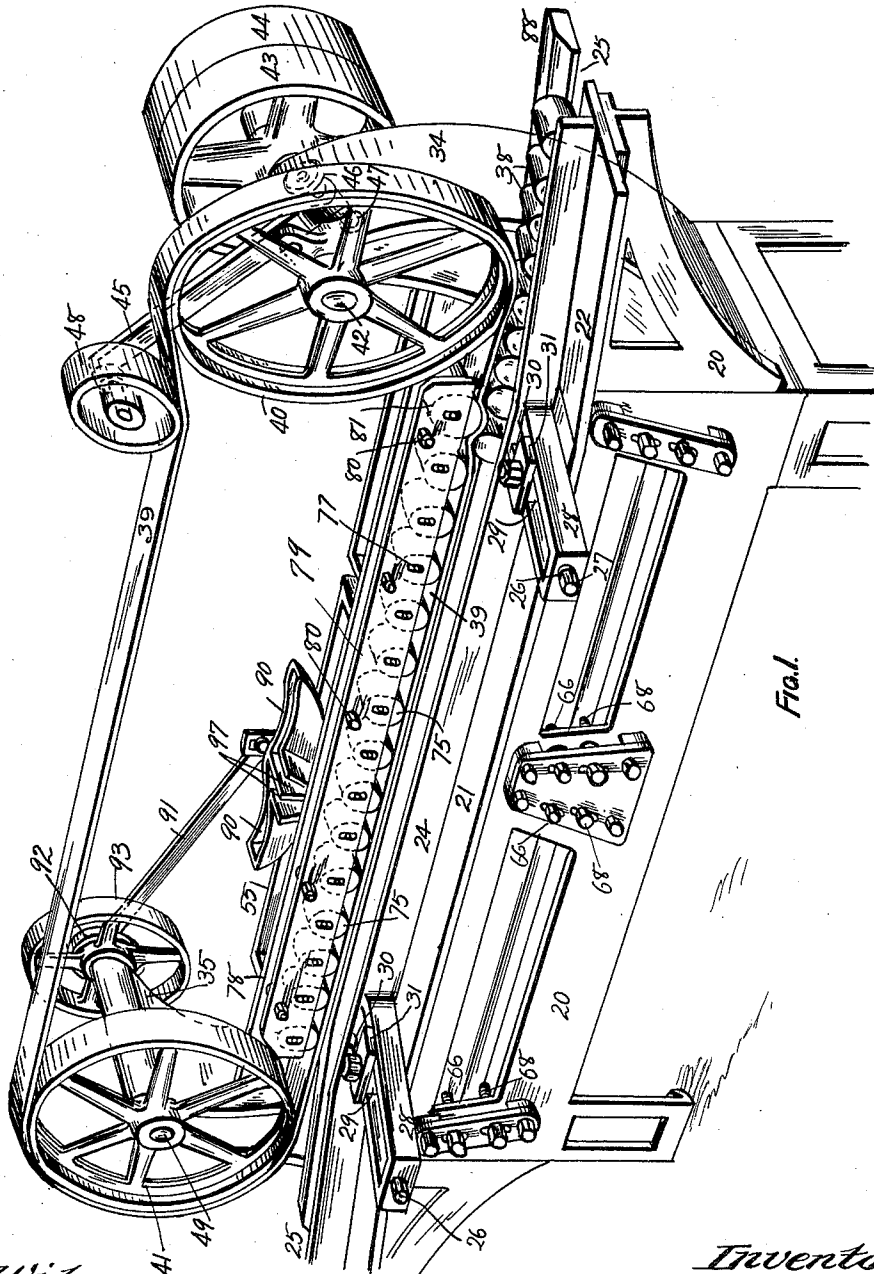


G. H. BENNETT.
MACHINE FOR SOLDERING SHEET METAL VESSELS.
APPLICATION FILED JUNE 6, 1911.

1,030,225.

Patented June 18, 1912.

8 SHEETS—SHEET 1.



Witnesses:

[Signature]
[Signature]

Inventor
George H. Bennett.

by *[Signature]*
[Signature]

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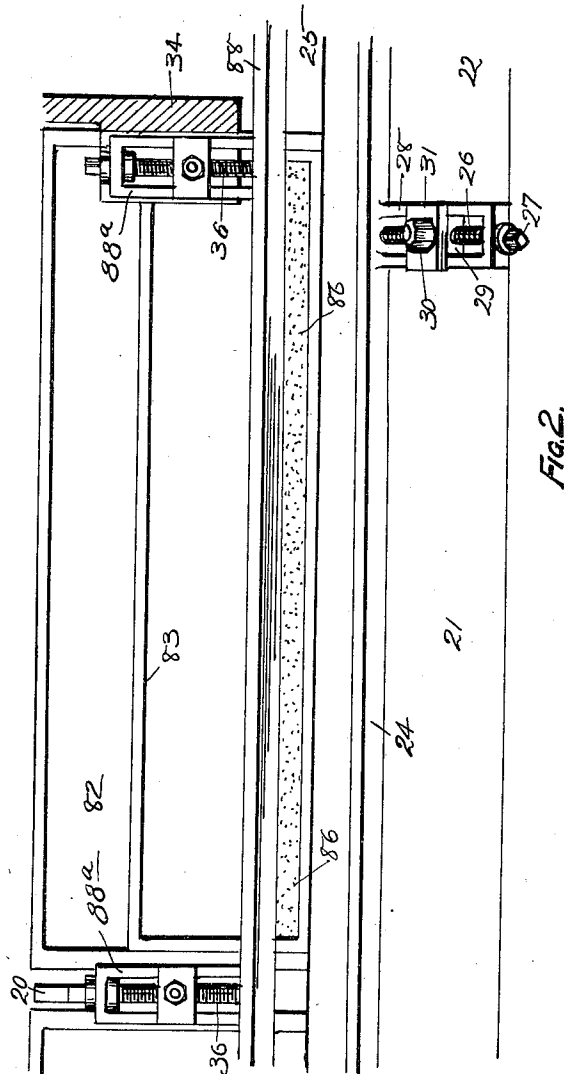


Fig. 2.

Witnesses:

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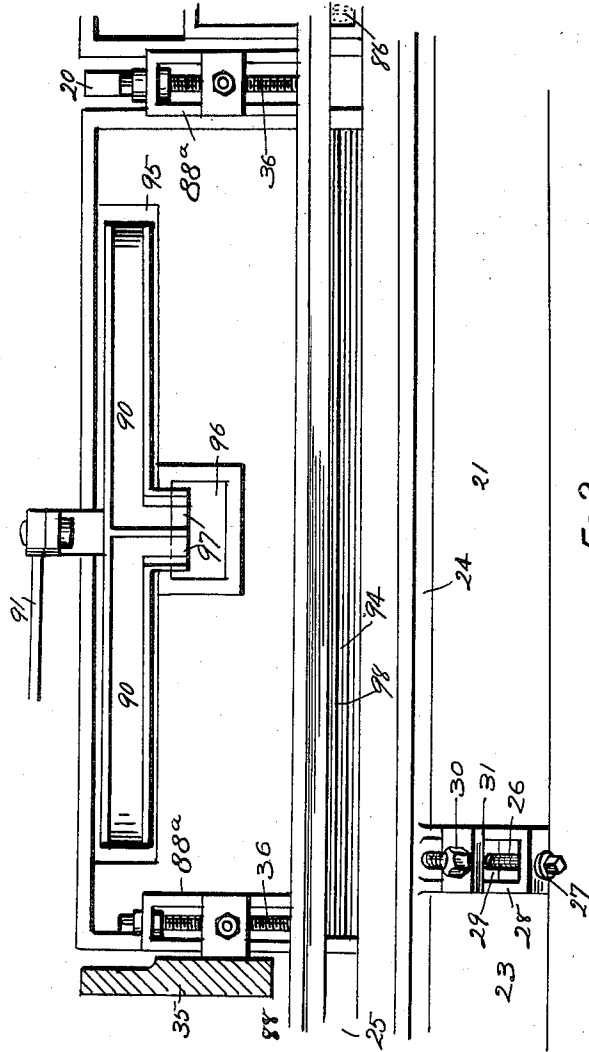


Fig. 3.

Witnesses:

[Signature]
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Inventor
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[Signature]

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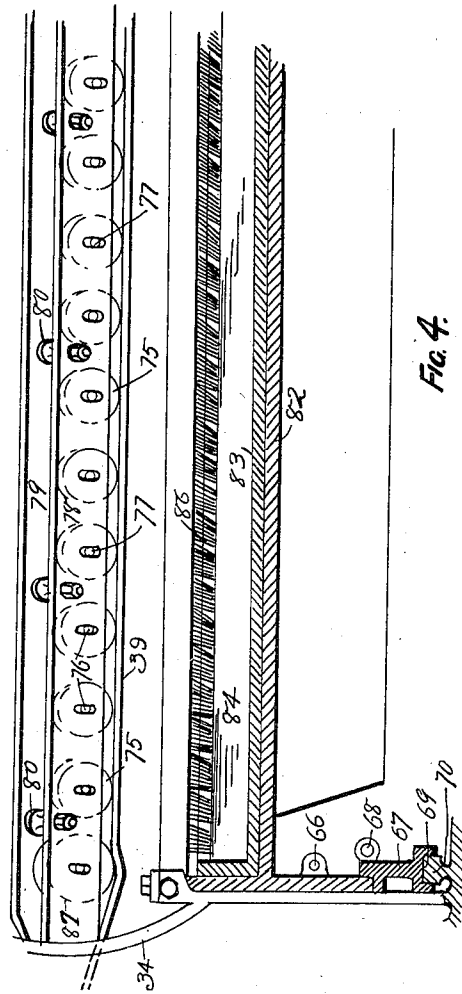


Fig. 4.

Witnesses:

[Handwritten signatures of witnesses]

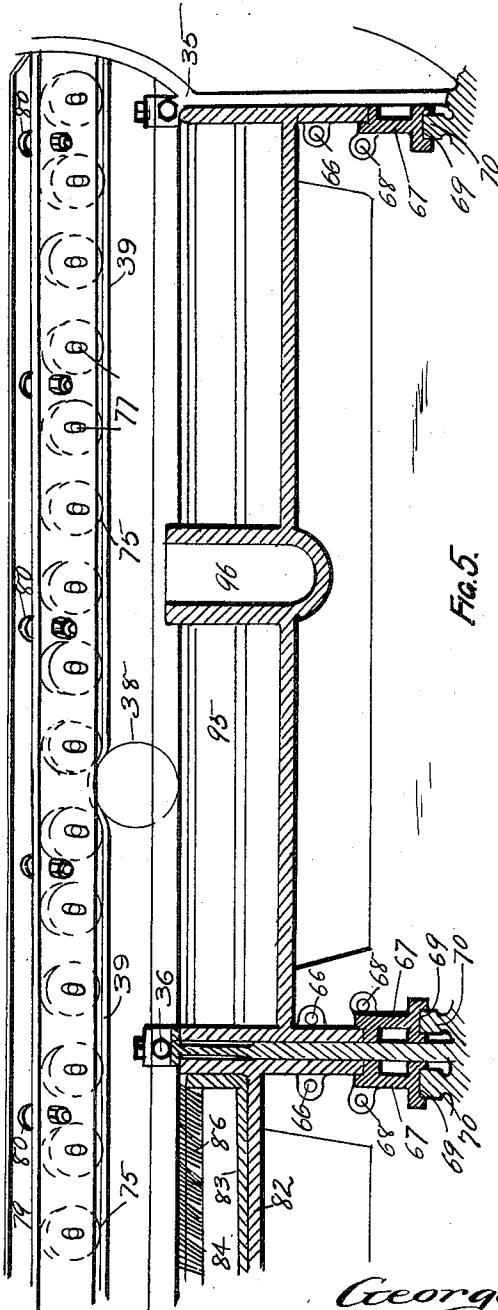
Inventor
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 by *[Handwritten signature]*
 Atty.

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8 SHEETS-SHEET 5.



Witnesses

[Handwritten signatures of witnesses]

Inventor
George H. Bennett

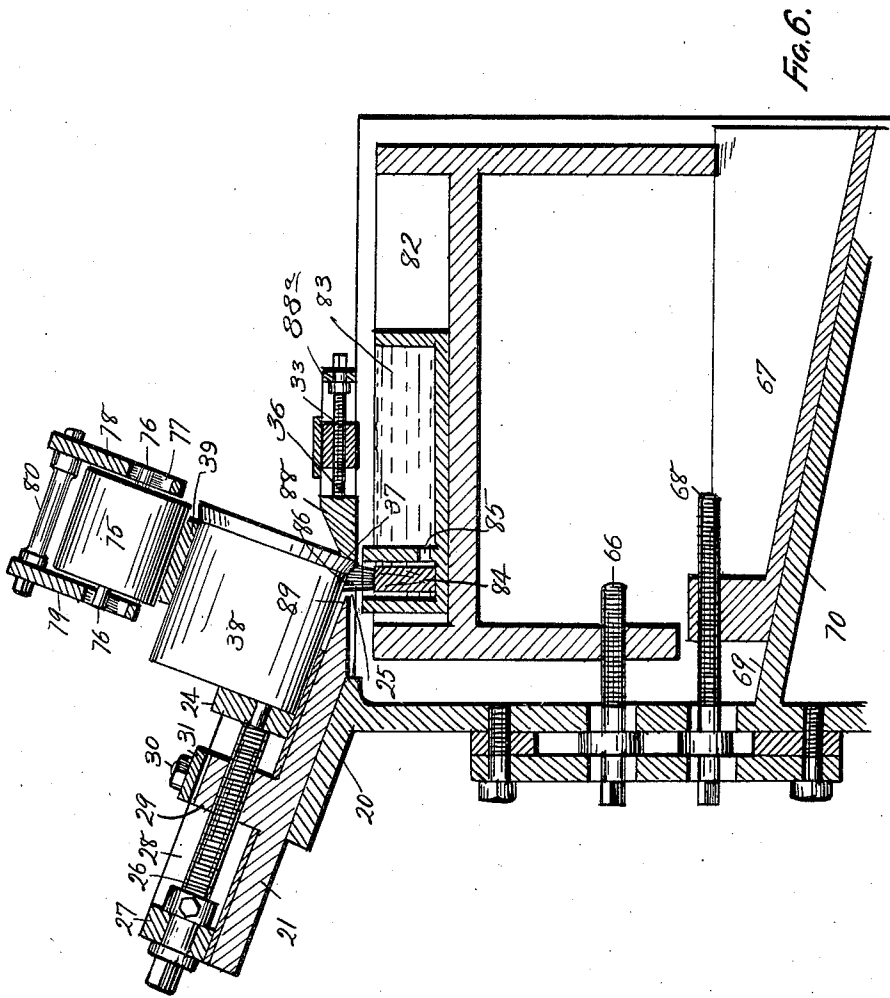
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Att'y.

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8 SHEETS—SHEET 6.



Witnesses:

[Signature]
[Signature]

Inventor
George H. Bennett

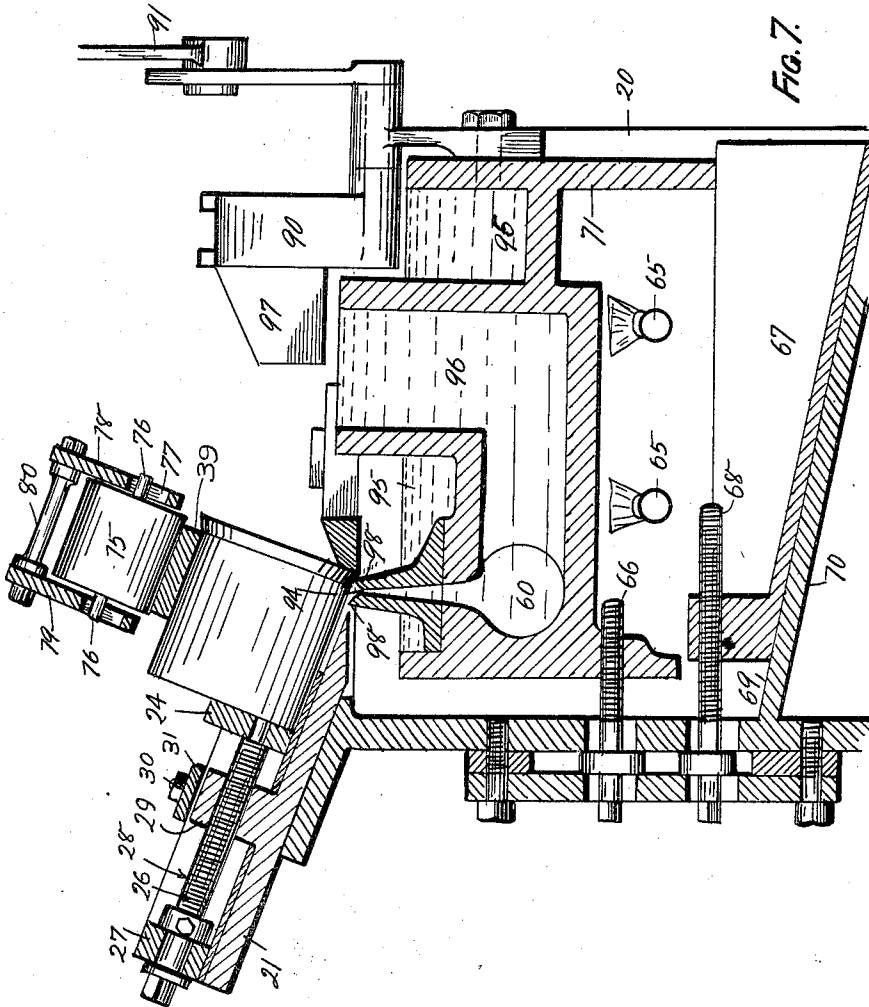
[Signature]
Atty.

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8 SHEETS—SHEET 7.



Witnesses:

[Signature]
[Signature]

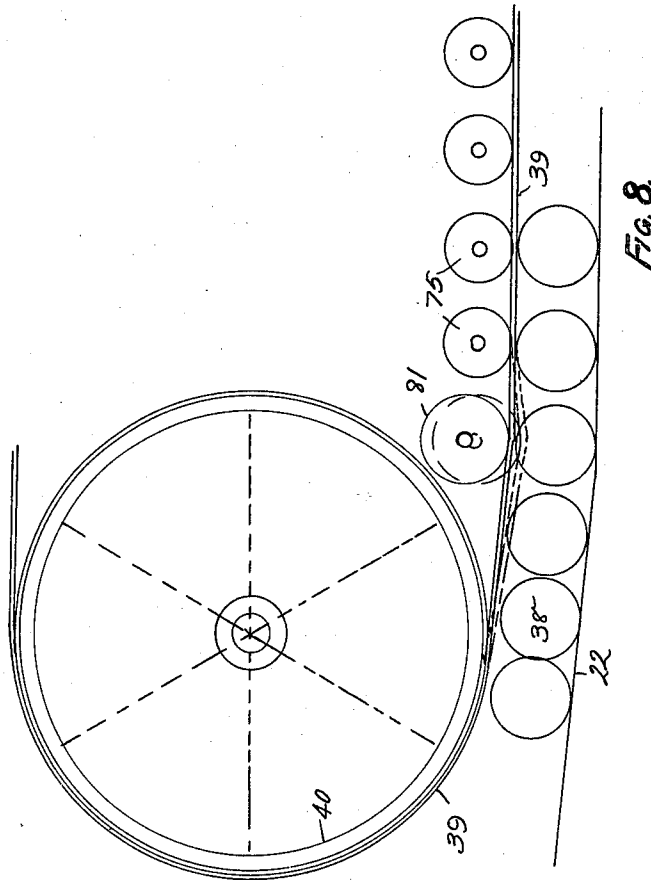
Inventor
George H. Bennett
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[Signature]

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8 SHEETS-SHEET 8.



Witnesses:

[Handwritten signatures of witnesses]

Inventor
George H. Bennett
by *[Handwritten signature]*
[Handwritten signature]

UNITED STATES PATENT OFFICE.

GEORGE H. BENNETT, OF SYDNEY, NEW SOUTH WALES, AUSTRALIA, ASSIGNOR TO
BRITISH-AMERICAN TOBACCO COMPANY LIMITED, OF LONDON, ENGLAND.

MACHINE FOR SOLDERING SHEET-METAL VESSELS.

1,030,225.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed June 6, 1911. Serial No. 631,526.

To all whom it may concern:

Be it known that I, GEORGE HERBERT BENNETT, a subject of the King of Great Britain, residing at 267 Castlereagh street, Sydney, in the State of New South Wales, Commonwealth of Australia, have invented certain new and useful Improvements in Machines for Soldering Sheet-Metal Vessels, of which the following is a specification.

This invention relates to improvements in machines for soldering the tops or bottoms of cylindrical sheet metal vessels such as cans for containing substances liable to deterioration on exposure to air or moisture. These improvements have been devised with the object of providing a reliable machine for rapidly and effectively accomplishing the purpose mentioned and have special reference to soldering thin taggers, caps, or plates crimped on the tops of filled tobacco cans.

The invention comprises a suitable frame on which is carried or supported the apparatus for fluxing the parts to be soldered and applying the solder thereto. At each end of the frame is secured a bracket carrying pulleys over which travels a flexible belt conveyer or carrier. The said belt bears downwardly upon the cylindrical sides of the cans and trundles them by friction over the fluxing and soldering apparatus, being assisted by a series of adjustable roller weights, the initial weight being larger and heavier, which weights bear on the upper side of the belt. These weights space the cans and assist in the operation of conveying and maintaining them at a regular distance from each other.

The cans first pass over a fluxing tank through a slot in which projects a stationary brush whose bristles are inclined in the same direction as the travel of the cans and wipe the parts to be soldered as the cans revolve. The soldering apparatus comprises a tank or bath for holding the molten solder, being provided underneath with a suitable heating arrangement. Extending upward from the tank is the solder outlet consisting of a narrow aperture or slot almost the length of the tank. The lips of the outlet are chamfered or beveled on their inner sides, forming a depression or recess in which is always a film or bead of molten solder to which bead the parts to be joined

are brought into contact. The fluxing apparatus and the soldering apparatus are made adjustable both vertically and horizontally in order that the apertures or slots thereof may be made to register with the parts to be soldered on cans of different size. The guides for holding the cans in relation to the fluxing and soldering apparatus are similar and comprise an adjustable wall which bears against the head ends of the cans and a second adjustable wall which bears against the opposite or bottom ends of the cans and maintains the parts to be soldered in relation to the fluxing or soldering slot as the case may be.

In order to insure a constant supply of solder at the solder aperture or slot the tank has two compartments in one of which a cradle is fitted. On reciprocation of the cradle the molten solder is raised from the lower compartment to the higher and a regular supply of solder is maintained at the slot, any excess solder escaping back to the tank. But in order that the invention may be the more readily comprehended, reference will now be made to the drawings herewith, in which:—

Figure 1 is a perspective view of the complete machine. Figs. 2 and 3 are plans of the fluxing and soldering apparatus respectively. Figs. 4 and 5 are longitudinal partial sections through the fluxing apparatus and the soldering apparatus respectively. Fig. 6 is a cross sectional elevation through the fluxing apparatus. Fig. 7 is a similar view through the soldering apparatus. Fig. 8 is a detail view of the initial weighted roller for spacing the cans.

The same numerals indicate the same or corresponding parts throughout the drawings.

The rectangular framing 20 has affixed thereto a longitudinal table or guide 21 slightly canted to one side and having inclined feed and delivery ends 22 and 23 respectively. Upon this table is a longitudinal plate 24 forming the side of a longitudinal channel 25, and being adjustable by screw bolts 26 which have bearings in said side plate 24 and also bearings 27 in the U shaped brackets 28 which are integral with the plate 24. The bolts 26 pass through the threaded blocks 29 which are integral with the table 21. The blocks 29 have stud bolts 30 passing upwardly through the

bridge plates 31 which bear upon the U shaped brackets and are provided for the purpose of frictionally locking said brackets and thereby the adjusting screw bolts in position. The other side plate 88 of the channel is provided with similar supporting and adjusting devices which include the lugs 33 of brackets 34 and 35 respectively and bolts 36 which pass through said lugs and have bearings in the end walls of the U-shaped brackets 88^a with which the plate 88 is provided. The lug 33 of the central supporting and adjusting device is associated with any suitable fixed part of the machine. This adjustable side plate or guide 88 has an inclined surface provided with a bearing shoulder 37 for the cans 38. The cans are fed into the channel 25 from the end 22 and come in contact with a belt 39 which passes over a pair of wheels 40 and 41, the former being affixed to an axle 42 in bearing bracket 34 and having secured thereto fast and loose pulleys 43 and 44. On this bracket 34 is fulcrumed a radial arm 45 which has at its lower end an adjustable set screw 46 bearing against the lug 47 and at its upper end a pulley 48 for the purpose of tightening the belt 39. The axle 49 of the other pulley wheel 41 has bearings in the bracket 35 and is operative to reciprocate, through the agency of a link 91 and a cam 92, the cradle 90 which transfers the solder from the compartment 95 to the compartment 96 through the discharge channels 97. The compartment 96 has an extended outlet or aperture 94, which is formed at the upper end of a discharge way 60 and which has its inner sides 98 beveled or chamfered to form a wide depression or channel at the top for the purpose of forming a solder bead; said channel being maintained fully charged on reciprocation of the cradle 90. The solder in the tank is maintained in a molten state by means of the burners 65. The tank is adjustable by the screw bolts 66 and in its adjusting movement is slidable upon the wedge supports 67 which are in turn adjustable by the screw bolts 68 for the purpose of raising or lowering the solder tank and which bear upon the inclined faces 69 of the shelving 70 integral with the framing 20. The tank is provided with an integral or otherwise rigid frame part 71 which rests upon the supports 67.

Bearing against the belt 39 are a series of rollers 75 provided with trunnions 76 having bearings in the vertical slots 77 in the longitudinal plates 78 and 79 which are joined together by bridge bolts 80. The plate 78 is fastened at its ends to the brackets 34—35. In addition to the rollers 75 there is an initial roller 81 of somewhat larger diameter and greater weight, the object of which is to act as controlling means

in spacing the cans before they pass under the smaller rollers 75. This is effected by the large roller on the passage of each can, the said roller forming a depression or bight in the belt and thereby momentarily arresting the movement of the can which immediately follows the can that has just passed by the roller.

82 is a fluxing tank provided with leaden tray 83. 84 is a separate compartment thereof communicating with the main compartment by a passage 85. In compartment 84 is a stationary brush 86 the bristles of which are set at an angle inclined in the same direction as the travel of the cans. The brush projects slightly above the slot or opening 87 into the channel formed by the adjustable guides 88 and 21.

In operation the cans having the taggers or thin plates previously crimped thereon are fed into the channel 25 at the inclined end 22 and coming in contact with the underface of belt 39 are fed thereby under the rollers 81 and 75, the said rollers serving the purpose of spacing the cans apart in their passage along the channel and of assisting the action of trundling. Each can is carried along over the opening 87 above the fluxing tank 82 and in its travel the fluxing liquid which rises up the bristles of the stationary brush 86 by capillary attraction is wiped around the parts to be soldered. Preferably the opening or slot is sufficiently long to permit the cans to revolve at least twice. Immediately after the can leaves the fluxing apparatus it passes over the solder slot 94 containing the bead of solder which is forced up the slot to contact with the parts to be soldered, the solder slot being preferably sufficiently long for the can to revolve twice over it. After leaving the solder slot the can may pass over a heated sharp metal edge in order to prevent the formation of a dot of solder on the joint and falls down the discharge chute.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent, is:—

1. In machines for soldering the end or ends of cylindrical sheet metal vessels the combination with fluxing and soldering apparatus of a belt conveyer provided with superimposed weighted rollers for moving the vessels over said apparatus and an initial roller of greater diameter and weight for the purpose of controlling the preliminary spacing of the cans substantially as described and as illustrated.

2. In a machine of the type set forth, a channel along which a series of cans are continuously rolled and which has its tractive surface provided with a longitudinal slot, a weighted belt for feeding the cans along the channel, a soldering apparatus including a compartment which has an ex-

tended discharge mouth disposed within the slot, a second compartment serving as a solder reservoir and a reciprocatory cradle constructed to transfer solder to the first
5 compartment from the second, belt driving means and operative connections between an element of the belt driving means and the cradle to positively operate the latter from the former.

10 3. In machines for soldering the end or ends of cylindrical metal vessels a belt conveyer bearing downwardly against the cylindrical sides of the cans and weighted

rollers rotating in slotted bearings taking against the upper face of the conveyer and
15 an initial roller of greater diameter and weight for the preliminary spacing of the cans substantially as described and as illustrated.

In testimony whereof I have hereunto set
20 my hand in presence of two subscribing witnesses.

GEORGE H. BENNETT.

Witnesses:

CHARLES E. GRAHAM,
HENRY W. CLARKE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."