July 28, 1942. J. CRONSHAW 2,290,865

SHEET FEEDING MECHANISM AND METHOD FOR OPERATING THE SAME

Filed May 23, 1941

FIG.1.

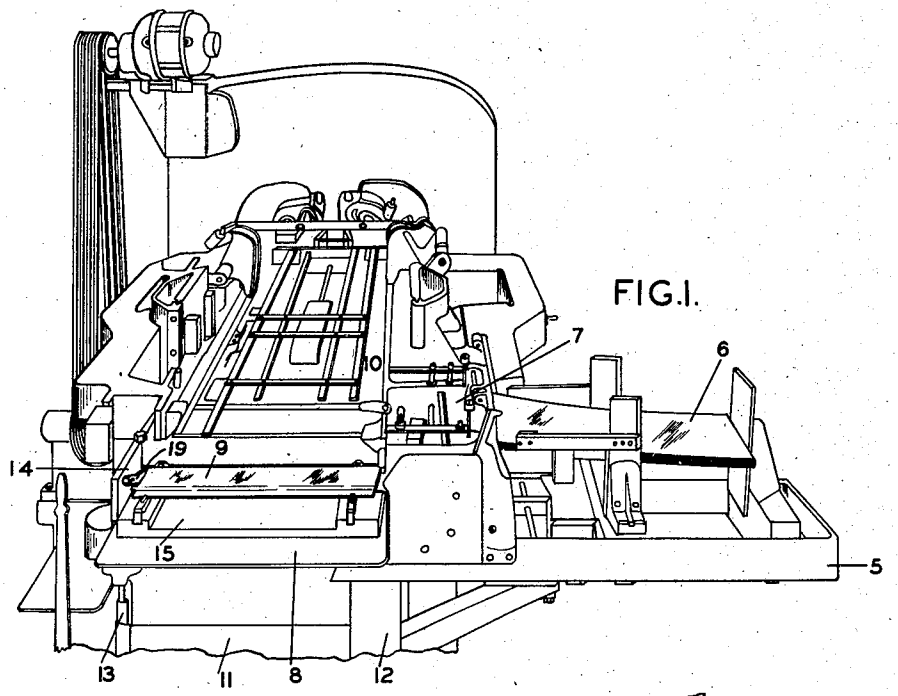


FIG 2.

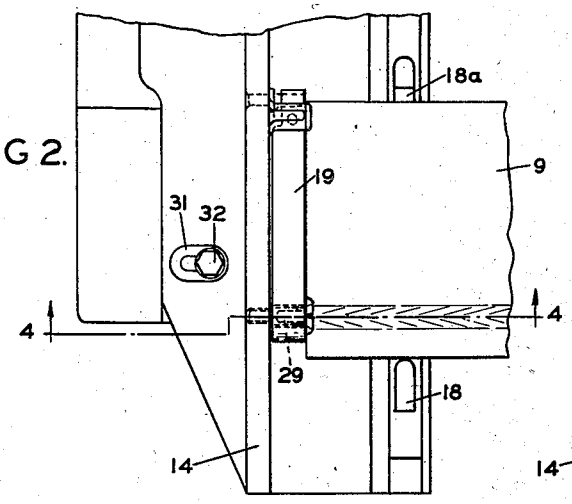


FIG.3.

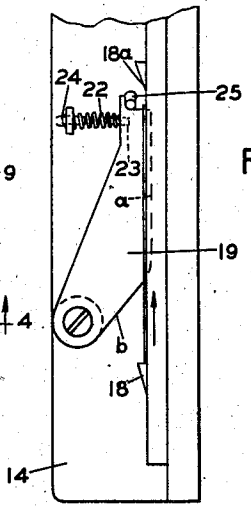
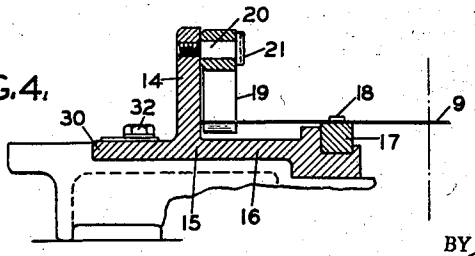


FIG.4.



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SHEET FEEDING MECHANISM AND METHOD FOR OPERATING THE SAME

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10 Claims. (Cl. 271—54)

The present invention relates to sheet feeding mechanism as used in a body maker of a can making line and is more particularly concerned with a device for receiving the shock of the incoming body blanks, which are taken into the machine from a feed-in mechanism at a high rate of speed. By my improved device extensions of the body blanks which later on form the tongue to be engaged by a key opener are protected against the impact of the delivery thrust, whereby loss of material, which hitherto occurred, due to bending or wrinkling of this tongue, is avoided.

In a body maker of the type described, sheets are delivered, stacked up in piles in a magazine, the rate of delivery being about 100 per minute. When the sheets or body blanks reach the body maker they are picked up by reciprocating fingers that feed them in a rack on the body maker proper, where they are carried in succession to a notching, hook-forming and bumping station, whereafter they leave the body maker.

Each incoming blank has a strip of scored metal, which, as is generally known, serves later on for opening the can. This strip extends over the edge of the blank, thus forming a tongue capable of engaging with the opening of a key opener. In the forming of blanks as practiced heretofore the blank, when being fed in, was thrust against the frame of the machine in a way that caused the extension or tongue which arrived there foremost, to bear the whole impact. As a consequence thereof many of these tongues were bent or broken, the whole blank becoming damaged thereby.

The present invention overcomes this drawback by providing a special arrangement for the protection of this most exposed part of the blank. In order to prevent the protruding tongue from being thrust against the side wall of the machine, a member of a particular shape is interposed at the part of the body maker where the blank is fed in between the wall and the incoming blank. This member, which extends over the base plate of the body maker for the greater part of its length, receives the impact of the blank as a whole, whereas the end portion of said member extends upward at an angle with the base plate, leaving a free space or clearance for the tongue of the blank to slip in free of impact.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims; the annexed drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a perspective view of the body maker;

Fig. 2 is a plan view of the parts of the machine forming the invention;

Fig. 3 shows the same parts in side elevation; and

Fig. 4 is a section on line 4—4, Fig. 2.

Referring to Fig. 1, 5 is the frame of a sheet feeding mechanism through which a pile of blanks 6 are fed in a known manner over a transfer mechanism 7 to the bed plate 8 of the station from which the blanks are started on their way through the body maker and which will be hereafter called the starting station. The blanks, one of which is shown at 9, are moved on a rack 10 successively past the notching, hook-forming and bumping stations respectively, all of which do not form any part of this invention and are, therefore, not included in the following description.

Bed plate 8 is carried by a frame 11 with standards 12, 13. On bed 8 a frame 15 is located, consisting of three plates 16, 14 and 30, best seen in Fig. 4. Plate 16 carries two bars 17 which serve for receiving the blanks at the starting station. Fingers 18, 18a on these bars, capable of reciprocating movement, pick up the blanks and feed them through the machine to the several working stations as set forth above.

The plate 14 extending in a plane perpendicular to the other two plates, forms the side wall of the starting station. The third plate 30, having a slot 31, is secured to the machine frame by a bolt 32. The connection is slidable in a horizontal plane and makes it possible to adjust the size of the starting station in accordance with the blanks under treatment in a manner known per se.

The shock receiving member is illustrated in Figs. 2 to 4. In the embodiment shown in the drawing it consists of a lever 19 which is pivotally mounted on the side wall 14 of the starting station by means of a pin 20 and a head 21. The lever is of substantially triangular shape, one of the sides, *a*, extending for its entire length over plate 16. The second side, *b*, forms an angle with the plane of plate 16, thus leaving a clear space for the tongue 29 to slide in when the blank is fed into the starting station. At the other side of lever 19 a spring 22 is mounted between pins 23 and 24 secured to the lever and

the side wall respectively, which holds down the lever in its normal position above plate 15 and returns it to the same if it is removed by action of the tongue as set forth below. A stop 25 is mounted on the side wall, in which the end of lever 19 rests in its normal position.

The operation of the machine is as follows:

As soon as the blank feeding mechanism has been started the blanks are fed from the pile 6 one at a time over transfer mechanism 7 to the starting station and are received on bars 17. The main body of the blank 9 is thrust against the lever 19, which is in the position shown in Fig. 3 of the drawing, whereas the tongue 29 slides into the clearance provided by the receding shape of lever 19, not meeting any resistance at all. Immediately after the blank has come in, fingers 18 push it forward in the direction shown by the arrow in Fig. 3. As the blank moves forward tongue 29 bears against the lever lifting it from its shown position and sliding through underneath side *a* of the lever, the spring 22 being compressed while it moves on, until the blank has passed fingers 18*a*. As soon as the tongue ceases to travel along the lever, spring 22 is free to press the lever down again, thus returning the same into the former position on stop 25. Meanwhile the next blank is in position for being fed by the action of fingers 18, while at the same time fingers 18*a* push the first blank through the body maker proper.

While I have shown the shock receiving member in the form of a lever of substantially triangular shape it will be understood that I do not want to be limited to that particular embodiment of my invention. Any structure equivalent to the lever shown in the drawing, viz., any member receiving the impact of the blank as a whole while leaving a clearance for the tongue, is within the spirit of the invention and the scope of the appended claims.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a can-body maker in combination, a feed-in means for body blanks, means for delivering the body blanks to the starting station, means for feeding the body blanks through the body maker proper, a shock receiving device in said starting station, said shock receiving device comprising a member having an elongated portion for receiving the main portion of the body blanks and an angle portion to provide a clearance for a protruding tongue on said body blanks.

2. In a can-body maker in combination, a feed-in means for body blanks, means for delivering the body blanks to the starting station. means for feeding the body blanks through the body maker proper, a shock receiving means in said starting station, said shock receiving means comprising an elongated body portion and an end portion, said body portion extending over the base plate of said starting station and the end portion enclosing an angle with said base plate, the end portion being pivotally mounted in a side wall at said starting station.

3. In a can-body maker in combination, a feed-in means for body blanks, means for delivering the body blanks to the starting station, means for feeding the body blanks through the body maker proper, a shock receiving means in said starting station, said shock receiving means comprising an elongated member of substantially triangular shape which is pivotally mounted in a side wall at said starting station, one side of said triangle extending over the base plate of the starting station and another side enclosing an angle with said base plate whereby a clearance is formed to receive a protruding tongue of the body blank.

4. In a can-body maker in combination, a feed-in means for body blanks, means for delivering the body blanks to the starting station, means for feeding the body blanks through the body maker proper, a shock receiving means in said starting station, said shock receiving means comprising an elongated member of substantially triangular shape which is pivotally mounted in a frame at said starting station, one side of said triangle extending over the base plate of the starting station and another side enclosing an angle with said base plate whereby a clearance is formed to receive a protruding tongue of said body blank, and elastic means for holding down said member on said base plate.

5. In a can-body maker in combination, a feed-in means for body blanks, means for delivering the body blanks to the starting station, means for feeding the body blanks through the body maker proper, a shock receiving means in said starting station, said shock receiving means comprising a substantially triangular member which is at one angle pivotally mounted on a side wall in said starting station and at another angle controlled by a spring, said spring being mounted on said side wall, the third angle having one of its sides extending over the base plate of said starting station and the other side extending upwards whereby clearance is left for a tongue-shaped portion of said body blank.

6. In a can-body maker in combination, a feed-in means for body blanks, means for delivering the body blanks to the starting station, means for feeding the body blanks through the body maker proper, a shock receiving means in said starting station, said shock receiving means comprising a substantially triangular member which is at one angle pivotally mounted on a side frame in said starting station and at another angle controlled by a spring, said spring being mounted on said side frame, the third angle having one of its sides extending over the base plate of said starting station and the other side extending upwards whereby a clearance is left for a tongue-shaped portion of said body blank, and means for horizontally adjusting said side frame in accordance with different sizes of said body blanks.

7. In a method of feeding body blanks through a can-body maker by delivering the blanks to a starting station and feeding them from there through the body maker proper, the steps of receiving the main body of the blanks by a shock receiving member arranged in the starting station, allowing a tongue formed on said blanks to glide into a clearance adjacent to said shock receiving member, lifting said member by means of said tongue while advancing said blanks through the starting station and thereafter returning said member into normal position by elastic means.

8. In a method for feeding body blanks through a can-body maker by delivering the blanks to a starting station and feeding them from there through the body maker proper in a direction at variance from the direction of delivery, the

steps of receiving the main body of the blanks by a shock receiving member arranged in the starting station thereby stopping the travel of the blanks in the direction of arrival, allowing a tongue formed on said blanks to glide into a clearance adjacent to said shock receiving member, lifting said member by means of said tongue thereby clearing the path for the travel of the blanks in said other direction while advancing said blanks through the starting station and thereafter returning said member into normal position by elastic means.

9. In a method for feeding body blanks through a can-body maker by delivering the blanks to a starting station and feeding them from there through the body maker proper, the steps of receiving the main body of the blanks by a pivotally mounted lever arranged in the starting station in front of the side wall thereof, allowing a tongue formed on said blanks to glide into a clearance adjacent to said pivoted lever, lifting said lever by means of said tongue while advancing said blanks through the starting station and thereafter returning said lever into normal position by elastic means.

10. In a method for feeding body blanks through a can-body maker by delivering the blanks to a starting station and feeding them from there through the body maker proper, the steps of receiving the main body of the blanks by a lever pivotally mounted on the side wall of said starting station, allowing a tongue formed on said blanks to glide into a clearance adjacent to said lever, lifting said member by means of said tongue while advancing said blanks through the starting station and while simultaneously compressing a spring mounted in said side wall and returning said lever into normal position by action of said spring.

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