse angle at one end of the tube and simultaneously expanding the opposite end thereof, by means of a single, rigid core and coil, by means of devices moving longitudinally of the tube.

A further object of the invention is the provision of means for bending and expansion of tubes of the character described, single in construction, thoroughly reliable and efficient in its purpose, positive in operation, easily manipulated and inexpensive of manufacture.

With these and other objects in view to be more fully set forth hereinafter, the invention consists in the novel construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter described in the specification and illustrated in the accompanying drawings considered together or separately.

The inventive idea involved is capable of receiving a variety of mechanical expressions, one of which for the purpose of illustrating the invention, is shown in the accompanying drawings.

The invention will be first described in connection with the accompanying drawings illustrating one embodiment of my invention, wherein similar reference characters are used to designate corresponding parts throughout the several views, and then more specifically defined and indicated in the appended claims.

In the drawings,—

Fig. 1 is a longitudinal sectional view of an apparatus for carrying out the process, the section being taken on the line 2—2 of Fig. 2;

Fig. 2 is a plan view of a portion of the device; and

Fig. 3 is a side elevation of a tube after the bending and expanding operation.

The process may be carried out in any form of machine having a reciprocating tool carrying element. An ordinary punch press may be employed.

The reciprocating head 1 of such an apparatus is shown. The head carries a special tool having a portion 2 adapted to enter the tube before the latter is expanded, a portion 4 of greater diameter and adapted to expand the tube to the diameter desired, that is, a diameter equal to the portion 4. The shoulder 5 is adapted to engage the end of the tube after the expansion thereof.

The table 6 of the press carries a pair of vise members, 7, between which is clamped a plate, 8, which carries a cylindrical boss, 9, of a diameter slightly less than that of the bore of the tube 3. The boss 9 is arranged at an angle to the plate corresponding to the angle to be given the end of the tube.

Resting on the plate, 8, and between the vise members is a pair of die members, 10, each of which is provided with a semi-cylindrical groove, 11, and the grooves, when the die members are positioned, form a cylindrical bore of a diameter adapted to receive the tube to be bent. The lower end of the bore is given the angle to which the tube is to be bent. The annular space between the boss 9 and the wall of the bore is adapted to receive the end of the tube.

The upper end of the die is counterbored as at 12, and a split ring 13 is carried in the counterbore. The bore of the ring 13 is equal to that of the die, and the upper edge of the ring is chamfered as at 14.

The die is positioned in axial alignment with the special tool carried in the head 1. A straight section of tubing is placed in the bore. Preferably, the lower end of the tube is beveled as at 15 in order that one portion may engage between the boss 9 and the wall of the die.

The head 1 is moved downward and the portion 2 of the tool enters and expands the upper end of the tube. The portion 2 is below the ring 13 before the portion 4 engages the tube and prevents collapsing of the latter. The frictional engagement of the portion 4 of the tool with the tube will force the lower end of the latter into the annular space between the core 9 and the wall of the die and start the bending of the tube. The continued movement of the head will engage the shoulder 5 with the top of the tube and

force the latter downward and finish the bending operation. The chamfer 14 of the ring 13 will give a finish to the expanded portion of the tube.

When the bending and expanding operation are completed, the tool is withdrawn from the tube, the die is removed from the vise, the members 10 are separated as are the halves of the split ring 13 and the bent tube is released from the die. The core 9 may now be withdrawn from the tube by a longitudinal movement.

In accordance with the provisions of the patent statutes, I have described the principle of my invention together with the apparatus which I now consider to represent the best embodiment thereof, but I desire it understood that my invention is not confined to the particular form of apparatus herein shown and described, the same being merely illustrative, and that the invention can be carried out in other ways without departing from the spirit of my invention, and, therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which objects of my invention are attained, and the new results accomplished, as herein set forth, as it is obvious that the particular embodiment herein shown and described is only one of many that can be employed to attain these objects and accomplish these results.

Having now described my invention, what I claim and desire to secure by Letters Patent is:—

1. An apparatus for bending tubes, which comprises a die member adapted to receive the tube, a rigid, integral core carried in the die and at an angle to the major portion of the axis of the die, and means movable in the direction longitudinally of the die, for moving the tube relatively to the die and core to expand the tube and bend one end of the tube to an angle to the axis of the major portion of the tube.

2. An apparatus for bending tubes comprising separable die members adapted to be placed together to form an angular, tubular chamber, a base plate adapted to support said die members, said base plate having a boss which projects into but is spaced from the walls of said annular chamber formed by the die members when said die members are positioned on said plate, vise members for holding said die members and said plate rigidly together and a reciprocating plunger adapted to enter a tube to be bent and to force it into said chamber and over said boss.

3. An apparatus for bending tubes comprising separable die members adapted to be placed together to form an angular, tubular chamber, a base plate adapted to support and position said die members under the plunger of a press, said base plate having an integral boss which projects into but is spaced from the walls of said angular chamber formed by the die members when said die members are positioned upon said plate, vise members for holding said die members and said plate rigidly together, and a movable stepped mandrel adapted to enter the tube to be bent and to force it into said chamber and over said boss.

This specification signed and witnessed this 9th day of May, 1919.

ANTHONY VASSELLI.

Witnesses:
JOHN L. LOTSCH,
M. JONES.