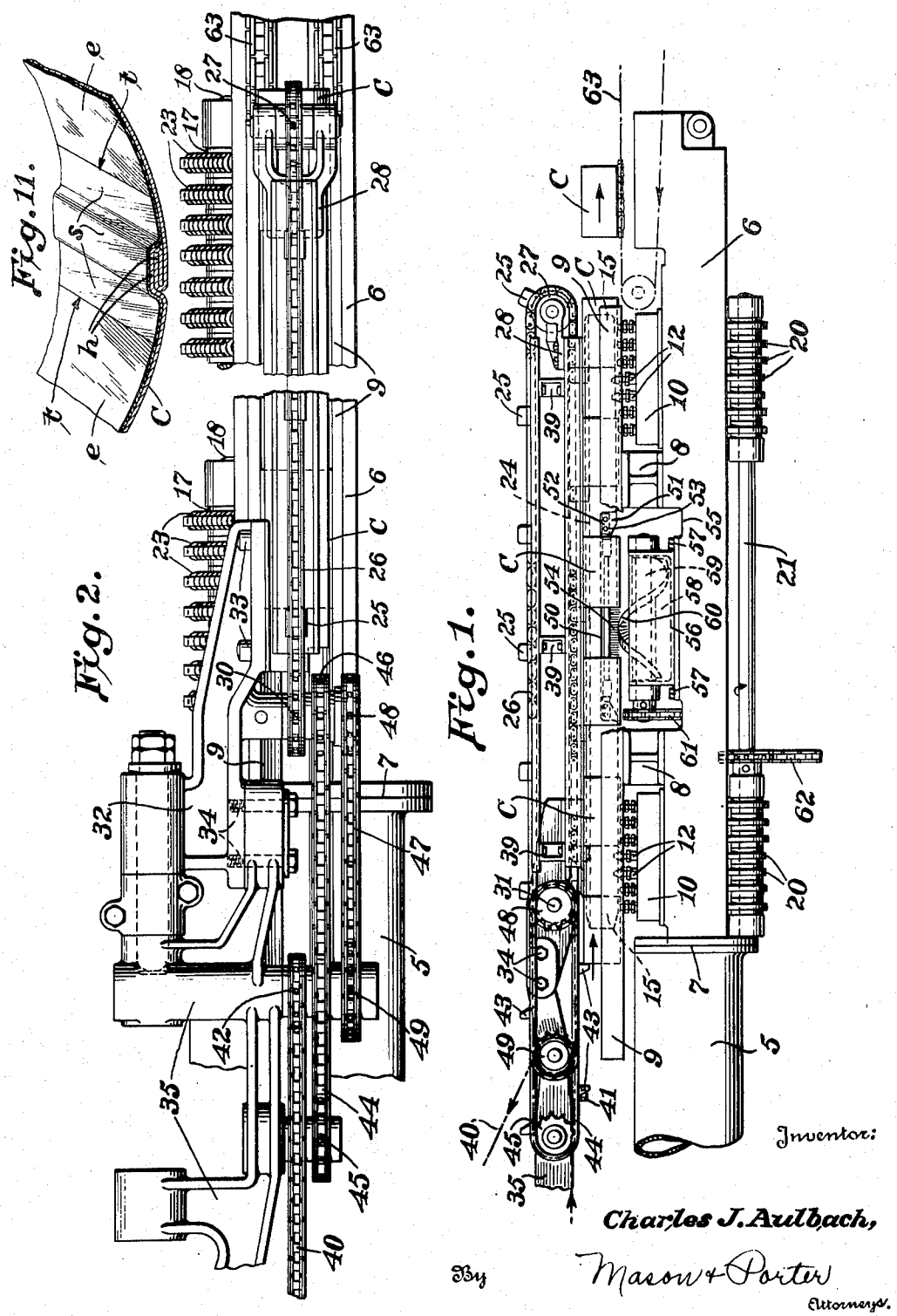
July 2, 1940. C. J. AULBACH 2,206,801

APPARATUS FOR INTERNALLY STRIPING CAN BODY SIDE SEAMS

Filed July 5, 1938 4 Sheets-Sheet 1



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Fig. 4.

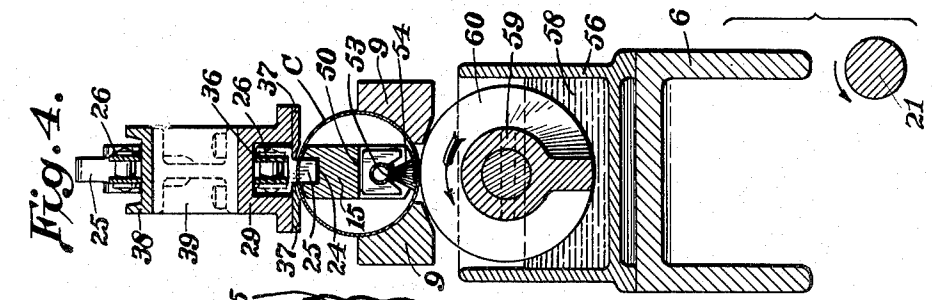
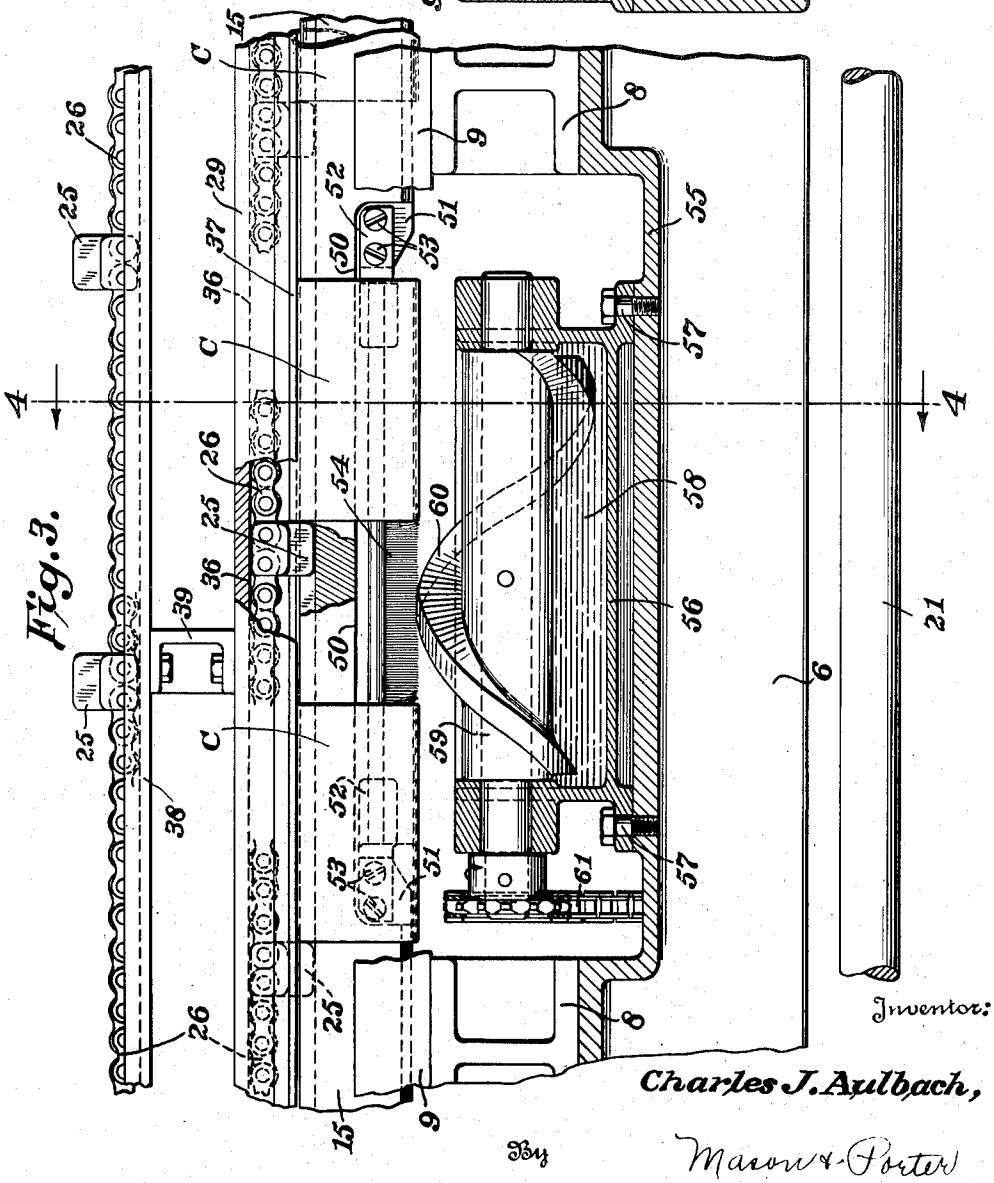


Fig. 3.



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Fig. 6.

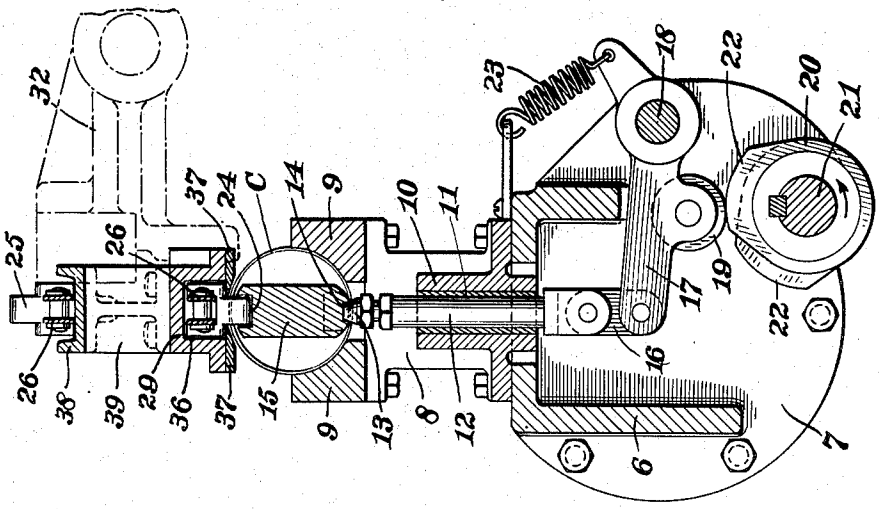
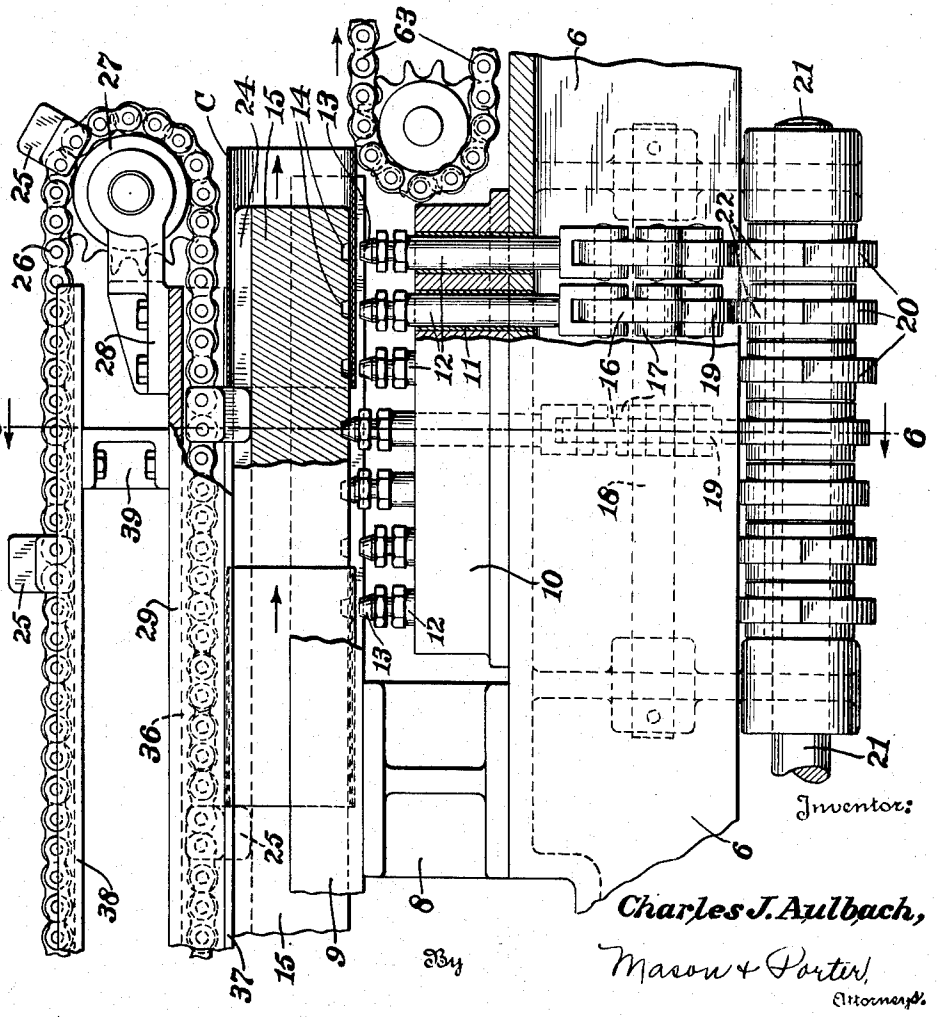


Fig. 5.



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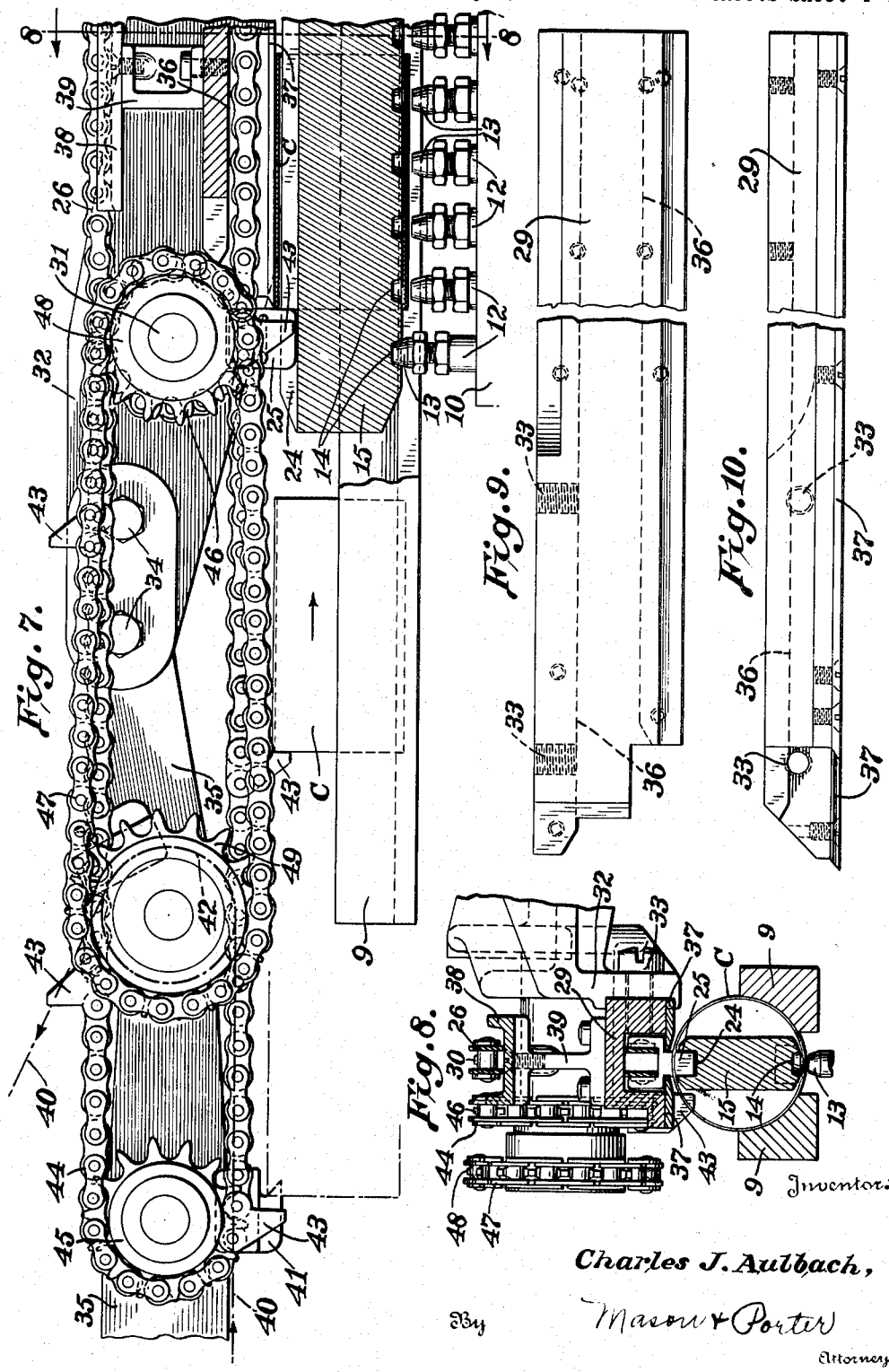


Fig. 7.

Fig. 9.

Fig. 10.

Fig. 8.

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UNITED STATES PATENT OFFICE

2,206,801

APPARATUS FOR INTERNALLY STRIPING CAN BODY SIDE SEAMS

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Application July 5, 1938, Serial No. 217,556

10 Claims. (Cl. 91—40)

The invention relates generally to apparatus for forming can bodies and primarily seeks to provide novel means for applying a stripe of enamel or lacquer over the side seams of the can bodies internally thereof.

In order to protect products packaged in completed containers from direct contact with the metal of which the containers are formed, it is customary to provide the containers with interior protective coatings. This coating usually is applied to the blanks from which the can bodies are formed. In the formation of the can bodies the blanks are fed along in a body maker, are formed about and side seamed on a forming horn, and then, while the can bodies are being fed along on the horn, the side seams are suitably solder bonded. The protective coating is omitted from the portions of the blanks which are joined in the formation of the side seams so that efficient solder bonding can be effected, and it is the purpose of the present invention to provide novel means for applying the desired protective coating to these stripes of metal surface left bare in the region of the side seams internally of the can bodies.

An object of the invention is to provide means for moving the can bodies along in spaced relation, means for engaging the side seams internally of the can bodies as they are moved along, and means for applying protective coating material to the side seam engaging means.

Another object of the invention is to provide apparatus of the character stated in which the side seam engaging means comprises a brush.

Another object of the invention is to provide apparatus of the character stated in which the protective coating material is applied to the side seam engaging means through the spaces intervening the moving can bodies.

Another object of the invention is to provide apparatus of the character described in which the protective coating material is applied to the side seam engaging means through the spaces intervening the moving can bodies without contacting the can bodies externally.

Another object of the invention is to provide apparatus of the character described in which the protective coating material is applied to the side seam engaging means by an applicator portion which is moved synchronously with the can bodies and effective only at the spaces intervening can bodies.

Another object of the invention is to provide apparatus of the character described in which the applicator comprises a rotor having a helical rib and which rotates in a bath of protective coating material.

Another object of the invention is to provide a novel combination of the protective coating applying devices and means for supporting them and the moving can bodies.

With the above and other objects in view which will hereinafter appear, the nature of the invention will be more clearly understood by following the detailed description, the appended claims, and the several views illustrated in the accompanying drawings.

In the drawings,

Figure 1 is a side elevation illustrating the invention.

Figure 2 is a plan view, parts being broken away.

Figure 3 is an enlarged detail side view of the applicator, parts being broken away and in section.

Figure 4 is a vertical cross section taken on the line 4—4 on Figure 3.

Figure 5 is a view similar to Figure 3 and illustrating the delivery end of the horn.

Figure 6 is a vertical cross section taken on the line 6—6 on Figure 5.

Figure 7 is a view similar to Figure 3 and illustrating the receiving end of the horn.

Figure 8 is a vertical cross section taken on the line 8—8 on Figure 7.

Figures 9 and 10 are detail views, respectively illustrating the abutment bar in plan and side elevation.

Figure 11 is a sectional perspective view illustrating a fragment of a can body with the protective stripe applied thereon.

The improved apparatus for striping can body side seams internally of the can bodies preferably is mounted for direct cooperation with a body maker whereby the can bodies are received from the body maker just after the seams thereof have been solder bonded. It is to be understood, however, that the apparatus is adaptable to use in any place where can bodies are being moved along under such control that the side seams thereof move in longitudinal alinement.

In the drawings, in which like numerals of reference indicate like parts in all of the figures, 5 designates a supporting arm at one end of which is supported a longitudinal housing 6, the latter being flange secured to the supporting arm as at 7.

A pair of pedestals 8 are mounted upon the housing 6 in longitudinally spaced relation, and the pedestals support a pair of laterally spaced

longitudinal supports or guides 9 for the can bodies, the supports being shaped to conform to the curvature of the can bodies. See Figures 1, 4, and 6.

Adjacent each pedestal 8 is mounted a support pin bearing block 10, and in each block there is provided a plurality of vertical bearings 11 for a group of horn supporting pins 12. The pins are vertically reciprocable in the bearings and project above and below the blocks as indicated in Figures 5 and 6 of the drawings. Each pin carries an adjustably mounted, tapered supporting head 13 engageable in a receiving socket 14 formed in the lower portion of a horn 15.

It will be observed by reference to Figure 1 of the drawings that a group of the pins is disposed beneath each end of the horn, and these pins constitute the sole supporting means for the horn and are movable, in a manner later to be described, for allowing can bodies to pass over and along the horn without being contacted by the supporting pins.

At its lower end each pin is link-connected as at 16 to an arm 17 pivoted at 18 on a mounting shaft and equipped with a roller 19 disposed for engagement with a cam 20 rotatable with a cam shaft 21 and including a lift portion 22. See Figures 1, 5 and 6 of the drawings. The cam shaft 21 is rotated in timed relation with the movement of the cam bodies along the horn, and the cams 20 are so positioned on the shaft 21 that the supporting pins are successively projected into and retracted from the receiving sockets 14 in the horn so as to be engageable with the horn only in the spaces intervening moving can bodies, as shown in Figures 1 and 5 of the drawings. The arms 17 are constantly urged downwardly by anchored spring equipments 23 so that the rollers 19 are constantly held in engagement with the cams 20.

The horn 15 is provided with a longitudinal groove 24 along its upper surface, as shown in Figures 1, 3, 5 and 6, to receive the dogs 25 which depend from the conveyor chain 26 and serve to move the can bodies along and over the horn in suitably spaced relation.

At one end, the chain 26 passes over an idler sprocket 27 supported by a bracket 28 secured at the delivery end of an abutment bar 29 disposed immediately above the horn as shown in Figures 5, 6, 7 and 8 of the drawings. At its other end, the chain 26 passes over a driven sprocket 30 mounted on a shaft 31 supported on a bracket 32 to which the abutment bar is secured as at 33 and which is in turn supported as at 34 on a stationarily supported bracket 35. See Figures 1, 2, 7, 8 and 9.

The bar 29, shown in detail in Figures 9 and 10, is grooved as at 36 to form a guideway for the lower flight of the chain 26, the lower portion of the grooveway being partially closed by supporting plates 37. Thus the lower flight of the chain is confined against moving upwardly or downwardly and the can body driving dogs 25, projecting into the longitudinal grooveway 24 in the horn, cooperate with the pin sockets 14 in supporting the horn against lateral displacement both at the upper and lower portions thereof. It will also be observed that the abutment bar 29 and the plates 37 thereof are disposed immediately above the horn so as to act as abutment means extending substantially the full length of the horn and securing it against displacement by any upward thrust imparted thereto. A grooved guideway 38 is supported as at 39 above the bar 29 and suitably supports the upper flight of the chain 26, as shown in Figures 1, 2, 5, 6 and 8 of the drawings.

In this particular illustration, the apparatus is disclosed as mounted at the end of a body maker. The usual can body feeding machine of the body maker is indicated at 40 and includes the usual feed dogs 41. This chain passes over a driven sprocket 42, and the cans moved along in longitudinally spaced relation by the chain 40 are stripped off by feed dogs 43 carried by a transfer chain 44 which is moved more rapidly than the chain 40 and passes over an idler 45 supported on the bracket 35 and over a driven sprocket 46 secured upon the same shaft on which the sprocket 30 is supported. Movement is imparted to the sprockets 30 and 46 and to the shaft on which they are mounted by a driver chain 47 which passes over a sprocket 48 on said shaft and over a sprocket 49 secured upon the same shaft on which the sprocket 42 is secured. Thus movement of the chain 40 is imparted to the conveyor chain 26. It will be observed by reference to Figures 2 and 8 of the drawings that the transfer chain 44 is disposed slightly to one side of the center line of the apparatus, and the can body driving dogs 43 thereon engage the can body edges as shown in Figure 8 of the drawings.

It will be observed by reference to Figures 1 and 3 of the drawings that the horn 15 is recessed at the lower central portion thereof as at 50 and is equipped with mounting ribs 51 to which brackets 52 are removably secured as at 53, said brackets serving as supports for a brush 54. The brush is thus mounted to extend longitudinally of the horn and in position for engaging the side seams of the can bodies internally thereof as shown in Figures 3 and 4 of the drawings.

Beneath the brush, in a recess 55 provided in the housing 6, a reservoir 56 is removably mounted as at 57 and contains a bath 58 of protective coating material which is to be applied in the form of a longitudinal stripe in the region of the side seams internally of the can bodies. A rotor 59 is longitudinally disposed and rotatably mounted in the reservoir and includes a peripherally extended helical rib 60 which dips into the coating material and functions as a coating material applicator. The rotor includes a shaft portion which is extended beyond one end of the reservoir and has rotation imparted thereto by a chain and sprocket equipment 61 from any suitable moving part of the body maker (not shown) so that the rotor will be driven in suitably timed relation with the moving can bodies.

The cam shaft 21 is similarly driven by sprocket and chain connections 62 so that the supporting pins 12 will be operated in suitably timed relation with the moving can bodies as hereinbefore described.

In Figure 11 of the drawings, I have illustrated a fragment of a can body. The can bodies are designated C and have the inner surfaces thereof provided with a protective coating indicated at *e* and which terminates as at *t* so as to provide a bare strip of metal in the region in which the hooks *h* interengage to form the side seams. The metal is left bare in this region so as to avoid frustration of efficient solder bonding. After the can bodies have been completed by the solder bonding operation the stripe *s* of protecting coating is applied over the previously bare metal portions by the apparatus herein described.

As the can bodies C are moved along the horn in equidistantly spaced relation, as shown in Fig-

ures 1 and 3 of the drawings, the helical rib 60 will carry protective coating material from the bath 58 and apply it to the brush 54 progressively along the length thereof and through the spaces intervening the moving can bodies. The coating material thus applied to the brush is applied in the form of a stripe *s* along the side seams internally of the can bodies as hereinbefore described. After the can bodies have been striped they are fed out of the apparatus on spaced take-off chains 62, as shown in Figures 1, 2 and 5 of the drawings.

It is of course to be understood that the details of structure and arrangement of parts may be variously changed and modified without departing from the spirit and scope of my invention.

I claim:

1. In apparatus of the character described, means for moving side seamed can bodies in longitudinally spaced relation, means for engaging the side seams internally of the can bodies as they are moved along, and means including an applicator rotatable about an axis disposed generally parallel the line along which the can bodies are fed for applying protective coating material to the side seam engaging means through the spaces intervening the moving can bodies.

2. In apparatus of the character described, means for moving side seamed can bodies in longitudinally spaced relation, means for engaging the side seams internally of the can bodies as they are moved along, and movable means engageable only with said side seam engaging means through spaces intervening the moving can bodies for applying protective coating material to the side seam engaging means without contacting the can bodies externally.

3. In apparatus of the character described, means for moving side seamed can bodies in longitudinally spaced relation, means for engaging the side seams internally of the can bodies as they are moved along, and means movable synchronously with the can bodies to progressively contact said side seam engaging means only at spaces intervening moving can bodies for applying protective coating material to the side seam engaging means.

4. In apparatus of the character described, a brush engageable with the side seams internally of the can bodies as they are moved along, a protective coating material bath, and an helical applicator rib dipping in said bath and engageable progressively with that portion of the brush which is exposed in the space intervening a pair of moving can bodies.

5. In apparatus of the character described, a brush longitudinally disposed and stationarily supported for contacting the side seams internally of the can bodies as they are moved along, a reservoir containing a bath of protective coating material, a rotor disposed longitudinally in the reservoir and rotatable about an axis paralleling the line of travel of the can bodies and having an helical applicator rib projecting therefrom and serving to pick up material from the bath and apply it to the brush, said rotor being rotatable in timed relation with the can body travel whereby the rib will progressively engage the brush always in a space intervening two moving can bodies.

6. In apparatus of the character described, a horn, means for moving side seamed can bodies over and along the horn in spaced relation, a brush supported intermediate the ends of the horn for contact with the side seams internally of the moving can bodies, a reservoir supported beneath the horn and containing a bath of protective coating material, a rotor having an helical rib and rotated in timed relation with the moving can bodies so that the rib dips into the bath and picks up coating material and applies it to the brush in the spaces intervening moving can bodies, and movable means engageable with the horn at spaced points endwise of the reservoir for supporting it without interfering with can bodies moving thereover.

7. In apparatus of the character described, a horn, means for moving side seamed can bodies over and along the horn in spaced relation, a brush supported intermediate the ends of the horn for contact with the side seams internally of the moving can bodies, a reservoir supported beneath the horn and containing a bath of protective coating material, a rotor having an helical rib and rotated in timed relation with the moving can bodies so that the rib dips into the bath and picks up coating material and applies it to the brush in the spaces intervening moving can bodies, movable means engageable with the horn at spaced points endwise of the reservoir for supporting it without interfering with can bodies moving thereover, and means effective above and below the horn for preventing lateral displacement thereof.

8. In apparatus of the character described, a horn, means for moving side seamed can bodies over and along the horn in spaced relation, a brush supported intermediate the ends of the horn for contact with the side seams internally of the moving can bodies, a reservoir supported beneath the horn and containing a bath of protective coating material, a rotor having an helical rib and rotated in timed relation with the moving can bodies so that the rib dips into the bath and picks up coating material and applies it to the brush in the spaces intervening moving can bodies, and movable means engageable with the horn at spaced points endwise of the reservoir for supporting it without interfering with can bodies moving thereover, said can body moving means including a chain disposed centrally over the horn and having depending dogs engageable with the can bodies, and said horn having a longitudinal grooveway therein for receiving said lugs whereby said lugs serve also to prevent lateral displacement of the horn.

9. In apparatus of the character described, a horn, means for moving side seamed can bodies over and along the horn in spaced relation, a brush supported intermediate the ends of the horn for contact with the side seams internally of the moving can bodies, a reservoir supported beneath the horn and containing a bath of protective coating material, a rotor having an helical rib and rotated in timed relation with the moving can bodies so that the rib dips into the bath and picks up coating material and applies it to the brush in the spaces intervening moving can bodies, movable means engageable with the horn at spaced points endwise of the reservoir for supporting it without interfering with can bodies moving thereover, said can body moving means including a chain disposed centrally over the horn and having depending dogs engageable with the can bodies, said horn having a longitudinal grooveway therein for receiving said lugs whereby said lugs serve also to prevent lateral displacement of the horn, and means for preventing upward or downward movement of the portion of

the chain adjacent the horn and for preventing upward movement of the horn.

10. In apparatus of the character described, a horn, means for moving side seamed can bodies over and along the horn in spaced relation, a brush supported intermediate the ends of the horn for contact with the side seams internally of the moving can bodies, a reservoir supported beneath the horn and containing a bath of protective coating material, a rotor having an helical rib and rotated in timed relation with the moving can bodies so that the rib dips into the bath and picks up coating material and applies it to the brush in the spaces intervening moving can bodies, movable means engageable with the horn at spaced points endwise of the reservoir for supporting it without interfering with can bodies moving thereover, said can body moving means including a chain disposed centrally over the horn and having depending dogs engageable with the can bodies, said horn having a longitudinal grooveway therein for receiving said lugs whereby said lugs serve also to prevent lateral displacement of the horn, and means for preventing upward or downward movement of the portion of the chain adjacent the horn and for preventing upward movement of the horn, said last named means including an abutment bar having a grooveway therein for receiving said chain portion and being of a length for extending over substantially all of said horn.

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