(No Model.) J. H. CLAPP. 2 Sheets—Sheet 1.

MACHINE FOR FORMING AND FLANGING CAN BODIES OF IRREGULAR SHAPE.

No. 457,909. Patented Aug. 18, 1891.

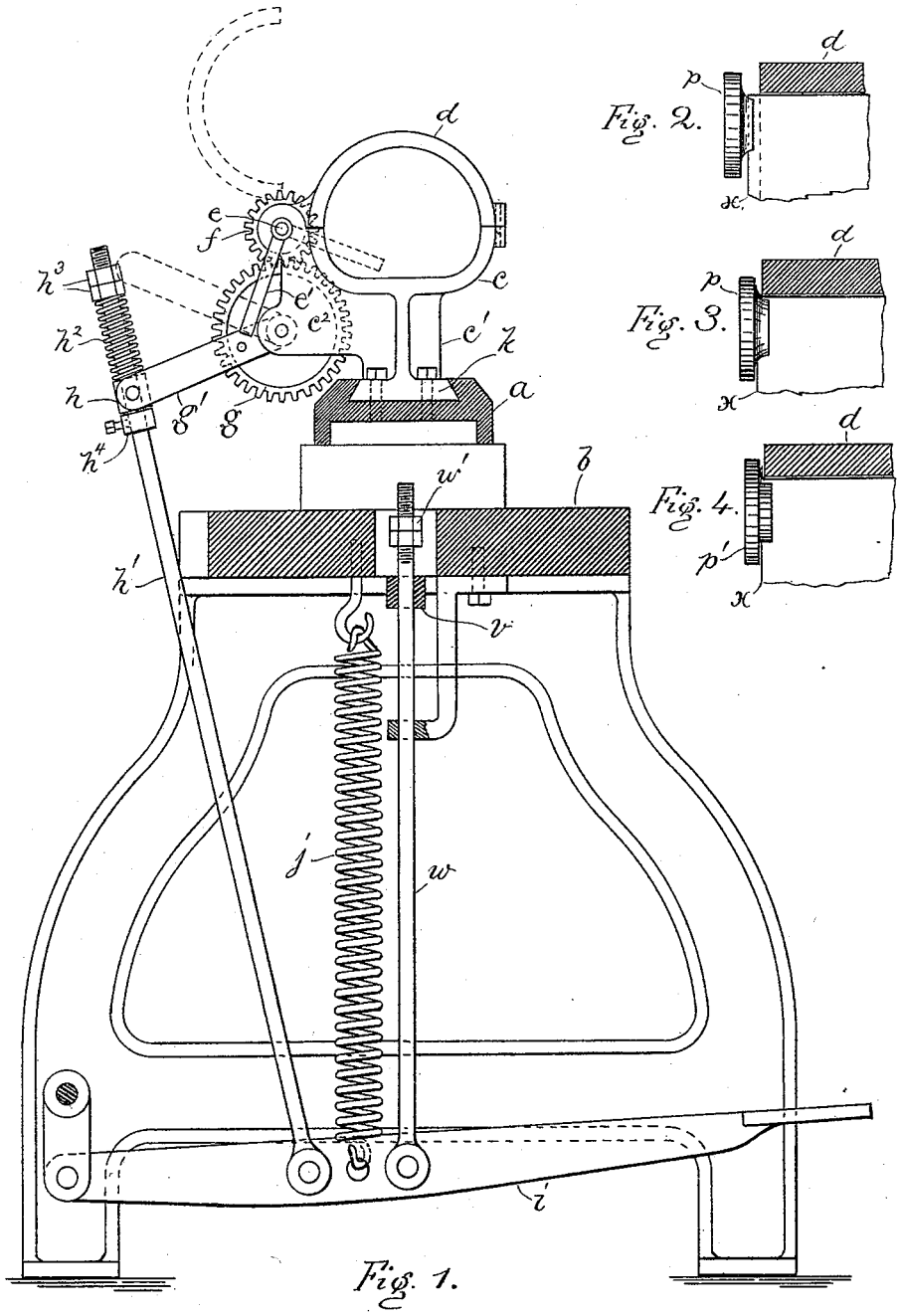

Fig. 1.

Witnesses
Ada L. Fletcher
J. B. Halpenny

James H. Clapp, Inventor,
By his Attorney David H. Fletcher.

(No Model.) J. H. CLAPP. 2 Sheets—Sheet 2.

MACHINE FOR FORMING AND FLANGING CAN BODIES OF IRREGULAR SHAPE.

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Fig. 5.

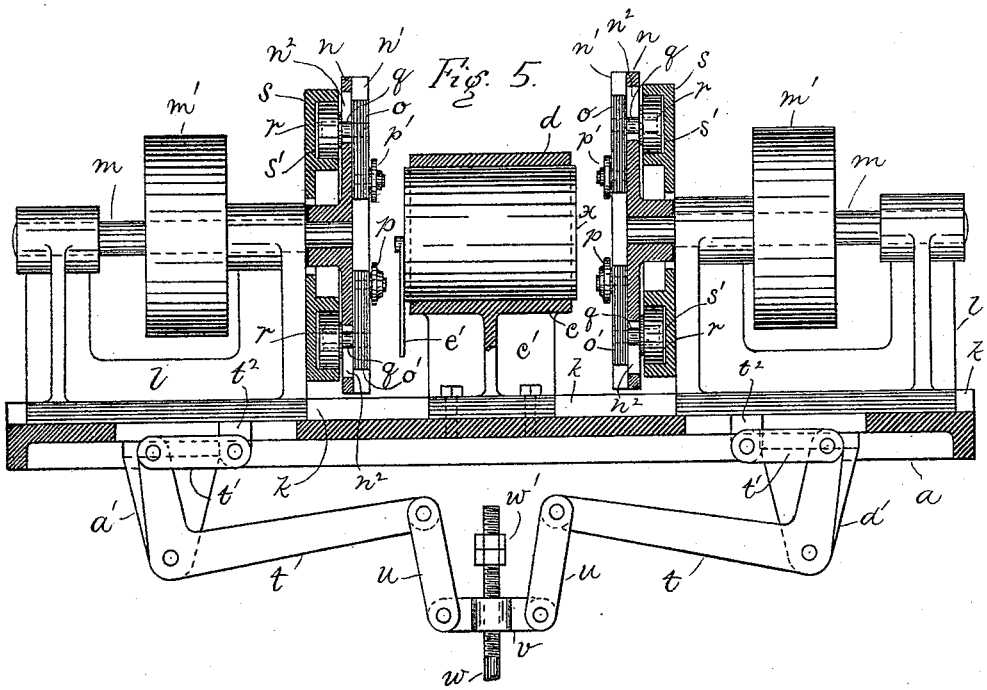

Fig. 6.

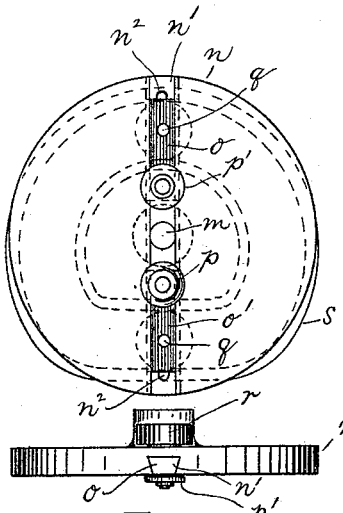

Fig. 7.

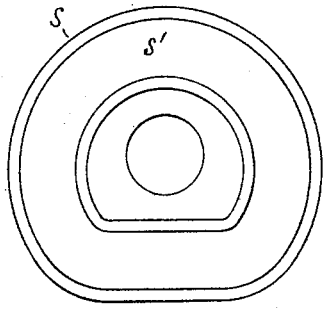

Fig. 8.

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UNITED STATES PATENT OFFICE.

JAMES H. CLAPP, OF CHICAGO, ILLINOIS, ASSIGNOR TO JAMES LEWIS BOARD, OF SAME PLACE.

MACHINE FOR FORMING AND FLANGING CAN-BODIES OF IRREGULAR SHAPE.

SPECIFICATION forming part of Letters Patent No. 457,909, dated August 18, 1891.

Application filed April 10, 1891. Serial No. 388,386. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. CLAPP, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Forming and Flanging Can-Bodies of Irregular Shape, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a transverse vertical sectional view of my improved machine. Figs. 2, 3, and 4 are detail views, partly in section, adapted to show the action of the different flanging-rolls. Fig. 5 is a longitudinal vertical sectional view of the body of my improved machine. Fig. 6 is a face view of one of the chucks. Fig. 7 is a plan view thereof, and Fig. 8 is a face view of the stationary cam for controlling the movement of the flanging-rolls.

Like letters of reference in the different figures indicate corresponding parts.

The object of my invention is to provide a machine for flanging the ends of irregular-shaped can-bodies or bodies of a shape in cross-section other than round.

To this end my invention consists in a suitable clamping-form adapted to grasp the can-body and compress it into the desired shape, revoluble reciprocating chucks in operative proximity to the ends of the can-forming clamp, and suitable flanging-rolls and cams adapted to govern their movements while being revolved, whereby they may adapt themselves to the contour of the can-body, all of which is hereinafter more particularly described, and definitely pointed out in the claims.

Referring to the drawings, *a* indicates the bed of my improved machine, which is supported upon a suitable table *b*. Upon the middle of said bed is placed a clamping device consisting of two parts *c d*, the first of which is provided with a base *c'*, rigidly attached to the bed *a*. The object of said clamping device is to compress the can-body into the desired shape and hold it in position during the operation of flanging the ends, as hereinafter specified. An extension or bracket c^2, Fig. 1, is formed upon and projects from the rear of the part *c*, upon which is formed a bearing for the reception of a shaft *e*, to which the part *d* is attached. Rigidly mounted upon the shaft *e* is a pinion *f*, which meshes into a cog-wheel *g*, mounted loosely upon a wrist-pin upon the part c^2. A gage-arm *e'* is rigidly attached to the shaft *e* for the purposes hereinafter stated, and an arm *g'* is also rigidly attached to the gear *g*, the movement of which serves to revolve said gear. The outer end of the arm *g'* is loosely attached to a sliding collar *h* upon a rod *h'*, the lower end of which is loosely secured to a treadle *i*. A spring h^2 is interposed between the collar *h* and a nut h^3 upon the end of the rod *h'*, and an adjustable collar h^4 is also secured to the rod below the collar *h*, to serve as a stop for the movement of the latter. A spiral spring *j'*, attached to the frame and treadle, respectively, serves to hold the latter normally in a raised position, thus permitting the arms *g e'* and the hinged lid or part *d* of the clamp to assume the positions indicated, respectively, in dotted lines in Fig. 1. Loosely mounted in dovetailed grooves *k* are sliding blocks *l l*, Fig. 5, adapted to move in a common plane. Secured in bearings upon said blocks are shafts *m m*, provided, respectively, with driving-pulleys *m' m'*. Rigidly attached to said shafts are revoluble chucks *n n*, in the face of each of which is formed a dovetailed groove *n'*, in which grooves are loosely secured sliding blocks *o o'*. Upon wrist-pins attached to said blocks are placed forming-rolls *p p'*. Wrist-pins *q q* are attached to the rear of the blocks *o o'* and are passed through the slots n^2 n^2 in the chucks *n*. Upon said wrist-pins are mounted friction-rollers *r r*, (shown in Figs. 5 and 7 and indicated in dotted lines in Fig. 6,) which are adjusted to move in cam-grooves *s' s'*, formed upon the faces of plates *s s*, rigidly attached, respectively, to the sliding heads *l l*.

Pivoted to depending supports *a' a'*, Fig. 5, are elbow-levers *t t*, the short ends of which are loosely connected by means of links *t' t'* to lugs t^2 t^2, formed upon the sliding blocks *l l*. The opposite ends of said levers are connected by means of links *u u* with a yoke *v*,

through a bore in which is loosely projected a rod w, attached to the treadle i. A nut w' is attached to the upper end of the rod w, but so adjusted as not to act upon the yoke until the arm g' is fully depressed by the action of the rod h', when a further downward movement of the treadle depresses the yoke v, actuates the connecting-levers, and slides the blocks l l toward each other until the chucks are brought into operative proximity to the clamp.

Having thus described the respective features of my improved machine, I will now describe its operation: The can-body x, Figs. 2, 3, 4, and 5, which is presumably in cylindrical form, is placed in the forming-clamp while the treadle is raised and the lid d thrown back, as indicated in dotted lines in Fig. 1, the arm e', as then situated, serving as a gage or stop, against which the end of the can-body is placed. When thus adjusted, the treadle is depressed, thus withdrawing the gage-arm e' from the end of the forming-clamp and clamping the lid d upon the can-body, which is thereby caused to assume the shape of said former. A further depression of the treadle acting upon the levers t forces the chucks into conjunction with the forming-clamp, when the flanging-rolls, as the chucks are revolved, act upon the projecting ends of the metal and bend the flange in the manner indicated in Figs. 2, 3, and 4. It will be observed that the shape of the groove in the cam-plate s is made to conform to that of the inner face of the forming-clamp. This shape, it is obvious, may be varied at will according to the shape in which it is desired to construct the can-body, which, after being shaped and flanged, retains its exact contour.

My improved flanging-machine is simple and durable, and can-bodies may be flanged thereon with great rapidity. The number of forms in which can-bodies may be made by modifying the contour of the clamp and cams is obviously indefinite.

Having thus described my invention, I claim—

1. A machine for flanging can-bodies of the class described, consisting of a forming-clamp for compressing the can-body into the desired shape, revoluble chucks in operative proximity to said forming-clamp, movable forming-rolls upon said chucks, cams shaped to conform to the contour of the forming-clamp, means for connecting said rolls with said forming-cams, and means for actuating the clamping device and chucks, respectively, substantially as shown and described.

2. The combination, with a forming-clamp for forming and holding can-bodies while undergoing the operation of flanging the ends, of revoluble chucks mounted upon sliding blocks, means for forcing said chucks into conjunction with the forming-clamp, sliding blocks arranged to reciprocate in said chucks, flanging-rolls thereon, cams conforming in shape to the contour of the forming-clamp, friction-rolls arranged to engage therewith, means for connecting the forming-roll slides with said friction-rolls, and means for revolving said chucks, substantially as shown and described.

3. The combination, with a forming-clamp made in two parts hinged to each other, means for holding the same normally open, of a treadle in operative connection therewith for closing the same, reciprocating and revoluble chucks in operative connection with said treadle, forming-rolls upon said chucks mounted upon reciprocating slides, cams conforming in contour to the contour of said forming-clamp, means for connecting said forming-roll slides therewith, and means for revolving said chucks, substantially as shown and described.

4. In a machine for flanging can-bodies having a contour other than circular, the combination of a forming-clamp, revoluble chucks, flanging-rolls mounted upon movable supports in operative connection with cams having a contour conforming to that of the forming-clamp, and means for actuating said forming-clamp and chucks in successive order, substantially as shown and described.

5. The combination, with the two-part forming-clamp, substantially as set forth, of an oscillatory gage-arm normally in position to serve as a stop for the can-body, and means for actuating said arm and the movable part of said forming-clamp, substantially as shown and described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 30th day of March, 1891.

JAMES H. CLAPP.

Witnesses:
R. D. WARDWELL,
D. H. FLETCHER.