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FEEDING APPARATUS FOR CAN BODY BLANKS.

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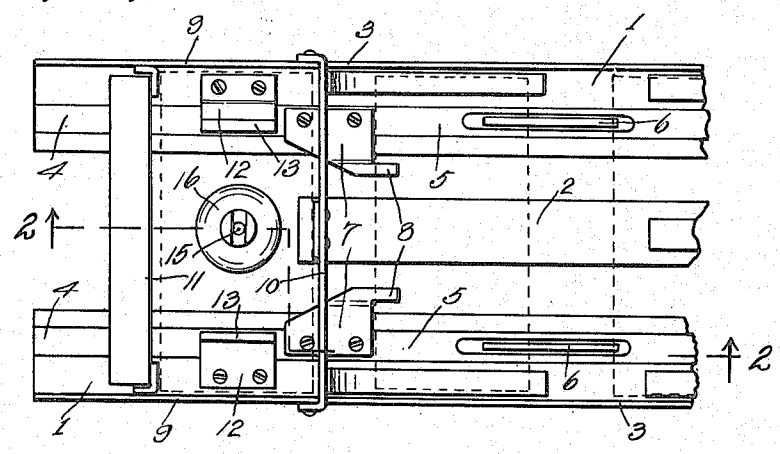


Fig. 1

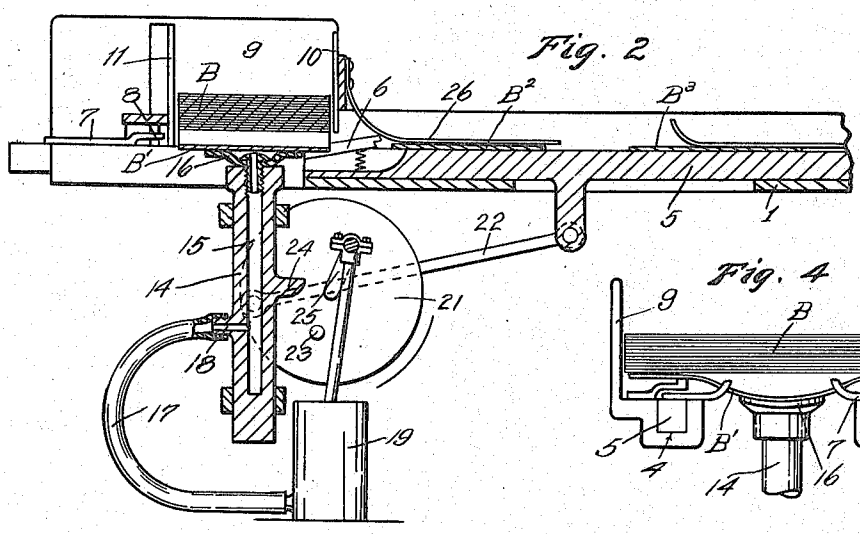


Fig. 2

Fig. 4

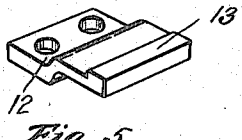


Fig. 5

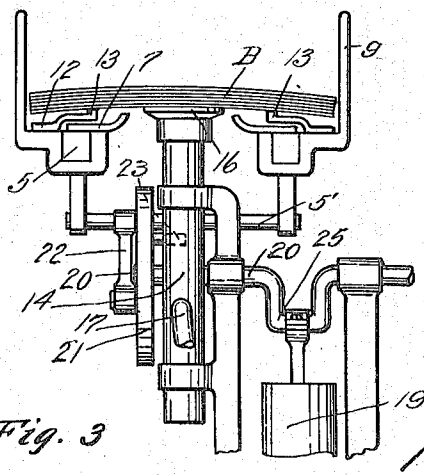


Fig. 3

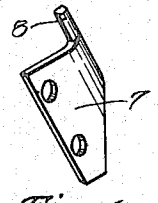


Fig. 6

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FEEDING APPARATUS FOR CAN-BODY BLANKS.

1,129,456. Specification of Letters Patent. Patented Feb. 23, 1915.

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To all whom it may concern:

Be it known that I, EDWARD W. CONRADI, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Feeding Apparatus for Can-Body Blanks, of which the following is a specification.

This invention relates to improvements in automatic devices for feeding blanks to can body-making machines.

The apparatus herein described embodies improvements in feeding mechanism wherein the metal sheets are successively placed in the path of a reciprocating blank-carrier of the can-making machine by means of a suction device.

The object of my improvements is the provision of simple and efficient means whereby the lowermost of a column of blanks may be singly and successively fed to the blank-carrier.

The invention consists in the novel construction, combination and adaptation of parts, as will be fully described in the following specification, illustrated in the accompanying drawings, and finally set forth in the appended claims.

In the drawings, Figure 1 is a plan view of a portion of a can body forming machine having an embodiment of my invention shown applied thereto. Fig. 2 is a view partly in side elevation and partly in longitudinal section along the line 2—2 of Fig. 1. Fig. 3 is an end view of Fig. 1 partly broken away. Fig. 4 is a fragmentary view of Fig. 3 illustrating the operative parts in different positions. Figs. 5 and 6 are perspective views of details of the invention.

In said drawings, the reference numeral 1 designates the side rails and 2 the center rail of the supporting-bed of a can-body forming machine. Said side-rails are provided with upright flanges 3 between which the blanks are guided to the forming apparatus of the machine. Said side-rails are likewise provided with longitudinal parallel grooves 4 in which the reciprocating feed-bars 5 are slidably mounted. Said feed-bars are rigidly connected together by cross-heads, as 5^1, and are provided with feed-dogs 6 which are pivoted at their rear end and spring-pressed upwardly at their forward end above the tops of the feed-bars in position to engage the rear edges of the blanks to move the latter forwardly in the forward movement of the feed-bars. A plate 7, see Fig. 6, is secured at the rear extremity of each feed-bar and is formed with a forwardly directed finger 8 extending into the space between said feed-bars.

In proximity of the rear end of the forming machine is a frame for receiving a pile B of can-body blanks consisting of the side walls 9, and front and rear walls 10 and 11 respectively. Said pile of blanks rest in horizontal condition upon brackets 12, see Fig 5, respectively secured to the side rails 1. Said brackets extend inwardly toward each other and toward the longitudinal axis of the machine-bed and terminate in an upwardly directed ledge 13 positioned at some distance inwardly from the side walls 9 of the frame.

The reference numeral 14 indicates a reciprocatively mounted member formed with an axial bore 15 open at its upper end and provided with a suitable rubber suction diaphragm 16. A flexible hose 17 connects said bore 15 by a branch opening 18 with an air suction pump 19. A power-driven shaft 20 may be arranged to actuate said feed-bars through a disk-crank 21 operatively connected to the cross-head 5^1 by connecting rod 22. At each revolution of said crank disk said member 14 is elevated through the contact of a pin 23 projecting from said disk with an integral lug 24 upon said member, the reverse descending stroke of said member is accomplished through the force of gravity. Air pump 19 is likewise operatively connected to a crank 25 of shaft 20 and is arranged to have its suction stroke whereby the air is partially exhausted in its cylinder and the bore 15 occur just before the member 14 reaches the culmination of its upstroke and during the major portion of its downward stroke.

The pile of metal body-blanks B normally rest upon the ledges 13 in a nearly horizontal condition due to the weight thereof being distributed upon the supporting ledges in the cantaliver principle inasmuch as the weight of metal extending laterally beyond each ledge 13 is approximately nearly equal to that bridging the space between said ledges. The member 14 is arranged to travel in its upward stroke beyond the plane of the upper portions of said ledges 13 and hence to engage the underside of the lowermost

blank, as B^1, and push the entire pile B upwardly and bowing the same slightly, as indicated in Fig. 3. Then in the downward stroke of member 14, the air pump having already commenced its exhausting stroke, the suction diaphragm seizes hold of said lowermost blank B^1 and pulls the same downwardly in the middle, as illustrated in Fig. 4. The feed-bars are meanwhile actuated in their forward stroke and as the middle of the blank B is drawn down the fingers 8 of the plate 7 engage over the blank and push it forwardly from under the pile B. The forward travel of the feed-bars carry the blank to a position, indicated by B^2 in Fig. 2, wherein it is engaged by a flat-spring 26 connected at one end to wall 10 of the frame and held by frictional contact while the feed-carriage is retracted into position to extract in like manner another blank from the bottom of the pile. On said next forward stroke the feed-dog is in position to engage the blank in position B^2 and advance it into position indicated at B^3 where it is yieldingly held in an analogous manner as before.

The particular merit and advantages of my invention reside in the provision of means to prevent the feeding of more than one sheet metal blank at a time. This is accomplished through the agency of the ledges 13 arranged substantially in the manner and position shown and in the combination therewith of the member 14 having its upward stroke extending beyond the plane of said ledges. In feeding devices of this general character trouble is usually experienced in feeding more than one blank at a time to the feed-bars due usually to suction between the adjoining blanks as the lowermost is pulled down by the suction devices. The blanks are usually supported close to their ends and intermediate thereof are bowed downwardly to a considerable extent. When the suction device engages the lower blank and is caused to pull downwardly thereupon several contiguous blanks may be influenced to be brought within the path of the feed-finger 8 and thus fed to the machine and interrupting the proper progress of the work.

In my invention I provide supports in ledges 13 spaced from the ends of the pile of blanks to distribute the weight thereof so that the blanks will lie in substantially horizontal planes. I next provide a suction member 14 whose upward travel extends upwardly beyond the plane of said ledges and hence bending the entire pile of blanks in the middle bowing them upwardly, as shown in Fig. 3. When the downward stroke of the member begins with the pile of blanks in this upwardly bowed relation, the suction device 16 will adhere to and influence the lowermost blank downwardly into the position shown in Fig. 4 but will not draw down the adjoining blank.

The device is simple in the extreme and has proven a valuable and economical expedient for the work described.

What I claim is—

1. In apparatus of the class described, a frame for holding a pile of body blanks, a pair of brackets spaced from the side walls of said frame, each bracket adapted to support said pile of blanks at a point spaced inwardly from the opposite side edges of the pile and a reciprocative suction device arranged to engage the lowermost of said blanks and draw the middle portion thereof downwardly below the plane of said bracket supports.

2. In apparatus of the class described, the combination with a frame for holding a pile of blanks, a pair of supporting brackets in said frame respectively spaced from the side walls of the frame, of a reciprocative suction device adapted to engage the lowermost of said blanks having the upward stroke of its travel extend upwardly beyond the horizontal plane of the lowermost blank.

3. In a machine of the class described, a frame for holding a pile of blanks, and a pair of stationary brackets adapted to support said blanks in horizontal condition by suspending the same therefrom, each bracket being spaced inwardly a distance from the opposite side edges of the pile, the distance between said brackets approximating the combined lengths of the two ends of the pile of blanks projecting beyond each of said brackets and a reciprocative suction device arranged to engage the lowermost of said blanks and draw the middle portion thereof downwardly below the plane of said bracket supports.

4. In feeding mechanism for can-body forming machines, the combination of horizontally reciprocating feed-bars, a vertically reciprocating suction device, and a pair of brackets upon the opposite sides of said feed-bars adapted to support a pile of blanks, each bracket engaging the pile of blanks at a point spaced inwardly some distance from the opposite side edges of the pile, said suction device arranged to engage the lowermost of said blanks and draw the middle portion thereof downwarly below the plane of said bracket supports.

5. In feeding mechanism for can-body forming machines, the combination of horizontally reciprocating feed-bars, a vertically reciprocating suction device, and a pair of brackets upon the opposite sides of said feed-bars adapted to support a pile of blanks, each bracket being spaced inwardly at some distance from the opposite side edges of the pile of blanks whereby the distance between said brackets approximates the combined lengths of the two ends of the

pile of blanks projecting beyond each of said brackets.

6. In apparatus of the class described, a frame for holding a pile of blanks, a pair of spaced brackets adapted to support said pile of blanks in horizontal condition, said brackets being respectively spaced inwardly from the side edges of the pile of blanks, and a reciprocative suction device arranged to engage the lowermost of said blanks and draw the middle portion thereof downwardly below the plane of said bracket supports.

7. In apparatus of the class described, a frame for holding a pile of blanks, a pair of brackets adapted to support said blanks in horizontal condition by suspending the same from points spaced inwardly from their opposite ends, and a reciprocative suction device arranged to engage the lowermost of said blanks in its upward stroke which terminates above the plane of said bracket supports whereby the middle portion of said pile of blanks is bowed upwardly.

8. In feeding mechanism for can-body forming machines, the combination of horizontally reciprocating feed-bars, a vertically reciprocating suction device, and a pair of brackets upon the opposite sides of said feed-bars adapted to support a pile of blanks, each bracket being spaced inwardly at some distance from the side edges of the blanks whereby the weights of the ends projecting beyond said brackets approximate the weight of the pile between said brackets.

9. In apparatus of the class described, a frame for holding a pile of body blanks, a pair of spaced brackets arranged within said frame for solely supporting the pile of blanks intermediate the side edges thereof and a reciprocative suction device arranged to engage the lowermost of said blanks and draw the middle portion thereof downwardly below the plane of said bracket supports.

10. In apparatus of the class described, a frame for holding a pile of body blanks, a pair of brackets arranged within said frame adjacent the opposite sides thereof, said brackets provided with inwardly and upwardly extending arms constituting supports to solely engage the pile of blanks intermediate the side edges thereof and a reciprocative suction device arranged to engage the lowermost of said blanks and draw the middle portion thereof downwardly below the plane of said bracket supports.

11. In a machine of the class described, a frame for holding a pile of body blanks, means within said frame for supporting the blanks at points spaced inwardly of the periphery of the blanks, and means arranged to engage the lowermost of said blanks to draw the middle portion thereof downwardly below the plane of said blank supporting means.

12. In a machine of the class described, a frame for holding a pile of body blanks, means within said frame for supporting the blanks at points spaced inwardly from their opposite-side edges whereby the distance between the blank supporting means approximates the combined lengths of the two ends of the pile of blanks projecting beyond the blank supporting means, and means arranged to engage the lowermost of said blanks to draw the middle portion thereof downwardly below the plane of said blank supporting means.

13. In sheet metal working machines, the combination of a hopper having an open bottom, a vertically movable suction cup adapted to move against and bend downwardly a portion of a sheet of metal contained in the bottom of the hopper, and a reciprocatory feed-bar adapted to engage said downwardly bent portion of said sheet while said sheet is in the hopper and feed the same out of said hopper.

Signed at Craig, Alaska, this 30th day of Sept. 1912.

EDWARD W. CONRADI.

Witnesses:
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ED NORDLUNEL.