April 30, 1946. A. M. CAMERON 2,399,203

DOUBLE SEAMER

Filed May 11, 1942 2 Sheets-Sheet 1

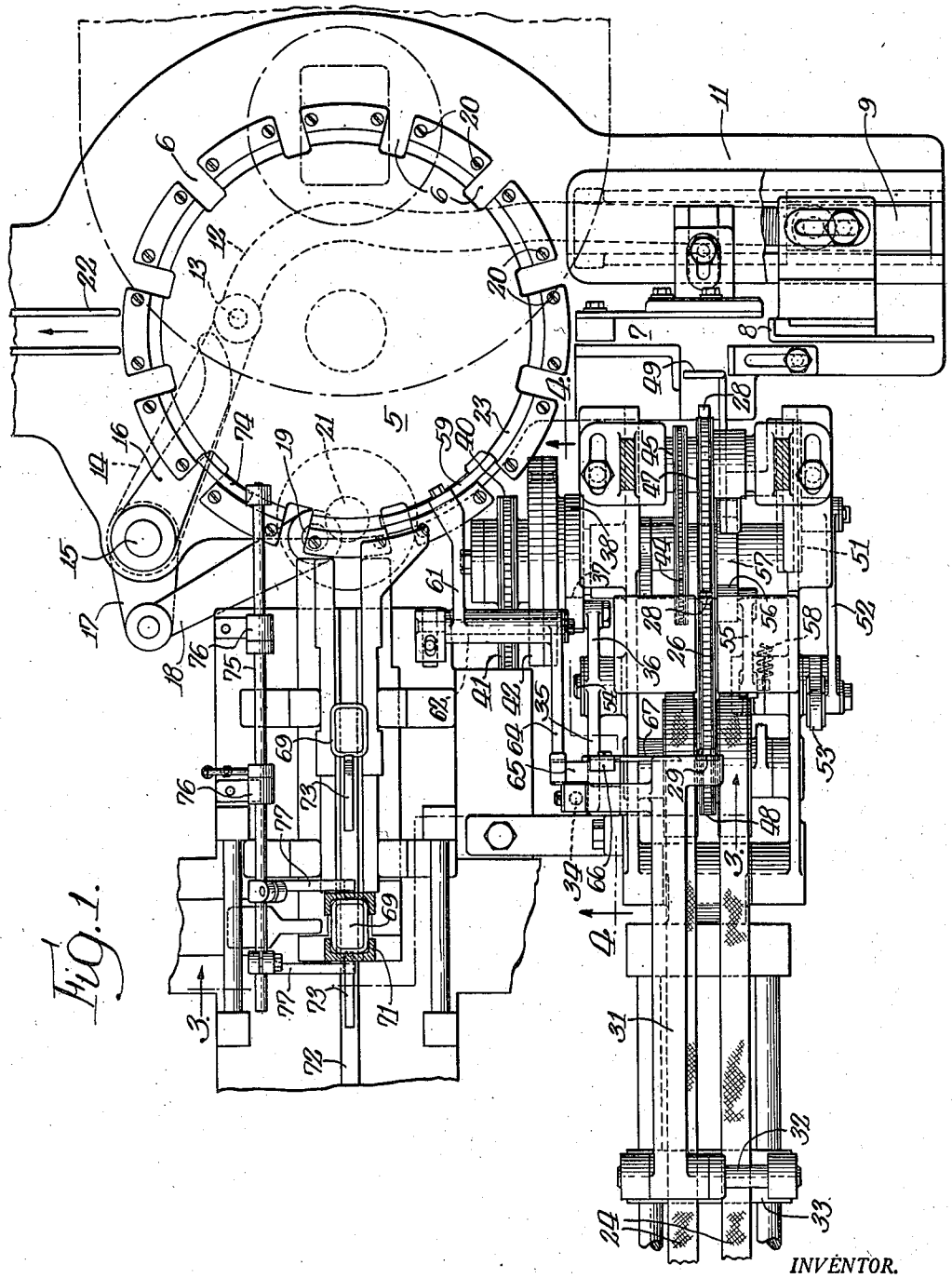


Fig. 1.

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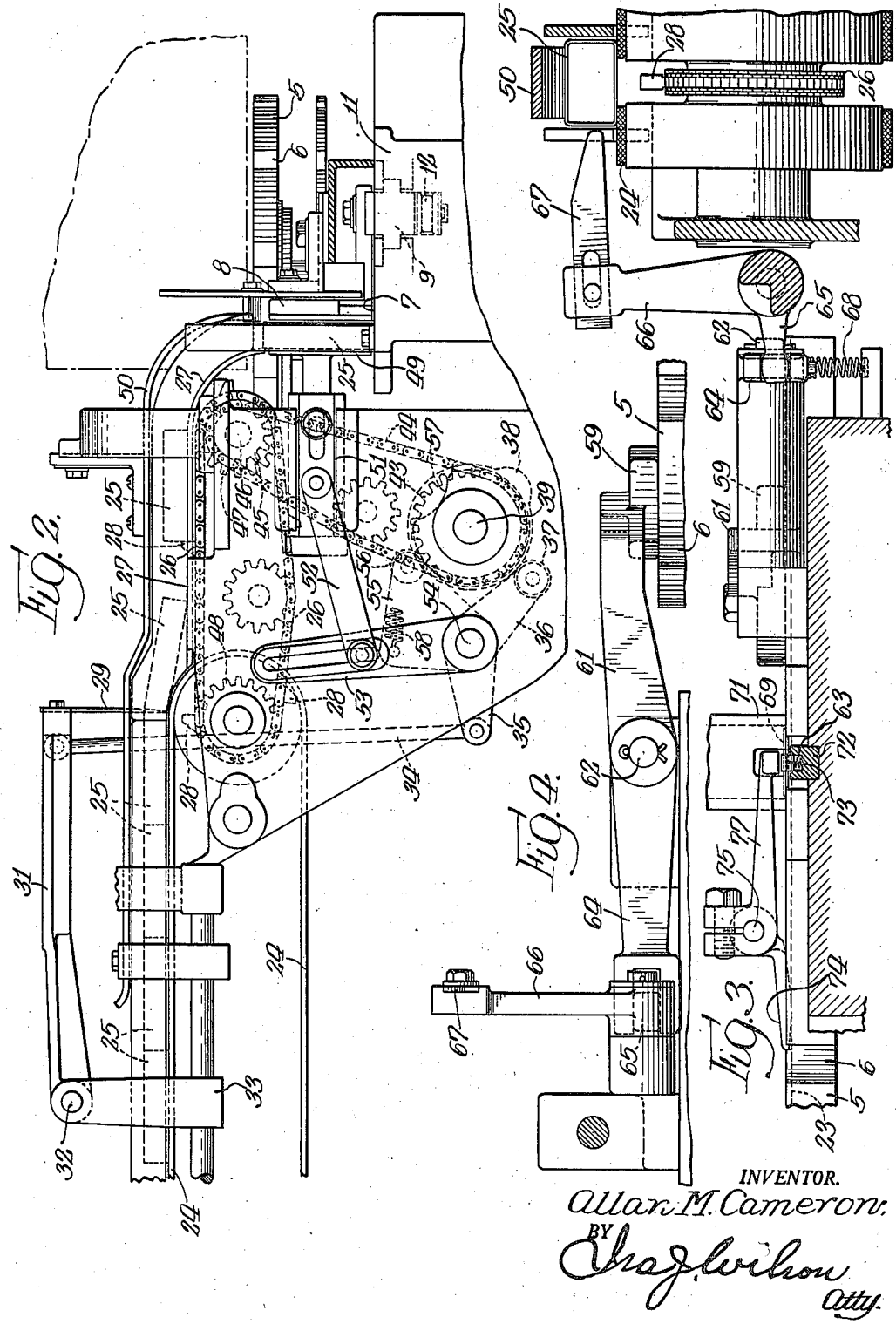


FIG. 2.

FIG. 4.

FIG. 3.

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DOUBLE SEAMER

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Application May 11, 1942, Serial No. 442,467

2 Claims. (Cl. 113—115)

This invention relates to machines for double seaming ends onto previously formed can bodies, and pertains more particularly to the mechanism for feeding the can bodies and can ends to the turret of the seaming mechanism and to means for controlling the feeding of such bodies and ends.

One of the purposes of my invention is to provide mechanism capable of feeding tall can bodies which, due to the relatively small cross-sectional dimensions, cannot be fed in upright position in the ordinary manner because of their liability to topple over. My invention contemplates the feeding of such bodies in horizontal position into proximity to the seaming turret, at which position the bodies are caused to assume a vertical position for feeding into the turret.

Another feature of my invention resides in the mechanism by which the can bodies are separated one from another and properly spaced apart for delivery to the turret.

Another object of my invention is the provision of novel mechanism for preventing the feeding of a body into a turret pocket unless such pocket has been provided with a can end for assembly onto the body.

Another object of my invention is the provision of mechanism for preventing the feeding of a can end to a turret pocket in the event such pocket already contains an end.

Other objects and advantages of my invention should be appreciated as the same becomes better understood from the following description when considered in connection with the accompanying drawings.

Referring to the drawings,

Fig. 1 is a plan view of so much of the mechanism of a double seaming machine as is essential to an understanding of my invention;

Fig. 2 is a side view of the mechanism shown in Fig. 1;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1; and

Fig. 4 is a fragmentary sectional view on the line 4—4 of Fig. 1.

Referring to the drawings more in detail, reference character 5 indicates generally the turret of a double seaming machine, which turret is provided with spaced apart pockets 6 adapted to receive can bodies and ends. The turret is indexed in a counter-clockwise direction viewing Fig. 1 by a Geneva movement (not shown) in a manner well known in this art.

Can bodies are delivered in upright position to the turret pockets in succession from a guideway 7 by a reciprocatory feed member 8 mounted upon a slide 9 which is arranged to reciprocate in a guideway formed in the table 11. Reciprocation is imparted to the slide by a link 12 pivotally connected at 13 with an arm 14 fixed upon a shaft 15 which also carries the knock-out arm 16 and an operating arm 17. A link 18 connects the arm 17 with a crank pin 19 carried by a rotatable shaft 21 which is driven from suitable mechanism, not shown. Oscillation of the shaft 15 in the counter-clockwise direction causes the feeding member 8 to position the can body in an aligned turret pocket while a body to which a cap or end has been applied by the seaming mechanism is simultaneously discharged from the turret by the knock-out arm 16 into a delivery chute 22.

The upper face of the turret is provided with an annular groove 23 intersecting the pockets 6, and adjacent to each side of each pocket there is located a permanent magnet 20 which serves to hold a can end against accidental displacement after it has been positioned in alignment with the pocket or, in other words, over the pocket. Detectors mounted to ride in the groove 23 are employed to detect the presence or absence of can ends in each pocket. One detector controls the feeding of can ends to the turret and the other detector controls the feeding of can bodies to the turret.

The control of the feeding of the bodies to the turret will first be explained. The particular double seaming machine here disclosed is designed to handle tall narrow bodies which tip over very easily and, consequently, cannot be fed to the machine in upright position and handled in the manner that ordinary packing cans are handled. The bodies, therefore, are advanced toward the machine in horizontal position upon an endless belt or conveyor 24 upon the upper lap of which the bodies 25 are placed either manually or mechanically so that they proceed toward the seaming turret.

Referring to Fig. 2, it will be observed that the bodies are delivered by the conveyor 24 onto a chain conveyor 26, the upper lap of which is disposed at a lower level than the upper lap of conveyor 24, so that as a can body passes from conveyor 24 onto conveyor 26 its forward end tilts downwardly, as illustrated in Fig. 2, thereby separating this body from the next following body. It will be observed that the upper lap of conveyor 26 travels immediately beneath a plate 27 having a longitudinal slot through which the feed dogs 28 of conveyor 26 project to advance the can bodies in properly spaced relation. To attain this

spacing of the bodies a holding or retaining finger 29 is introduced in the space between the tilted body and the following body so as to prevent for a predetermined period the following body from advancing until the tilted body has been engaged and moved forward by one of the dogs 28. The retaining finger 29 is carried upon the forward end of an arm 31 pivoted at 32 on a suitable support 33, and is moved up and down by a link 34 connected to an arm 35 of a bell-crank, the other arm 36 thereof being provided with a cam follower 37 adapted to be actuated by a cam 38 mounted on shaft 39. Shaft 39 is provided near its inner end (Fig. 1) with a sprocket wheel 40 which is driven through a chain 41 from a driving unit (not shown) which may be either a motor or a power driven shaft, depending upon the details of the particular installation.

A sprocket wheel 43 mounted on shaft 39 is connected by a chain 44 with the sprocket wheel 45 on shaft 46 which also carries sprocket wheel 47 around which conveyor chain 26 is trained. This chain trained over sprocket wheel 48 serves to drive the conveyor 24.

A can body 25 disposed on plate 27 by the conveyor 24 is moved to the right along this plate, viewing Fig. 2, by one of the lugs 28, and is guided from horizontal into upright position by the curved forward end of plate 27 and a companion guide plate 50 and deposited in upright position on the table 11, as shown in Fig. 2. From this position it is moved to the right into alignment with the guideway 7 and the feed member 8 by a pusher 49 mounted to be reciprocated in a guideway 51 by means of a link 52 adjustably connected to an arm 53 mounted on shaft 54. A second arm 55 connected with arm 53 and provided with a cam follower 56 is adapted to be actuated by a second cam 57 on the shaft 39. A tractile spring 58 holds the follower 56 against the face of the cam 57.

The parts are so timed that when a turret pocket is brought into alignment with the guideway 7 a can body is introduced into the pocket by the feeding member 8, and upon the return of this feeding member to its outer position shown in Fig. 1 another body, which has been delivered in upright position by the conveyor 26, is pushed into the path of the feed member 8 by the pusher 49, and these operations are continued upon successive bodies. In the meantime the bodies are separated one from another by the separating finger 29 in the manner above described.

If any turret pocket is not supplied with a cap or end, it is necessary, in order to prevent a jam in the machine such as would be caused by the action of the seaming rollers upon the can body instead of upon a cap, to prevent the feeding of a body to the pocket containing no cap. To prevent the feeding of a body under these circumstances, I have provided a detector 59, arcuate in form and proportioned to ride in the turret groove 23. The presence of a cap in a pocket moved beneath the detector causes the detector to ride over the cap and rock the lever 61, pivoted at 62, by which the detector is carried, in a counter-clockwise direction viewing Fig. 4. The other arm 64 of this lever is bifurcated, as shown in Fig. 3, to receive the arm 65 of a bell-crank lever, the other arm 66 of which carries a finger 67 normally positioned at one side of the path of travel of the can bodies 25 on the conveyor 24.

The finger 67 is in the same vertical plane as the holding finger 29, and, when projected into the path of a can body, is disposed immediately beneath the finger 29. Finger 29 is intermittently raised and lowered and serves merely as a retainer to space the can bodies, but finger 67 when projected by spring 68 in front of a can body prevents the advance of such body until the detector is elevated from the groove 23 by a cap in a succeeding turret pocket. In this manner the can body which would be fed to the pocket having no cap is held back, with the result that when such pocket becomes aligned with guideway 7 no body is present in the guideway for delivery to the pocket and this pocket during the passage past the seaming rolls is devoted not only of a cap but also of a body, so that no injurious results to the machine are produced. When the detector 59 is elevated from the groove 23 by a cap in a succeeding turret pocket, such movement withdraws the finger 67, and the normal feeding of the bodies proceeds.

The can caps or ends 69 are stacked in a magazine 71 from the bottom of which they are fed in succession to the turret pockets by a reciprocatory feed bar 72 operated by suitable well known mechanism, which feed bar is equipped with spaced apart pivoted feed dogs 73, the forward ends of which are projected upwardly by springs 63 (Fig. 3) to engage and remove the lowermost cap from the magazine upon reciprocation of the feed bar.

It sometimes happens that through failure of the supply of can bodies or an abnormality in the operation of the body feeding mechanism, a body may not be fed to a turret pocket which has been supplied with a cap. The result is that such pocket with the cap still in it will, as the turret revolves, be presented for the reception of another cap from the magazine. If a second cap is delivered to this pocket, serious injury to the seaming mechanism would result from the presentation of two caps instead of one to the seaming rolls. To obviate this possibility, I have provided mechanism for insuring against the delivery of a cap to a turret pocket already supplied with a cap.

For this purpose a second detector 74 proportioned to ride in the turret groove 23 is mounted upon a rod 75 journaled to oscillate in bearings 76 and carrying near its outer end a pair of arms 77 disposed respectively forwardly and rearwardly of the cap magazine 71. In the absence of a cap in a pocket approaching the cap receiving position, the detector 74 rides in the groove 23 and the arms 77 are elevated sufficiently to clear the cap feeding dogs 73 which feed the caps into the turret pockets as they are successively presented. If, however, a cap is already positioned in a turret pocket approaching the detector 74, such cap will cause the detector to rise and ride thereover, thereby rocking the shaft 75 and depressing the arms 77 so as to depress the forward ends of the feed dogs and prevent them from engaging with the lowermost cap in the magazine upon both the forward and rearward stroke of the feed bar. In this manner the feeding of a cap to a turret pocket already supplied with a cap is prevented.

The mechanism for driving the shaft 21 and the cap feed bar and other parts of the machine shown may be of any well known construction common in the art, consequently, such mechanism has for purposes of simplicity been omitted from the drawings.

The structural details of the various parts shown and described may obviously be varied within considerable limits without departing from

the essence of this invention as defined in the following claims.

I claim:

1. In a double seaming machine, the combination of a turret provided with pockets adapted to receive can bodies and caps to be assembled, means for feeding caps to said pockets in succession, means for feeding bodies to said pockets in succession, said body feeding means including a conveyor, a can holding finger adapted to be projected across the path of travel of bodies on said conveyor, a fulcrum for said finger positioned to preclude movement of the finger in the direction of travel of said bodies, a lever pivotally mounted in proximity to the turret and provided at one end with a shoe positioned to ride upon the caps when present in the pockets as the turret rotates beneath the shoe and thereby support said end of said lever, and an operative connection between said lever and said finger for holding said finger out of the path of advancing bodies to permit movement of said bodies by said conveyor when said lever is supported by a cap, said lever being arranged to move under gravity into engagement with the top of the turret in the absence of a cap from a pocket positioned to receive a body, thereby moving said finger into position to withhold the feeding of a body to said pocket unsupplied with a cap.

2. In a double seaming machine, the combination of a turret provided with can body and cap receiving pockets, a continuously operating conveyor for conveying can bodies toward said turret, cap feeding means, a can body holding finger mounted on an axis disposed parallel with the path of travel of the can bodies so as to be movable only transversely to the travel of the can bodies, a detector disposed in proximity to the turret in position to be controlled by the presence or absence of a can cap in a turret pocket, a lever operable by said detector, and a connection between said lever and said finger whereby the finger is projected into the path of travel of the can bodies to withhold the feeding of a body to a turret pocket unsupplied with a cap.

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