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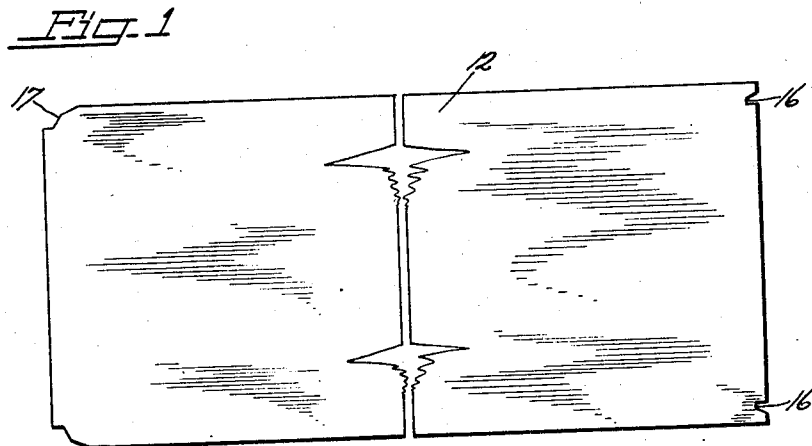
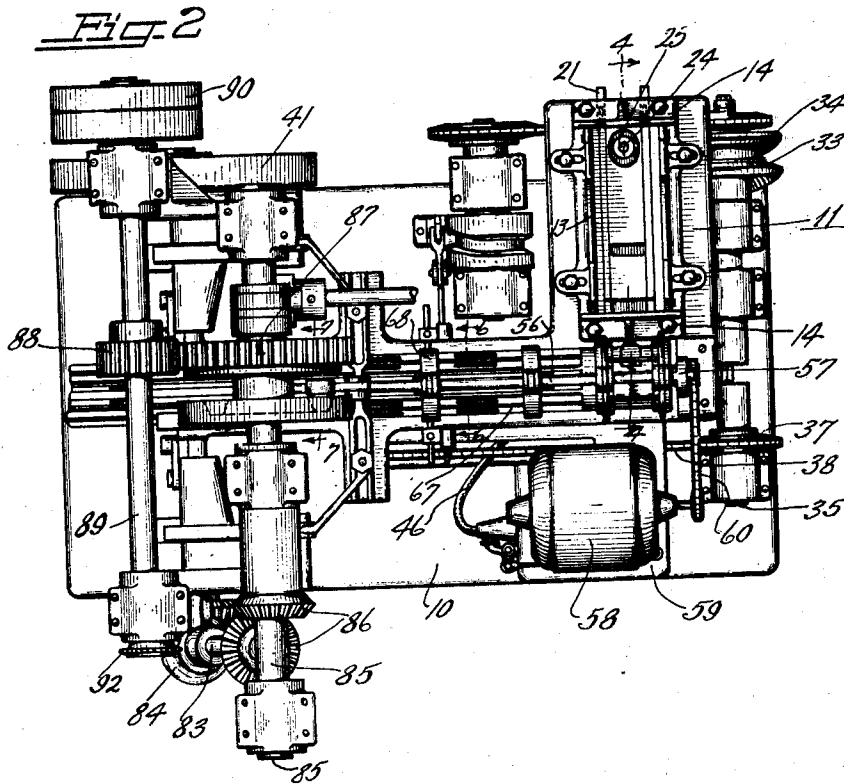
J. F. PETERS

1,875,353

CAN BODY MAKER

Filed June 3, 1927

4 Sheets-Sheet 1



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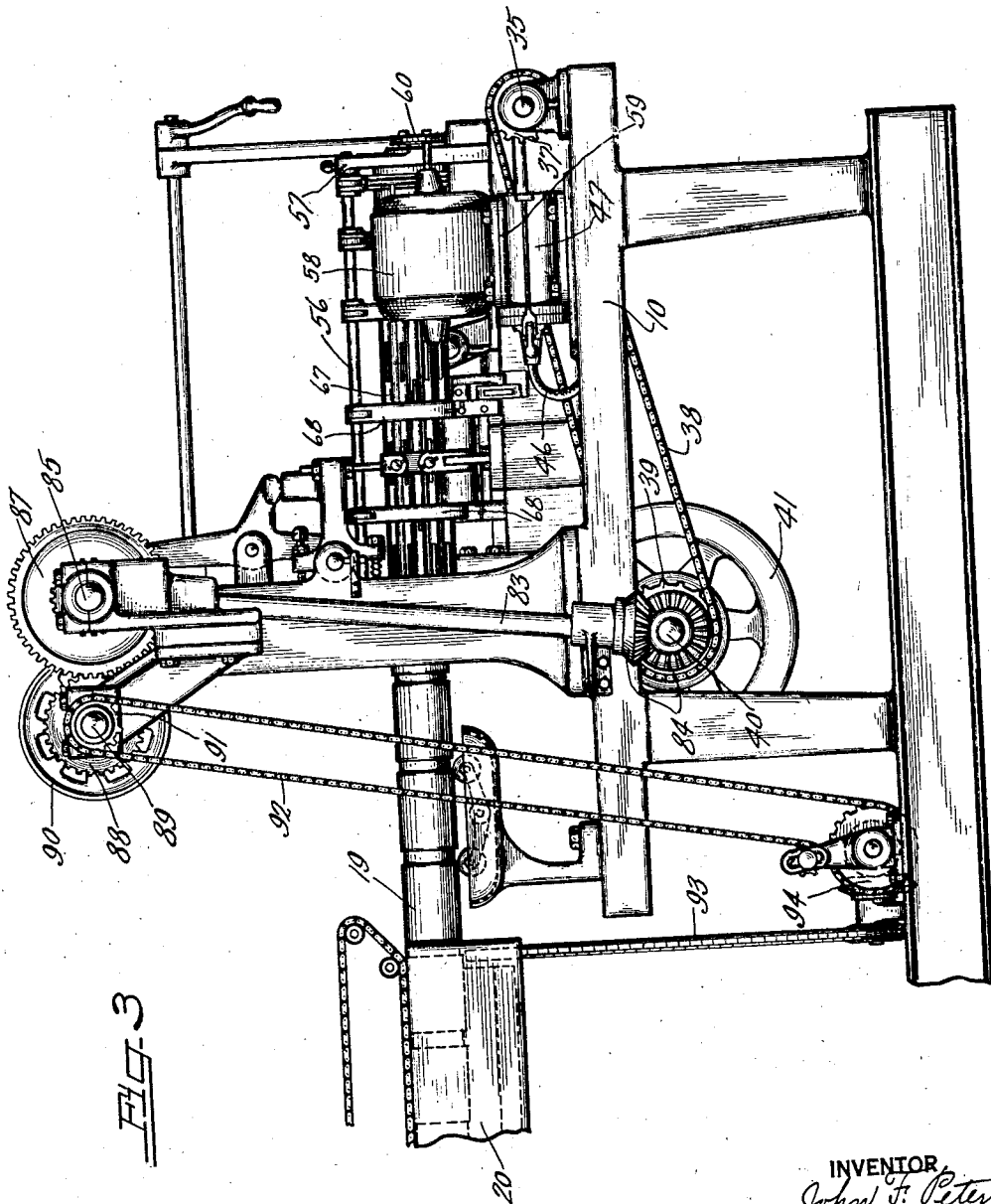


FIG. 3

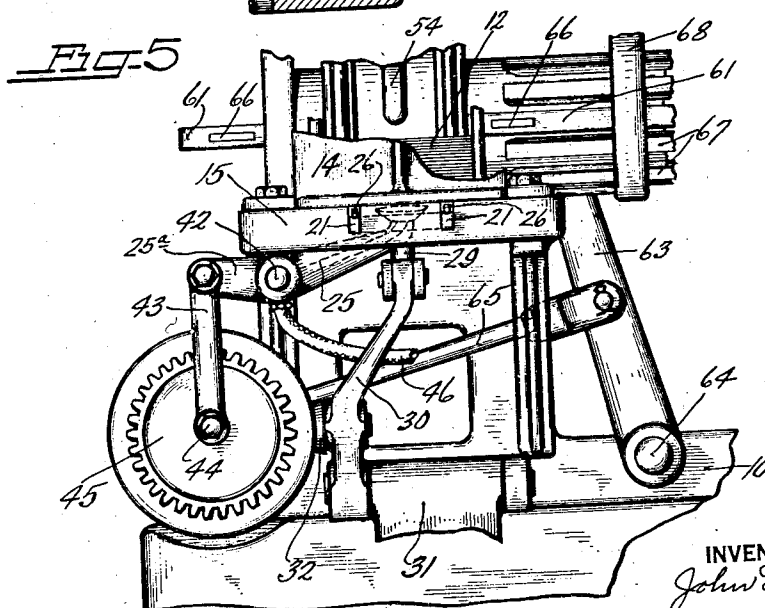
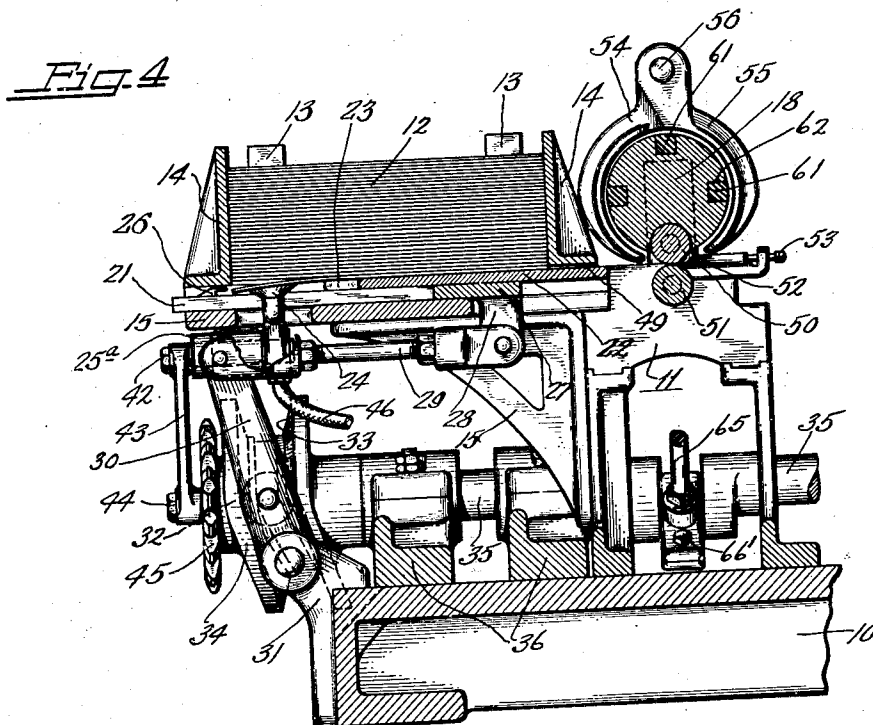
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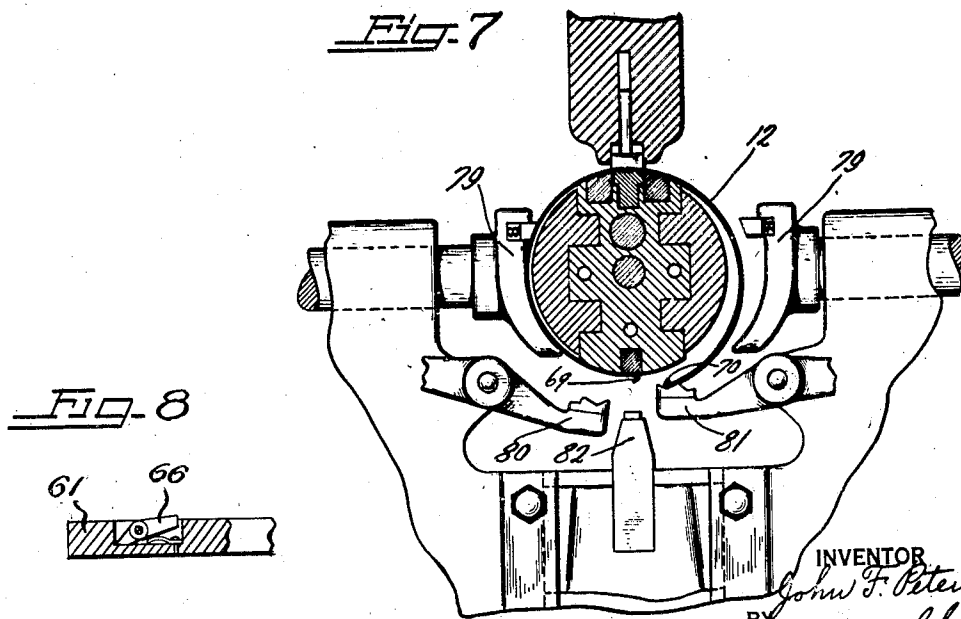
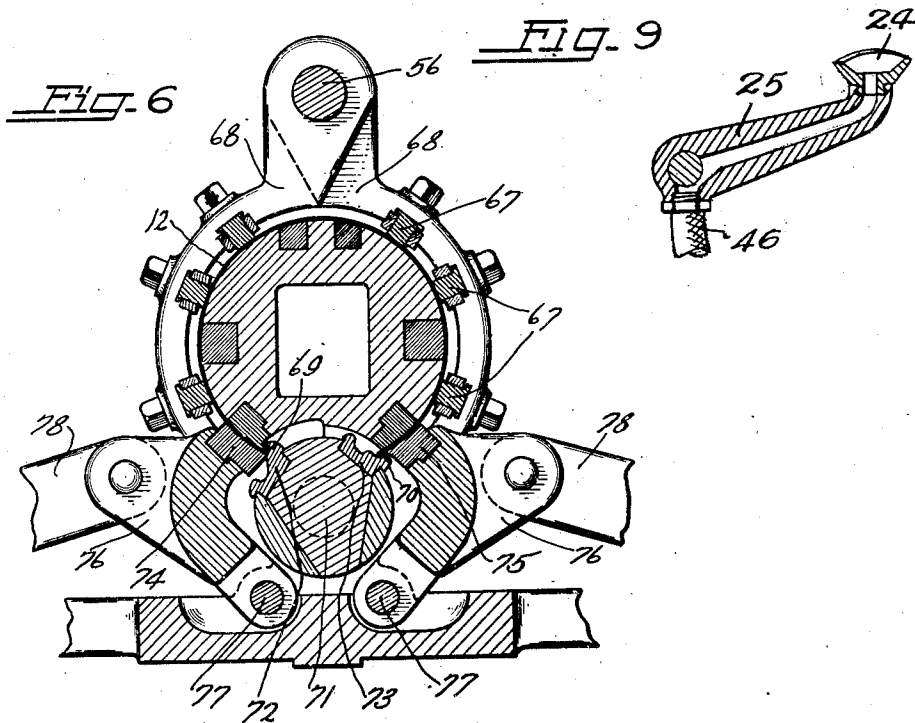
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4 Sheets-Sheet 4



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CAN BODY MAKER

Application filed June 3, 1927. Serial No. 196,207.

This invention relates in general to an apparatus for making can bodies, and more particularly to the elimination of notching apparatus for can body blanks as a unitary part of the apparatus.

A principal object of the invention is to simplify the construction and operation of the body maker by providing can body blanks with proper notches prior to their arrangement in the feed magazine of the body maker from which they are fed singly to the operative mechanism which forms them into can bodies.

Numerous other objects of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

In the drawings:

Figure 1 illustrates one type of fully prepared can body blank, such as is adapted to be placed in the feeding magazine of this apparatus;

Fig. 2 is a plan view of the body forming apparatus;

Fig. 3 is a side elevation of the body forming apparatus and a portion of an associated side seaming mechanism;

Fig. 4 is a section through the can body blank magazine and the forming station as taken along the line 4—4 of Fig. 2;

Fig. 5 is a fragmentary elevation of a portion of the blank feeding mechanism as seen in viewing Fig. 4 from the lefthand side;

Fig. 6 is a cross-section taken on the line 6—6 of Fig. 2 and illustrating the edging station; and

Fig. 7 is a section taken on the line 7—7 of Fig. 2 and illustrating the interlocking station.

Fig. 8 is a vertical section of one of the feed bars with one of its spring dogs.

Fig. 9 is a vertical sectional detail of the suctional blank feed member.

The present invention is an improvement over a standard form of body maker as shown in John F. Peters Patent 1,625,091 of April 19, 1927, the improvement consisting in the elimination of notching and attendant feed-

ing mechanism from the body maker itself, so that the magazine stack holder may be located directly adjacent the forming mechanism and the blanks fed directly thereto.

In the process of manufacturing can bodies, as illustrated in my above mentioned patent, a properly sized blank is fed automatically through mechanism for notching the edges of the blanks, and thereafter the notched blanks are fed continuously into the forming mechanism as shown and described.

Referring briefly to these operations, the can body is first formed into cylindrical or other annular shape, the opposite edges are bent to provide interlocking hook portions, the hook portions are interlocked and compressed to form a tight seam, and the can body is then passed through the side seam soldering machine.

Referring more particularly to the drawings, a machine base 10 is suitably supported and carries a frame 11 upon which is a magazine or stack holder for can body blanks 12, the magazine comprising adjustable sides 13 and ends 14 secured to a bracket 15 which is mounted upon the frame 11.

Each of the blanks 12 is formed with notches 16 and 17 (see Fig. 1) before being deposited in the magazine, so that no notching of the blanks is necessary after the body blanks are deposited in the feeding magazine, and the magazine is or may be located closely adjacent to the mechanism which bends the blank to desired shape.

As shown more clearly in Figs. 2 and 4, the magazine is located directly adjacent a horn 18 which extends throughout the length of the body maker and communicates at the end furthest from the magazine with a horn extension 19 connected with the side seam soldering machine 20 indicated in Fig. 3.

The can body blanks are fed one by one from the bottom of the magazine to the forming mechanism around the horn 18 adjacent thereto, the formed can body being then moved along the horn for the subsequent operations of the machine.

To remove the lowermost blank 12 from a stack in the magazine, there is a feeding plate with bars 21 mounted below a bottom or

fixed platform 22, upon which the blanks are supported in the magazine. The bottom platform extends the greater length of the blank but terminates at a distance from the end of the magazine remote from the horn 18 to form an opening 23. A suction cup 24 of the usual rubber or flexible cupped disc type is mounted upon one end of an arm 25 secured to a horizontal oscillating shaft, to be hereafter described, the oscillation of which moves the arm and its cup 24 to operate vertically through the opening 23. This movement causes the cup 24, in its upper position, to engage the rear end of the lowermost blank 12, and when the suction cup is drawn downwardly it bends the engaged end of the lowermost blank downwardly, as clearly illustrated in Fig. 4.

When the lowermost blank is bent downwardly, the edge thereof is in position for engagement by feed dogs 26 carried by the slide bars 21 which move the blank endwise to be engaged by the forming mechanism.

To reciprocate the slide bars 21, they are connected to or formed integral with a cross-piece 27 having a depending lug 28 in which one end of an adjustable link 29 is pivoted, the other end of the link being pivoted to the upper end of a lever 30 which in turn is pivoted at its lower end in a bracket 31 secured to the machine base 10. Intermediate its ends, this lever 30 carries a cam following roller 32 which rides in a cam groove 33 of a cam 34 mounted upon a horizontal shaft 35 journaled in bearings 36 secured to the upper surface of the machine frame 10. At its opposite end, this shaft 35 carries a sprocket 37, as shown more clearly in Figs. 2 and 3, and a drive chain 38 engages this sprocket and also a sprocket 39 mounted on a horizontal drive shaft 40 which is journaled in bearings below the machine base 10 and carries a fly wheel 41.

For operating the suction cup 24, as shown in Figs. 4 and 5, the arm 25, upon which it is carried at one end, oscillates with a shaft 42 carried by the bracket 15 of the machine frame, the shaft also having another arm 25^a secured thereto with its outer end pivoted to one end of a link 43, the other end of the link being pivoted to a stud 44 secured eccentrically upon a sprocket 45 carried by the continuously driven shaft 35.

With this construction, rotation of the shaft 35 oscillates the arm 25 and the suction cup 24 is brought into contact with the rear edge of the lowermost blank 12 each time it is raised through the opening 23, and when the cup is lowered it carries the blank with it into the position shown in Fig. 4 for the engagement of the dogs 26 on the slide bars 21 which move the selected blank from the bottom of the magazine.

A flexible tube 46 extends from the lever 25 where it is connected with the suction cup

24 through a suitable channel in the lever, to a suction pump 47 (see Figs. 2 and 3), the pump being actuated by a piston rod which receives reciprocation from a crank or other suitable mechanism in connection with the shaft 35, this mechanism not being illustrated in detail in the drawings.

As shown more clearly in Fig. 4, one of the magazine ends 14 is elevated above the bottom plate 22 to provide a passageway 49 of sufficient size to permit a single body blank 12 to pass therethrough but preventing more than a single blank being fed from the magazine.

When the feeding fingers 26 on the slide bars 21 engage the lowered edge of the lowermost blank, the forward edge of the blank is moved into engagement with forming rollers 50 and 51. The uppermost roller 50 is positioned in a channel formed in a lower part of the horn 18 and the lowermost roller is placed directly beneath the upper one. As the forward edge of the blank 12 is engaged by the rollers 50 and 51 they withdraw it from the bottom of the magazine and feed the forward edge against a shaping plate 52 which is mounted on the frame 11 and adjusted by means of a screw 53 for proper position relative to the rollers. The engagement of the shaping plate 52 causes the forward end of the blank to bend or curl about the horn 18 where it is restrained by circular hinged guide shields 54 and 55 pivoted on a rod 56 carried by supports 57 mounted on the frame 11, (see also Fig. 3).

The blank feeding rollers 50 and 51 are constantly driven at high speed by a motor 58 supported above the base 10 on a frame bracket 59. A driving connection is made direct from the motor to the rollers by means of a chain 60.

When a body blank 12 is positioned about the horn 18, it makes engagement with a number of bars 61 reciprocable in longitudinal channels 62 in the horn and these bars are reciprocated by a suitable connection with a lever 63 pivoted at its lower end upon a pivot pin 64 supported by the machine frame 10. The lever is actuated by a link 65 connected at one end to the lever 63 intermediate its ends and at the other end to a crank 66 formed on shaft 35 as illustrated in Fig. 4. Full details of this feed drive are illustrated in Peters Patent 1,625,091, and further description is thought unnecessary to an understanding of the present invention.

The feed bars 61 carry spring dogs 66 which engage the formed blanks positioned upon the horn 18 and advance them intermittently along the horn to present the blank for subsequent operations of the machine. In the first or forming stations the blanks are held by the circular guide shields 54 and 55 and as the can body is advanced along the horn 18 to the subsequent stations, it is moved

within guides 67 held in place by brackets 68 which are hinged upon the rod 56.

The edging station and its operation is illustrated more clearly by Fig. 6, in which the two adjacent edges of a body blank 12 are bent into opposite hooks 69 and 70. This bending is accomplished by means of a rocker edging tool 71 provided with hardened steel edging dies 72 and 73 co-operating with anvils 74 and 75 respectively, carried by levers 76 pivoted at 77 to the frame of the machine and operated in timed relation by arms 78 to form the hooks. The details of this operating mechanism may be the same as that described in my patent before referred to and need not again be described in this application.

After passing the edging or hook forming station, the formed blank is brought to rest at the interlocking station illustrated by Fig. 7. At this station a pair of side clamps 79 are moved inwardly to hold the walls of the blank 12 in proper position to enable levers 80 and 81 properly to interengage the hooked edges of the body blank. When this engagement takes place a seam is formed by bumping or flattening the inter-hooked edges with a hammer 82. The specific mechanism at this interlocking station may be the same as that described in my patent before referred to.

The drive shaft 40 receives rotation from a vertically extending shaft 83 through bevel gears 84, as shown more clearly in Figs. 2 and 3 and from a horizontal shaft 85 through bevel gears 86. The horizontal shaft 85 carries a spur gear 87 which meshes with a gear 88 mounted on a horizontal drive shaft 89 which carries a driving pulley 90 to which power is applied by means of a belt in any desired manner.

As illustrated more clearly in Fig. 3, a driving connection may be made with the side seam soldering machine 20 by providing a driving sprocket 91 on the driving shaft 89 and connecting it by means of chains 92 and 93 and suitable driving mechanism 94 with the side soldering machine 20.

With this construction the can body blanks cut to size and properly notched at the ends are deposited in a stack in the magazine at one side of the forming station. From this position the blanks are fed from the bottom of the stack by first withdrawing the far edge of the lowermost blank from the stack and engaging it with pushing dogs which push the blank endwise until the near edge engages the feeding rollers. The blanks are then formed, edged and interlocked in subsequent stations to which they are moved intermittently along the forming horn. By thus locating the feeding magazine at the side of the body former, not only is the blank notching mechanism done away with, but also the long feed travel, and instead of feeding the

blanks first parallel with the forming horn and then at right angles to it at the forming station, the blanks are simply deposited in a magazine and are fed directly to the body former, the feed stroke being short as may be seen from Fig. 4.

It is thought that this invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that many changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A machine for making can bodies, comprising a forming horn, a magazine arranged at the side of the horn and near the bottom thereof, roller means for wrapping the blanks around said horn, and means for feeding the blanks from the bottom of said magazine directly to the said roller means, and means for bending the edges of the blanks and means for interlocking said bent edges.

2. A machine for making can bodies, comprising a forming horn, roller means at the bottom of the horn for wrapping the blanks around the horn, reciprocating means for intermittently advancing said blanks upon the horn, a stack holder for blanks at the side of said horn, and intermittent means for advancing the blanks one at a time from the bottom of said holder directly to the said roller means, and means for bending the edges of the blanks and means for interlocking said bent edges.

3. A machine for making can bodies, comprising a forming horn, roller means under the horn for forming the blanks from which the bodies are made around said horn, means located at spaced stations along the horn for first hooking the edges of the blanks and for then locking said hooked edges in a side seam, a stack holder for blanks at the side of the horn, and means for feeding the blanks directly into said roller means from said holder of the blanks adjacent thereto.

4. In a machine for making can bodies, a forming horn, roller means for wrapping the blanks around the horn, means for feeding the blanks intermittently longitudinally of the horn, means forming a vertical magazine adjacent to the side of the horn and of the roller means, and an intermittent feed for engaging the lowermost blank in the magazine and feeding it only at right angles to the movement of blanks on the horn for direct engagement by the roller means, and means for bending the edges of the blanks and means for interlocking said bent edges.

5. In a machine for making can bodies, a forming horn, continuously operating roller means for wrapping a blank around the horn,

reciprocating means for intermittently advancing formed blanks along the horn, means forming a magazine for holding blanks flatly in horizontal position, stacked one above the other, at one side of the forming horn adjacent said roller means, and blank feeding means for engaging the outer edge of the lowermost blank in said magazine and pushing the inner end of the blank directly from the bottom of said stack into said roller means, and means for bending the edges of the blanks and means for interlocking said bent edges.

6. In a machine for making can bodies, a forming horn, roller means for forming the blanks around the horn, means forming a magazine for vertically stacked blanks at one side of the horn opposite the roller means, means for feeding the blanks endwise to the roller means from the bottom of the magazine, said means comprising a suction device for withdrawing the remote edge of the lowermost blank from the stack, and reciprocating means having fingers for engaging a withdrawn edge and for pushing the lowermost blank thus engaged directly from the stack into engagement with said roller means, and means for bending the edges of the blanks and means for interlocking said bent edges.

7. In a machine for making can bodies, a forming horn, continuously operating roller means for wrapping the blanks around the horn, reciprocating means for intermittently advancing the blanks along the horn, means for holding a stack of formed blanks at one side of the horn adjacent the roller means, an intermittently operating feeder for pushing the blanks one at a time directly from the said stack into said roller means, and a pneumatic device intermittently operable for drawing down the far edge of the lowermost blank in timed relation for engagement by said intermittent feeder, and means for bending the edges of the blanks and means for interlocking said bent edges.

8. In a machine for making can bodies, continuously operating roller means for forming the blanks, an intermittently operating blank feeder comprising members reciprocable at the bottom of a stack of blanks and having fingers for engaging the far edge of the lowermost blank only and pushing the near edge of a blank directly from the bottom of said stack into engagement with said roller means, and means for bending the edges of the blanks and means for interlocking said bent edges.

9. In a machine for making can bodies, continuously operating roller means for rolling the blanks into circular form, an intermittently operating blank feeder comprising reciprocable means with fingers for engaging the remote side of the lowermost blank in a vertical stack of such blanks and directly feeding the near side of such a blank from the

bottom of said stack into said roller means, and intermittently timed means for withdrawing the remote edge of the lowermost blank in the stack into engagement with said reciprocable means, and means for bending the edges of the blanks and means for interlocking said bent edges.

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