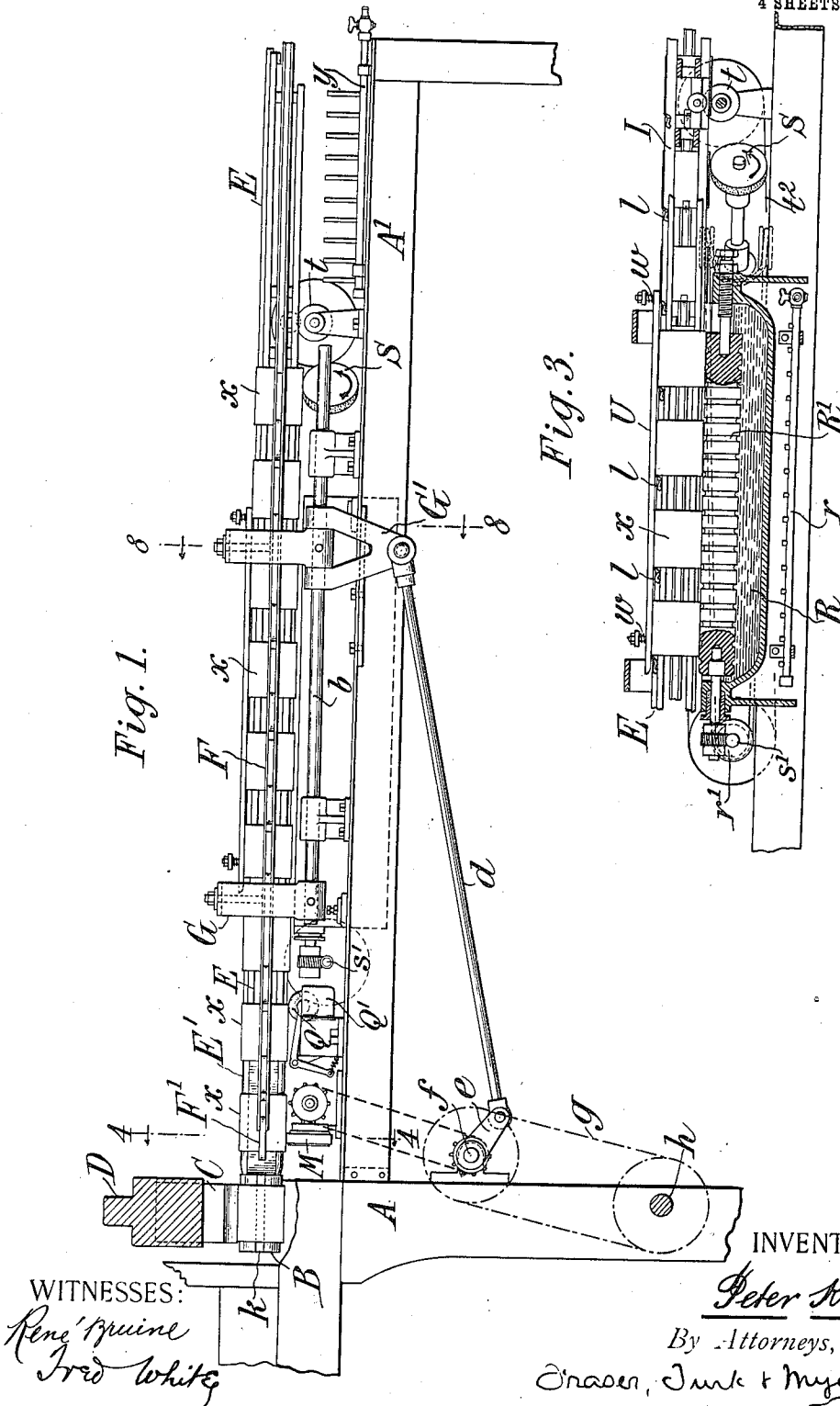


P. KRUSE.
CAN BODY SOLDERING MACHINE.
APPLICATION FILED AUG. 16, 1911.

1,050,956.

Patented Jan. 21, 1913.

4 SHEETS—SHEET 1.



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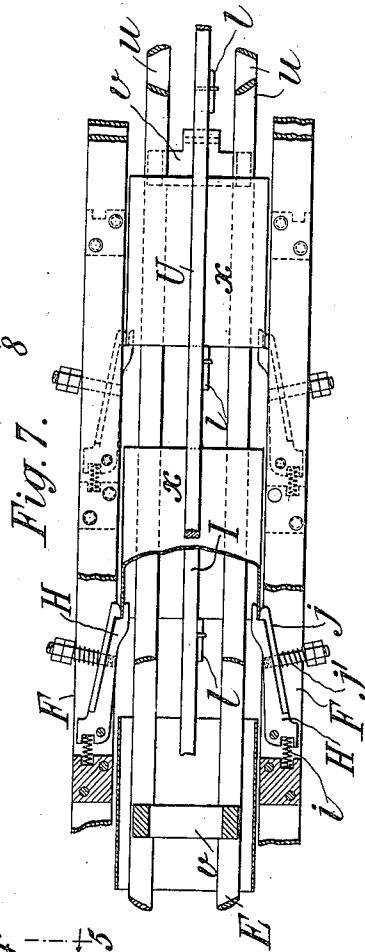
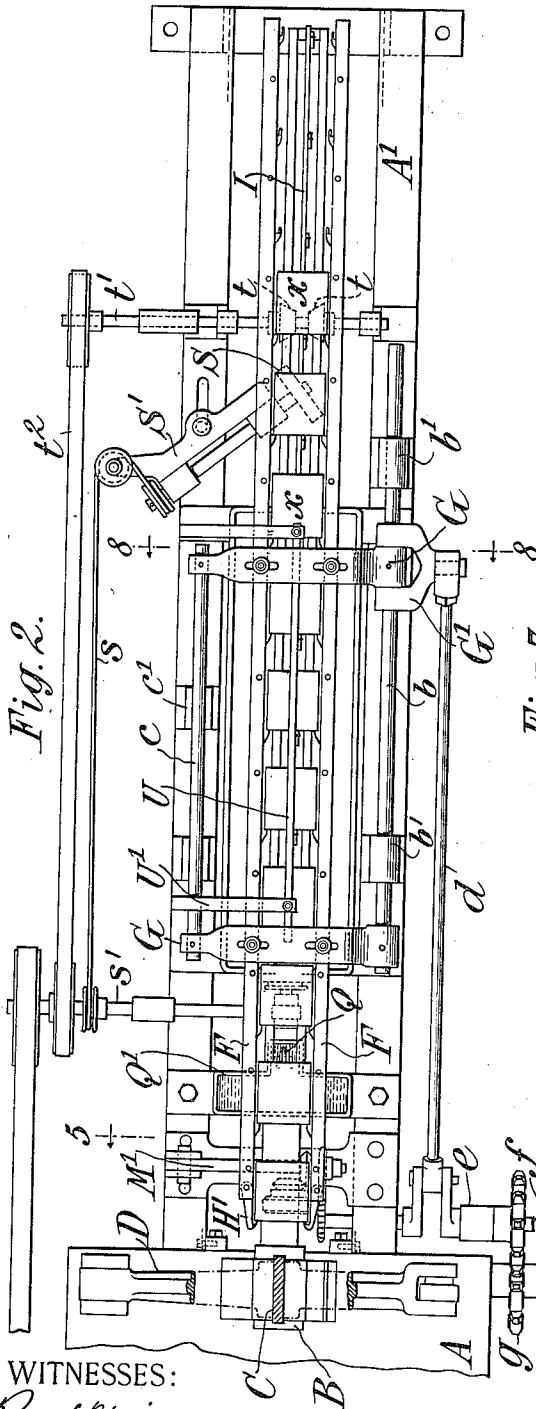
Orasen, Junk & Myers

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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 4.

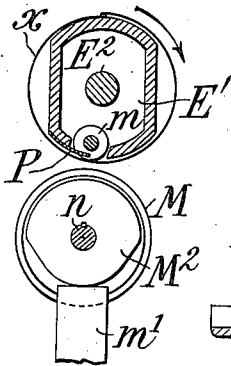


Fig. 5.

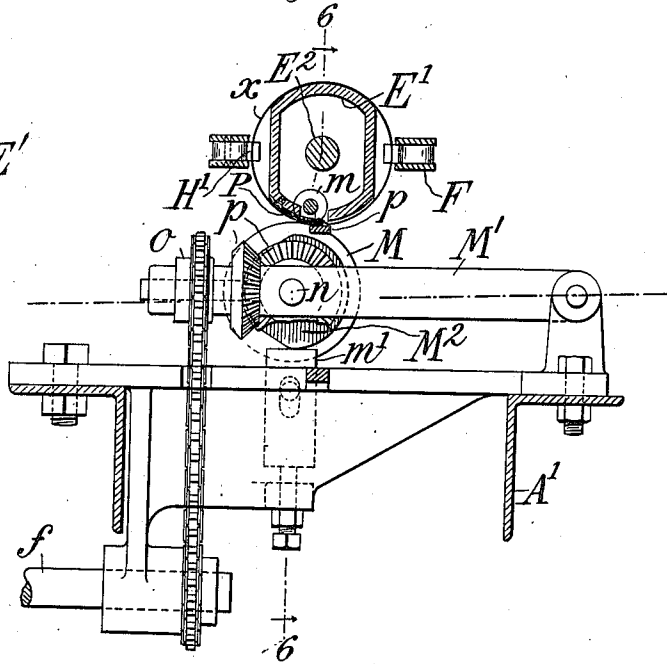
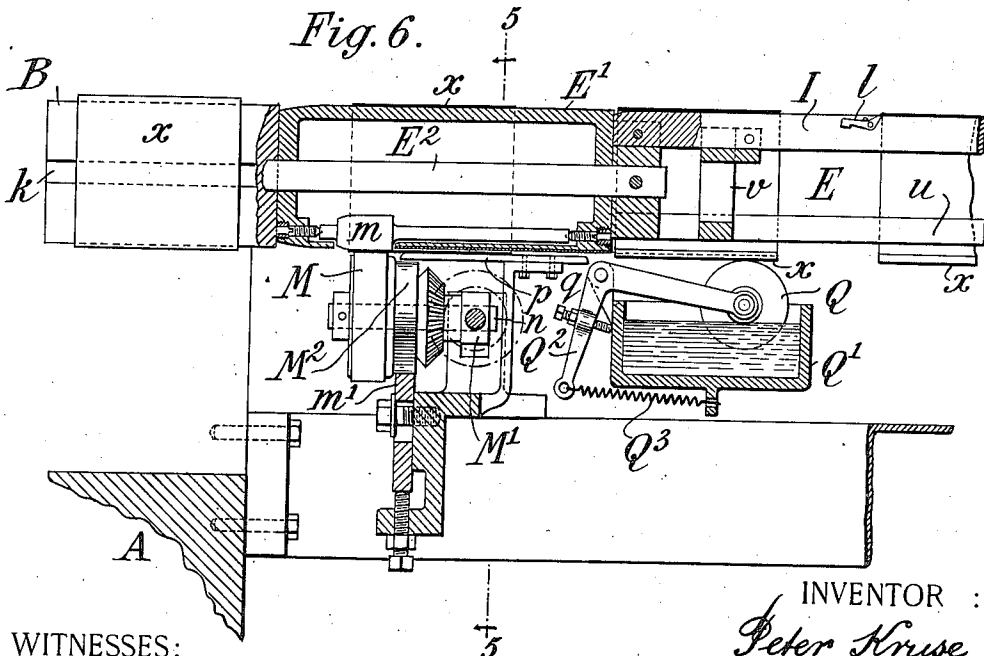


Fig. 6.



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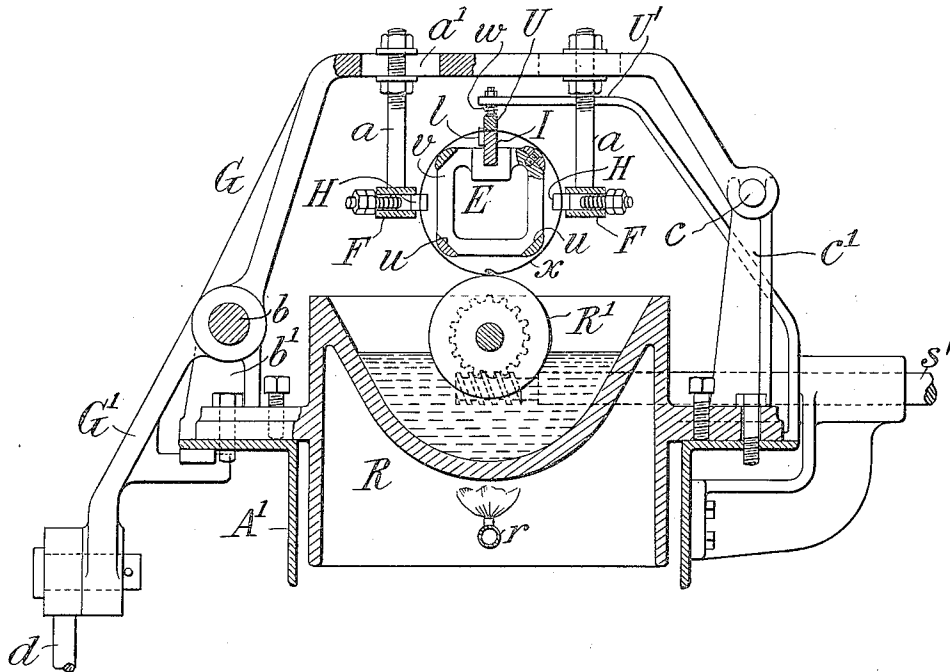
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4 SHEETS—SHEET 4.

Fig. 8.



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UNITED STATES PATENT OFFICE.

PETER KRUSE, OF NEW YORK, N. Y., ASSIGNOR TO E. W. BLISS COMPANY, OF
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CAN-BODY-SOLDERING MACHINE.

1,050,956.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Application filed August 16, 1911. Serial No. 644,368.

To all whom it may concern:

Be it known that I, PETER KRUSE, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Can-Body-Soldering Machines, of which the following is a specification.

This invention relates to mechanism for soldering the side seam of a can body.

It applies particularly to a double seam formed of interlocked hooked flanges, and in which as usual the projection of the seam is upon the inner side of the can body. The machine is particularly adapted to be applied in association with known mechanisms for forming such can bodies. Such mechanisms customarily act upon successive blanks or sheets of tin cut to the proper size, first feeding such sheets to edge-bending devices whereby their hooked edges are turned in contrary directions, and then to body-forming devices whereby the blank is bent around a horn, its hooked edges or flanges interlocked, and these flanges then pressed together to unite them in a double seam, and to flatten this seam. Such body forming mechanisms commonly make the body with the seam on the upper side.

One object of the present invention is to provide means for turning the successive can bodies half around so as to bring the seam upon the lower side, so that the soldering device may be located upon such lower side, an arrangement which presents important advantages in the application of solder.

The invention provides also certain other novel features which will be hereinafter indicated.

The accompanying drawings show a machine containing the preferred embodiment of my present invention.

Figure 1 is a side elevation, including also a fragment of the body forming machine a portion of which is in section; Fig. 2 is a plan, a fragment of the body forming machine being in section; Fig. 3 is a fragmentary longitudinal mid-section showing particularly the soldering means. The remaining views are details drawn to a larger scale. Fig. 4 is a transverse section in the plane of the line 4—4 in Fig. 1 showing the can body turning mechanism out of action; Fig. 5 is a transverse section in a similar plane on the line 5—5 in Fig. 2 showing the turning

mechanism after completing its operation; Fig. 6 is a vertical longitudinal mid-section showing the turning mechanism and acid-ing roll; Fig. 7 is a fragmentary plan partly in horizontal section showing chiefly the feeding means; Fig. 8 is a vertical transverse section on the line 8—8 in Figs. 1 and 2 showing the soldering and feeding mechanism.

At A in Figs. 1 and 2, is shown a portion of the frame of a can-body-forming machine of well known construction. The only active portions of this machine shown are the horn or mandrel B around which the body is formed, and the "bumper" C by which the seam is flattened against the horn, this bumper being carried upon an operating lever D in the usual manner. These parts are well known and have no necessary connection with my invention, but are illustrated solely to show how my mechanism receives or may receive the can bodies from the body-forming machine.

The mechanisms to be described are shown as supported upon a frame A' having rails extending in the direction of travel of the can bodies. The can bodies *xx* are received from the horn B upon a skeleton mandrel or guide E by which they are supported in their travel through the mechanism to be described. The successive bodies are advanced intermittently along this skeleton guide so that the successive bodies form an intermittently moving procession.

The feeding mechanism shown comprises reciprocating side bars F F shown best in Figs. 7 and 8, which bars are supported by rods *a a* fastened adjustably in slots *a'* in overhead frames G G (Fig. 8) which frames are connected by longitudinal rods *l c*. The rod *b* slides in fixed bearings *b'* on the main frame, while the rod *c* slides upon stationary supports *c'*. The rod *b* is shown as forming a hinge rod on which the frames G G may be swung over vertically around the axis of the rod *b*, in order to lift the feed bars F F out of their working position. For reciprocating the feed bars, one of the frames G is connected to a slide G' which is driven through a pitman *d* from a crank *e* on a transverse shaft *f* which is shown as driven by a sprocket chain *g* from a driving shaft *h*. The reciprocating feed bars F F carry feed pawls H H, these being arranged in pairs at suitable intervals

in order to engage the successive can bodies and push them forward. Each pawl is provided with a spring i for throwing it behind the can body. The pawls H may be variously constructed, the preferred form being shown in Fig. 7, wherein each pawl is provided with a gripping finger j pressed toward it by an adjustable spring j' , so that the end of the can is gripped between the jaws formed by the end of the pawl and the nose of this finger. For the initial feed of each can body, that is, to remove it off from the horn B, differently shaped feed pawls H' are provided, these being constructed as hooks as shown in Fig. 2. The horn has grooves in opposite sides to admit the movement of the hooked ends of these pawls H', one of these grooves being shown at k in Fig. 1. In operation, this feeding device at each reciprocation engages the hook pawls H' with a new can body, which in the advancing movement is pulled off from the horn and left in the position shown in Fig. 2; at each reciprocation the pawls F F move back so as to free themselves from the can body last fed, and sliding over the next can body in the rear, snap into place behind this body, and upon the forward stroke they engage the rear end of the body in the manner shown in Fig. 7 and push the body forward into its next position. To prevent any backward displacement of the can bodies during the retractile movement of the feed bars, stop pawls l l are provided which are pivoted to a bar I forming the top member of the skeleton guide E.

The means for giving the can bodies a half turn so as to carry the seam from the upper side to the under side, will now be described.

Referring to Fig. 6, the can body x is first pulled off from the horn B and onto a hollow cylindrical mandrel E' which fills the space between the horn and the end of the skeleton mandrel or guide E. Within this hollow mandrel E' is mounted a roller m which projects out through an opening in the under side of the mandrel E' (Figs. 4-6). Directly beneath this roller m is a turning roller M which is rotated continuously from the shaft f (or any convenient source of motion). As shown the roller M turns upon a stud n projecting from a lever M' hung at one side (Fig. 5), which lever carries also a stud on which turns a sprocket wheel o driven by a chain from the shaft f , and driving through miter gears p p the roller M. The roller M has imparted to it rising and falling movements, so that when it rises it grips the can body x between itself and the idler roller m , whereby to impart the turning movement to the can body; and upon the completion of this movement the roller M drops out of engagement with the can body.

These rising and falling movements may be variously accomplished, a simple means being that shown wherein a cam M² is fastened to the roller M so as to turn with it, and reacts against a vertical adjustable support m' . As the larger part of the cam rides against the support, it lifts the roller M into engagement with the can body, and upon the completion of the half turn the smaller part of the cam encounters this support and permits the roller M to drop. The roller M and cam M² are so proportioned that the roller M tends to give the can body slightly more than the required half turn. A stop blade P (Fig. 4) is mounted upon the mandrel E' so as to come within the can body, and its free edge is so located as to form a stop against which the internally projecting seam on the can body abuts during this turning movement, whereby the can body is arrested with the seam in the correct position directly beneath the center of the mandrel. A stationary supporting bar p is provided coming directly beneath the can body and holding it up so that its seam must strike the stop P. In Fig. 5 the seam is shown in contact with the stop. The excessive movement which the roller M makes is taken up by sliding against the now stationary can body.

The described mechanism imparts the desired half turn or inverting movement to the can bodies, acting intermittently so as to engage each body after it has been moved into the position shown upon the mandrel E'. At the next forward reciprocation of the feed bars F the can body thus inverted is moved forward, and in its forward movement it passes over an acidifying roller or disk Q, which takes acid from a vat Q' and carries it up into contact with the seam on the can body. The roller Q is shown as mounted on a lever Q² which is pressed up by a spring Q³, its upward movement being limited by an adjustable screw stop q (Fig. 6). After one or more further movements the can body is brought over the soldering tank R. This tank is heated by gas jets from burners r so as to keep the solder molten. Partly immersed in the molten solder is a solder applying roll R' which is slowly revolved by suitable gearing, as for example by a worm and worm wheel r' . The revolving roll R' carries up the molten solder and wipes it onto the side seam, the latter being presented so as to make tangential contact with the roller. The roller is long enough to act simultaneously upon one or more can bodies, four being shown. It is desirable to present them for a considerable time to the action of the hot roller, in order to insure heating the flange sufficiently to cause the solder to flow into its interstices. Preferably a surplus of solder is applied, and the surplus is wiped or rubbed

off by a wiping wheel S located beyond the soldering tank. This wheel may be of felt, or may be faced with felt or soft material, or may be a brush of bristles or wires. It is shown as set obliquely, its obliquity being preferably adjustable by locating the frame S' which carries the shaft of this roll. The shaft is driven by a belt or otherwise in any desired manner. It is shown as driven by a belt s from a shaft s', being shown as the same shaft which drives the solder applying roll.

The skeleton mandrel or guide E is shown as supported at the receiving end by being fastened on a central bar E² fixed in the horn B and projecting through the hollow mandrel E'. On its opposite or delivery end the hollow mandrel or guide E is necessarily so constructed that the can bodies may freely pass off from it. This precludes its being given any direct support at the delivery end. For supporting this end portion of the skeleton mandrel, conical rollers t t are provided, being fixed on a transverse shaft t' which is preferably rotated as by being belted by a belt t² to a pulley on the shaft s' or any other driving shaft. The rollers t t are so located that when the can is passing they support the skeleton mandrel through the medium of the can; but when no can is passing they come into direct contact with some part of the mandrel, so that in either case they carry the weight of the mandrel. To thus support the mandrel upon revolving rollers, facilitates the movement of the successive cans between the mandrel and the roller.

The construction of skeleton mandrel E which is shown comprises four longitudinal bars u u arranged as shown in Fig. 8, and connected at intervals by transverse frames v. To these transverse frames is attached also the longitudinal bar I, which comes within the upper side of the can bodies and serves as a support for the stop pawls l.

Lest the upward pressure of the solder applying roll should lift the can bodies so that the stop-pawls l might not engage them, an upper presser bar U is provided overlying the can bodies above the solder tank. This bar U is pressed down yieldingly by springs w reacting against supporting brackets U'.

It is desirable to provide for cooling the cans after they have passed beyond the soldering means. For this purpose an air-pipe y is provided having branches the jets of air from which play against the under side of the can bodies as they move beyond the soldering position.

What I claim is:—

1. In a can body soldering machine, the combination with means for presenting a cylindrical can body horizontally with its side seam above its under side, of means for

rotating said body to bring its side seam to the under side, consisting of rollers engaging the body, one being within the body and the other exterior thereto, means for rotating one of said rollers, means for stopping the can body in the correct position, and means for feeding said body longitudinally.

2. In a can body soldering machine, the combination with means for presenting a cylindrical can body horizontally with its side seam above its under side, of means for rotating said body to bring its side seam to the under side, consisting of rollers engaging the body, one being within the body and the other exterior thereto, means for rotating one of said rollers, and a stop for arresting the can body in the correct position, said stop located adjacent said rollers.

3. In a can body soldering machine, the combination with means for presenting a cylindrical can body horizontally with its side seam above its under side, of means for rotating said body to bring its side seam to the under side consisting of rollers engaging the body, one being within the body and the other exterior thereto, means for rotating one of said rollers, and a stop for arresting the can body in the correct position, said stop located within the can body and adjacent to the interior roller.

4. In a can body soldering machine, the combination with means for presenting a cylindrical can body horizontally with its side seam above its under side, of means for rotating said body to bring its side seam to the under side, consisting of rollers engaging the body, one being within the body and the other exterior thereto, means for rotating the latter roller, and means for feeding said body longitudinally.

5. In a can body soldering machine, means for turning a cylindrical can body, consisting of rollers engaging the body, the one being within the body and the other exterior thereto, means for rotating the latter roller, and means for lifting the exterior roller to grip the can body and for lowering it to free the latter, and means for stopping the turning when the can body reaches the prescribed position.

6. In a can body soldering machine, means for feeding successive can bodies, means for turning them, consisting of rollers engaging the body, the one being within the body and the other exterior thereto, means for continuously rotating the exterior roller, and means for intermittently raising the latter roller to grip the successive can bodies.

7. In a can body soldering machine, means for turning the can body consisting of a roller within it, a roller exterior to it, a movable part carrying the latter roller, means for continuously revolving said roller, a cam revolving with said roller, and

an adjustable part against which said cam acts whereby to raise and lower said roller.

8. In a can body soldering machine, means for presenting a cylindrical can body horizontally with its side seam above its under side, a mandrel receiving said can body, means for turning the can body on said mandrel to bring its side seam to the under side, consisting of a roller within the mandrel, a roller exterior to it; and means for

turning one of said rollers, and means for subsequently feeding the can body longitudinally on said mandrel.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

PETER KRUSE.

Witnesses:

CHAS. J. ELLSWORTH,
CHARLES THOMA, Jr.