July 16, 1929. B. E. TAYLOR 1,721,264

MECHANISM FOR FEEDING CAN CAPS TO SWAGING DEVICES

Original Filed Jan. 3, 1927 3 Sheets-Sheet 1

Fig. 1.

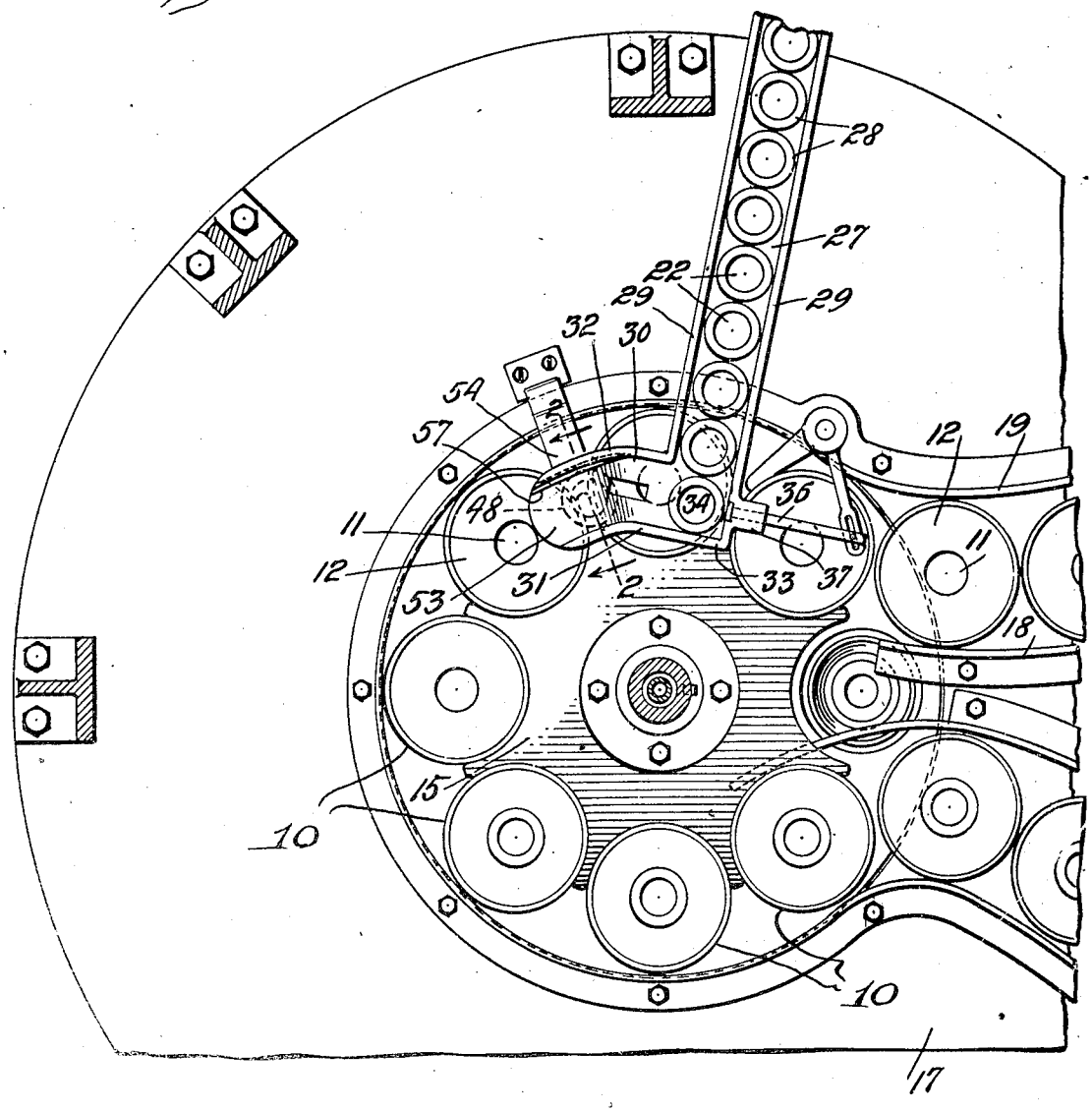
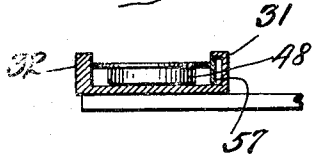


Fig. 2.



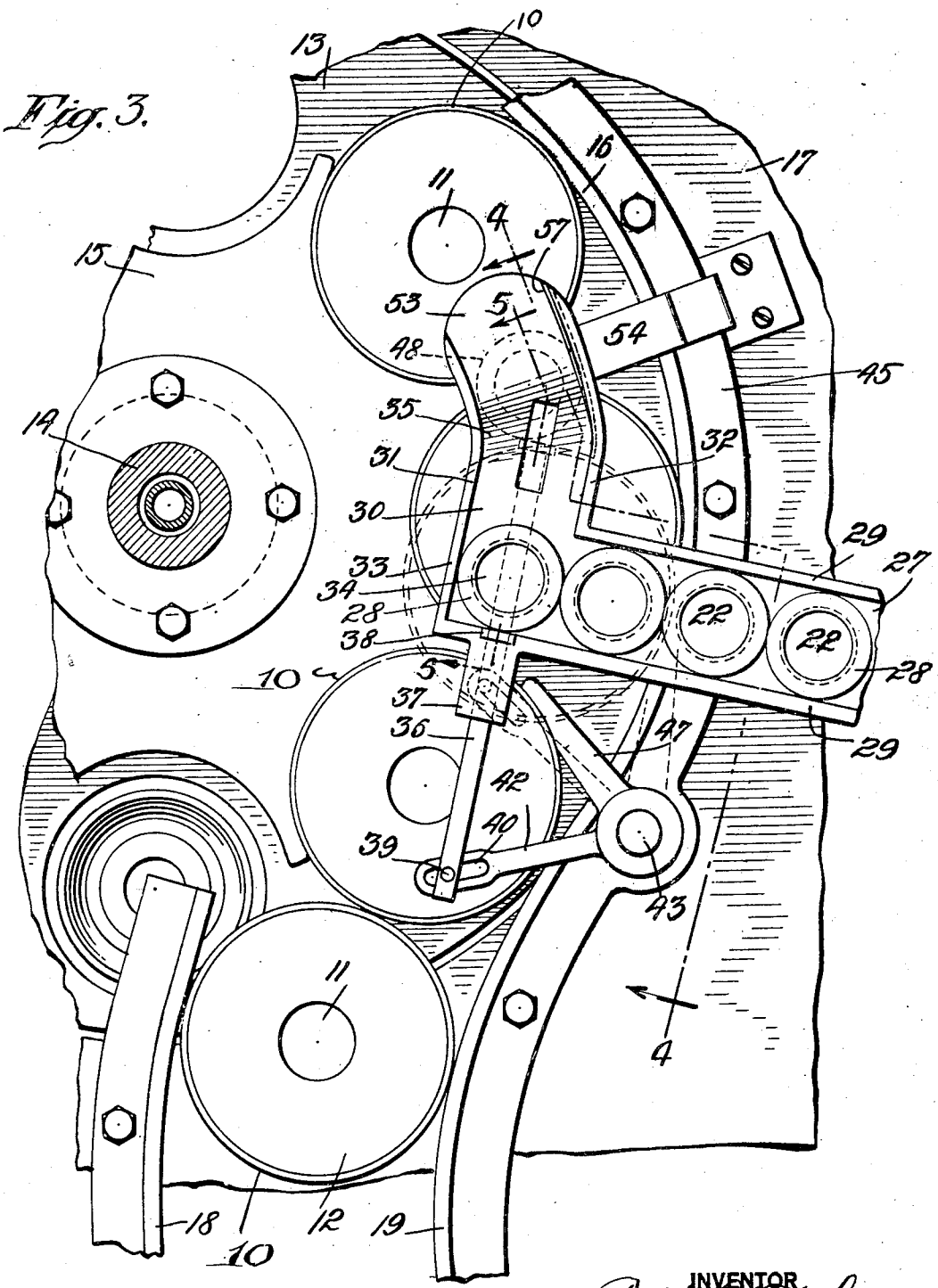
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Fig. 3.



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Fig. 4.

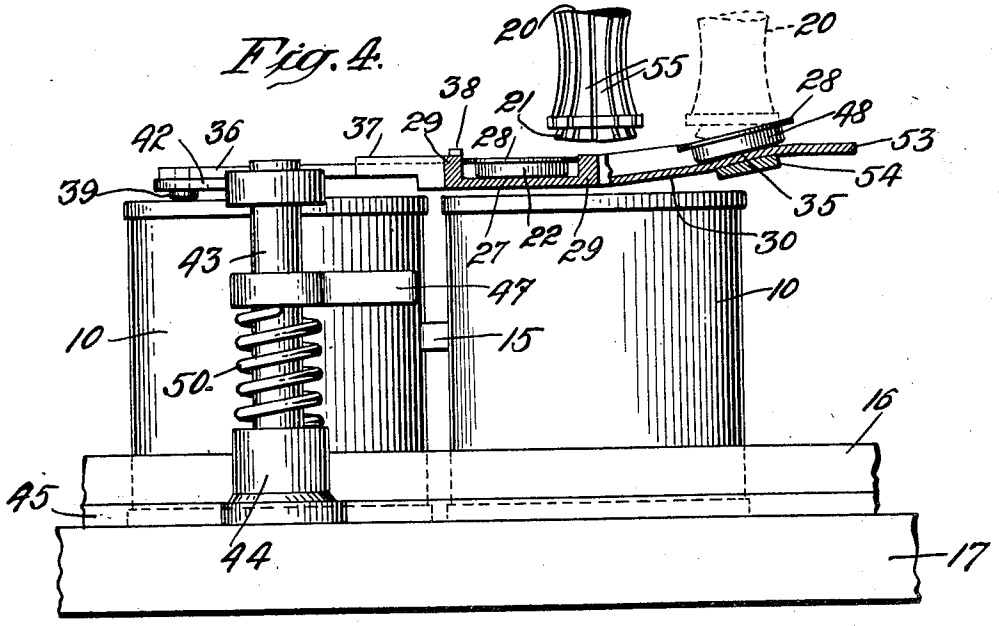
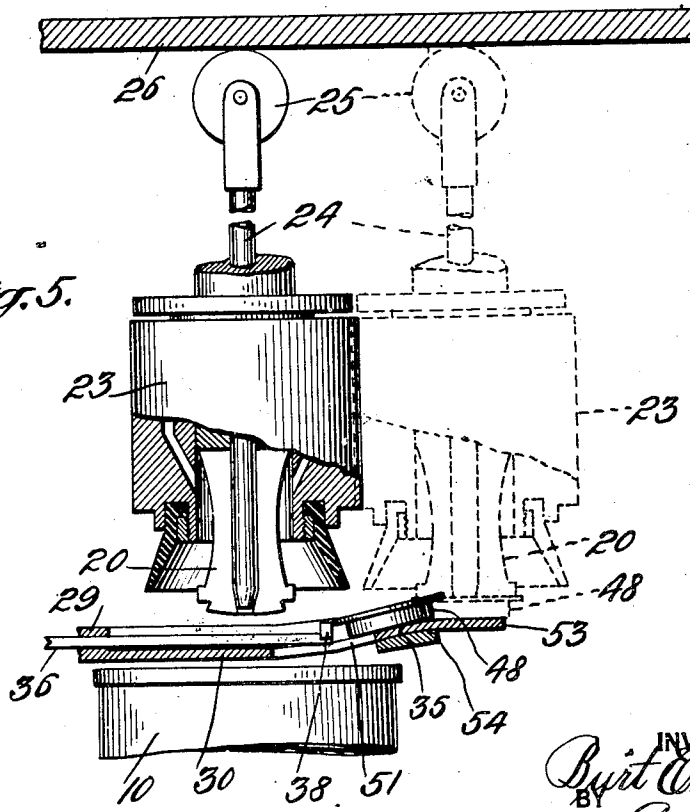


Fig. 5.



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UNITED STATES PATENT OFFICE.

BURT E. TAYLOR, OF MOUNT VERNON, NEW YORK, ASSIGNOR TO THE BORDEN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

MECHANISM FOR FEEDING CAN CAPS TO SWAGING DEVICES.

Original application filed January 3, 1927, Serial No. 158,455. Divided and this application filed January 9, 1928. Serial No. 245,322.

The invention relates to an improvement in mechanism for feeding caps to swaging devices such as are employed for placing the cap in the central hole in the top end of a tin can and sealing it therein, as shown and described in my Patent No. 1,693,262, issued November 27, 1928, on application Serial No. 158,455, filed January 3, 1927, of which the present application is a division.

The machine disclosed in my said patent comprises, among other things, means for advancing a series of cans in upright position through the machine, and a series of cap swaging devices located respectively over the central holes in the top ends of the cans and arranged to travel synchronously with the cans and at the proper time in the operation of the machine to insert a cap in the central hole of each can and swage it therein to hermetically seal the can. Associated with the can advancing means and cooperating with the swaging devices is a cap feeding mechanism of which the parts are arranged to hold the cap corresponding to a can in position to be engaged and picked up by the lower end of the swaging device over the can, the lower end of the swaging device being made resilient to enter the dish-shaped cap and hold it suspended over the hole in the can until such time in the operation of the machine the swaging device is actuated to descend and insert the cap in the hole in the can. This cap feeding mechanism is fully described and clearly shown in said patent, but is not claimed therein, and now constitutes the subject-matter of the present application.

In the accompanying drawings illustrating the cap feeding mechanism of the machine of my said patent, Fig. 1 is a top plan of the cap feeding mechanism and showing it associated with the machine; Fig. 2 is a section taken on the line 2—2 of Fig. 1; Fig. 3 is an enlarged view of a portion of the parts shown in Fig. 1; Fig. 4 is a sectional elevation taken on the line 4—4 of Fig. 3, and showing the lower end of a swaging device to illustrate the manner in which a cap is engaged; and Fig. 5 is a view similar to Fig. 4 and taken on the line 5—5 of Fig. 3, and showing the swaging device more in detail and further illustrating the manner in which the cap is engaged and picked up by the lower end of the swaging device.

Only so much of the machine described in said patent is shown in the accompanying drawings as is necessary to understand the application of the cap feeding mechanism thereto. The cylindrical tin cans 10 having a central hole 11 in their top ends 12 are advanced in succession through the machine by means of a rotatable plate 13 supported from a centrally disposed shaft 14. The cans 10 are held in proper position on the plate 13 by means of a star wheel 15 and a guide rail 16 supported on the part 17 of the frame of the machine. The cans enter the machine through the discharge end of a chute formed by the rail 18 and the part 19 of the guide rail 16. The cap swaging device 20 has a lower end 21 which is made resilient so that when it enters the body portion of the dish-shaped cap 22, adapted to fit and seal the central hole 11 of the can, it will hold the cap until it is operated to insert the cap in the hole in the can and swage it therein to seal the can. The swaging device 20 is carried by a head 23 arranged to hold the swaging device 20 over the central hole 11 of a can and to travel synchronously with the can. The rod 24 for spreading the lower yieldable end of the swaging device to swage the cap into the hole in the can carries on its upper end a roll 25 which travels along a cam surface 26. The construction and mode of operation of all these parts and the actuating mechanism therefor are fully described in said patent.

The dish-shaped caps 22 are fed into position to be picked up and held on the lower end 21 of the swaging device 20 by a chute of which only the lower end 27 is shown in the drawings. As is usual in machines of this character the caps may be fed down onto the lower part 27 of the chute under the action of gravity. The dish-shaped caps come down onto the lower end 27 of the chute open side up. The lateral flanges 28 of the caps touch the side walls 29 of the chute and the caps are thereby guided in the chute. Since all the caps are of substantially the same depth, the outer edges of the flanges 28 of the caps abut each other and the caps are thereby prevented from overlapping. The inner

end of the chute is provided with an offset portion 30 which constitutes a platform bounded on its inner side by the wall 31 and on its outer side by the wall 32. The part 33 of the wall 31 serves as a stop to arrest the travel of the caps in the chute and holds the foremost cap 34 in readiness so that it may at the proper time be placed in position to be picked up by the swaging device.

The caps 22 are pushed onto the inclined surface 35 of the platform 30 and are held thereon in position to be picked up by the swaging device. In order that the cap may be in proper alinement with the lower end 21 of the swaging device, the side walls 31 and 32 of the platform curve at the point 35 in conformity with the path of travel of the cans and of the swaging device. The foremost cap 34 in the chute is removed from its place therein and shoved forward onto the inclined surface 35 of the platform 30 by means of a rod 36 slidingly mounted in the bearing 37 projecting laterally from one side of the inner end of the chute. The head 38 of the rod 36 is normally received in a recess in the chute so as not to interfere with the travel of the caps to their position against the wall 33. The rod 36 is adapted to be actuated by the can which is to receive the cap. For this purpose the outer end of the rod 36 is articulated by a pin 39 with the slotted end 40 of an arm 42 projecting inwardly from the upper end of a shaft 43 journaled at its lower end in the boss 44 secured in the base 45 of the rail 16. A second arm 47 secured to the shaft 43 projects inwardly into the path of travel of the cans. When a can encounters the inner end of the arm 47 the shaft 43 is oscillated and the rod 36 is moved forward to shove the cap 34 up onto the inclined surface 35 of the platform 30, the position of the cap 48 on the incline being shown in dotted lines in Figs. 1 and 3 and in full lines in side elevation in Figs. 4 and 5. When the can passes out of engagement with the arm 47, a spring 50 secured at one end in the boss 44 and at the other end in the arm 47, operates to return the arm 47 and the rod 36 to normal position. In order that the lower edge of the head 38 may not scrape against the bottom of the platform 30 a slot 51 is provided in the latter.

While the cap 48 is on the inclined portion 35 of the platform 30 it is in such position that the forward side of the lower end 21 of the swaging device 20 may enter the forward side of the opening in the cap, as clearly indicated in Figs. 4 and 5. As the swaging device continues its travel it carries the cap along with it up onto the horizontal raised end 53 of the platform, thereby causing the lower end 21 of the swaging device to enter fully into the body portion of the cap, as indicated in dotted lines in Fig. 5. This action is aided by yieldingly supporting the part 53 of the platform 30 on the inner end of the bracket 54 supported on the plate 17. The lower end 21 of the swaging device 20 has a slightly greater diameter than the internal diameter of the body portion of the caps, and since the lower end 21 of the swaging device is made resilient, being composed of separate sectors 55 having a slight spring tension, as fully described in said patent, the cap will be held on the lower end of the swaging device until the latter is actuated to insert the cap into the hole of the can under it and swage it therein. To prevent the cap 48 on the incline 35 of the platform 30 from accidental displacement, the side wall 32 of the platform is recessed to receive a leaf spring 57 which presses against the edge of the rim or flange 28 of the cap. As the cap is moved out of the open discharge end of the platform 30 it forces the spring 57 into the recess in the wall 32.

What I claim as new and desire to secure by Letters Patent is:—

1. In a machine of the character described including means for advancing a can having a hole in its top end, and a cap swaging device located above the hole in the can and arranged to travel with the can, said swaging device having a resilient cap holding lower end, mechanism for feeding a cap into position to be engaged and picked up by the swaging device comprising a platform on which the cap rests, said platform having a forward extension provided with an inclined surface and a horizontal surface beyond the inclined surface, and means operated by the advance of the can to push the cap onto the inclined surface in position to be engaged by the lower end of the swaging device, the advance of the swaging device acting to push the cap onto the horizontal section of the platform which serves to properly position the cap on the swaging device.

2. In a machine of the character described including means for advancing a can having a hole in its top end, and a cap swaging device located over the hole in the can and arranged to travel with the can, said swaging device having a resilient cap holding lower end, mechanism for feeding a cap into position to be engaged by the lower end of the swaging device comprising an inclined platform for holding the cap in position to be engaged by the lower end of the swaging device, said platform having beyond the inclined part thereof a horizontal part onto which the swaging device pushes the cap so as to properly position the cap on the swaging device, and means for placing the cap on the inclined platform.

3. In a machine of the character described

including means for advancing a can having a central hole in its top end, and a swaging device located above the hole in the can and arranged to travel synchronously with the can, the lower end of the swaging device being adapted to pick up and hold a dish-shaped cap, mechanism for feeding a dish-shaped cap into position to be engaged and picked up by the swaging device comprising a platform having an inclined part and beyond the inclined part a horizontal part, and means operated by the can in which the cap is to be placed for pushing a cap onto the inclined portion of the platform in position to be engaged and picked up by the swaging device.

4. In a machine of the character described including means for advancing a can having a hole in its top end and a swaging device located over the hole of the can and arranged to travel synchronously with the can, the lower end of the swaging device being adapted to pick up and hold a dish-shaped cap, mechanism for feeding a cap into position to be engaged by the lower end of the swaging device comprising a platform having an inclined portion located under the path of travel of the swaging device, and means operated by the can in which the cap is to be placed for pushing a cap onto the inclined part of the platform in position to be engaged and picked up by the lower end of the swaging device.

5. In a machine of the character described including means for advancing a can having a central hole in its top end and a swaging device located over the hole in the can and arranged to travel synchronously with the can, the lower end of the swaging device being adapted to engage and hold a dish-shaped cap, mechanism for feeding a dish-shaped cap into position to be engaged by the lower end of the swaging device comprising a chute having a part arranged in conformity with the path of travel of the central axis of the cans, said part having an inclined surface and beyond the inclined surface a horizontal surface, and means for placing a cap on the inclined surface in position to be engaged by the lower end of the swaging device, the horizontal surface serving to properly position the cap on the lower end of the swaging device.

6. In a machine of the character described including means for advancing in upright position a can having a central hole in its top end, and a vertically arranged swaging device located above the hole in the can and adapted to travel synchronously with the can, the lower end of the swaging device being resilient to engage and hold a dish-shaped cap, mechanism for feeding a dish-shaped cap into position to be engaged and picked up by the lower end of the swaging device comprising a platform having an inclined surface located under the path of travel of the swaging device, said platform having a horizontal part beyond the inclined surface thereof, a plunger for pushing a cap onto the inclined surface, and means connected with the plunger and arranged to be actuated by the can in which the cap is to be placed for operating the plunger.

BURT E. TAYLOR.