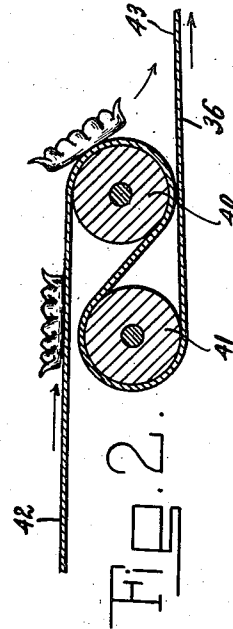
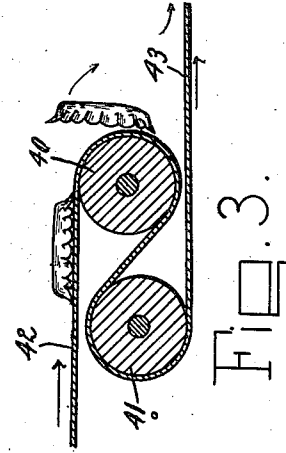
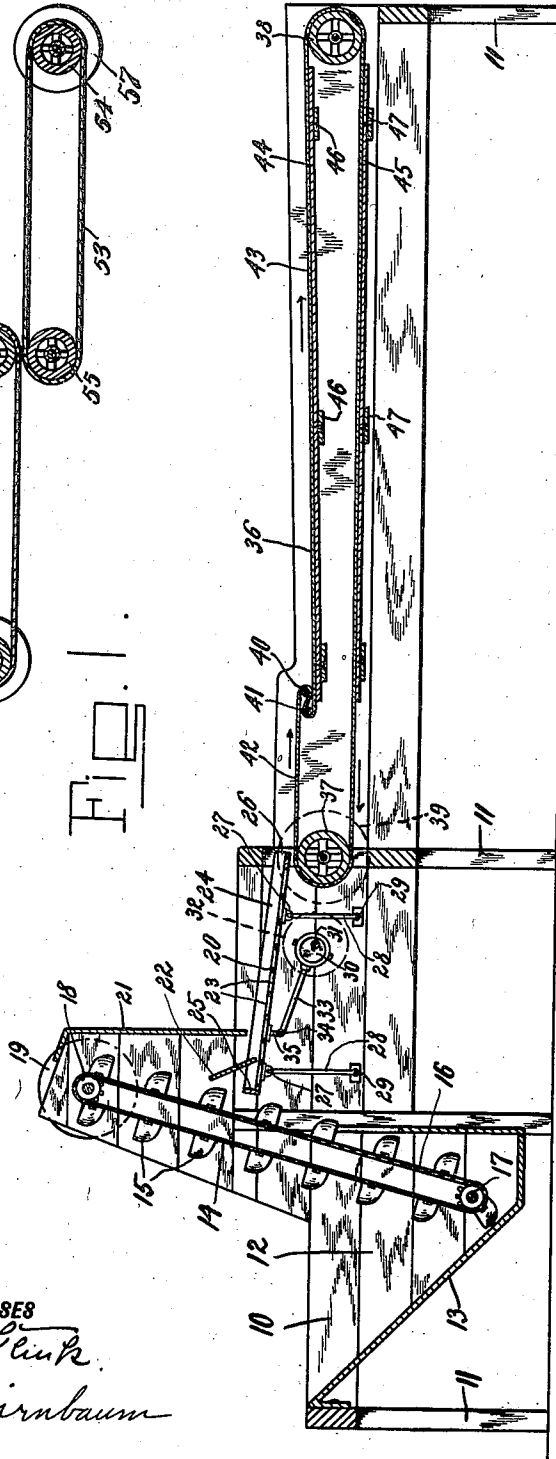
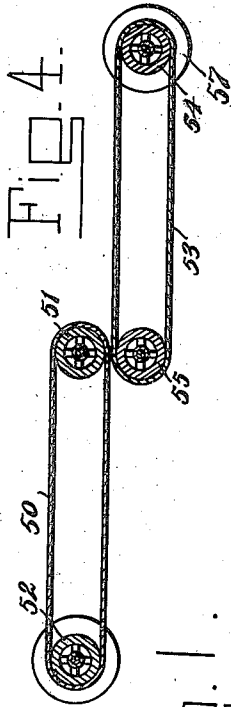


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CROWN CORK SORTING MACHINE.
APPLICATION FILED JUNE 9, 1913.

1,148,005.

Patented July 27, 1915.



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CROWN-CORK-SORTING MACHINE.

1,148,005.

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To all whom it may concern:

Be it known that I, ALEXANDER BOGDANFFY, a subject of the King of Hungary, and resident of the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Crown-Cork-Sorting Machines, of which the following is a specification.

The present invention relates to sorting machines for bottle closures of the crown cork variety.

Closures of this type usually comprise three parts, that is to say a metallic cap having a corrugated flange to be locked to the exterior of the bottle neck, a sealing disk or packing of cork or the like, and an impervious cementing material interposed between the metallic cap and the sealing disk. The cementing material and the sealing disk are disposed within the head of the cap. The center of mass or gravity is located within the head of the cap, and more particularly very near its inner face, such location being due to the formation of the cap and also to the fact that the cementing medium and the sealing disk are arranged in the head. After the parts of the crown have been assembled and properly united, the finished product must be carefully examined in order to remove from the mass crowns the sealing disks or caps of which are defective, or the sealing disks of which have not been properly united with the caps. In examining the finished product, heretofore, the attendant had to pick up the crowns one after the other, particularly those which were resting on their flange portions on a support or table; such crowns had to be obviously inverted in order to expose to view the sealing disks. Sometimes the finished product was thrown onto a belt conveyer, the attendant being able there to examine all caps which were resting on their heads, or in other words traveled in their inverted positions; those, however, which were in their upright positions, that is to say those passing on their flange portions, had to be inverted for purposes of examination.

One of the objects of the present invention is to provide a sorting device which will automatically invert those caps which are traveling on their flange portions, thereby enabling the attendant, who is standing at a point beyond the inverting means, to closely

examine and sort the caps without being first compelled to watch and invert the upright ones.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a vertical central section taken through an apparatus constructed in accordance with the present invention; Fig. 2 is a detail of construction, showing the inverting means and the travel of the inverted caps; Fig. 3 is a similar detail showing the travel of the upright caps; and Fig. 4 is a detail of a portion of a modified belt conveyer.

In the drawings, the numeral 10 indicates a frame, supported by legs or standards 11. From this frame is suspended a receptacle 12, having slanting sides 13. Into this receptacle are dumped indiscriminately the crown corks to be sorted. An elevator mechanism 14 is mounted upon the frame, said mechanism in the case illustrated in the drawings being of the bucket type, and consists mainly of a plurality of buckets or cups 15, which are attached to an endless chain 16, said chain running over wheels 17 and 18, the wheel 17 being arranged near the bottom of the receptacle 12, while the wheel 18 is disposed a substantial distance above the said receptacle. The wheels 17 and 18 are journaled in the frame, rotation being imparted to the elevator mechanism by the intermediary of a pulley 19, which is fixedly attached to the wheel 18. The buckets, passing through the receptacle, scoop out crown corks therefrom and, as they arrive at their uppermost positions and start their downward movement, they empty their contents onto a separating screen 20, the spilling of the crowns being prevented by a hood 21

arranged in rear of said elevator. An inclined transverse board 22, held above the screen 20, guides the crown corks onto the screen, and at the same time prevents their falling into the receptacle or upon the ground.

The screen comprises a sheet of rigid material, having perforations 23, which are smaller than the heads of the crown corks, the purpose of the screen being to sift out the broken crowns or foreign matter mixed therewith. The screen is provided with side flanges 24 and a rear flange 25, its front end 26 being open to permit a passing of the crowns toward the sorting means. The screen is inclined toward its open front end and provided with downwardly extending lugs 27, to which are pivotally secured flexible, springy bars 28, preferably made of wood, the latter being fulcrumed at 29 to the sides of the frame of the apparatus. A shaking or reciprocating motion is imparted to the screen by means of an eccentric 30, which is keyed to a shaft 31, the latter being journaled in the sides of the frame 10. The shaft 31 is rotated by the intermediary of a pulley 32. To the strap of the eccentric is attached a rod 33, which is pivoted at 34 to a downwardly extending projection 35 upon the screen.

The screen delivers the crown corks to a conveyer 36 of the belt type. The belt of this conveyer runs over two main rollers 37 and 38, the roller 37 being mounted in the sides of the frame 10 beneath the open front end of the screen 20, and the roller 38 at or near the rear end of the frame. To the shaft of the roller 38 is keyed a pulley 39, to which rotation is imparted by the intermediary of a belt, actuated from any suitable source of power. The acting portion of the belt, that is to say that part thereof which transports the crowns from the screen toward the roller 38, runs over two small rollers 40 and 41, which are journaled in the sides of the frame of the apparatus and are disposed in rear of the roller 37. The roller 40 is arranged in rear of the roller 41, the belt running from the roller 37 over a portion of the roller 40, then backward toward the roller 37 and over a portion of the roller 41, and thence toward and over the roller 38. By inserting the small rollers 40 and 41 between the rollers 37 and 38, the acting portion of the belt is divided into two sections, one of the same, denoted by the numeral 42, extending from the roller 37 to the roller 40, and being arranged in a substantially horizontal plane below the open end of the screen, the other section, denoted by the numeral 43, being located in a plane below the plane in which the section 42 moves. The section 43 of the belt and the returning portion of the same are supported by longitudinal slats 44 and 45, respectively, said slats being attached to

transverse strips 46 and 47, respectively, the latter being fastened to the sides of the frame. It is to be observed that the passage of the crowns from the section 42 of the belt onto the section 43 thereof is unobstructed, that is to say nothing stands in the way or path of the crowns to either retard their speed or to deflect or change their course. The difference of the level between the sections 42 and 43 of the belt is, for a purpose hereinafter to be described, substantially greater than the diameter of the flange portion of an individual crown cork.

The operation of the machine is as follows: The crowns to be sorted are dumped into the receptacle 12, from which they are fed intermittently by the elevator mechanism 14 onto the screen 20, which separates therefrom the broken crowns or other foreign matter mixed therewith. The screen advances the crowns indiscriminately, that is to say some resting on their heads and others on their flange portions, onto the section 42 of the conveyer. Those crowns which are advanced toward the section 43 of the conveyer in their inverted positions, that is to say those crowns which rest during their movement upon the section 42 on their heads, simply slide down onto the section 43 of the belt, and continue their travel on the latter in their inverted positions. The reason for this is that the center of gravity or mass of an individual crown is located near the inner face of the metallic cap, as has been mentioned above, and so near its support as it slides down onto the section 43 of the belt that the gravity or other forces acting thereon cannot unbalance the same. Those crowns, however, which travel upon the section 42 of the belt on their flange portions, are turned over into inverted positions as they drop onto the section 43 of the belt, for the reason that the center of gravity or mass of an individual crown is so far away from its support that a vertical line passing through the center of gravity or mass is located outside of the supporting point or line. The vertical line passes outside of the support because the section 43 is located below the section 42 a distance which is greater than the diameter of the flange portion of a crown.

From the foregoing it will be observed that the crowns travel in their inverted positions while being carried by the section 43 of the belt toward the roller 38. The defective crowns can, therefore, be readily distinguished by the attendant and removed from the conveyer. The perfect crowns drop into a receptacle located beneath the roller 38.

It is obvious that, while herein a conveyer has been described comprising one single belt having a section of its acting portion located in a plane below the plane of another

section thereof, a conveyer consisting of two belts, located below each other, could be made use of just as well without departing from the invention. In the claims hereto
 5 appended, it is intended, therefore, to cover by the term "conveyer" a mechanism comprising either a single belt or a plurality of belts.

A conveyer consisting of two belts is
 10 shown in Fig. 4 of the drawings, comprising a belt 50, running over rollers 51 and 52, and a belt 53, running over rollers 54 and 55. One roller of each set must obviously be rotated. For this purpose, for instance, to the
 15 roller 52 is keyed a pulley 56 and to the roller 54 a pulley 57. To each of said pulleys rotation is imparted by a belt from any suitable source of power. The difference of level between the acting portions of the two
 20 belts is for reasons above described substantially greater than the diameter of the flange portion of an individual crown. With this conveyer is obviously associated a feeding device, for instance of the type above de-
 25 scribed, the whole acting then in the manner disclosed in connection with Figs. 1 to 3, inclusive.

It is obvious that the machine herein described may be used for sorting the metallic
 30 parts alone of the closures. In the claims, therefore, the term "cap" is intended to stand for the complete closures and their metallic parts alone just as well.

What I claim is:—

35 1. A machine for sorting caps, comprising a conveyer of the endless belt type, means for feeding caps to the same, and rollers dividing the acting portion of said belt conveyer into two sections, one of said sections

being disposed beneath said feeding means 40 and the other section being located in a lower plane than said first named section at a distance which is greater than the diameter of the flange portion of a cap, the path of the acting section of said belt conveyer about
 45 said rollers being free from obstructions, whereby those caps which travel on said upper section on their heads slide down onto and continue their travel on said lower section in such positions, while those caps which
 50 travel on said upper section on their flange portions are automatically turned over into inverted positions as they drop onto the lower section of said conveyer.

2. A machine for sorting caps, comprising 55 a conveyer of the endless belt type, rollers for dividing the acting portion of said conveyer into two sections, one of said sections being located in a lower plane than the other one at a distance which is greater than the
 60 diameter of the flange portion of a cap, the path of the acting portion of said belt conveyer about said rollers being free from obstructions, whereby those caps which travel on said upper section on their heads slide
 65 down onto and continue their travel on said lower section in such positions, while those caps which travel on said upper section on their flange portions are automatically
 70 turned over into inverted positions as they drop onto the lower section of said conveyer.

Signed at New York, in the county of New York and State of New York, this 4th day of June, A. D. 1913.

ALEXANDER BOGDANFFY.

Witnesses:

JOHN ALBERTI,
 SIGMUND HERZOG.