June 26, 1928. 1,674,636

W. CAMERON

CAN FEEDING MECHANISM

Filed April 13, 1925 2 Sheets-Sheet 1

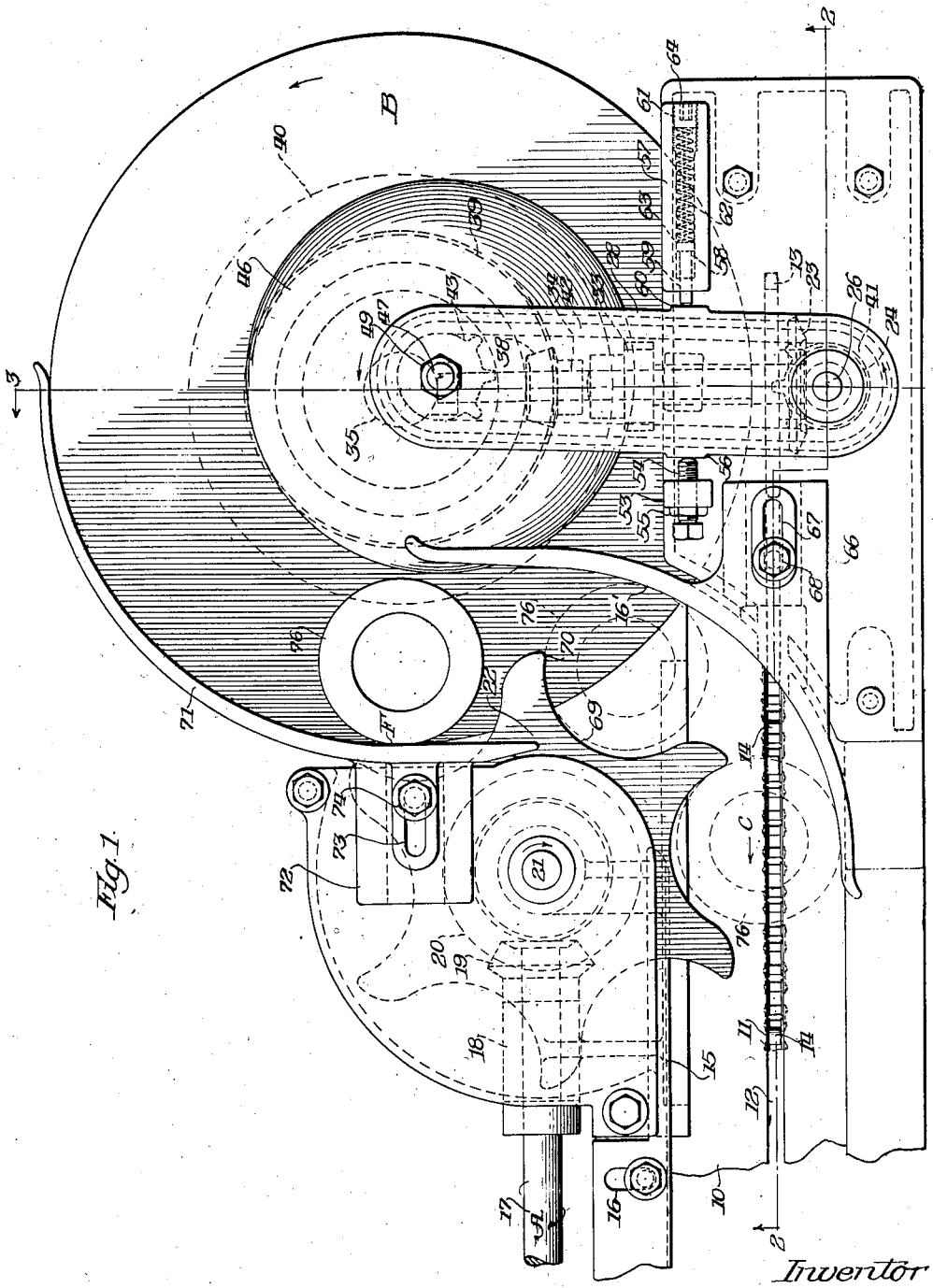


Fig. 1.

Witness:

By

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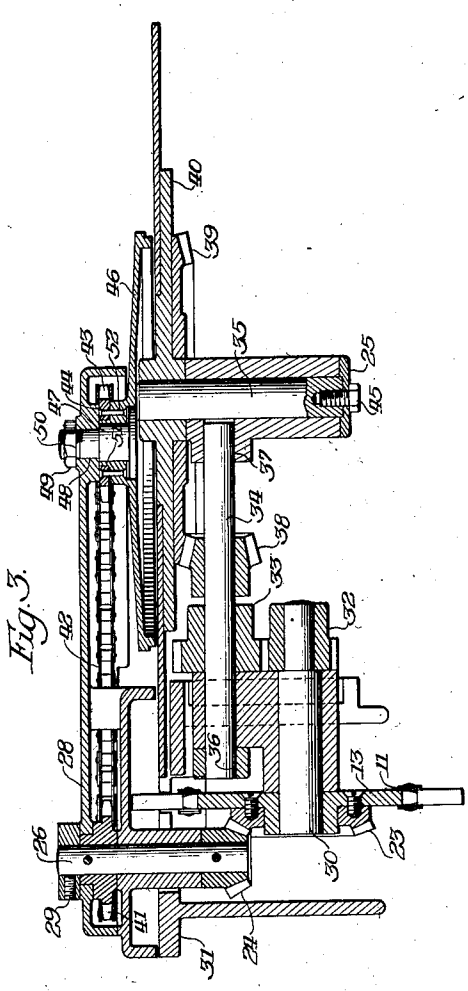


Fig. 3.

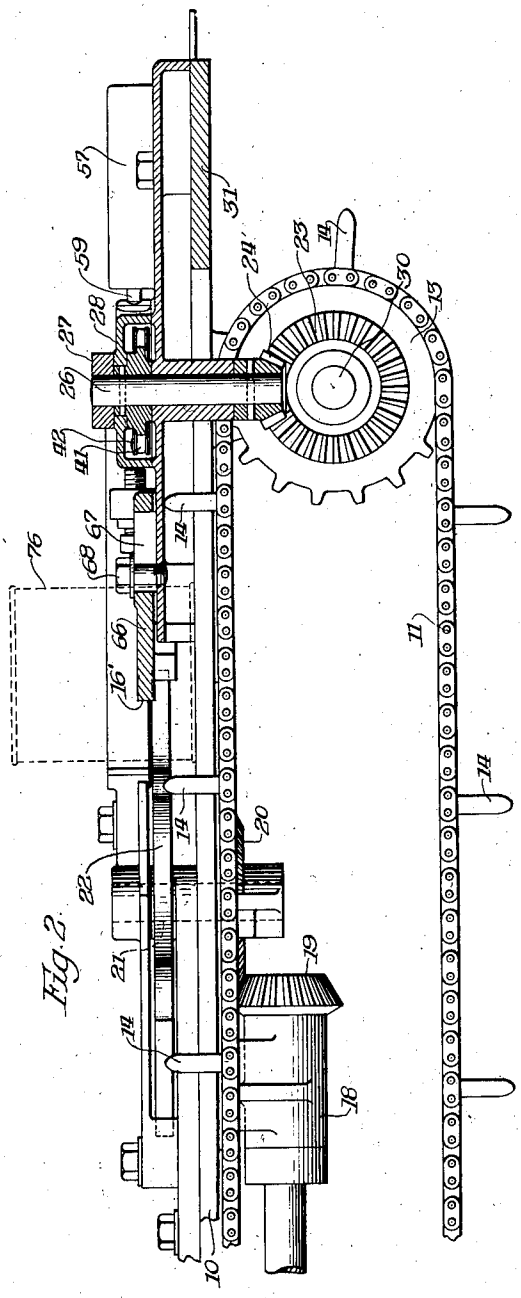


Fig. 2.

Witness

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UNITED STATES PATENT OFFICE.

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CAN-FEEDING MECHANISM.

Application filed April 13, 1925. Serial No. 22,534.

My invention relates to feeding apparatus for promptly disposing the can bodies into a can capping or other functioning machine, and consists primarily in preventing any distortion of the can body while passing through the mechanism which adjusts or spaces the same for reception by the can capping or other machine (not shown or included). It is well known in the art of can capping machines that mechanism heretofore devised for transmitting the can therethrough has been subjected to alternate stops and starts or momentary holding of the can to procure proper spacing. This intermittent motion has resulted in the spilling of liquid contents of the cans when filled so that by the time a can reached the capping mechanism it would not be one hundred per cent full. Furthermore, spacing mechanism employed prior to my invention for spacing the can bodies apart frequently injured the bodies by jamming or compressing them.

The primary object of my invention is to provide a spacing mechanism which will accurately space the can bodies apart without either stopping the continuous travel of the bodies and spilling some of the contents, or injuring the bodies by jamming or distortion.

A further object is to provide a mechanism which can be readily applied to a can capping or other machine employed in this art and one which will deliver to said mechanism the cans in perfect spacing distance for having further operation performed thereon. In addition to the features mentioned, a mechanism embodying my invention is capable of being quickly and accurately adjusted to accommodate can bodies of various sizes, and is capable of being connected to a machine for can capping, such, for instance, as is shown in my United States Letters Patent granted March 22, 1927, No. 1,621,580, wherein the star wheel designated as 133 may be omitted and the mechanism herein provided and claimed may be employed instead for spacing the can bodies and without any stopping and starting of the same as is necessary in the mechanism shown in the application above mentioned.

The mechanism herein described and claimed is extremely simple in construction possessing fewer moving and operating parts than is usual for a mechanism of this character and, because of its simplicity, it is extremely accurate and reliable in operation, and also very durable.

While I have merely briefly set forth the objects of my invention many more apparent uses for the same will be disclosed by refernce to the drawings submitted herewith. Referring to the drawings:

Fig. 1 is a top plan view of my invention;

Fig. 2 is a longitudinal view on the line 2—2 of Fig. 1; and

Fig. 3 is a longitudinal view of the off-center or eccentric mechanism on the line 3—3 of Fig. 1.

The feeding mechanism as considered in connection with my United States Letters Patent hereinbefore referred to is connected with the feed table designated in such patent as 26, and in the present application as 10, and the conveying mechanism in my device consists of a chain 11 extending through a slot 12 in said table and at its outer end over the sprocket wheel 13, while at various points throughout the said chain are upstanding arms 14 for the purpose hereinafter explained. The width of the feed table 10 is regulated by means of the wall 15 which is adjustably mounted through the slot 16 and the adjustment of the guide rail 16′ as hereinafter explained, and between which the can passes to the capping or other machine after it has been properly spaced and placed on the conveyor 11.

My improved can mechanism is operated through the shaft 17 connected with any suitable source of power (not shown) and is operated in the direction of the arrow A in Fig. 1. This shaft is housed in a suitable bearing 18 and is provided at the inner end thereof with a bevel gear 19 meshing with bevel gear 20 at the lower end of the shaft 21, while the upper end of said shaft is provided with a star or spacing wheel 22 as hereinafter explained.

The chain 11 which forms the conveying means to the can capping or other machine is driven by any suitable means of power and the sprocket wheel 13 thereof is provided on its outer face with a bevel gear 23 which meshes with the pinion 24 on the lower end of the shaft 26 while the upper end of said shaft is held in position by means of the sleeve or nut 27 resting on the

upper face of the frame 28. The collar or nut 27 holds the upper part of the shaft 26 through the medium of the set screw 29 and this mechanism together with the sprocket 13, which is carried on the shaft 30, is mounted in the body 31 which, as hereinbefore explained, is connected by any suitable means with the can capping or other machine. At the outer end of the shaft 30 is a pinion 32 meshing with the pinion 33 on the shaft 34 which is housed in the frame at the points 36 and 37 and said shaft is also provided with a small bevel gear 38 which meshes with the bevel gear 39 on the lower face of the table 40. This table 40 is rotatable upon the shaft 35 and said shaft is provided at its lower end with the cap 25 and screw 45 for holding the same in position. Mounted upon the shaft 26 and within the confines of the frame 28 which is also pivotally mounted on the shaft 26, is a sprocket wheel 41 which carries the sprocket chain 42 and said chain passes over the sprocket wheel 43 carried on the hub portion 44 of the disc 46 which travels upon the small shaft 47 which is supported and held in position above the table 40 by means of the threaded portion 48 being provided with the nut 49 for resting upon the boss 50 on the frame 28. The sprocket wheel 43 fits onto the reduced portion 51 of said hub and is held in position by means of the bolts or screws 52. The axis of rotation of the disc 46 being in the small shaft 47 will be eccentric to the axis of rotation of the table 40 carried on the shaft 35 as shown in Figs. 1 and 3.

Mounted upon the body 31 at a point intermediate the sprockets 41 and 43, and frame 28 is a threaded lug 53 which is provided with a set screw 54 having a lock nut 55 thereon and the inner end of said screw is adapted to bear against a boss 56 on the side of the frame 28. At a point immediately opposite and on the other side of the frame 28 is a raised portion 57 having a chamber 58 therein, while a pin 59 extending through the inner end of said portion 57 bears against a boss 60 on said frame 28. The outer end of the chamber 58 has a threaded portion 61 and a spiral spring 62 is adapted to bear against an enlarged portion 63 on the pin 59, while the outer end of said chamber has a slotted set screw 64 adjustably mounted by the screw threads 61 so as to procure the desired tension on the spring 62.

The guide rail 16′ is provided at the outer end of the same with a connecting portion 66 by which said rail is adjustably mounted on the body 31 through the medium of the slot 67 and bolt 68 so that the said rail can be adjusted to provide the proper space between the inner edge of the same and the recesses 69 between the projections 70 on the star wheel 22. The outer guide rail 71 extends around in close proximity to the outer edge of the rotatable table 40 and to a point opposite the center of star wheel 22, and is provided at its outer side with an attaching portion 72 adjustable on the body of the machine through the slot 73 and bolt 74.

Having now described the working parts of my improved can feeding mechanism I will explain the operation thereof and the delivery of the cans to the conveyor for passing to a station for further operation. The can bodies one of which I have shown in Fig. 2 in dotted lines and designated by the reference character 76 are placed upon the rotatable table 40 at a position between the point B and the end of the outer guide rail 71 and as the said table rotates the can is brought around into a position near the inner end of the guide rail 16′ where it is engaged by one of the fingers or projections 70 on the star wheel 22 and rests against the said projection and against the inner face of the guide rail 16′ from which point it passes onto the table 10 and is conveyed in the direction of the arrow C to the can capping or other machine for further operation. At the point where the can leaves the guide rail 16′ it will be properly spaced on the conveying means or chain 11 by the end of said rail cooperating with the guide member 15 so as to give it the proper location thereon. To prevent any slipping or movement of the can body on the conveying member or chain 11, I have provided upstanding arms 14 and the same may be so adjusted in relation to its operation with the star wheel 22 so that one of the upstanding arms will ride behind each of the can bodies as it passes onto the said conveyor. This would make the spacing distance between the successive cans the same as the spacing distance between the successive upstanding arms 14. The foregoing description of operation has been where the can has moved into the star wheel recess 69 without any interruption or improper engagement by the fingers or projections 70 of said star wheel.

The frame 28 pivoted on the shaft 26 is capable of being thrown out of line with the center line of the rotatable table 40 by the adjustment of the set screw 54 against the boss 56 on said table so that the center line of the outer sprocket wheel 43 will be thrown off the vertical axis of rotation of the said table and can be still further moved so as to create a greater angle with the center line of said table by pressure placed upon the inner face of the disc 46, which will depress the pin 59 bearing against the spring 62 in the chamber 58 of the portion 57. A line therefore drawn between the axis of rotation of the sprocket 41 and the movable table 40 will be directly at right angles to the line

of movement of the conveyor 11 while a line drawn between the center of the sprocket 41 and the axis of rotation of the outer sprocket 43 will be greater than 90° from a line of travel of the conveyor 11. When the can is set onto the movable table 40 at the point hereinbefore explained and it passes around the guide rail 71, should it be improperly engaged by the finger or projection 70 on the star wheel 22, that is, should the said projection strike the can along about a point which I have designated as F on said can, were there nothing yielding, the finger would press the can against the disc 46 and probably distort the same. By reference to Fig. 3 and the gear connection thereon, it will be apparent that the disc 46 travels at a considerably greater rate of speed than the rotatable table 40 so that if the end of the finger or projection 70 strikes the point F on the can body, the outer end of the frame 28 will be depressed slightly through the action of the boss 60 bearing against the pin 59 and depressing the spring 62 while at the same time the swifter rotation of the disc 46 will spin the can body forward from its engagement with the end of the finger or projection 70 and into the immediately preceding recess 69. From this point where the can enters the recess 69 it will pass onto the conveyor 11 as before explained.

It will thus be seen that with the exception of the slight rotation or spinning to which the can is subjected when it does not properly engage the finger or projection 70 in the star wheel 22, there will be no retarding or stopping and starting, of the filled can which would spill the contents thereof, neither will there be any necessity for stopping the can capping or other machine for the removal of distorted can bodies.

While I have shown and described in detail a preferred embodiment of my invention, it should be manifest that the invention is not limited to the details which have been selected for illustrative purposes merely, but is capable of embodiment in machines differing materially in their construction and mode of operation from that shown and described without departing from the essence of the invention as defined in the following claims.

I claim:

1. A can feeding mechanism comprising means having projections for properly spacing the can bodies, and continuously rotated means adapted to rotate the can body should the same be improperly engaged by any of said projections, so as to spin the same and break the engagement thereof and thus prevent distortion of said body.

2. A can feeding mechanism comprising means having projections for properly spacing the can bodies, and continuously rotated and yieldable means adapted to rotate the can body should the same be improperly engaged by any of said projections, so as to spin the same and break the engagement thereof and thus prevent distortion of said body.

3. A can feeding mechanism comprising a rotatable table carrying can bodies, means having projections for properly spacing the can bodies, and means rotating at a greater rate of speed than said table and adapted to rotate the can body should the same be improperly engaged by any of said projections, so as to break the engagement thereof and prevent distortion of said body.

4. A can feeding mechanism comprising a rotatable table carrying can bodies, means having projections for properly spacing the can bodies, yielding means rotating at a greater rate of speed than said table and adapted to rotate the can body should the same be improperly engaged by any of said projections, so as to break the engagement thereof and prevent distortion of said body.

5. A can feeding mechanism comprising a rotatable table carrying can bodies, means having projections for properly spacing said bodies, and means continuously rotating on a yielding axis normally eccentric to the axis of rotation of said table adapted to rotate the can body should the same be improperly engaged by any of said projections so as to spin the same and break the engagement thereof and thus prevent distortion of said body.

6. A can feeding mechanism comprising a rotatable table carrying can bodies, means having projections for properly spacing said bodies, and means rotating on a different axis than the axis of rotation of said table and at a greater rate of speed than said table and adapted to rotate the can body should the same be improperly engaged by any of said projections, so as to spin said body and break the engagement thereof and thus prevent distortion of said body.

7. A can feeding mechanism comprising a rotatable table carrying can bodies, means having projections for properly spacing said bodies, and means rotating on a yieldable axis and at a greater rate of speed than said table and adapted to rotate the can body should the same be improperly engaged by any of said projections so as to break the engagement thereof and prevent distortion of said body.

8. A can feeding mechanism comprising a rotatable table carrying can bodies, means having projections for properly spacing said bodies, and means rotating on a yielding axis normally eccentric to the axis of rotation of said table and at a greater rate of speed than said table and adapted to rotate the can body should the same be improperly engaged by any of said projections so as to

break the engagement thereof and prevent distortion of said body.

9. A can feeding mechanism comprising a rotatable table carrying can bodies, means having projections for properly spacing said bodies, means continuously rotating on an axis normally eccentric to the axis of rotation of said table, said means carried by a frame pivoted at a point without the perimeters of said means and said table, said means being adapted to rotate the can body should the same be improperly engaged by any of said projections so as to break the engagement thereof and prevent distortion of said body.

10. A can feeding mechanism comprising a rotatable table carrying can bodies, means having projections for properly spacing said bodies, and continuously rotating means carried by a frame pivoted at a point without the perimeters of said means and said table and adapted to rotate the can body should the same be improperly engaged by any of said projections so as to break the engagement thereof and prevent distortion of said body.

11. A can feeding mechanism comprising a rotatable table carrying can bodies, means having projections for properly spacing said bodies, means rotating on an axis eccentric to the axis of rotation of said table, said rotating means carried by an oscillatory frame pivoted at a point without the perimeter of said table, said means being adapted to rotate the can body should the same be improperly engaged by any of said projections so as to break the engagement thereof and prevent distortion of said body.

12. In a can feeding mechanism, a supply table, a spacing member having projections for spacing the cans, and means rotating at a greater rate of speed than the speed of said table for spinning said can forward to prevent distortion should the same improperly engage any of said projections.

13. In a can feeding mechanism, a supply table, a star wheel for spacing the cans, and a rotating disc traveling at a greater rate of speed than the speed of said supply table, so that when a projection on said star wheel improperly engages said can, said disc will spin the can forward and into the forward recess on said star wheel.

14. In a can feeding mechanism, a supply table, can spacing member provided with spaced projections having recesses therebetween, and a chain operated disc having a rate of speed greater than the rate of speed of said table, so that when a projection on said spacing member improperly engages the can body, said disc will spin the same forward into the forward recess on said spacing member.

15. In a can feeding mechanism, a circular rotating supply table, a spacing member provided with spaced projections having recesses therebetween for spacing the cans, a chain operated disc carried by an arm pivotally mounted beyond the perimeter of said table, said disc having a greater rate of speed than the rate of speed of said table so that when a projection on said spacing member improperly engages said can said disc will spin the same forward and into the forward recess on said spacing member.

16. In a can feeding mechanism, a rotating supply table, a spacing member for spacing the cans, a conveyor onto which said cans are passed by said spacing member, and a disc continuously rotated by chain driving mechanism mounted in an arm pivoted at a point beyond the perimeter of said supply table, said disc being yieldable to and from the spacing member so as to prevent injury to a can improperly engaged by said spacing member.

17. A can feeding mechanism comprising a rotatable table, rotatable means having a plurality of projections for properly spacing the can bodies, and continuously rotating yieldable means for preventing injury to the can body by said projections.

18. A can feeding mechanism comprising a rotatable table, rotatable means having a plurality of projections for properly spacing the can bodies, and rotatable means yieldable in a direction approximately radially with respect to said first means for preventing injury to the can bodies by said projections.

19. A can feeding mechanism comprising a rotatable table, rotatable means having a plurality of projections for properly spacing the can bodies, and yieldable rotatable means carried on an arm which is pivoted beyond the perimeter of said table for preventing injury to the can bodies by said projections.

20. A can feeding mechanism, a supply means, rotatable means associated with said supply means and having projections for properly spacing the can bodies delivered thereto by said supply means and rotatable means yieldable in a direction approximately radially with respect to said second means for preventing injury to the can bodies by said projections.

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