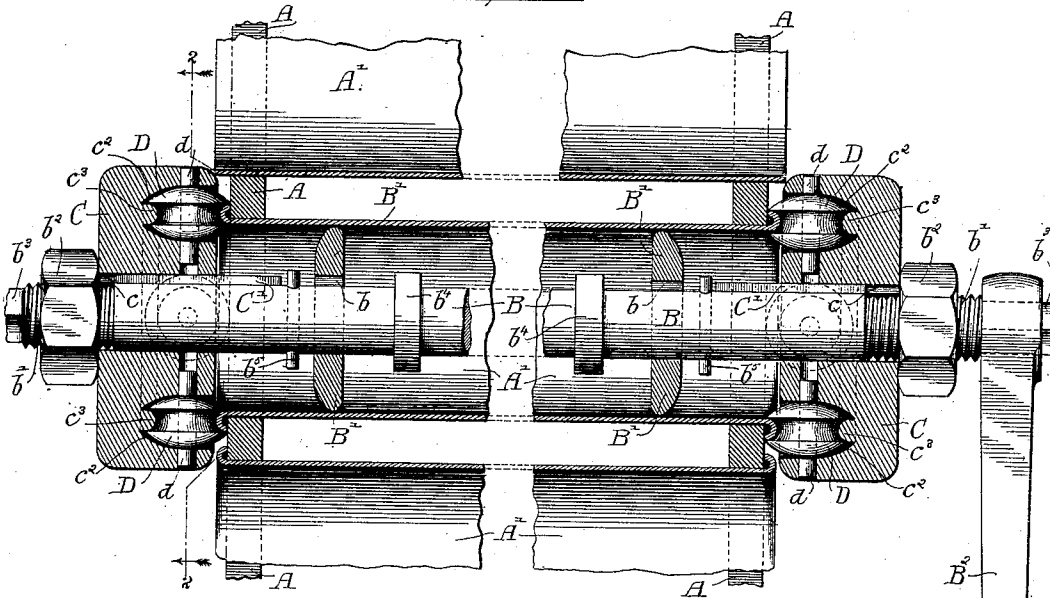


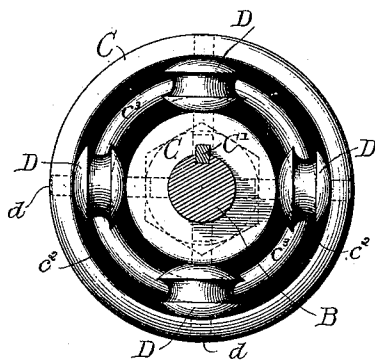
(No Model.)

H. EDWARDS.  
MACHINE FOR BEADING THE ENDS OF BOILER TUBES.  
No. 429,263. Patented June 3, 1890.

*Fig. 1.*



*Fig. 2.*



*Witnesses:-*  
*Louis H. Whitehead.*  
*Wm. A. Reming.*

*Inventor:-*  
*Hiram Edwards.*

*By:-* *Waylin, Poole & Brown.*

*Attorneys:-*

# UNITED STATES PATENT OFFICE.

HIRAM EDWARDS, OF AURORA, ILLINOIS, ASSIGNOR OF ONE-HALF TO WALT HOOVER, OF SAME PLACE.

## MACHINE FOR BEADING THE ENDS OF BOILER-TUBES.

SPECIFICATION forming part of Letters Patent No. 429,263, dated June 3, 1890.

Application filed April 29, 1889. Serial No. 309,046. (No model.)

*To all whom it may concern:*

Be it known that I, HIRAM EDWARDS, of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful  
5 Improvements in Machines for Beading the Ends of Boiler-Tubes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the  
10 letters of reference marked thereon, which form a part of this specification.

This invention relates to novel devices adapted to be employed for beading the ends of boiler-tubes.

15 The object of the invention is to provide a device of this character whereby both ends of boiler-tubes may be beaded simultaneously after the same have been arranged in position and expanded within the flue-sheets.

20 The invention consists in the details of construction and combinations of parts herein-after fully described, and pointed out in the appended claims.

In the drawings, Figure 1 is a vertical longitudinal sectional view of a device embodying my invention and represented as applied  
25 to one of a plurality of boiler-tubes secured at their opposite ends in flue-sheets. Fig. 2 is a vertical transverse sectional view taken  
30 on the line 2 2 of Fig. 1.

As shown in said drawings, A A are flue-sheets of a boiler provided with correspondingly-located circular openings, into which  
35 boiler-tubes A' A' are inserted and suitably expanded, so as to be securely fixed therein.

My improved beading device comprises a shaft B, which is intended to pass through the tubes to be beaded and is somewhat longer  
40 than the same.

40 B' B' are guide-rings formed with central openings having notches or feather-ways  $b\ b$ , by which they may be passed over splines or  
feathers C' C' and held upon the shaft between the collars  $b^4\ b^4$  and pins  $b^5\ b^5$ , and  
45 thus support said shaft B centrally with the tubes to be beaded.

50 C C are heads mounted loosely upon the ends of the shaft B and provided interiorly with notches or feather-ways  $c\ c$ , which receive

portions of the shaft B. It will thus be seen that the heads C C are capable only of a longitudinal movement upon said shaft. Near the ends of said shaft B, exterior to the splines or feathers C' C', are screw-threaded portions  
55  $b' b'$ , upon which nuts  $b^2\ b^2$  are adapted to fit to hold the heads C C upon the shaft. The extreme ends  $b^3\ b^3$  of the shaft are squared to receive a crank B<sup>2</sup>, by means of which said  
60 shaft may be revolved; but it will be obvious that other forms of cranks or similar devices for revolving the shaft may be employed, as this forms no part of my invention. The inner face of each head C is provided  
65 with an annular recess or groove  $c^2$ , having a ridge or rib  $c^3$  in its bottom.

D D are grooved rollers mounted upon radial pins  $d\ d$ , which pass through said recess or groove, and are so arranged that the grooves  
70 of the rollers will bear upon the ridge or rib  $c^3$  of the recess, and thus relieve the strain on the pins, and also prevent a lateral movement of the rollers. It will be obvious that after continued use the portion of the head in  
75 the rear of the rollers will be worn away, in which event new holes can be bored for the bearing-pins and the position of the rollers thus changed, so that they will bear against other parts of the rib. It will also be manifest that by means of the nuts  $b^2\ b^2$  the heads  
80 C C may be carried or forced toward each other. I have shown in the drawings the said head provided with four rollers or bead-ers, which number may be varied, if desired.

85 The parts of my invention being constructed and assembled as described, the operation is as follows: When it is desired to bead the end of a boiler-tube, one of the heads C is removed and the shaft is passed through the  
90 tube, when said guide-rings will hold it centrally therein. The head is then replaced, and the heads are drawn against the projecting ends of the tubes to be beaded by means of one or both of the nuts  $b^2\ b^2$ . The heads  
95 are then revolved by means of the cranks, and the said rollers are caused to travel around said ends of the tubes. Either one or both of the nuts  $b^2\ b^2$  are moved slightly inward as the rollers revolve, so as to maintain  
100 a sufficient pressure of the rollers upon the