

(No Model.)

2 Sheets—Sheet 1.

S. J. WEAVER.

MACHINE FOR FLANGING BOILER HEADS.

No. 245,678.

Patented Aug. 16, 1881.

Fig. 1.

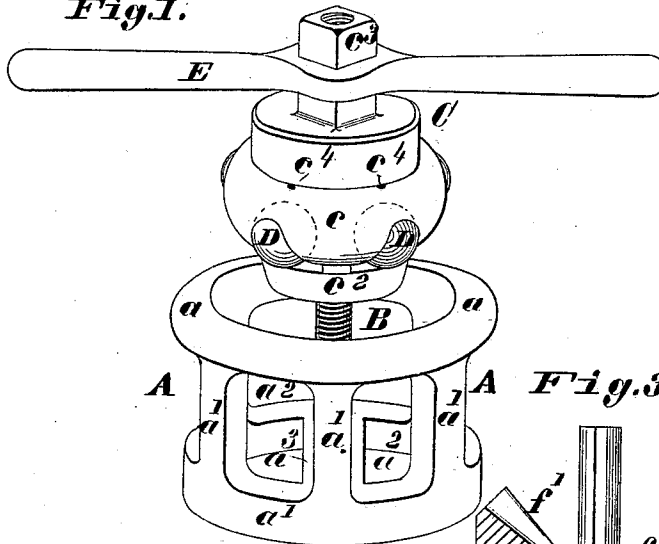


Fig. 3.

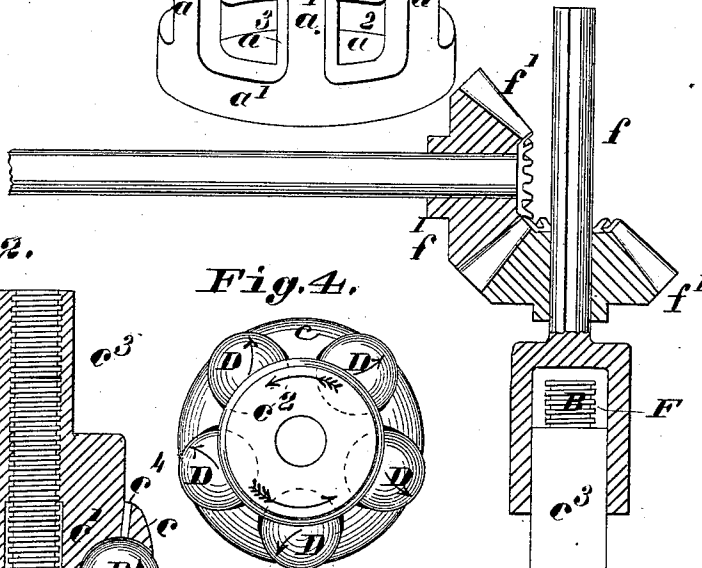


Fig. 2.

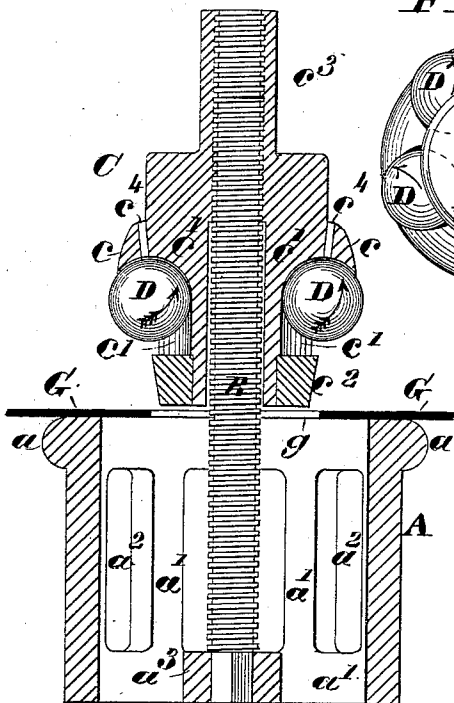
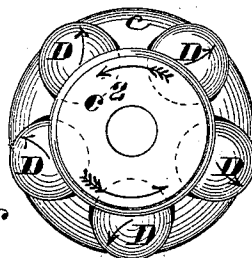
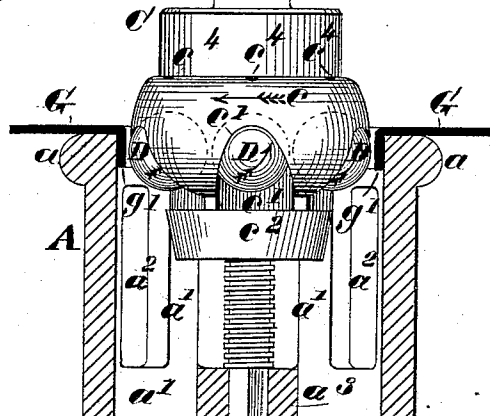


Fig. 4.



Attest:

Charles Pickles

Saml. S. Boyl.

Inventor:

Samuel J. Weaver
by C. D. Moody. atty.

(No Model.)

2 Sheets—Sheet 2.

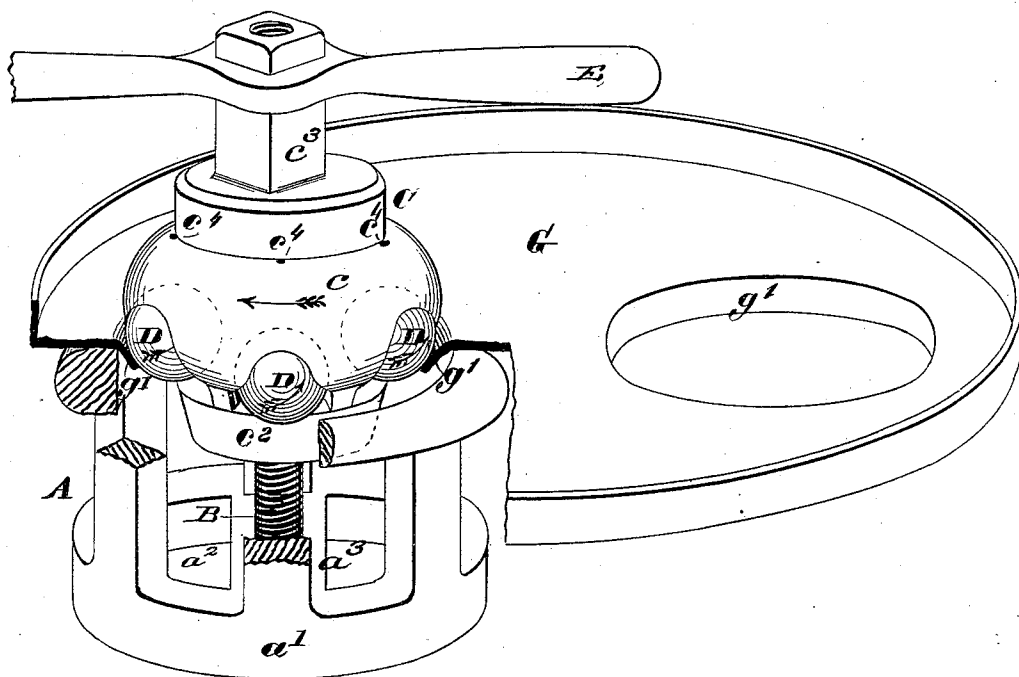
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Fig. 5.



Attest:

Charles Pickles

Frank S. Boyd

Inventor:

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UNITED STATES PATENT OFFICE.

SAMUEL J. WEAVER, OF ST. LOUIS, MISSOURI.

MACHINE FOR FLANGING BOILER-HEADS.

SPECIFICATION forming part of Letters Patent No. 245,678, dated August 16, 1881.

Application filed May 23, 1881. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL J. WEAVER, of St. Louis, Missouri, have made a new and useful Improvement in Devices for Forming Flanges on Boiler-Heads, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a view, in perspective, of the improved device, the former being raised above the die and a hand-lever being attached to the former; Fig. 2, a vertical section, taken through the device, the former being above the boiler-head, and as when the flange is to be formed; Fig. 3, another sectional view of the device, showing the parts as when the flange is formed, and also showing means by which power can be used in operating the device; Fig. 4, a bottom view of the former; and Fig. 5 a view, in perspective, showing the device in position upon a boiler-head, the latter being broken away.

The same letters denote the same parts.

The principal features of the device having the improvement are a die and a former, the die supporting the boiler-head, and the former forcing the metal into the die and forming the flange therein.

The improvement especially relates to the peculiar means used to relieve the friction as the former is shaping the flange.

A represents the die, consisting, essentially, of the ring *a*, of a diameter suited to the size of the intended flange, and supported upon a base or frame, *a'*, which is preferably perforated or made open at *a''* to enable the work to be inspected.

A screw, B, is arranged vertically and centrally in the die, being stepped in a cross-bar, *a'''*, of the die, and squared to prevent its rotating.

C represents the former, consisting mainly of the head *c* and the balls D D D. The head *c* is threaded to engage with and move up and down on the screw B, and at *c'* *c'* *c'* it is chambered out to receive the series of balls D D D. The latter are arranged uniformly and evenly around the vertical axis of the head *c*, projecting slightly outward from the periphery of the head, and the chambers *c'* *c'* *c'* are cup-shaped,

or otherwise properly formed, to enable the balls, as the former passes into the openings in the boiler-head, to turn in all directions, not only around horizontally, but in vertical planes or in intermediate directions. Arranged thus the surfaces of the balls D D D constitute the bearing which comes immediately in contact with the metal of the boiler-head in forming the flange. The head *c* is furnished at its lower end with a ring or thimble, *c''*, which serves mainly to center the former to the opening in the boiler-head in starting the flange. The head is also squared at *c'''* to receive the hand-lever E or socket F, and at *c''''* *c''''* there are oil-passages for lubricating the balls D D D.

In practice the boiler-head G, having the usual openings, such as *g*, previously made therein, is placed upon the die, as in Fig. 2. The former is then screwed upon the screw B, downward, forcing the metal of the boiler-head into the die and forming the flange *g'* therein, as shown in Fig. 3. As the head *c* descends it rotates horizontally, as indicated by the arrow in Fig. 3. The balls D D D, however, are free to yield and turn in that direction which is opposite to the resultant of the downward and rotary movements of the former, as indicated by the arrows upon the balls. The effect of this is to greatly diminish the friction of the operation, and to a much greater extent than if cylindrical rollers arranged vertically were employed. The balls D D D also are valuable in causing the flange *g'* to be formed evenly in the head. After the flange has been made the lever E, or whatever means is used for operating the former, is detached from the former, and the boiler-head reheated preparatory to the forming of the next flange, when the former is unscrewed from the screw B and the head replaced upon the die for the forming of the next flange, and so on.

In place of the lever E the former may be operated by power, as by the socket F upon the shaft *f*, which can be rotated by suitable gearing, as at *f'*, the shaft *f* also being vertically adjustable to provide for detaching the socket from the former.

The number of the balls D D D may be increased as desired, it not being intended to confine the series to any specified number.

The ring c^2 serves both as a guide, and also to uphold the balls D D D in lifting the former. I claim—

1. The combination of the die A, screw B, and the former C, consisting of the head c and the balls D D D, substantially as described.

2. A former having a series of balls turning in all directions in the former, for the purpose described.

3. The combination of the die A, the screw 10 B, the former C, and the ring c^2 , substantially as and for the purpose set forth.

4. The combination of the head c , balls D D D, and ring c^2 , substantially as described.

SAMUEL J. WEAVER.

Witnesses:

CHAS. D. MOODY,
J. K. WORTHINGTON.