No. 847,451. PATENTED MAR. 19, 1907.

J. T. WILMORE.

MEANS FOR TURNING AND ARRANGING CAN CAPS.

APPLICATION FILED AUG. 7, 1905.

2 SHEETS—SHEET 1.

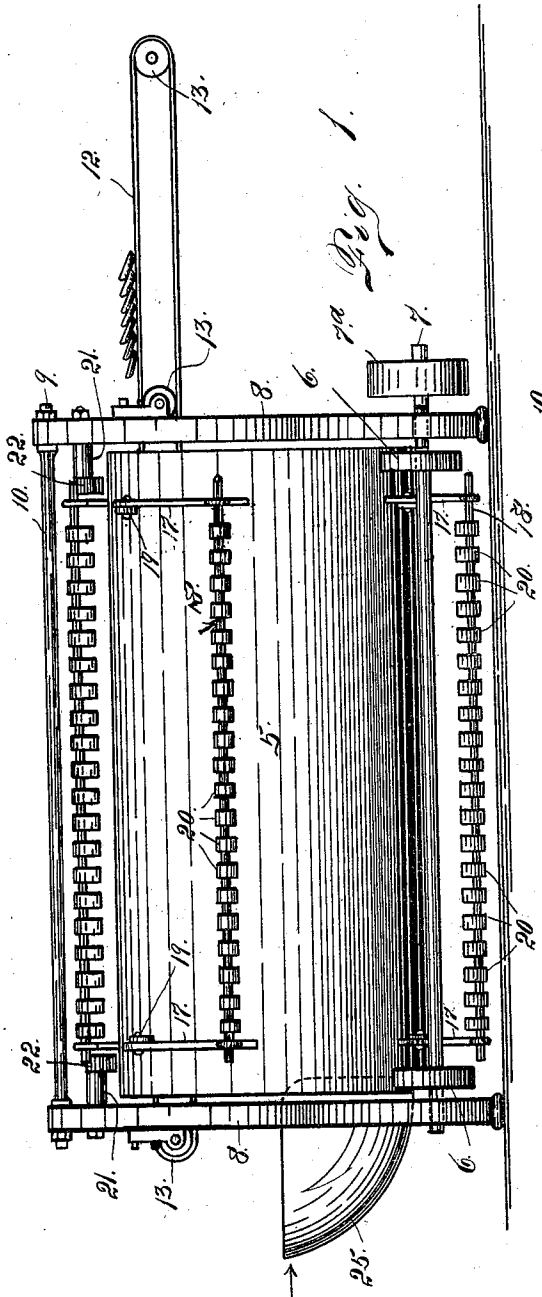

Fig. 1.

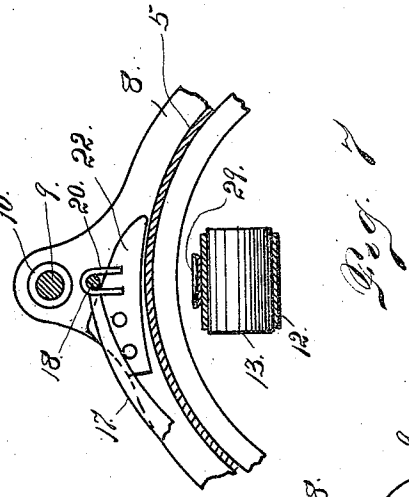

Fig. 3.

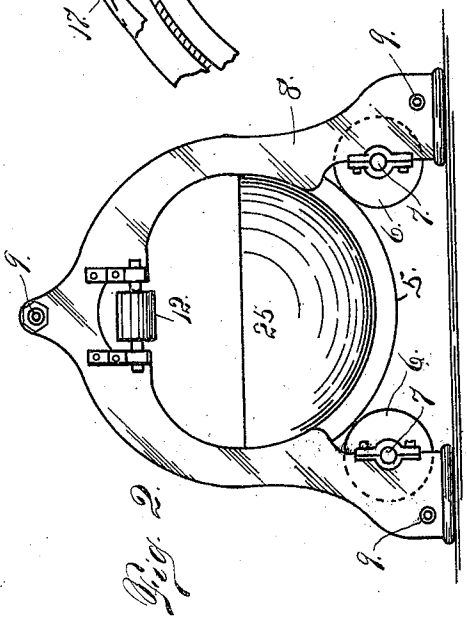

Fig. 2.

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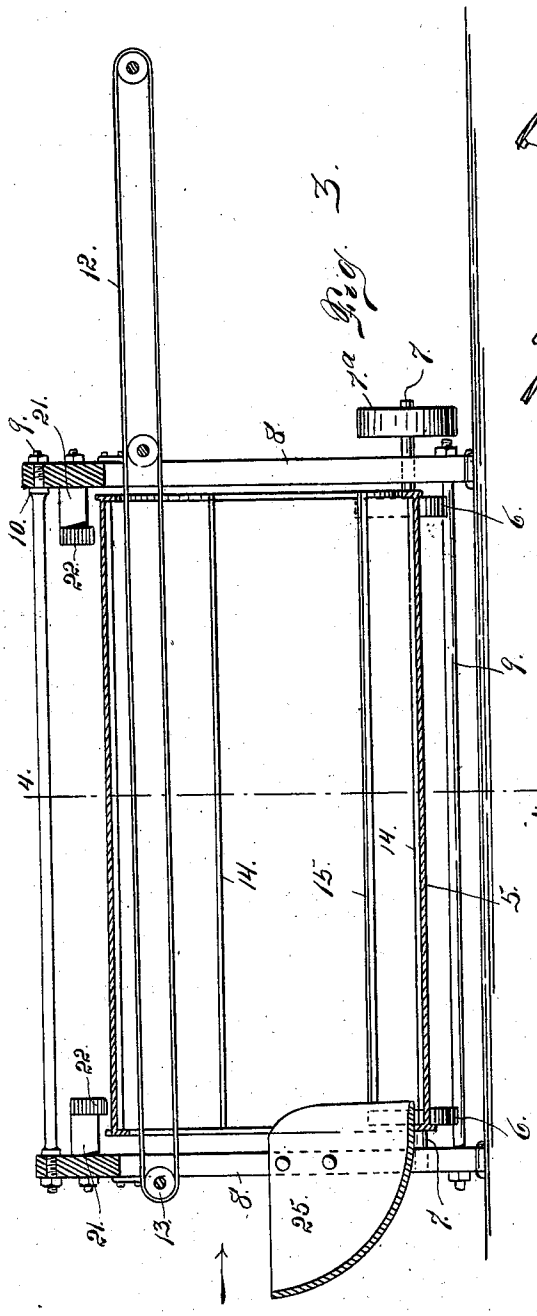

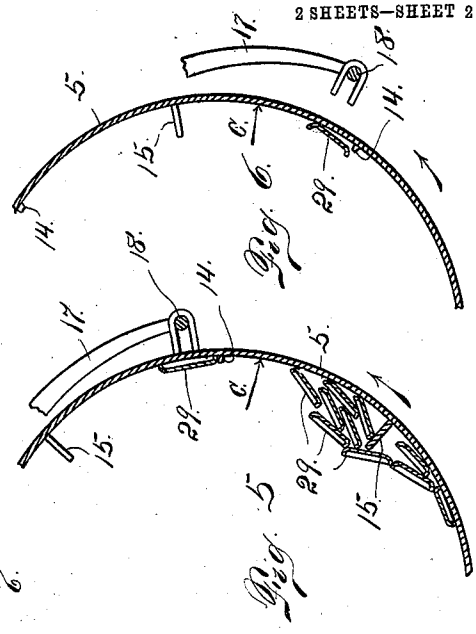

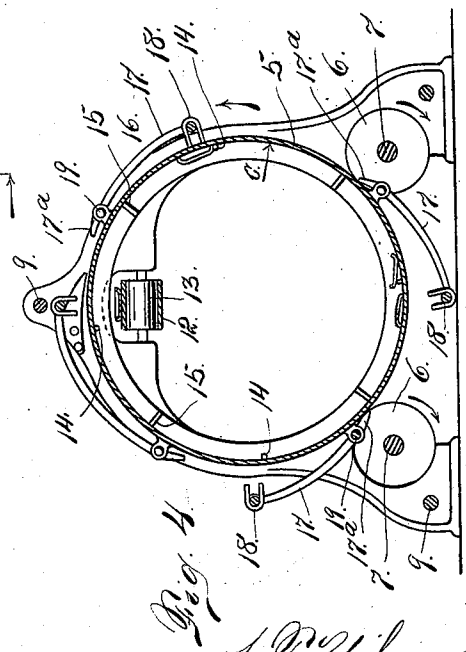

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MEANS FOR TURNING AND ARRANGING CAN-CAPS.

No. 847,451. Specification of Letters Patent. Patented March 19, 1907.

Application filed August 7, 1905. Serial No. 273,009.

To all whom it may concern:

Be it known that I, JOHN T. WILMORE, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Means for Turning and Arranging Can-Caps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in apparatus for arranging can-caps in uniform position for use. When these caps are applied by machinery, it is essential to the success of the operation that they all be arranged in a certain position. The caps in their original position are miscellaneously arranged; and the object of my improved construction is to bring about uniformity of position. In accomplishing this object I use a rotary cylinder containing interiorly-projecting relatively shallow ribs of such height that when the can-caps are in one position they will slide down over the ribs, while when they are in another position they will be caught by the ribs and carried upwardly on one side of the rotating cylinder. Mounted exteriorly upon this cylinder are magnets carried by a swinging frame, and these magnets are so arranged that when the hinged magnet-carrying frames reach certain positions in their circuit or revolution they fall away from the cylinder, while when in certain other positions they engage the exterior shell of the cylinder and act upon the can-caps to hold the latter in position until they can be carried upwardly to a position above a conveyer-belt. The construction is so arranged that as soon as the caps reach this position the magnet-carrying portion of the frame is caused to travel outwardly from the cylinder a sufficient distance to prevent the magnetism from acting on the caps, in which event the latter drop downwardly upon the belt conveyer. The principle of my improved construction consists in the fact that when the convex side or outer surface of the caps is turned toward the inner wall of the cylinder these caps will slip over the short interiorly-projecting ribs and pass downwardly into the lower part of the rotating cylinder before they are carried upwardly far enough on one side of the cylinder to bring them within range of the magnets. When, however, the position of the can-caps is reversed and their inner or flanged surface engages the inner wall of the cylinder on the upwardly-moving side, the interiorly-projecting ribs will support the caps independently of the magnetic influence until the caps are carried upwardly within range of this influence, and when once the magnets act upon the caps this influence continues in force until the caps are carried to a position immediately above the belt conveyer.

It is evident that when the can-caps are in position to slip downwardly past the ribs, as heretofore explained, that in order that these caps may finally turn to the proper position to be acted on by the magnets their original position in the cylinder must be changed. In order to accomplish this, I place interiorly-projecting strips intermediate the shallow ribs, the said strips being considerably wider than the ribs, whereby a number of the can-caps after they slip past the shallow ribs are being continually carried upwardly and released, whereby there is a tendency to tip them over or change their position as they drop downwardly into the cylinder. In this way eventually all the caps are turned to the proper position to be acted on by the exteriorly-located magnets.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In the drawing, Figure 1 is a side elevation of my improved can-cap-manipulating construction. Fig. 2 is an end elevation of the same looking in the direction of the arrow in Fig. 1. Fig. 3 is a vertical longitudinal section taken through the construction, some of the features in the plane of the section being shown in elevation. Fig. 4 is a vertical cross-section of the construction. Figs. 5 and 6 are fragmentary views illustrating the operation of the device. Fig. 7 is an enlarged fragmentary detail view shown partly in section.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a rotary cylinder supported by rotating wheels or disks 6, mounted on shafts 7, journaled in the framework 8, located at each end of the cylinder.

The two end frames are connected at the top and bottom by tie-rods 9, surrounded by spacing-tubes 10, whereby the heads are maintained at a uniform distance apart. The ends of the cylinder are open, and through these ends passes a conveyer-belt 12, supported by pulleys 13. This belt is centrally located near the top of the cylinder.

At suitable intervals on the inner surface of the cylinder relatively shallow ribs 14 are formed, while intermediate or equidistant between each pair of these ribs is located an interiorly-projecting plate 15, the said plate being considerably wider or deeper than the said ribs.

Exteriorly mounted upon the cylinder is a number of frames, which may be designated in their entirety by the numeral 16. Each of these frames consists of two parallel arms 17, connected by a rod 18. The end arms 17 are pivotally connected to lugs 19, formed on the exterior surface of the cylinder. As shown in the drawing, each one of these swinging or pivoted frames is so arranged that the rod 18 when assuming its position nearest to the exterior surface of the cylinder occupies a position slightly above one of the ribs 14 on the upwardly-moving side of the cylinder. When the device is in use, it is assumed that the cylinder is rotated in the direction indicated by arrow *a* in Fig. 4.

Mounted upon each rod 18 is a series of permanent magnets 20, which are arranged to engage the exterior surface of the cylinder as they approach the extremity of a horizontal diameter on the upwardly-moving side of the cylinder. The point where magnets first engage the outer surface of the cylinder on the upwardly-moving side thereof is approximately that indicated by the arrow C in Figs. 4, 5, and 6. The structure should be so regulated that this point shall be located to bring a can-cap 29, carried upwardly by a rib 14, within the influence of the magnetic force before the cap has been carried upwardly far enough to tip over and fall below a horizontal diameter of the cylinder.

It will be understood that the pivoted magnet-carrying frames 16 are free to swing by gravity either toward or away from the cylinder, according to the position of the latter. In order to limit the outward swing of the magnet-carrying rod 18 from the cylinder when the frames 16 are in the position shown at the lower left-hand side of Fig. 4 and also at the bottom of said figure, each arm 17 of the frame is provided with a tailpiece 17^a, which when the rod 18 has moved outwardly a sufficient distance to prevent the magnetic force from acting on the caps within the cylinder engages the cylinder and prevents farther outward movement.

Mounted upon the end frames 8 at their upper extremities are two stationary inwardly-projecting pieces 21, provided with parts 22 extending at right angles to the parts 21 and forming cams adapted to pass beneath the rod 18 of each magnet-carrying frame and raise the rod and its magnets far enough from the outer surface of the cylinder to release the can-caps when they have assumed the position at the upper extremity of a vertical diameter drawn through the cylinder, causing the can-caps to fall. Suitably mounted directly beneath and a short distance from the top of the cylinder and passing through the same is the endless conveyer 12, which receives the can-caps and carries them along in the position or approximately in the position shown in Fig. 1.

After releasing the caps at the top of the cylinder the magnet-carrying frames move downwardly and perform no function on the downwardly-moving side of the cylinder. In fact, the magnet-carrying rods of these frames fall away from the outer surface of the cylinder as they move downwardly and remain in this outer position until they have been carried upwardly a suitable distance on the upwardly-moving side of the cylinder, as heretofore explained.

When the apparatus is in operation, the can-caps are poured into a sort of hopper 25, whereby they are delivered to the lowest part of the inner surface of the cylinder. Then as the latter continues its rotary movement these caps are carried upwardly on the upwardly-moving side of the cylinder, and it is supposed to always happen that a number of these caps will accidentally assume a position with their flanges pointed outermost and occupying a position above a rib 14 as the cylinder moves upwardly. Now the caps that are in this position will be carried upwardly by the rib 14 until they come within the influence of the magnets 20 of a rod 18, and consequently will be held in engagement with the inner surface of the cylinder until they are carried upwardly and dropped upon the conveyer 12. Meanwhile it is also assumed that a number of the caps will occupy a reverse position—that is to say, with their curved or outer surfaces outwardly—in which event they will be carried up a short distance by the short rib 14, but not far enough to come within range of the magnetic force before they will slip downwardly over the rib 14, as shown in Fig. 5. In this event they will be caught by the strip 15 next below and carried upwardly and again thrown down, whereby they are caused to assume a different position, since the tendency is to turn over the caps as they fall from the strips 15. In this way in practice it always happens that a number of the caps with their flanges directed outwardly against the inner surface of the cylinder are caught by each rib 14 as it passes upwardly, and the result is that each one of these ribs carries a number of can-caps upwardly during each

rotation of the cylinder and deposits them upon the endless conveyer 12, all in the same position, or with their flanges directed upwardly, as shown in Fig. 1.

It is assumed in this specification that the can-caps 29 and the wall of the cylinder are made of magnetic material, as ordinary sheet-iron or other magnetic metal. It is also assumed that the wall of the cylinder is relatively thin in order that magnets of great strength may not be required in order to perform the function stated.

Attention is further called to the fact that the ribs 14 and the strips 15 may be termed "rabbles."

It must be understood that I do not limit myself to the use of magnets as an element of the structure, as I am aware that other means may be employed to aid the ribs, rabbles, or projections of the rotary device in the performance of the can-cap-assorting function, though at present I consider the magnets the preferred construction.

Having thus described my invention, what I claim is—

1. The combination of a cylindrical receptacle, a magnet-carrying frame exteriorly mounted on and arranged to swing toward and away from the cylinder by gravity, a rib mounted on the inner surface of the cylinder and arranged with reference to the exteriorly-located magnet-carrying frame whereby when can-caps are in suitable position within the cylinder, they will be carried upwardly by the rib until they are brought within range of the magnetic influence and carried by the latter a predetermined distance.

2. In means for arranging can-caps, the combination of a cylindrical can-cap-containing receptacle, and magnet-carrying frames pivotally mounted thereon at suitable intervals, the receptacle being provided with interior ribs or rabbles arranged with reference to the position of the magnet-carrying frames.

3. In an apparatus of the class described, the combination of a cylindrical can-cap-containing receptacle provided with interior rabbles, and magnet-carrying devices mounted exteriorly on the cylinder and arranged to act on the can-caps carried by the rabbles while traveling a predetermined distance with reference to the position of the rabbles.

4. In means for arranging can-caps, the combination of a cylindrical can-cap-carrying receptacle, provided with interior rabbles, magnet-carrying devices mounted exteriorly on the cylinder and arranged with reference to the interior rabbles and so that the magnetic influence acting through the cylinder will act on the can-caps and cause them to be carried upwardly a predetermined distance, a conveyer entering the cylindrical receptacle, and means for automatically actuating the magnet-carrying devices whereby they are thrown far enough away from the cylinder to prevent their influence from acting on the caps whereby the latter are released at a point directly above the said conveyer.

5. An apparatus of the class described, the combination of a can-cap-containing cylinder mounted to rotate and provided on its inner surface with rabbles of different heights and arranged at suitable intervals, and magnet-carrying frames pivotally mounted exteriorly on the cylinder and arranged to act on the can-caps caught by the narrower rabbles after the latter have carried the caps a predetermined distance on the upwardly-moving side of the cylinder.

6. An apparatus of the class described, the combination of a can-cap-containing receptacle mounted to rotate and provided on its inner surface with rabbles, and magnet-carrying frames pivotally mounted exteriorly on the cylinder and adapted to swing toward and away from the cylinder by gravity as the latter rotates, the said frames being provided with means for limiting the outward movement of the frame, substantially as described.

7. An apparatus of the class described, the combination of a cylindrical receptacle mounted to rotate and provided with interiorly-projecting rabbles, magnet-carrying frames pivotally mounted exteriorly on the cylinder and consisting of parallel end arms connected by a rod upon which a series of magnets is mounted, and cams mounted above the cylinder and adapted to act on the magnet-carrying rod to throw the latter outwardly far enough to prevent the magnetic influence from acting on the contents of the cylinder.

8. The combination of a can-cap containing cylindrical receptacle mounted to rotate and provided at its inner surface with shallow ribs arranged at suitable intervals and also with ribs or strips of greater depth arranged intermediate the shallow ribs, magnet-carrying devices mounted exteriorly on the cylinder and arranged to swing toward and away from the latter according to their position during the rotation of the cylinder, means mounted in the path of the magnet-carrying devices for actuating the latter sufficiently to prevent the magnetic influence from acting on the contents of the cylinder, and a conveyer mounted within the cylinder for the purpose set forth.

9. Means for arranging can-caps and similar devices comprising a can-cap-containing receptacle mounted to rotate and having means adapted to carry certain of the can-caps upwardly on the upwardly-moving side of the receptacle farther than the other caps, before allowing them to fall, means for catching and removing the caps carried farther upwardly, and means for rearranging the caps carried upwardly the less distance after

they have fallen downwardly into the receptacle.

10. In can-cap-assorting apparatus, the combination of a can-cap-containing receptacle mounted to rotate and having rabbles adapted to carry certain of the can-caps upwardly on the upwardly-moving side of the receptacle farther than the other caps before allowing them to fall, and a conveyer traveling through the receptacle and arranged to catch the falling caps that are carried farther upwardly.

11. Can-cap-assorting apparatus consisting of a rotary device having access to the caps, and provided with means for carrying certain of the caps upwardly farther than the other caps, means for catching and removing the caps carried farther upwardly, and means for rearranging the caps carried upwardly the less distance.

12. Can-cap-assorting apparatus comprising a rotary device having access to the caps and provided with means for carrying certain of the caps upwardly farther than the other caps, and means for catching and removing the caps carried upwardly the greater distance.

13. Means for arranging can-caps comprising a can-cap-containing receptacle mounted to rotate and provided with rabbles or interior projections, and means connected with the rotary receptacle for preventing the can-caps from falling downwardly by gravity for a time after the caps have reached the point where unassisted they would be no longer held by the rabbles.

14. Means for arranging can-caps comprising a can-cap-containing receptacle mounted to rotate, a rib or rabble for carrying the caps upwardly on the upwardly-moving side of the apparatus, means for preventing the caps from falling downwardly after they have reached the point on the upwardly-moving side of the receptacle where unassisted they would fall, and means for catching the falling caps and removing them from the receptacle which is sufficiently open for the purpose.

15. Means for arranging can-caps comprising a can-cap-containing receptacle mounted to rotate, an interior projection connected with the rotating receptacle for carrying can-caps upwardly on the upwardly-moving side of the receptacle farther than the other caps, and means for retarding the falling of the caps carried farther upwardly after they have reached a point where unassisted they would fall, and means for removing the caps carried farther upwardly.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN T. WILMORE.

Witnesses:
DENA NELSON,
A. J. O'BRIEN.