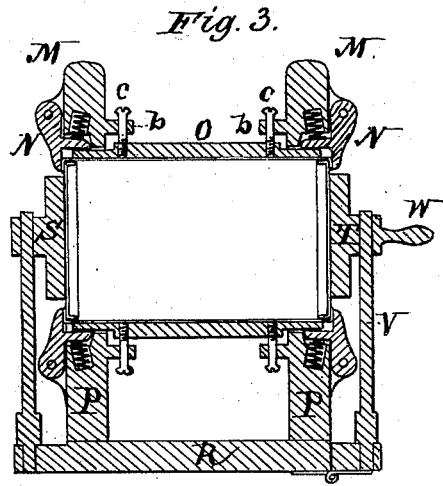
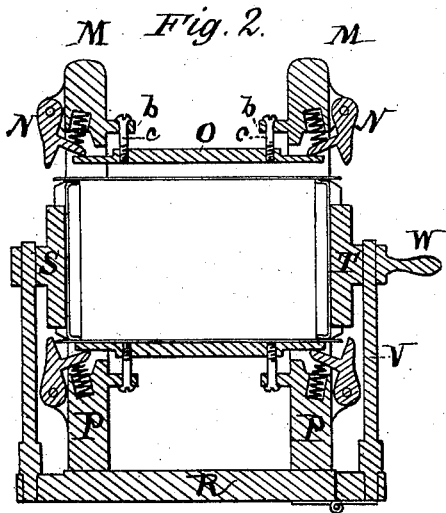
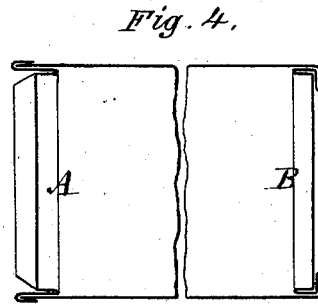
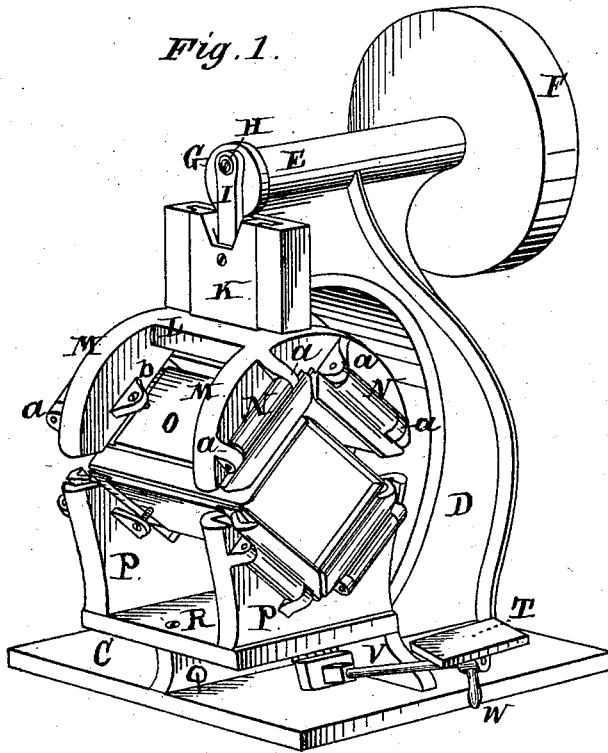


E. R. BOWIE.  
Can-Seaming Machine.

No. 198,965.

Patented Jan. 8, 1878.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

EDWIN R. BOWIE, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR TO  
EDWARD T. COVELL, OF SAME PLACE.

## IMPROVEMENT IN CAN-SEAMING MACHINES.

Specification forming part of Letters Patent No. **198,965**, dated January 8, 1878; application filed  
November 15, 1877.

*To all whom it may concern:*

Be it known that I, EDWIN R. BOWIE, of New Bedford, Massachusetts, have invented certain new and useful Improvements in Machines for Closing the Seams of Metallic Vessels, of which the following is a full, clear, and exact description.

My present invention relates to machinery for turning over and compressing or closing the seams uniting the head with the body of cans of peculiar construction. The distinguishing feature of such cans is that the seam is formed and perfected without the use of internal support or mandrels, but is closed or turned down upon the head itself, or upon an auxiliary or false head which may be interposed between the head and the turned-down flange.

In illustration of or to exemplify such cans I would refer to the patent issued to E. T. Covell on the 7th day of September, 1875, and to that issued to said Covell, as assignee of Charles P. Manfield, on the 6th day of November, 1877.

The machine, therefore, which embodies my improvements dispenses with the use of mandrels, either internal or external, but contains devices for the simultaneous turning over and closing of all the flanges or seams on either or both heads; and to this effect my said invention consists in the employment and use, in combination with a stationary angular supporting-frame and a movable or reciprocating angular follower, of angular jaws or flaps actuated to converge, for the purpose of turning over and compressing the flanges against the heads of the can by means of the can itself when, resting upon its support, it is compressed between the said support and the follower.

In order to enable others to make and use my said invention, and to understand the manner in which the same is or may be carried into effect, I shall now proceed to describe the same with reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a machine constructed in accordance with my said invention. Figs. 2 and 3 are sectional views according to a plane through the center of the can at an angle of forty-five degrees with the perpendicular, and passing through the oper-

ative parts of the machine, showing the seam bending and compressing jaws respectively open and closed.

In Fig. 4 I have shown a diagram of the can as the same appears before and after being operated upon by the machine, the one end at A showing the head as combined with the sides of the can in the former position, while the end B shows it so combined in the latter position.

The frame of the machine consists of a pedestal, C, cast in one piece or otherwise united with a goose-neck bracket, D, in the top of which is the bearing E of the main shaft, to which is or may be imparted rotary movement from a belt over a pulley, F, or by gearing, or by any other mechanism driven by steam or other power. To the front end of the shaft is secured a disk, G, and a connecting-rod or pitman, I, is attached at one end to an eccentric pin, H, on said disk, and at the other to a sliding block, K, traveling in vertical guides in the head of the frame, and imparting an up-and-down reciprocating movement to the cross-head L, which carries on each extremity a segmental yoke, M. The contour of the interior or under side of these yokes is shaped to conform to the two adjoining sides of a can of rectangular area—that is to say, forming an angle of ninety degrees—which is so arranged that a vertical plane shall bisect the angle. Each yoke on the exterior face is provided with lugs or knuckles *a*, to contain the hinge-pins or pivotal axes of jaws N and N, which are thereby respectively held in a line parallel with one of the sides of the angle formed by the under side of the yoke. These jaws are rectangular levers, having their fulcrum in the hinge referred to, and are, by a spring in a recess in the yoke, thrown out and maintained in the position shown in Fig. 2. On the interior face of the yokes are lugs *b*, from which are suspended, by means of loose spindles *c*, the platens O. These are plain-surfaced plates, of the dimension corresponding to that of a side of the can, and extend transversely from one yoke to the other, engaging from beneath one side of the jaw.

The length of the spindle determines the amount of play which each platen has toward and away from the angular under side or clamping-surface of the yoke, and the move-

ment of the platen controls the swinging or tilting action of the jaw.

In Figs. 2 and 3 the extreme positions are indicated. In the former figure the platen is shown thrown out by the spring acting on the jaw-levers, which are engaged by the platen. In the latter the platen is shown forced back into its seat in the yoke, and tilting the jaw-levers, the spring being compressed.

For the purpose of regulating the amount of play thus given the platen and the jaws, the spindles may be screw-threaded on either or both ends, and a movable head or nut may be applied to the one end, or it may be screwed more or less into the platen at the other. Directly opposite, in the same planes with and underneath the movable yokes, (provided with the two platens arranged at right angles relatively to each other, and with four jaws, one on each outer end of each platen,) are arranged the fixed yokes P, firmly secured upon a platform, R, supported by standards Q on the pedestal. These yokes carry two platens and four jaws, and their accessories, in the manner precisely similar to those of the movable yokes, differing from them only in the arrangement—that is to say, while the angle in the movable yokes, and consequently the angle which the platens in the movable yokes form with each other, faces downward, that of the fixed yokes and that of the platens within the fixed yokes face upward; but the vertical plane which bisects the one angle bisects also the other.

On one side of the machine there is a disk, S, supported by a post or bracket in a position to afford an abutting-surface to the can when placed into the machine, and a similar disk, T, is arranged on the opposite side of the machine, to securely hold the can in position while being operated upon. The latter disk is supported by a movable post or tilting-bar, V. A handle, W, is arranged for convenience of manipulation.

The operation of the machine is as follows: By proper revolution of the driving-shaft the upper yoke is raised and the disk T is dropped, as shown in Fig. 1, to allow the can to be perfected to be placed on the lower yokes, or, rather, to rest with its two contiguous sides upon the two platens when the can is brought home—*i. e.*, when the one head butts against the stationary disk S the movable disk T is lifted to close against the other head of the can. The can thus securely held in the proper position, the driving-shaft is rotated, and the upper yokes are caused to descend. During part of this descent, and until the platens of the upper yokes come in actual contact with the can, the latter presses upon the lower platens by its own weight, which is, however, insufficient to counteract the action of the springs, whereby the platens are kept away from their seats, and whereby, also, the jaws are kept open or deflected from the seam-flange to be closed by them.

The moment the can is clasped on its four

sides by the lower and upper platens the action of the eight jaws commences simultaneously, and is continued by the progress of the downward stroke of the upper yoke until the seam is completed, and this is effected in the manner as follows: The four platens surrounding the can, on compressing it, meet with a certain resistance. Being backed by springs, and loosely hung, as before described, the platens simultaneously yield, and by thus yielding act on the lever ends of the jaws with which they are engaged, and cause them to tilt or close in against the heads of the can. In thus closing in the jaws meet the seam-flanges of the can, which are bent and compressed against the head, as shown in Fig. 3. The action of the jaws, it will be observed, is regularly continuous or gradual and progressive. For this reason the injurious effects attending blows or percussive action of seam bending devices heretofore used are avoided.

When the seams of the can are thus closed and perfected, the can is readily removed by dropping the can-confining disk T, and by raising the upper yoke.

Having thus described my said invention, and the manner in which the same is or may be carried into effect, I would observe that many modifications may be made to the machine herein described without departure from my invention. Thus the shape of the yokes, their seam bending and closing jaws and jaw-operating platens, may be varied according to the shape of the can to be operated upon.

I have shown the parts of the machine arranged with reference to cans the body of which has a square cross-section as the simplest form, or the form which is most commonly in use; but any quadrangular or polygonal shaped can, constructed with a seam which is to be turned down inwardly upon the head or false head, can be operated upon in like manner by the means described by simply changing the form of the yokes and the number and arrangement of their intermediate platens and of the jaws accordingly.

What I claim, and desire to secure by Letters Patent, is as follows:

1. A can-seaming machine in which the jaws for bending and compressing the seams are arranged in frames or yokes closing against the can, and are operated by the can itself through the intermediary of mechanical devices, substantially as herein shown and described.

2. The combination, with a pair of stationary yokes provided with can-supporting platens and seam bending and closing jaws, of a pair of movable yokes similarly provided with intermediate platens and seam bending and closing jaws, substantially as herein set forth.

3. The combination, with the stationary and movable can-confining frames or yokes, of seam-closing jaws the pivotal axes of which are parallel with the seam to be operated upon, substantially as set forth.

4. In a machine for closing and compressing

seams of metal cans, the combination, with the side platens, arranged in stationary and movable yokes to correspond to the sides of the can, and with jaws operated by said platens, of springs, arranged for operation substantially as herein shown and described.

5. In a machine for closing and compressing seams of metal cans, the platens loosely hung in the stationary and movable yokes, and the means, substantially as herein shown and described, for regulating their play within said yokes.

6. In a machine for closing and compressing

seams of metal cans by means of jaws operated automatically, as described and claimed, a stationary and a movable end plate for holding the can confined in its proper position during the operation of closing the seam, substantially as set forth.

In testimony whereof I have hereunto signed my name this 11th day of October, A. D. 1877.

EDWIN R. BOWIE.

Witnesses:

ALANSON BORDEN,  
ALBERT B. COLLINS.