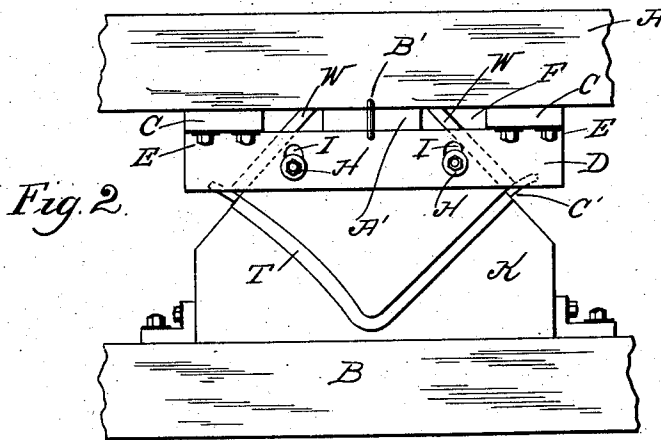
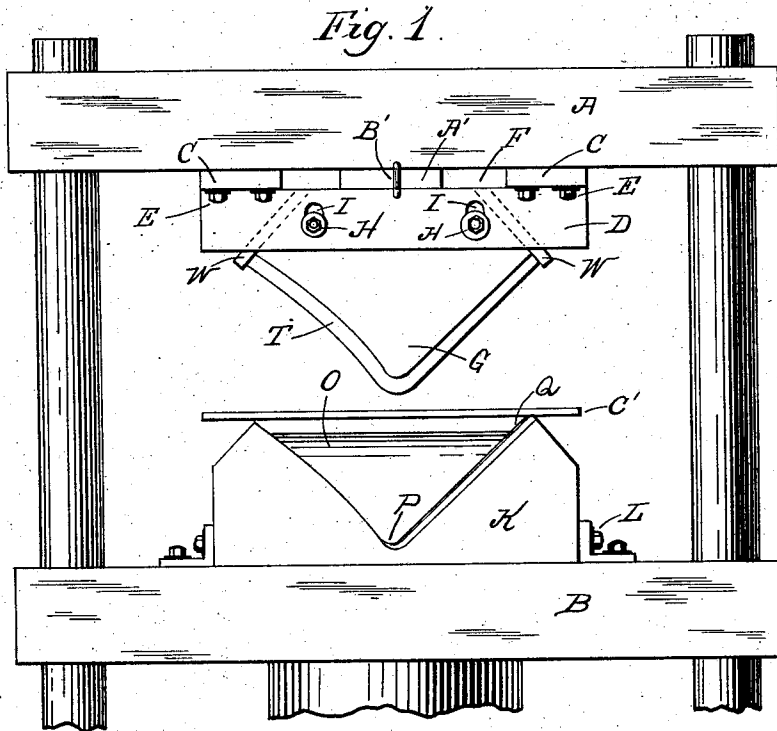


W. HORSLEY.
MACHINE FOR FORMING LUGS FOR BOILERS, &c.
APPLICATION FILED FEB. 7, 1907.

1,027,480.

Patented May 28, 1912.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 3.

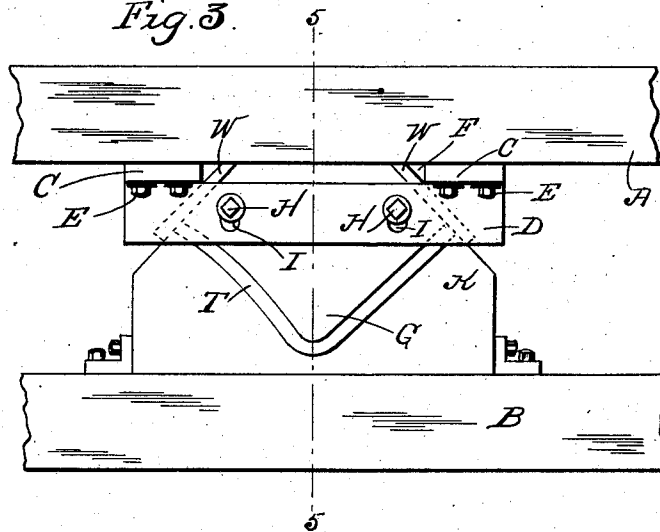


Fig. 4.

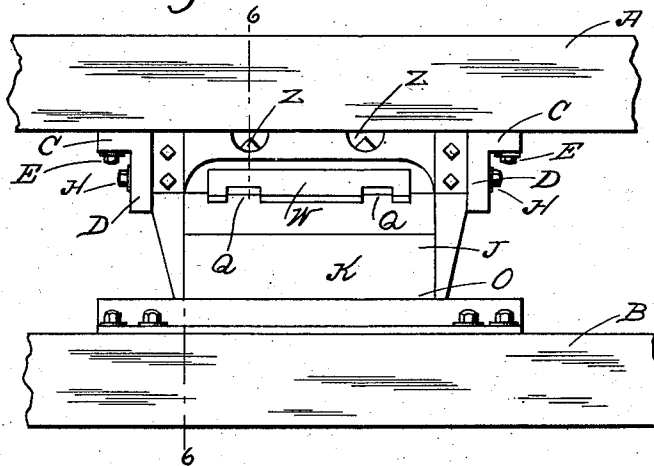
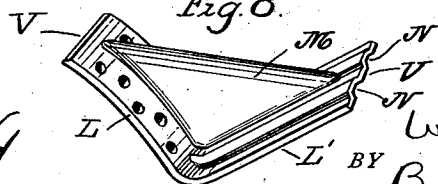


Fig. 8.



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3 SHEETS—SHEET 3.

Fig. 5.

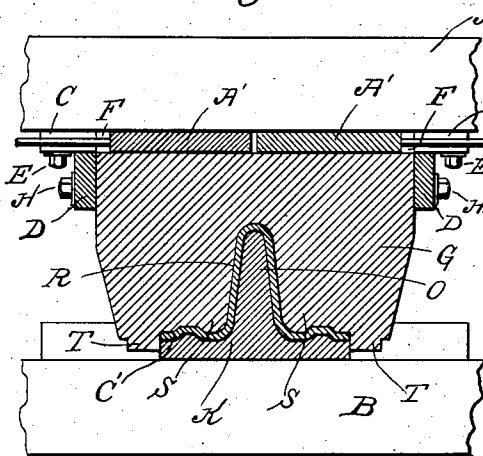


Fig. 7.

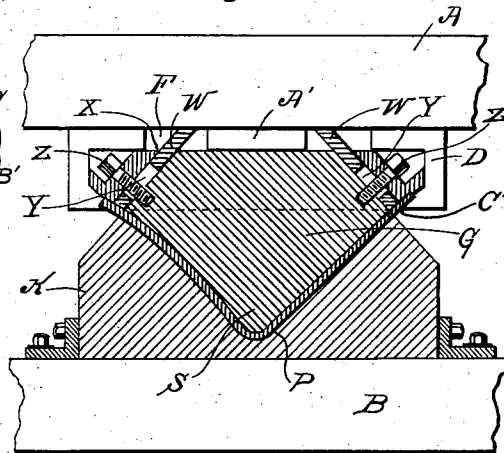
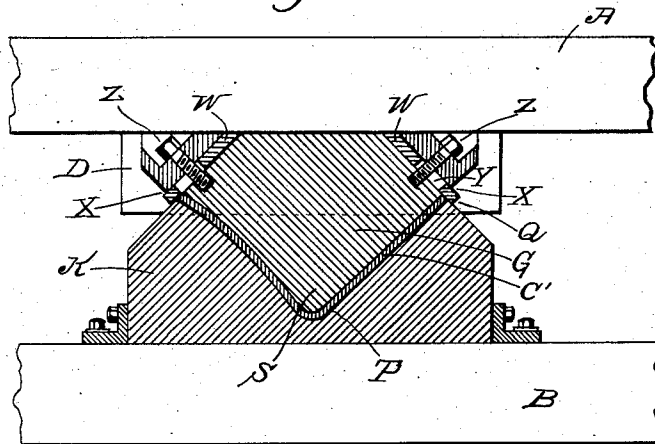


Fig. 6.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR FORMING LUGS FOR BOILERS, &c.

1,027,480.

Specification of Letters Patent.

Patented May 28, 1912.

Application filed February 7, 1907. Serial No. 356,236.

To all whom it may concern:

Be it known that I, WILLIAM HORSLEY, of the city and county of New Haven and State of Connecticut, have invented new and useful Improvements in Machines for Forming Lugs for Boilers and Similar Articles, of which the following is a full, clear, and exact description, when taken in connection with the accompanying drawings.

10 This invention relates to mechanisms for forming boiler lugs substantially of the form shown herein. In order to produce these lugs in sufficient quantities for the market, attempts have hitherto been made with various mechanisms to press flat pieces of metal into the desired form, but without success, because of the difficulty in producing the U-shaped strengthening rib and of the expense and labor entailed in trimming the blanks. When the strengthening rib has been pressed out of the blank, the metal of the rib has been drawn out unevenly. To obviate this objection, two cooperating dies or forming members are herein provided one of which has a projecting ridge or back. Over this ridge the flat blank is placed and its sides are pressed downward on both sides of the rib by the other member, thereby leaving the metal of the central strengthening rib substantially of the original thickness of the blank. The expense of trimming the blank after it was thus formed, however, materially increased the cost, and on the other hand, it was practically impossible to give the blank the proper outline before being operated upon, so that it would assume the exact form desired under the operation of the press. Hence by the present invention, the edges are trimmed while the blank is still in the press, either while it is being formed into shape or subsequently. Shearing blades are provided connected with the cooperating dies or forming members, either rigidly or slidably, so that they may act on the blank at the same time as the dies, or when desired.

To these ends, the invention consists of the several improvements and combinations set forth and claimed hereinafter.

50 Referring to the drawings for a more particular description, Figure 1 represents a front elevation of a portion of a press, in which are mounted the cooperating dies or forming members and shearing blades em-

bodying the invention, Fig. 2, a similar view of the dies and blades, in which the dies are shown closed, Fig. 3, a similar view, with the end shearing blades shown in operation, Fig. 4, an end elevation of the parts shown in Fig. 3, Fig. 5, a transverse vertical section on line 5—5 of Fig. 3, Fig. 6, a longitudinal vertical section on line 6—6 of Fig. 4, Fig. 7, a similar view of the same parts shown in the position indicated in Fig. 5, and Fig. 8, a perspective view of a boiler lug when formed.

In all figures, similar letters of reference represent like parts.

To the stationary part A of the press two depending supporting plates D are secured by means of bolts E projecting through flanges C, or in other desirable manner. Through the central portion of the plates are transverse openings F.

Between the supporting plates D a die or forming member G is provided, which has a sliding connection with the plates D by means of bolts H projecting through vertical slots I in the plates. Mounted on the lower or movable portion B of the press is a cooperating die member K.

The boiler lug or article to be formed by the die members is shown in its finished form in Fig. 8, and consists of substantially rightangle parts L—L', and a central longitudinal U-shaped rib M. In one of the parts as L', on either side of the central rib, are formed recesses N. To produce a lug of this form the lower forming or die member K is provided with a central longitudinal ridge or back O, corresponding in form to the under or concave side of the strengthening rib M of the finished lug, (Figs. 1 and 5). On either side of the ridge O is a substantially rightangled recess P and along the surface of one side of the recess is a bead or shoulder Q. The upper one G of the cooperating die members is provided with a longitudinal recess R corresponding to the projecting ridge O of the lower member K, and on either side of the recess R with depending angular projections S adapted to fit into the recesses P in the member K. By this construction when the flat blank C' is placed on the lower member K, (Fig. 1) and the press operated to bring the two forming or die members together, the upper member will bend the blank downward over

the ridge O and will draw the metal downward into the angular recesses P (Figs. 5 and 7). The metal over the ridge O forming the U-shaped strengthening rib M of the lug will thereby remain of substantially the original thickness of the blank.

On the sides of one member, such as G, are shearing blades or plates T, which may be, as shown in the drawings, integral with the member G. These blades project downward below the member G and, when the members are in contact, are adapted to fit snugly against the sides of the lower member K (Fig. 5), thereby being adapted to shear off and trim the lateral edges of the blank as it is being formed into shape by the members G and K. To trim the end edges V of the blank, a difficulty occurs, in that these edges are at an angle to each other, (Fig. 8), and to the line of movement of the members, and hence the shearing blades to operate upon these end edges V of the lug must move at an angle to each other and the line of movement of the forming members. Furthermore, it is desirable in trimming these edges, at least that the shear blades act after the blank has been pressed into shape. The present invention provides, therefore, shearing blades which are adapted to be brought into operation after the blank is formed if the operator so desires. To this end, shearing plates or blades W are adapted to fit in slots X in one forming member, such as G. These slots, as shown more particularly in Figs. 6 and 7, are at an angle to the line of movement of the member G. The blades W are provided with slots Y for screws Z, projecting through into the member G, to permit the blades to have a limited sliding movement on the member G.

In order to operate the forming members without the operation of the blades W, if so desired, one or more blocks or stop pieces A' with handles B' are adapted to be inserted through the openings F of the supporting plates D over the member G, when it is in its lower position in the supports (Figs. 1, 2, 5 and 7). The blocks A' prevent the upward movement of the member G' in the supports D, when the members are forced together by the press. At the same time the shearing blades W are free to slide upward in the member G' (Fig. 7) as the blocks A' do not extend over the upper ends of these blades. Hence, when the blocks A' are in place, and the members made to act on the blank C' the shear blades W are free

to be forced upward by the blank and are not made to operate thereon.

In the first operation of forming the blank to shape, the blades W are as above described relieved from operation. After the blank has been formed into shape, the press is opened a slight distance to permit of the removal of the blocks or stop pieces A'. Then the press is put into motion to bring the die members together again, whereupon the upper die member G will be forced upward in the supports D until the upper edge of the die abuts against the stationary base A. As the member G is thus raised in the supports D, the shearing blades W are raised correspondingly until their upper ends abut against the base A. In this position their lower ends project below the lower face of the die member G, as shown more particularly in Figs. 3 and 6, and hence they will sever or trim the end edges of the blank or lug.

While I have described the blades for shearing or trimming the sides of the lug as rigidly connected with the die member, and the blades for trimming the ends of the lug as having a slidable connection therewith, I do not intend to limit myself to this particular construction, as it is obvious that either or both may be mounted slidably or rigidly upon the die, as may be desired.

Having now described my invention which may vary in its details without departing from the spirit thereof, what I claim and desire to secure by Letters Patent, is:—

1. In a machine for forming lugs and similar articles, the combination with co-operating forming members; of a shearing blade rigidly connected with a member and another shearing blade having a sliding connection therewith; and mechanism for operating the same, substantially as described.

2. In a machine for forming lugs and similar articles, the combination with co-operating forming members; of rigid shearing blades on the sides; shearing blades on the ends having a sliding connection with said member and being adapted to operate at an angle to the movement of said member; and mechanism for operating the same, substantially as described.

In witness whereof, I have hereunto set my hand on the 4th day of February, 1907.

WILLIAM HORSLEY.

Witnesses:

LUCIUS BRADLEY,
FRANK L. BIGELOW.