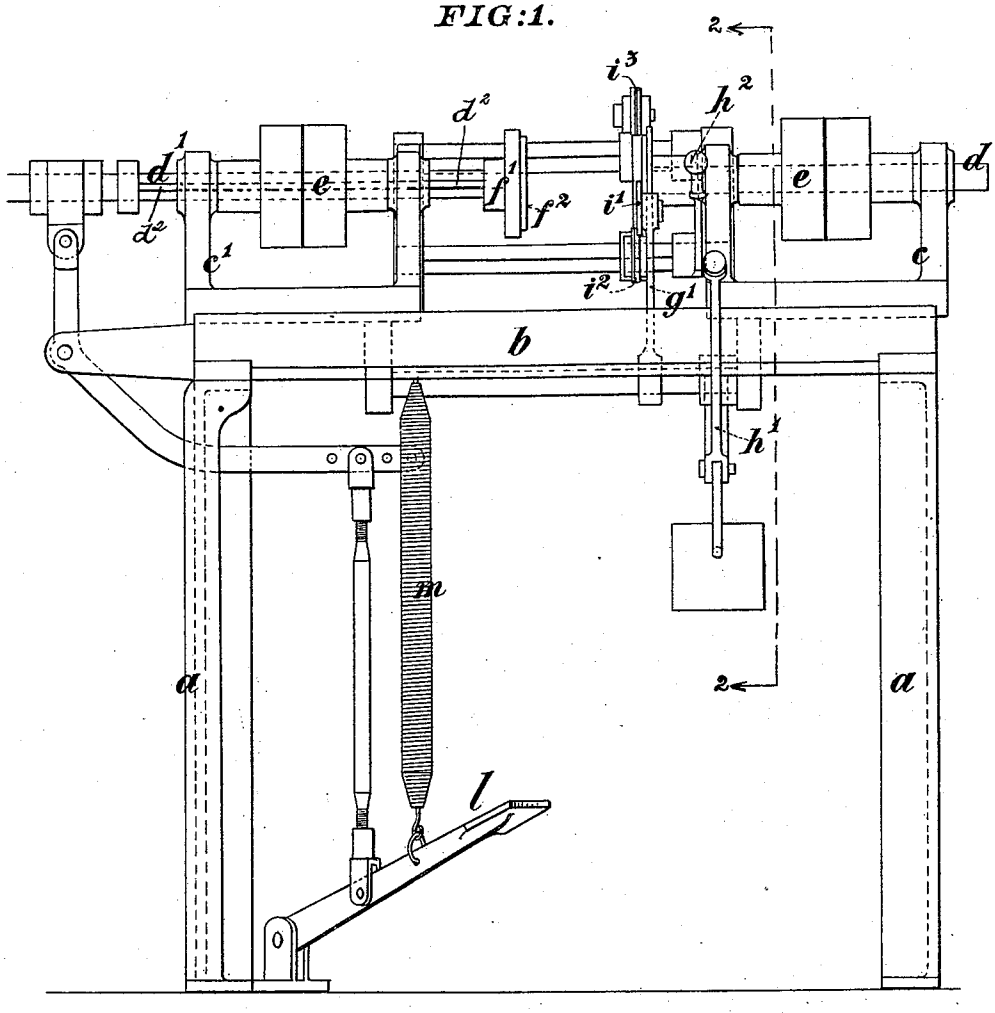
(No Model.) 3 Sheets—Sheet 1.

A. E. BENTLEY.

MACHINE FOR MAKING METAL CANISTERS.

No. 478,389. Patented July 5, 1892.

FIG:1.



Witnesses.
George Baumann
James Gracy

Inventor.
Albert Edward Bentley
By his Attorneys
Howson and Howson

(No Model.) 3 Sheets—Sheet 2.

A. E. BENTLEY.

MACHINE FOR MAKING METAL CANISTERS.

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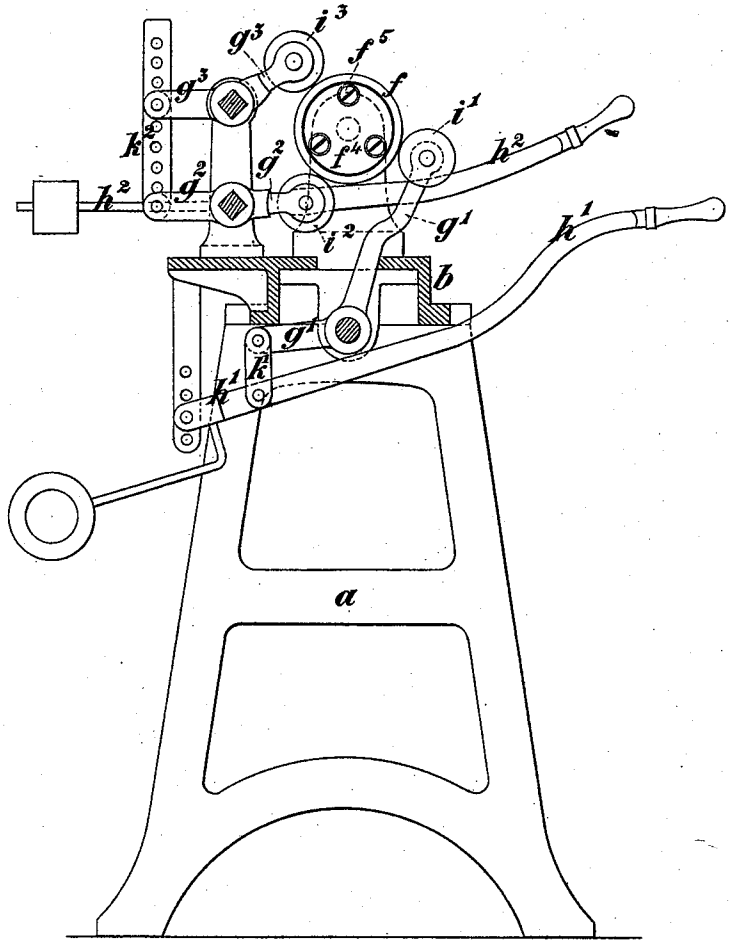
FIG: 2.



Witnesses.
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(No Model.) 3 Sheets—Sheet 3.

A. E. BENTLEY.

MACHINE FOR MAKING METAL CANISTERS.

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FIG: 3.

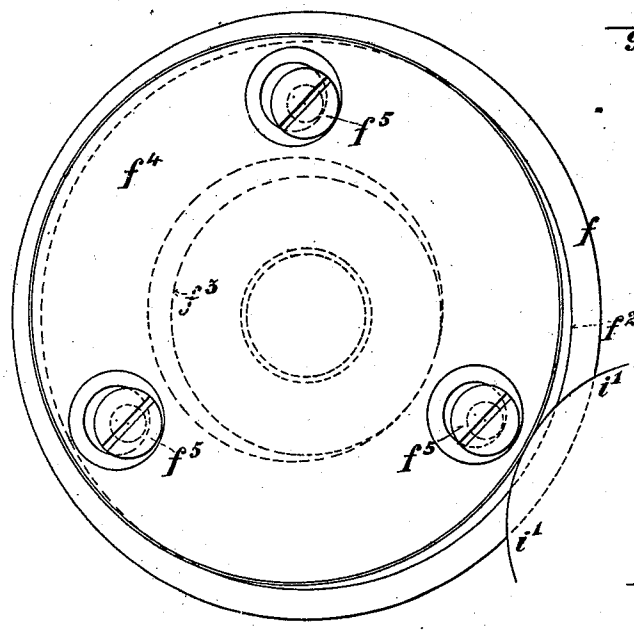


FIG: 4.

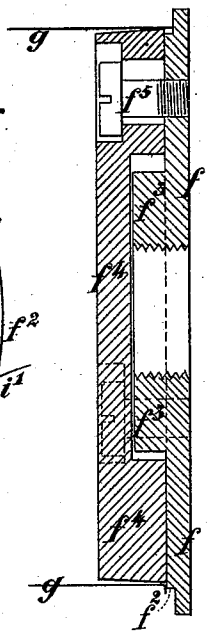


FIG: 8.

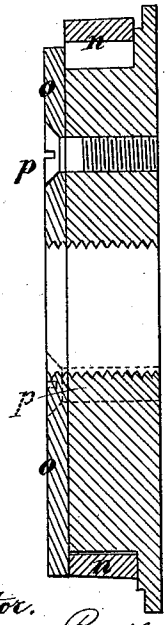


FIG: 5.

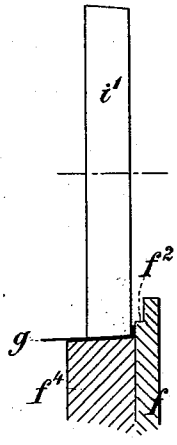


FIG: 6.

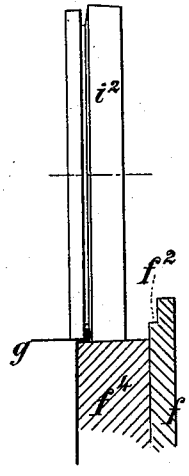
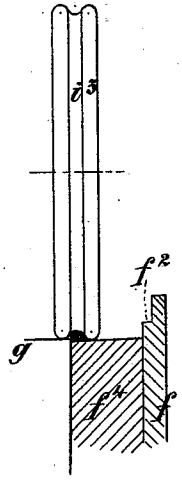


FIG: 7.



Witnesses.
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UNITED STATES PATENT OFFICE.

ALBERT ED. BENTLEY, OF MANCHESTER, ENGLAND.

MACHINE FOR MAKING METAL CANISTERS.

SPECIFICATION forming part of Letters Patent No. 478,389, dated July 5, 1892.

Application filed January 13, 1892. Serial No. 417,907. (No model.)

To all whom it may concern:

Be it known that I, ALBERT EDWARD BENTLEY, a subject of the Queen of Great Britain and Ireland, and residing at Manchester, in the county of Lancaster, England, have invented Improved Apparatus for the Manufacture of Tin or other Metal Canisters, of which the following is a specification.

This invention relates to the construction of apparatus for the manufacture of air and liquid tight metal canisters of a cylindrical form, the body and ends being united with a double-seamed joint without the use of solder.

The nature of my invention and the manner in which the same is to be performed or carried into practical effect will be readily understood on reference to the drawings hereunto annexed and the following explanation thereof.

Figure 1 of the drawings is an elevation, and Fig. 2 a vertical section on line 2 2 of Fig. 1, of my improved apparatus for uniting the ends and cylindrical body of metal canisters by double-seaming, the three necessary operations—viz., first, "throwing off" or flanging the edge of the body; second, "paning down" the edge of the circular end over such flange, and, third, "double-seaming" the joint—being all performed by a single machine. Figs. 3, 4, 5, 6, 7, and 8 are detached views, hereinafter more particularly referred to, of separate parts of the apparatus.

Referring to Figs. 1 and 2 of the drawings, the general arrangement of the machine is similar to that of a lathe, consisting of two end frames *a*, supporting a bed *b*, on which are fixed the head-stocks *c c'*, each carrying a spindle *d d'*, driven by means of an endless strap passing round a driving-pulley *e*. One of these spindles *d'* (the left-hand one on the drawings) is provided with a key or feather d^2, sliding in a groove through the boss of the pulley *e*, so that although the latter drives it the spindle can slide horizontally through the head-stock. The outer spindle *d* is fixed so far as horizontal movement is concerned.

On the inner end of each spindle is screwed or otherwise fixed a head or block *f f'*. The one *f'* on the "following" spindle *d'* is in the case of a single machine for making canisters with loose lids (as that shown on the drawing, for example) a plain block or face plate with a central projection f^2 of such a diameter as will just fit into the open end of the cylindrical body of the canister. The construction of the other head *f* will be best understood on reference to the full-size face view, Fig. 3, and section, Fig. 4. In this case in addition to the projection f^2 there is a central boss f^3 and a loose cap f^4, the outside of which is of the same diameter as the projection f^2—that is, equal to the inner diameter of the body of the canister—and its inner diameter is larger than that of the central boss f^3. This is connected to the main plate *f* of the head by three screws f^5, the holes in the cap f^4 being larger than the screws, so that the cap f^4 can be moved thereon eccentrically in any direction to a limited extent.

Referring back to Figs. 1 and 2, it will be seen that the machine is provided with three arms g' g^2 g^3. The lever g' is connected by a link k' to the weighted hand-lever h'. The lever g^2 is connected to the handle h^2, and the lever g^3 is connected to the lever g^2 by means of a link k^2, so that the movement of the lever h^2 raises or depresses both of the levers g^2 and g^3 together. These levers carry, respectively, at their ends the three circular tools or runners i', i^2, and i^3. The front tool i' has a plain cylindrical edge (see detached view, Fig. 5) and is for throwing off or flanging the edge of the cylindrical body *g*. The latter is placed on the projection f^2 of the plain head *f'*, (see Fig. 1,) and by placing the foot on the treadle *l* this is advanced until the other edge of the body passes onto the loose cap f^4 and the projection f^2 of the working head *f*, which, as before stated, are both of the same diameter and are at this time concentric. The spindles *d* and *d'* are then set in motion and the handle *h'* is depressed, pressing the plain tool or runner i' against the edge of the cylindrical body *g*, which pushes the loose cap backward, and thus throws off or flanges the edge of the body all round, as shown at Figs. 3, 4, and 5, as the cylinder revolves. The foot is then removed from the treadle *l*, and the spring *m* draws the following spindle back through its intermediate connections. A circular end with a grooved punch round its edge in the usual

form is now fitted onto the "thrown" or flanged end of the cylindrical body, which is again placed in the machine and pressed forward by the treadle l until the recessed end fits against the cap f^4. The spindles are again set in motion and the handle h^2 is raised, bringing the tool or runner i^2 into action, which "panes" the edge of the circular end over the flange. (See Fig. 6.) The handle h^2 is then depressed, bringing the runner i^3 into action, which bends over the doubled flanges, making what is known as a "double seam." I prefer to make the runner i^2 in two parts, so that the width of the groove can be altered according to the thickness of the metal.

I may here observe that the machine shown on Figs. 1 and 2 is a single machine for making canisters with loose lids; but the same machine may be used for making double-ended canisters by using a working head with loose cap on each spindle and having a second set of tools or runners fixed on the same shaft so as to make a double-seam joint at each end of the cylindrical body at one operation.

Fig. 8 is a section of a slight modification of the working head for throwing off the flange wherein a loose ring n is substituted for the loose cap f^4 and is held in place by a front plate o, fixed on by screws p. This form of working head is also adapted to be used in the ordinary crimping-machine for throwing off the edge or flange of the body for double-seaming in a separate machine, and it can be adapted, also, for oval or oblong canisters by making the head of a corresponding shape.

I claim as my invention—

1. In a seaming-machine, the combination of a working head adapted to fit into the open end of the cylindrical body of the canister, the said head being provided with a loose cap or ring capable of an eccentric motion, with a tool i', as and for the purpose set forth.

2. In a seaming-machine, the combination of a working head adapted to fit into the open end of the cylindrical body of the canister, the said head provided with a loose cap or ring capable of an eccentric motion, with a plain tool i', a paning-tool i^2, and a double-seaming tool i^3, as and for the purposes set forth.

3. In a seaming-machine, the combination of two rotary spindles, each carrying at one end a head adapted to fit into the open ends of the cylindrical body of the canister, with tools i', i^2, and i^3, set around the head, and pivoted levers g', g^2, and g^3, carrying the said tools, respectively, all substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT ED. BENTLEY.

Witnesses:
GEORGE DAVIES,
CHARLES A. DAVIES.