March 6, 1928. 1,661,912

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MACHINE FOR MANUFACTURING BOTTLE CAPS, SO CALLED CROWN CAPS

Filed Dec. 22, 1926 2 Sheets-Sheet 1

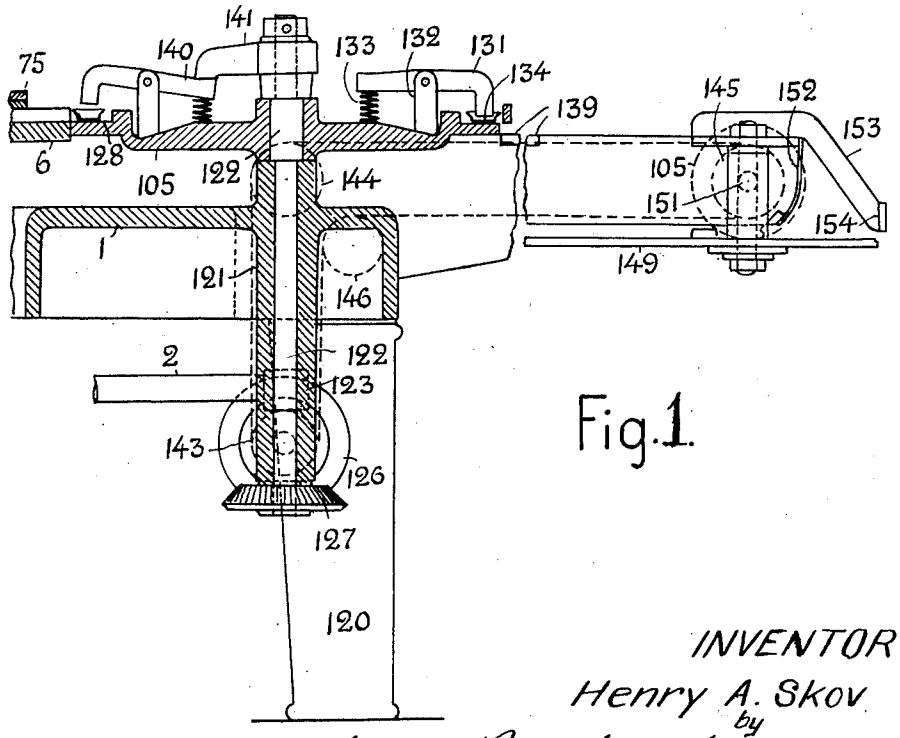


Fig. 1.

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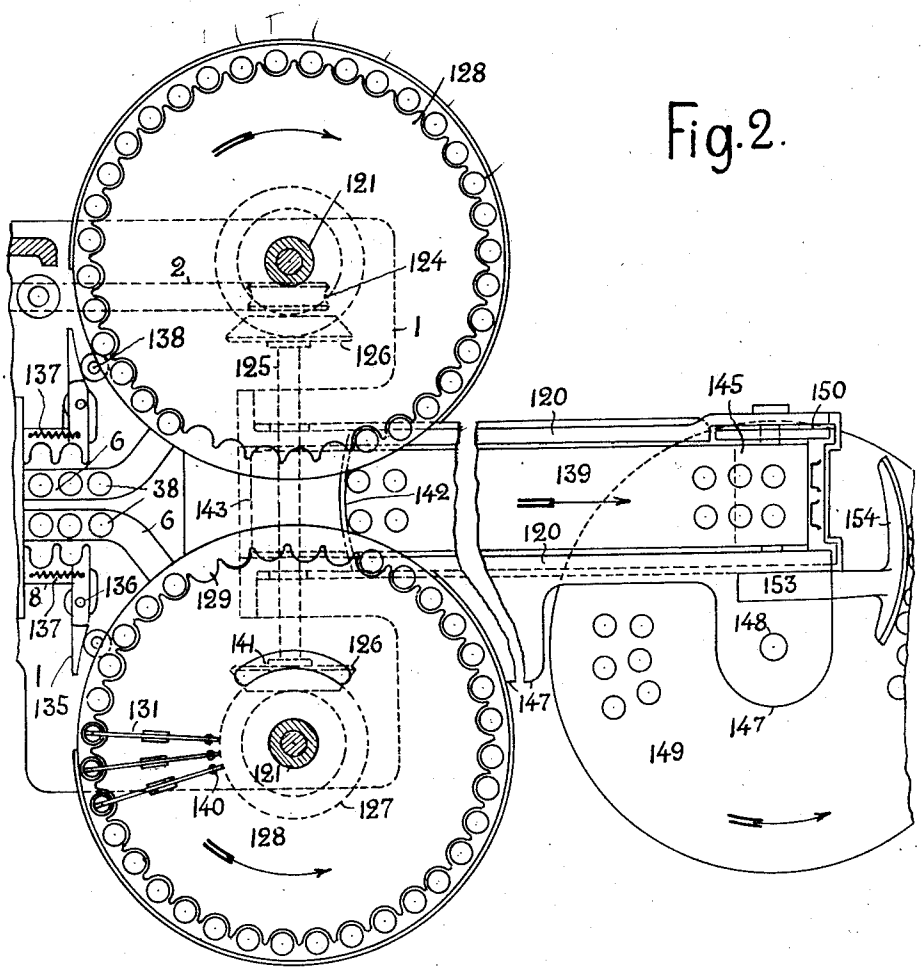
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Fig. 2.



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Patented Mar. 6, 1928. 1,661,912

UNITED STATES PATENT OFFICE.

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MACHINE FOR MANUFACTURING BOTTLE CAPS, SO CALLED CROWN CAPS.

Application filed December 22, 1926, Serial No. 156,473, and in Denmark January 12, 1926.

The present invention relates to improvements in machines for manufacturing bottle-caps, so called crown caps, especially machines of the kind described in my previous U. S. A. Patent application No. 67,093 which machines are destined to provide metallic caps pressed in form and supplied to the machine with a paper lining, or instead thereof with a layer of adhesive matter, and with a cork disc.

According to said previous patent application the machine is of such a construction that it will continuously deal with two or more rows of caps which are supplied to the machine and intermittently advanced through parallel guide ways arranged longitudinally in the machine, which latter is provided with a paper disc fitting device or an adhesive applying device and a cork disc fitting device, which devices are disposed transversely across the advancing rows of the caps and work synchronously with the feeding device to provide the caps with a paper lining or adhesion and a cork disc. The caps when leaving the machine are either delivered to an endless belt conveyor or the like or to a revolving pressing table, which serves to press the cork- and paper-disc tightly down into the caps, and from which table the finished caps are delivered to a sorting table.

The present invention has especially for its object improvements in said final pressing- and sorting-means, which means are arranged at the delivery end of the machine and comprise means for conveying the caps from the guideways of the machine to the revolving pressing table and from this to a turn device which turns the caps and delivers them to a rotating controlling or sorting table.

The invention is illustrated on the accompanying drawing on which

Figure 1 shows a side view partially in section of the improved device and

Figure 2 said device seen from above.

On the drawing 1 indicates the end of the bottle cap manufacturing machine which is of known construction, especially of the construction described in my previous U. S. A. Patent application No. 67,093 and which of course does not need to be described.

To the end or frame 1 of the machine is fixed a pair of vertical supports 120 of which only the foremost is seen in Figure 1. A pair of hollow pillars or bushes 121 extend upwards and downwards from the table-shaped part of the machine frame 1 which pillars or bushes form vertical bearings for a pair of revolubly mounted shafts 122, which by means of pinions 126, 127 are driven from a transverse shaft 125, which in turn is driven from the main shaft 2 of the machine by means of screw and screw-wheel 124. The shafts 122 carry pressing tables 128 of which only the foremost is seen in Figure 1 which shows the table in section.

The edge of the tables 128 is provided with recesses 129, Figure 2, which can receive the caps 38 discharged from the guide ways 6 of the machine. Below the edge of the tables 128 may if desired suitable gas-burners be arranged, which heat the tables and the caps. Such heating is, however, only necessary when the caps are provided with adhesive instead of paper discs.

During their stay on the tables 128 the cork discs are pressed tightly down into the caps. For this purpose a number of pressing arms 131 is in a known manner disposed in a circular row along the upper side of the tables. Only three of said pressing arms 131 are shown in Figure 2. The pressing arms are pivotally mounted in uprights 132 and are actuated by suitable springs 133 which act on the inner ends of the pressing arms and normally force the downwardly extended outer ends 134 down against the cork discs as shown in Figure 1.

The caps 38 are inserted in the pressing tables 128 by two-armed levers 135 pivotally mounted on pivots 136 fixed to reciprocating cap advancing bars 8 of the machine. The levers 135 are drawn towards the machine frame by means of springs 137, the pull of which springs during the introduction of the caps to the tables is overcome thereby that the outward projecting ends of the levers 135 during the forward stroke of the bars 8 strike stationary rollers 138. To allow the introduction of the caps to the tables and their departure from the tables to the belt conveyer 139 the pressing arms 131 must at said places be turned up from the caps for which purpose the upper end of the pillars 121 at said places is provided with a downwardly projecting arm 141 (see the left hand side of Figure 1) which in a

known manner forces down the inner end 140 of the pressing arms 131 when they arrive to the receiving and the delivering places.

After being carried around with the rotating tables 128 the caps are by means of a stationary guide rail 142 delivered to the belt conveyer 139 (Figure 2) which is arranged between the vertical supports 120. The belt conveyer 139 runs over a suitable number of rollers 143, 144, 145, 146 of which the roller 143 is fixed to the horizontal shaft 125 and drives the belt.

One of the supports 120 carries a special shaped frame 147 the outer end of which is provided with a downwardly extending shaft 148 for a rotary controlling table 149 which is rotated by a friction disc 150 fixed to one end of the shaft 151 carrying the roller 145. A guide rail 152 surrounding a part of the circumference of the roller 145 forms together with said roller 145 a turn device which serves to deliver the caps carried forward by the belt 139 to the controlling table 149 in such a manner that the caps are placed on the table with their backs turned upwardly. The outermost end of the frame 147 is provided with a downwardly projecting arm 153 which at its lower end carries a scraper 154 to push the finished and controlled caps into a suitable storage container not shown on the drawing.

A workman placed in the free space between one of the pressing tables 128, the frame 147 and the controlling table 149 can without difficulty control both the caps carried forward on the conveyer belt and the caps which with their backs turned upwards are carried past him on the controlling table.

The details of the construction described and shown may of course be varied and modified without departing from the principle of the invention.

I claim:

1. In a continually working machine for providing bottle caps with a lining and a cork disc in which machine the caps are intermittently carried through the machine through two or more parallel guide ways with a rotary pressing table provided with means for pressing down the cork discs in the caps and arranged at the delivery end of each of said guide ways; means intermittently operated from said machine for carrying the caps from said guide ways to said pressing table, means for leading the caps from said pressing table to a belt conveyor, a rotary controlling table receiving the caps from said belt conveyor, and a turn device which turns the caps over during their passage from the belt conveyor to the controlling table.

2. A combination as stated in claim 1, in which the means for carrying the caps from the guideways to the pressing table consist of two armed levers turning about pivots fixed to reciprocating cap advancing bars of the machine, the said levers being actuated by springs and by stationary rollers striking the levers during the forward stroke of the cap advancing bars 8.

3. A combination as stated in claim 1, in which the turn device consists of a guide rail coacting with the foremost guide roller of the belt conveyer in such a manner that the caps carried forward by said conveyer are turned over and delivered to the controlling table with their backs turned upwards.

4. A combination as stated in claim 1, in which the controlling table is arranged below the outer end of the belt conveyer which controlling table rotates about a shaft fixed to a frame carried by supports at the end of the machine frame, so that a workman placed in the space between the pressing table, the frame and the controlling table can control the caps during their travel on the belt conveyor and during their travel in reversed position on the controlling table, so that both the inner and outer parts of the caps are controlled.

5. A combination as stated in claim 1, comprising a stationary scraper provided above the rotatory controlling table and pushing the finished and controlled caps down in a suitable storage container.

In testimony whereof I affix my signature.

HENRY ARNOLD SKOV.