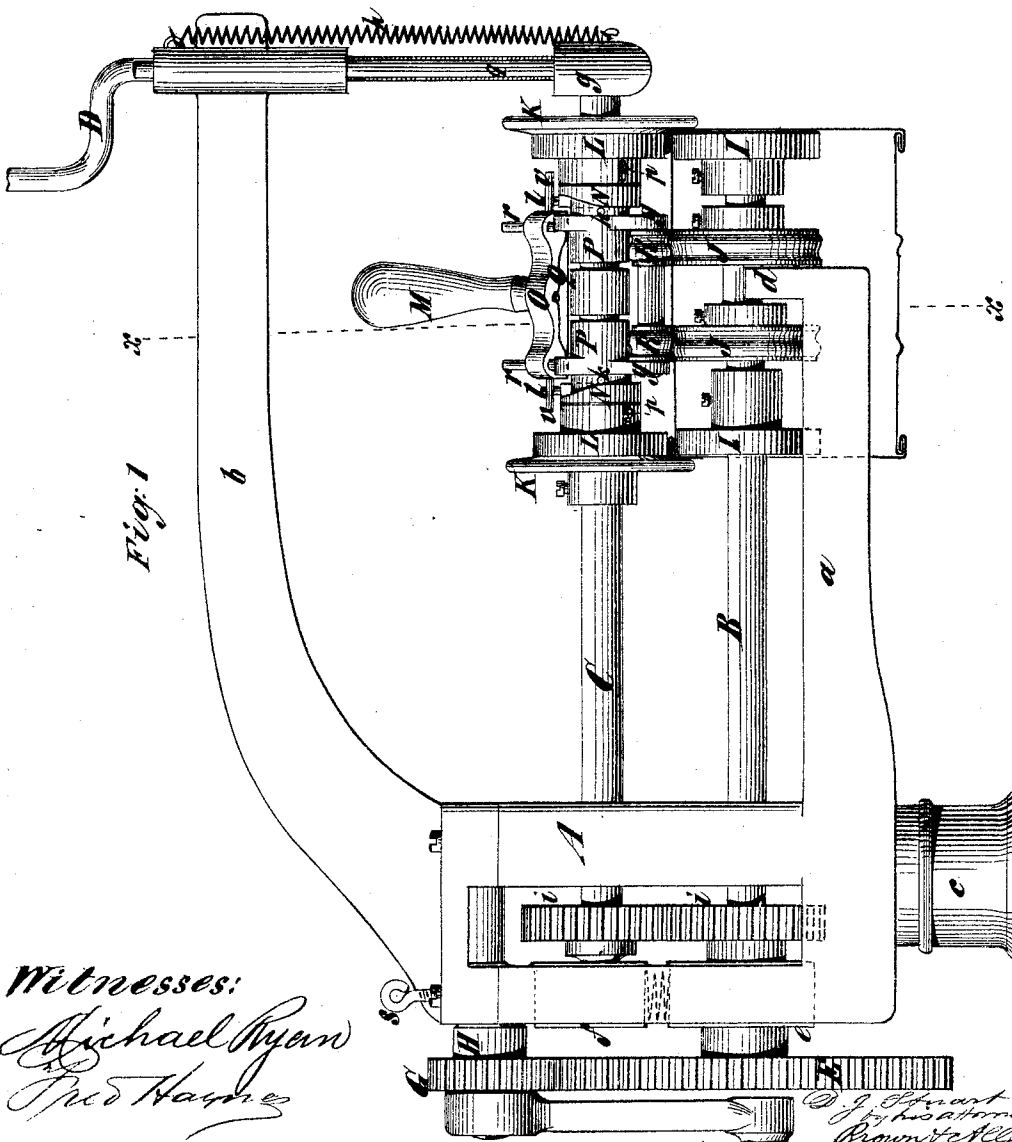
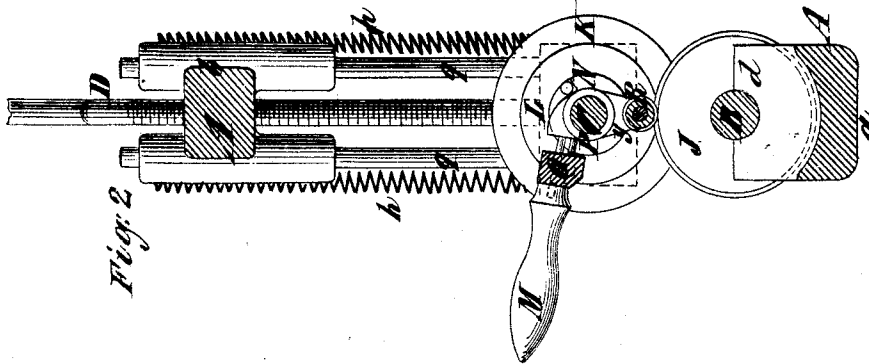


D. J. STUART.
Box and Can Machines.

2 Sheets--Sheet 1.

No. 151,935.

Patented June 9, 1874.



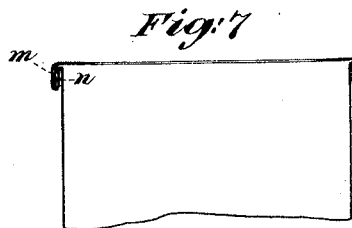
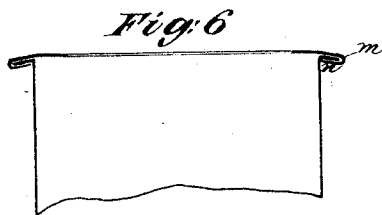
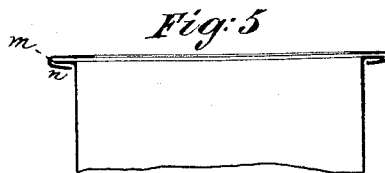
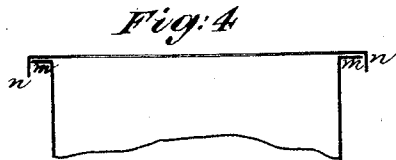
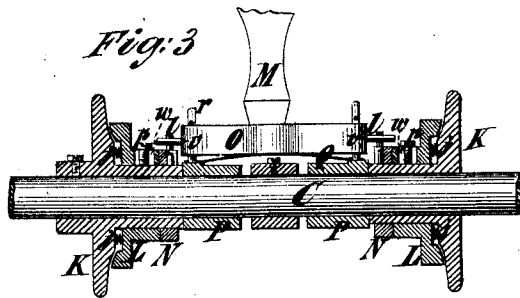
Witnesses:
Michael Ryan
Fred Harnes

D. J. Stuart
by his attorneys
Brown & Hildes

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Witnesses:

Michael Ryan
Fred Hume

J. G. Stuart
By his Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE,

DAVID J. STUART, OF WILLIAMSBURG, NEW YORK, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO JOSEPH McKEE, OF SAME PLACE.

IMPROVEMENT IN BOX AND CAN MACHINES.

Specification forming part of Letters Patent No. **151,935**, dated June 9, 1874; application filed September 2, 1873.

To all whom it may concern:

Be it known that I, DAVID JAMES STUART, of Williamsburg, in the county of Kings and State of New York, have invented Improvements in Machine for Pinning Down and Double-Seaming the Heads of Sheet-Metal Cans and other vessels and swaging them, of which the following is a specification:

This invention consists, essentially, of a novel system of rollers, whereby the joints between the two heads of a can and its body may both be pinned down at the same time, and their seams may be closed, and whereby, also, the swaging may be done, if desirable, without removing the can during the several operations.

In the accompanying drawing, Figure 1 is a side view of the machine. Fig. 2 is a transverse section of the same, taken at the dotted line *xx* in Fig. 1. Fig. 3 is a longitudinal section of the controlling series of rollers; and Figs. 4, 5, 6, and 7 are diagrams illustrative of the several stages of the operation.

Similar letters of reference indicate corresponding parts in all the figures.

A is the frame of the machine. It consists, mainly, of two horizontally-extending arms, one of which, *a*, supports a lower series of rollers that carry the can while being operated upon by an upper series adjustably supported in the other arm *b*. These arms extend from a box-like upright portion that contains one set of bearings for the shafts that carry the two sets of rollers. The whole frame is secured to a suitable base by means of a single standard or post, *c*. The two series of rollers are arranged on two shafts, B and C, situate one above the other. The lower shaft, B, is supported in a bearing, *d*, at the outer end of the lower arm *a* of the frame, and is likewise supported in a bearing, *e*, arranged in the bottom of a housing in the box-like portion of the frame before described. The other shaft, C, near one end, is supported in a bearing, *f*, which is arranged within the same housing. It is separated from that supporting the adjacent end of the shaft B by springs, which hold it up as far as permitted by screws *s s*, which regulate its position. This adjustment is afforded to enable the series of rollers that this

shaft carries to act uniformly on their respective fellows on the lower shaft, B. The bearing which the shaft has here is of the ball-and-socket kind, and enables its other end to be tipped without causing binding in this bearing. The other end of this shaft is supported in a bearing, *g*, that is suspended by two spiral springs, *h h*, from the outer end of the upper arm *b* of the frame, and is confined laterally by rods *q q*, sliding in guides on the fore end of this arm. It is held down in the position that it is desired to maintain by a screw, D, that is furnished at the upper end with a crank, to provide for its manipulation. This shaft has to be raised in order to place in the machine the body and heads of the can to be united, and it is for this reason arranged in its bearings after the manner just described.

Instead of the screw D, there may be used for raising and depressing the shaft a treadle-motion, which would expedite the operation of the machine very materially.

The motion of said shaft is derived from the lower shaft, B, through the medium of gear-wheels *i i*, with which they are both furnished, near their bearings, in the housings of the frame. Motion is imparted to the shaft B by means of a large gear-wheel, E, which is arranged on its outer end, and has working into it a pinion, G, on the driving-shaft H of the machine. Power may be transmitted to this shaft by means of a crank, belt and pulleys, or other suitable means.

I will now describe the rollers, which, indeed, are the essential part of the machine. The two end rollers I I of the series on the shaft B have plain peripheries, and the inner one is made adjustable relatively to the other, in order to enable it to be arranged at such distance from the other that they both will fit against the heads of a can placed upon them for the purpose of having its heads secured to its body. They are much smaller in diameter than the body of the can, so that the head of the can, which usually has an opening in it, designed to be closed by a cover soldered to it, may easily pass over them, to permit the placing of the can thereon. These rollers are secured in place by means of set-

screws carried by long hubs, with which they are provided. Between these rollers are others, J J, of the same size, having the transverse profile of their peripheries curved after the manner of an ogree. These are the lower set of swaging-rollers. They are both secured adjustably on the shaft, in the same manner as the inner roller I, previously described, in order that the swaging may be done on any part of the can-body that may be preferred, and likewise to adapt the machine to different-sized cans. The upper series of rollers are somewhat different. The rollers K K at the ends of the series of the heads, as they might very properly be termed, are larger in diameter than those, I I, on the lower series, but are quite narrow, and have their inner opposite faces inclined slightly, to approach each other as they near their hubs. They lap over the outer sides of the rollers I I somewhat, and the inner of the two is secured adjustably on its shaft, in order that it may be shifted to maintain its relative position to the adjacent roller I whenever that is adjusted. These heads have long hubs, extending one toward the other. On these hubs rollers L L, corresponding in size and peripheral shape to the rollers I I, are arranged in such manner that they are capable of sliding laterally back and forth a short distance. These, also, have hubs on their opposite sides, and pins or studs *p p*, passing through slots *w w*, provided in them to lock them to the hubs of the heads K K, as regards circumferential motion, but do not interfere with their independent longitudinal movements. The outer sides or faces of these rollers are shaped to correspond with the adjacent portions of the heads K K, and in the middle are hollowed out, to receive springs *j j*, which press against the heads, and thereby force the rollers away therefrom as far as permitted by the pins *p p*. On the hubs of the heads K K, just inward of the hubs of the rollers L L, there are loose collars N N, which have on their adjacent sides cam-like surfaces that somewhat resemble ratchet-teeth. They work against pins *k k*, that project from the hubs of the heads K K. From the collars themselves project other pins, *l l*, which afford a means of locking them to a lever, M, by which they may be turned so that their cam-faces will act against the pins, and by this means the collars will force the rollers L L over toward the heads K K. The lever M, by which this is effected, is secured to a yoke or bar, O, that is fitted to two pins or rods, *r r*, on collars P P, which are loose on the shaft C, between the hubs of the heads K K. A spring, Q, holds the bar O as far away from the collars P P as possible, so that pins *r r* on its ends will not come in contact with the pins *l l* on the collars N N, except when the bar is pressed toward the shaft by means of the lever M, in the hands of the operator. Arms *y y* project from the sides of the collars P P, to hold a short shaft, furnished with small

swaging-rollers R R, corresponding in peripheral profile to the swaging-rollers J J, previously described, and also in situation.

The body and heads of the can to be united are first prepared as shown in Fig. 4, the body having right-angled laterally-extending flanges *m m* on it, and the heads vertically-extending flanges *n n*. They are fitted together as shown in that figure, and the edges of the heads' flanges are turned over the flanges on the can-body by burring or a hand-tool, as shown in Fig. 5. The can is then ready to be placed in the machine. The shaft C is now raised, and the can, with the open head foremost, is placed on the lower series of rollers, as illustrated in Fig. 1. The shaft C is then lowered, and the bent-over flanges of the can enter between the inner faces of the heads K K and the adjacent faces of the rollers L L. The bar O is pressed toward the shaft C, so that, as the pins *l l* on the collars N N come round, the collars will be stopped, and their cam-faces will, by acting against the pins *k k*, force the rollers L L toward the heads K K, and thereby clamp the flanges of the can tightly, and close or pin down the joint. Owing to the incline of the adjacent faces of the heads and rollers, a slight incline rearward is given to the flanges, as shown in Fig. 6, so that the turning-over rollers will bend them down in the proper direction. Next, the collars N N are freed, and the shaft C is raised again slightly, to withdraw the rollers from the flanges of the can, and then the rollers L L are, by means of the lever M, forced tightly against the heads K K, and afterward the shaft is lowered, and the rollers L L, coming then on the bent-in flanges of the can, fold them down and complete the double-seaming.

If it be desirable to swage the can, also, the lever M is pulled over to bring the upper swaging-rollers, R R, down, to act in connection with the lower ones, J J, and their profile will, by the continued rotation of the rollers, be imparted to the can.

This machine is an exceedingly good one, as not only does it secure both heads at once, but also it affords a means of swaging the body of the can while still in the machine. If desirable for any reason, the machine could be made to act on one end only of the can at a time.

What I claim as my invention is—

1. The combination of the rollers L with the rollers or heads K on the same shaft, substantially as and for the purpose herein set forth.

2. The combination, with the heads K and rollers L, of the cam-like collars N, the pins *k*, against which they operate, the pins *l* on said collars, and the operating-lever M, substantially as and for the purpose herein set forth.

3. The inwardly-inclined or rounded inner faces of the heads or rollers K, in combination with the correspondingly-shaped adjacent faces of their fellow rollers L on the same

shaft, substantially as described, whereby, in the operation of pinning down the seams, they are bent slightly inward, so that the peripheral faces of said rollers L, at a successive stage in the operation, may fold them down on the body of the can.

4. The holding-rollers I on the same shaft B, in combination with the heads or rollers K, and their fellow rollers L on the shaft C, situated above, substantially as described, whereby, after the pinning down of the seams, they are folded inward over the body of the can.

5. The combination of the revolving swaging-rollers J J on the shaft B, the yoke O, supported on the shaft C, the lugs y y, and the loose swaging-rollers R R appended thereto, substantially as herein set forth, whereby the can may be swaged without shifting it in the machine.

DAVID J. STUART.

Witnesses:

MICHAEL RYAN,
FRED. HAYNES.