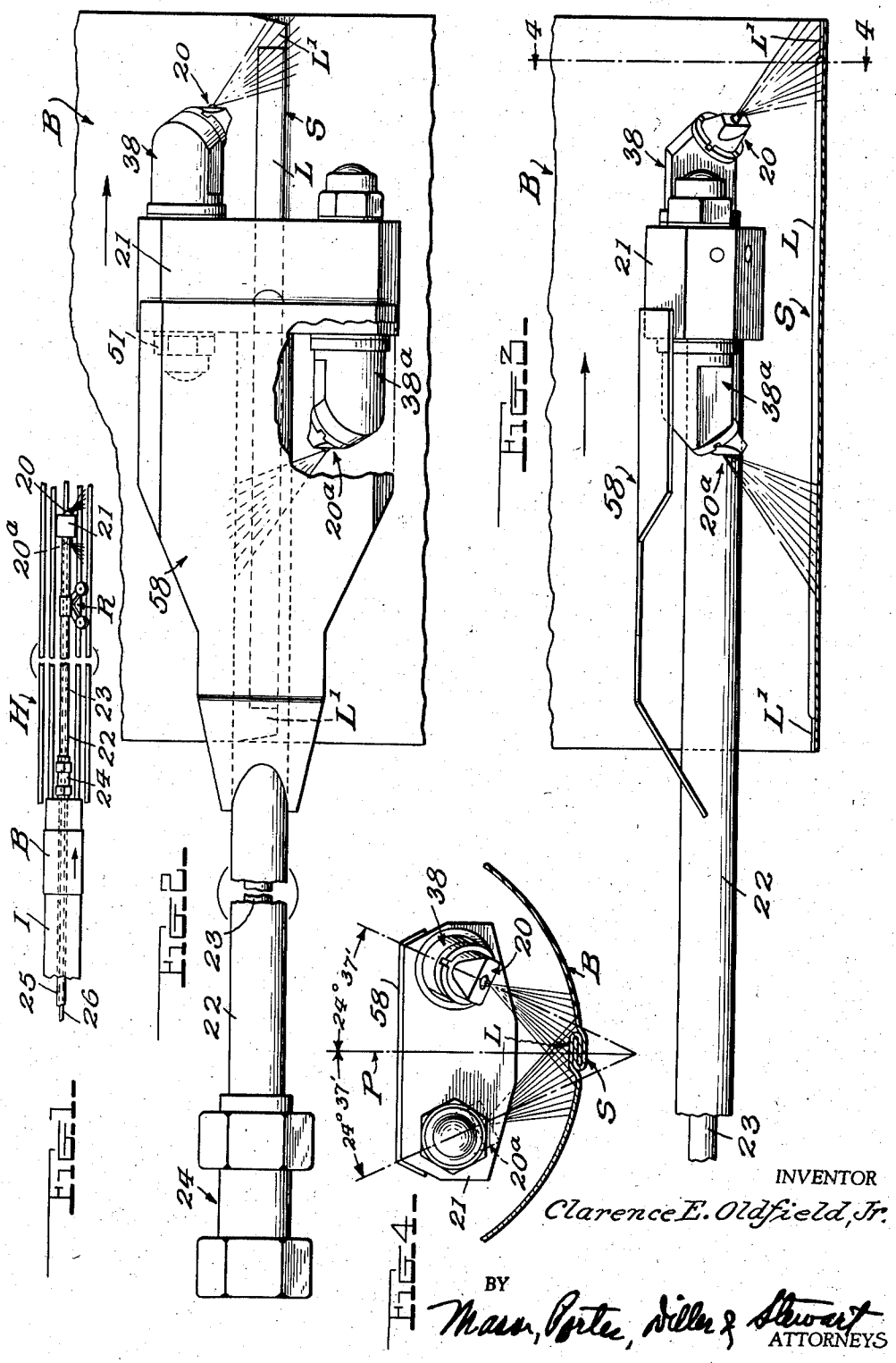
July 21, 1959 C. E. OLDFIELD, JR 2,895,449

INSIDE SIDE SEAM COATING MEANS

Filed April 30, 1957 4 Sheets-Sheet 1

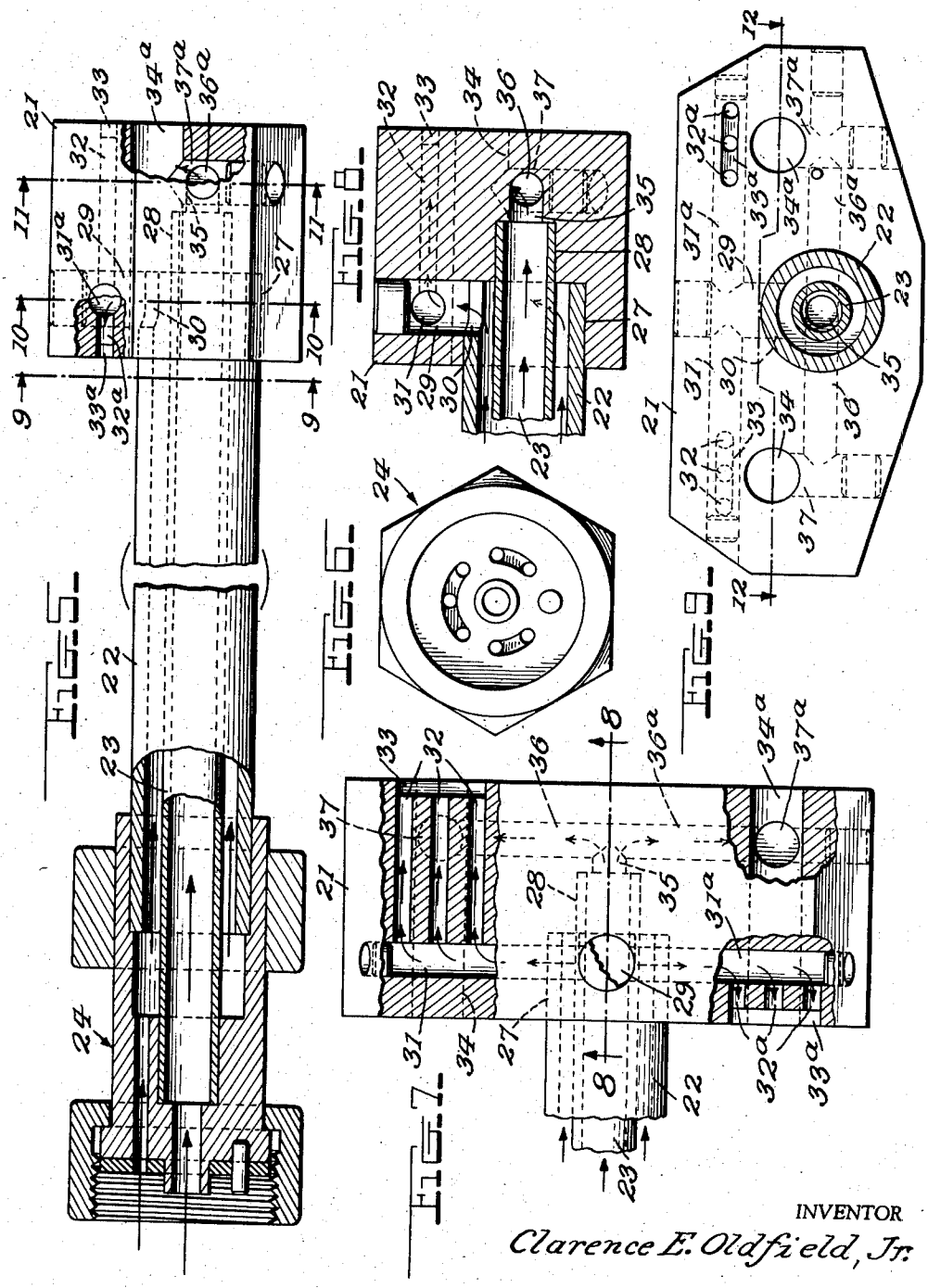


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INSIDE SIDE SEAM COATING MEANS

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INSIDE SIDE SEAM COATING MEANS

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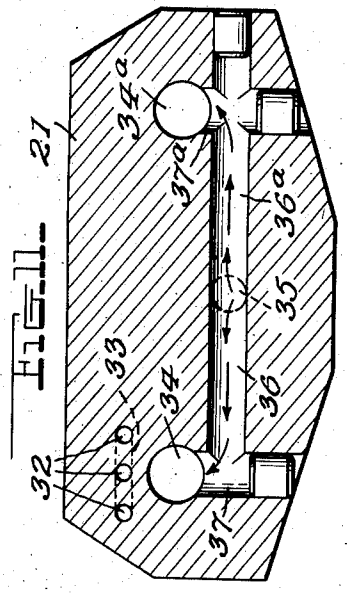


Fig. 11

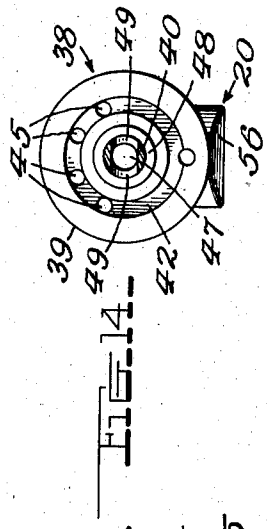


Fig. 14

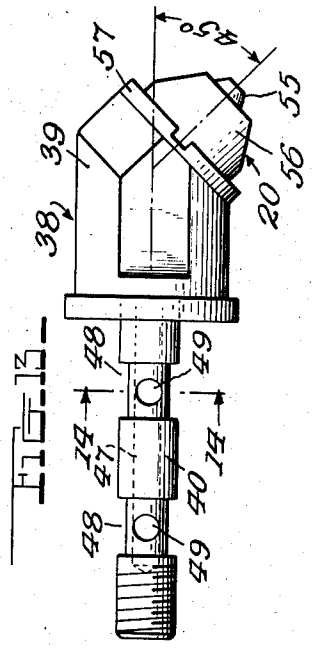


Fig. 13

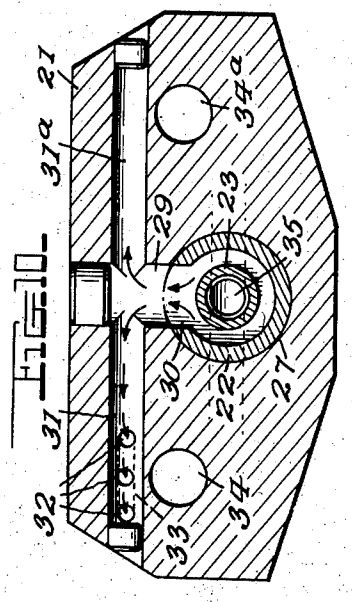


Fig. 10

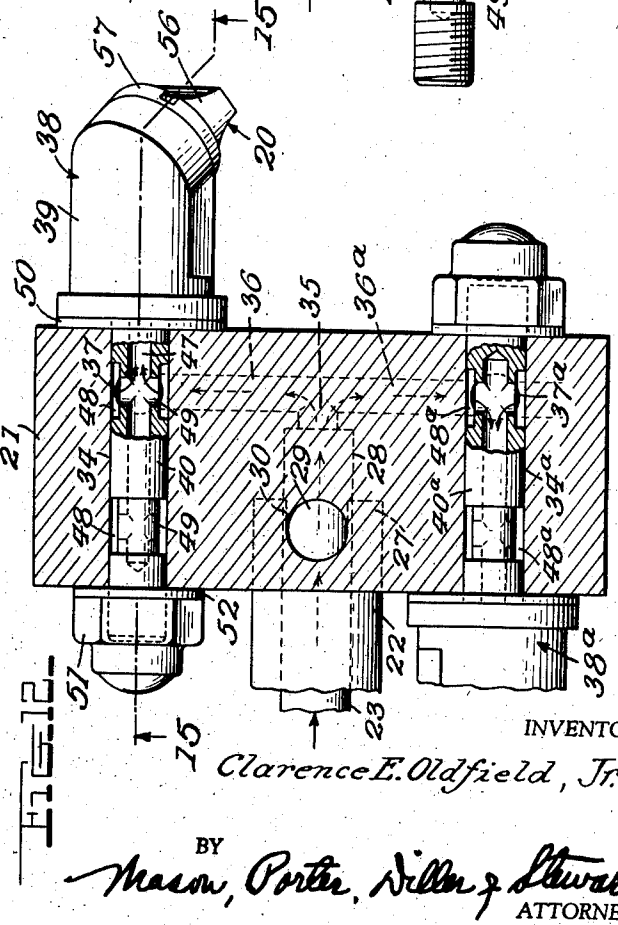


Fig. 12

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4 Sheets-Sheet 4

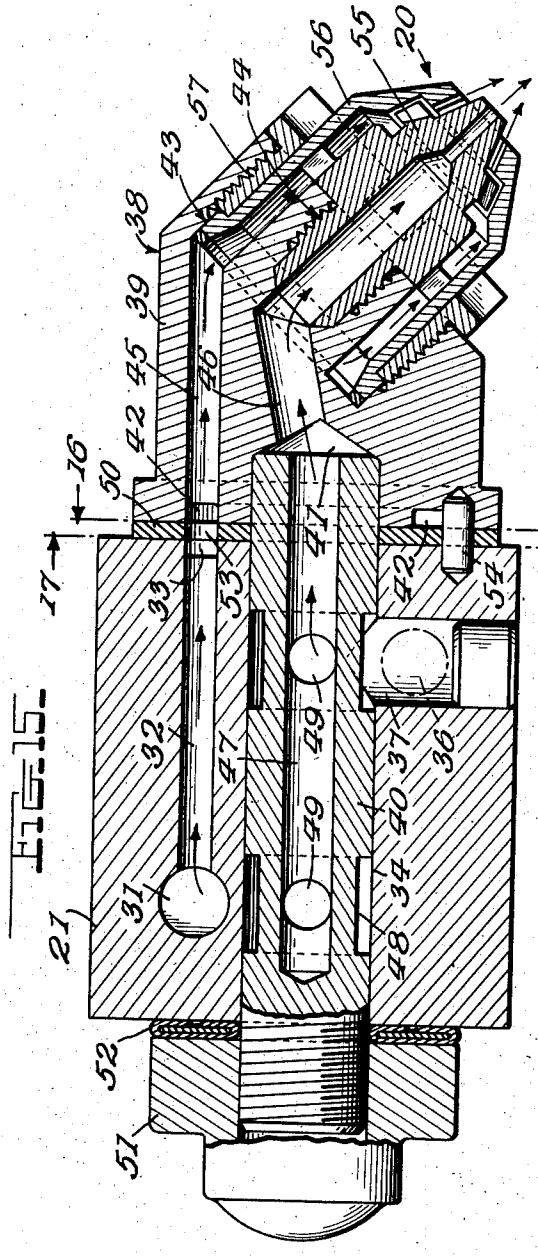


FIG. 15

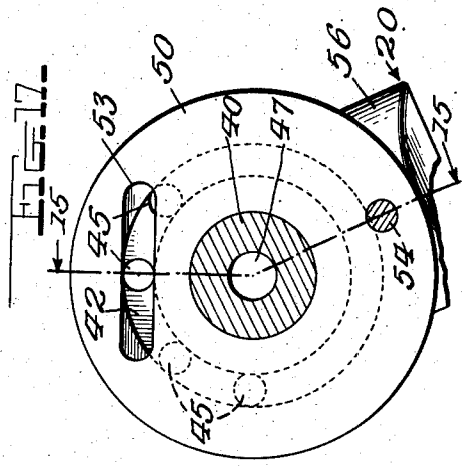


FIG. 17

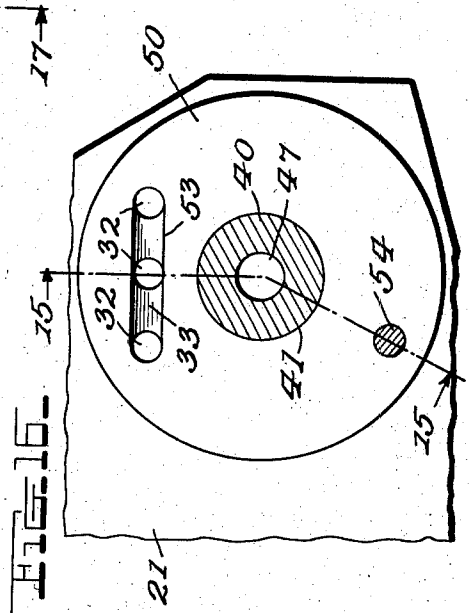


FIG. 16

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United States Patent Office 2,895,449 Patented July 21, 1959

2,895,449

INSIDE SIDE SEAM COATING MEANS

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Application April 30, 1957, Serial No. 656,033

9 Claims. (Cl. 118—306)

In the manufacture of internally coated cans it is customary to spray lacquer on the usual lock and lap side seams of the can bodies as these bodies are advanced beyond the seam soldering means along the outside horse of the conventional body maker. A single spray nozzle has been employed for this purpose but not with complete success as the spray does not in some instances reach all of the restricted areas of the lock and lap portions of the seam. Such areas are the longitudinal edges of the lock portion and the valley along one of these edges, the ends of this lock portion, and both the longitudinal and transverse edges of the lap portions. Whenever even very minute portions of these areas are skipped by the spray, auxiliary spray operations are required to supply the deficiencies and manufacturing cost is therefore increased.

The present invention has aimed to overcome the above problem and has proven to be highly successful even at the unusually rapid operating speeds of modern body making machines.

In carrying out the above end, a further object has been to provide two lacquer spray nozzles in a novel relation, one of these nozzles being slanted toward the path on which the soldered seams approach the nozzles, and the other of said nozzles being slanted toward the path on which the seams depart from the nozzles.

Another object has been to dispose the two nozzles at opposite sides of a plane which is radial to the can bodies and intersects the body seams, and to slant the nozzles toward this plane.

By slanting the two nozzles in either of the two ways above mentioned, seam coating is greatly improved; and by slanting the nozzles in both of said ways, the possibility of imperfect seam coating becomes practically nonexistent.

A further object of the invention has been to provide a simple and compact structure for mounting the two nozzles within the outside horse of the body maker.

A still further object has been to make novel provision for conducting both lacquer and lacquer atomizing air to the two nozzles.

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

In the drawings:

Figure 1 of the accompanying drawings is a diagram showing an illustrative relation of the improved spray means with the inside horn and outside horse of a body making machine.

Figure 2 is a top plan view, partly broken away, showing the air and lacquer tubes, the junction block secured to these tubes, the two nozzles, and the adapters mounting said nozzles on said junction block, a portion of a can body and its seam being also disclosed as if the seam were being sprayed.

Figure 3 is a side elevation, a portion of a can body and its seam being again disclosed as if the seam were being sprayed.

Figure 4 is a front elevation of the junction block with nozzle and nozzle adaptors showing the lateral pattern of front and rear sprays.

Figure 5 is an enlarged side elevation, partly broken away and in section, illustrating the air and lacquer tubes and the junction block, the adapters and nozzles being removed.

Figure 6 is an end elevation showing the tube coupling at the left of Figure 5.

Figure 7 is a top plan view, partly broken away and in section, to disclose some of the air ports of the junction block.

Figure 8 is a vertical longitudinal sectional view on line 8—8 of Figure 7.

Figures 9, 10 and 11 are vertical transverse sectional views on the correspondingly numbered lines of Figure 5.

Figure 12 is a horizontal sectional view on line 12—12 of Figure 9, the nozzle carrying adapters omitted from Figure 9 and certain other preceding views being restored.

Figure 13 is a side elevation of one of the adapters and nozzles.

Figure 14 is a transverse sectional view on line 14—14 of Figure 13.

Figure 15 is a further enlarged longitudinal sectional view substantially on lines 15—15 of Figures 12, 16 and 17.

Figures 16 and 17 are vertical transverse sectional views on lines 16 and 17 of Figure 15, respectively.

In the diagrammatic illustration of Figure 1, a portion of the inside horn I and outside horse H of a body making machine, are shown. The formed can bodies are advanced as usual along the horn I and their side seams are soldered. The can bodies then proceed along the horse H in the customary manner, and during their progress in this horse, the inner sides of the soldered seams and the contiguous portions of the bodies are sprayed with lacquer. One of the can bodies is shown at B.

The two spray nozzles of the present invention are indicated at 20 and 20*a*, respectively: and a junction block which carries the nozzles and conducts lacquer and atomizing air thereto is shown at 21. An air conducting tube 22 and a lacquer conducting tube 23, within said tube 22, extend from the horn I to the junction block 21 and support the latter. These two tubes 22 and 23 are connected by a coupling 24 with an air duct 25 and a lacquer duct 26, respectively, said ducts extending longitudinally in the horn I. A roller-type support prevents sagging of the tubes 22 and 23 is indicated at R and may be of known form.

The tubes 22 and 23 are located centrally over the line along which the soldered seams S of the can bodies travel and the junction block 21 projects equidistantly to the right and left from said tubes. One end of this junction block 21 carries the spray nozzle 20 which is at the side of said block remote from the horn I. The other end of the block 21 carries the spray nozzle 20*a* which is at the side of said block toward the horn I. The two nozzles are thus located at opposite sides of a vertical longitudinal plane P (Figure 4), said plane being radial to the advancing can bodies B and centrally intersecting the side seams S of said bodies.

The nozzle 20*a* is slanted toward the path along which the side seams S approach the junction block 21, as seen in Figure 3. The nozzle 20 is slanted toward the path along which the seams S depart from the block 21, as also seen in Figure 3. The two nozzles 20 and 20*a* are also slanted toward the plane P as seen in Figure 4. This angle of slant is preferably at about 24° to the plane P as indicated in Figure 4.

As a result of the novel nozzle arrangement, the lacquer spray discharged from the two nozzles will thoroughly coat all areas of the seams S and the portions of the can bodies contiguous to said seams. There is no area of either the lock portion L or the lap portion L' of the seams against which spray is not directly aimed. All areas facing in the direction in which the can bodies are travelling, encounter the spray from the nozzle 20*a*: and all areas facing in the opposite direction are subjected to the spray from the nozzle 20. All longitudinal areas facing in one direction with respect to the plane P, are sprayed by the nozzle 20: and all areas facing in the opposite direction are sprayed by the nozzle 20*a*. All areas facing the axes of the can bodies are sprayed by both nozzles 20 and 20*a*.

In the preferred construction, herein disclosed, the junction block 21 has a socket 27 (see Figures 8 and 10) in which the rear end of the air tube 22 is secured: and said block has another socket 28 (Figure 8) in which the rear end of the lacquer tube 23 is secured, silver solder being preferably employed in securing the two tubes in the sockets. A port 29 (Figures 8, 10 and 12) extends upwardly from the socket 27 and the air tube 22 has a notch 30 placing this tube in communication with said port 29. Two horizontal ports 31 and 31*a* (Figures 7, 8 and 10) extend from the port 29 into the opposite end portions of the junction block 21: and ports 32 (Figures 7, 10 and 11) extend from the port 31 to a groove 33 in the rear side of the block 21. Other ports 32*a* (Figures 5, 7 and 9) extend from the port 31*a* to a groove 33*a* in the front side of the block 21. The various ports 29, 30, 31 and 32 and the groove 33 conduct air under pressure from the air tube 22 to the nozzle 20 as later described. The ports 29, 30, 31*a* and 32*a* and the groove 33*a* also conduct air under pressure from the air tube 22 to the nozzle 20*a*.

Two bores 34 and 34*a* (Figs. 9, 10, 11 and 12) are formed in the end portions of the junction block 21 and extend from the front side of said block to the rear side thereof. A short port 35 (Figures 8 and 10) extends rearwardly from the lacquer tube 23. This port 35 communicates with ports 36 and 36*a* (Figures 5, 7, 11 and 12) which extend into the end portions of the block 21. Port 36 communicates, by means of a short vertical port 37 (Figures 11 and 12) with the bore 34. Port 36*a* is in communication, through a short vertical port 37*a* with the bore 34*a*. The ports 35, 36 and 37 are instrumental in conducting lacquer to the nozzle 20 as later explained. The ports 35, 36*a* and 37*a* similarly serve the nozzle 20*a*.

Two adapters 38 and 38*a* (Figures 2, 3 and 12) are employed in connecting the nozzles 20 and 20*a* respectively, with the junction block 21. The construction of the adapter 38 is shown in Figures 13, 14 and 15 and the other adapter 38*a* is a duplicate. A description of the adapter 38 will therefore suffice. This adapter comprises a body 39 and a stem 40 secured to and projecting from one end of said body. The stem 40 is preferably silver-soldered in a socket 41 in this end of the body 39 and said body end has a continuous groove 42 concentric with said stem. The other end of the body 39 is obliquely cut and is formed with an outer socket 43 and an inner socket 44, these sockets being in concentric relation. Ports 45 extend from the groove 42 to the outer socket 43: and a port 46 extends from the socket 41 to the inner socket 44.

The adapter stem 40 has a longitudinal port 47, two longitudinally spaced peripheral grooves 48 and radial ports 49 from said grooves 48 to said port 47. One end of this port 47 opens into the socket 41 and the other end of this port is closed. The stem is inserted into the above described bore 34 of the junction block 21, as seen in Figures 12 and 15 and one of the stem grooves 48 communicates with the vertical port 37 of this block to receive lacquer therefrom.

A gasket 50 is interposed between the adapter body 39 and one side of the junction block 21: and a clamping nut 51 is threaded on the stem 40 at the opposite side of said block, a sealing washer 52 being interposed between said nut and block. The gasket 50 has a slot 53 which communicates with the groove 33 of the junction block 21 and with the groove 42 of the adapter body 39. Thus, the air reaching the groove 33 from the ports 32 is conducted into the adapter groove 42 and ports 45. A positioning pin 54 holds the adapter body against possible pivotal movement about the axis of the stem 40.

A lacquer discharge tip 55 (Figure 15) and an air discharge cap 56 cooperate with the adapter body 39 in forming the spray nozzle 20. The axis of the nozzle is preferably about 45° to the extended center line of the stem 40, as shown in Figure 13. The tip 55 is threaded into the socket 44. The cap 56 is secured in the socket 43 by means of a sleeve 57 threaded into this socket. The tip 55 receives lacquer from the port 46: and the cap 56 receives air from the ports 45. The discharging air thoroughly atomizes the discharging lacquer into a fine spray for effective seam coating.

The stem 40*a* of the adapter 38*a* is received in the bore 34*a* of the junction block 21 as seen in Figure 12: and one of the stem grooves 48*a* communicates with the vertical port 37*a* of said block. The two ports 37 and 37*a* can be most conveniently located near one side of the junction block: and the adapter stem is provided with two peripheral grooves in order that one of these grooves may function for the adapter 38 and the other for the adapter 38*a*.

A shield 58 is preferably provided over the junction block 21, said shield being secured at one end to said block and at its other end to the air tube 22. This shield is tapered toward the horn I and serves to deflect any injured can body which might otherwise jamb against the junction block 21.

From the foregoing, it will be seen that a novel and advantageous construction has been disclosed for attaining the desired ends. Attention is invited, however, to the possibility of making variations within the scope of the invention.

I claim:

1. In a can body maker in which solder-seamed can bodies are progressively advanced with their soldered side seams in longitudinal alignment, two lacquer spray nozzles stationarily mounted in position to spray the inner sides of the soldered side seams and the contiguous portions of the can bodies, one of said lacquer spray nozzles being slanted toward the path along which the can bodies approach the nozzles, the other of said lacquer spray nozzles being slanted toward the path along which the can bodies depart from the nozzles.

2. In a can body maker in which solder-seamed can bodies are progressively advanced with their soldered side seams in longitudinal alignment, two lacquer spray nozzles stationarily mounted in position to spray the inner sides of the soldered side seams and the contiguous portions of the can bodies, said two lacquer spray nozzles being located at opposite sides of a plane which is radial to the can bodies and intersects the side seams, said nozzles being slanted toward said plane.

3. A structure as specified in claim 1; said two lacquer spray nozzles being disposed at opposite sides of a plane which is radial to the can bodies and intersects the side seams, said nozzles being also slanted toward said plane.

4. In a can body maker in which solder-seamed can bodies are progressively advanced along an inside horn and an outside horse, and in which said horn is provided with longitudinal air and lacquer ducts, air and lacquer conducting tubes conductively connected with said ducts respectively and extending into said outside horse, a junction block to which said tubes are secured, and two lacquer spray nozzles fixedly mounted on said junction block in positions to spray lacquer upon the inner sides

of the soldered side seams and the contiguous portions of the can bodies, one of said lacquer spray nozzles being slanted toward the path along which the can bodies approach said junction block, the other of said lacquer spray nozzles being slanted toward the path along which the can bodies depart from said junction block, said junction block having ports for conducting air and lacquer from said tubes to said nozzles.

5. In a can body maker in which solder-seamed can bodies are progressively advanced along an inside horn and an outside horse, and in which said horn is provided with longitudinal air and lacquer ducts, air and lacquer conducting tubes conductively connected with said ducts respectively and extending into said outside horse, a junction block to which said tubes are secured, and two lacquer spray nozzles fixedly mounted on said junction block in positions to spray lacquer upon the inner sides of the soldered side seams and the contiguous portions of the can bodies, said two nozzles being located at opposite sides of a plane which is radial to the can bodies and intersects the side seams, said nozzles being slanted toward said plane, said junction block having ports for conducting air and lacquer from said conducting tubes to said nozzles.

6. A structure as specified in claim 4; said two lacquer spray nozzles being disposed at opposite sides of a plane which is radial to the can bodies and intersects the side seams, said nozzles being also slanted toward said plane.

7. Can body side seam spraying means comprising a junction block for stationary mounting within the outside horse of a can body maker, air and lacquer conducting tubes secured to said junction block for longitudinal disposition in the horse, and two lacquer spray nozzles fixedly mounted on said junction block in positions to spray lacquer on the side seams and contiguous portions of can bodies advanced along the horse, one of said lacquer spray nozzles being slanted toward the path along which the can bodies approach the nozzles, the other of said lacquer spray nozzles being slanted toward the path along which the can bodies depart from the nozzles, said junction block having ports for conducting air and lacquer from said air and lacquer tubes to said nozzles.

8. Can body side seam spraying means comprising a junction block for stationary mounting within the outside horse of a can body maker, air and lacquer conducting tubes secured to said junction block for longitudinal disposition in the horse, and two lacquer spray nozzles fixedly mounted on said junction block in positions to spray lacquer on the side seams and contiguous portions of can bodies advanced along the horse, said two lacquer spray nozzles being disposed at opposite sides of a vertical longitudinal plane centrally intersecting said junction block, said nozzles being slanted toward said plane, said junction block having ports for conducting air and lacquer from said tubes to said nozzles.

9. A structure as specified in claim 7; said two lacquer spray nozzles being disposed at opposite sides of a vertical longitudinal plane centrally intersecting said junction block, said nozzles being also slanted toward said plane.

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