M. A. McLEOD.

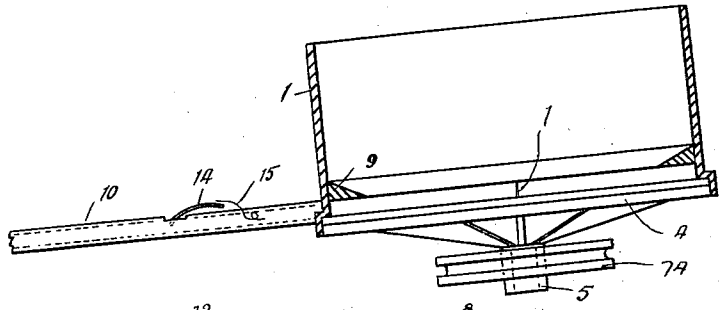
MEANS FOR THE SORTING AND DELIVERY OF METAL CONTAINERS.

APPLICATION FILED JULY 15, 1914.

1,195,054. Patented Aug. 15, 1916.

3 SHEETS—SHEET 1.

FIG. 1



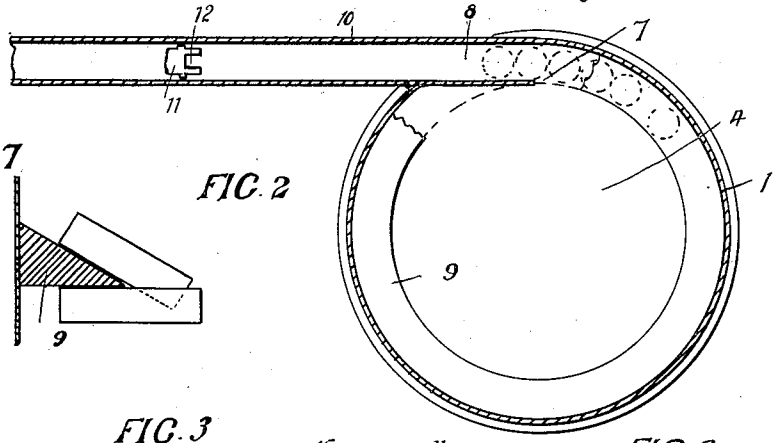


FIG. 7

FIG. 2

FIG. 3

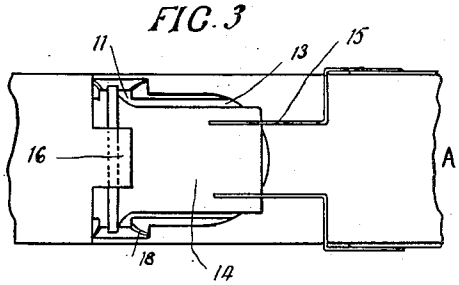


FIG. 4

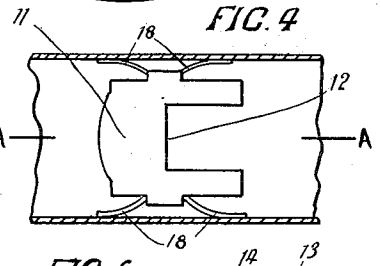


FIG. 5

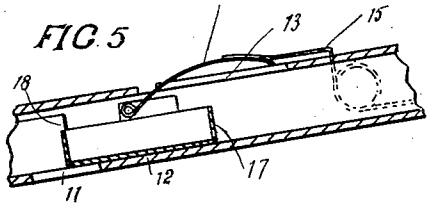
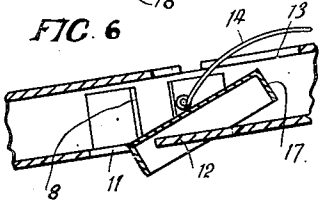


FIG. 6



WITNESSES

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3 SHEETS—SHEET 2.

FIG 8

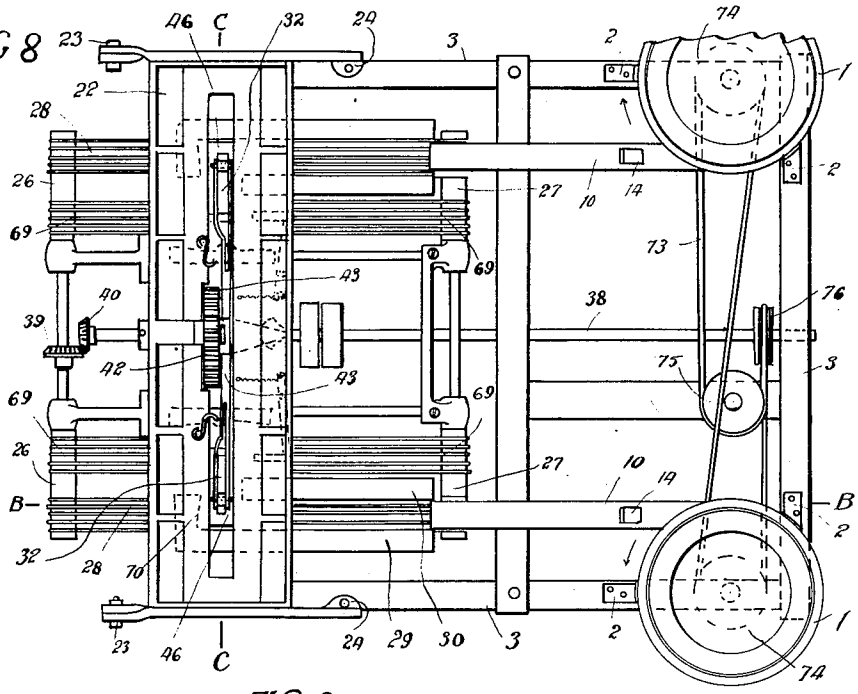


FIG. 9

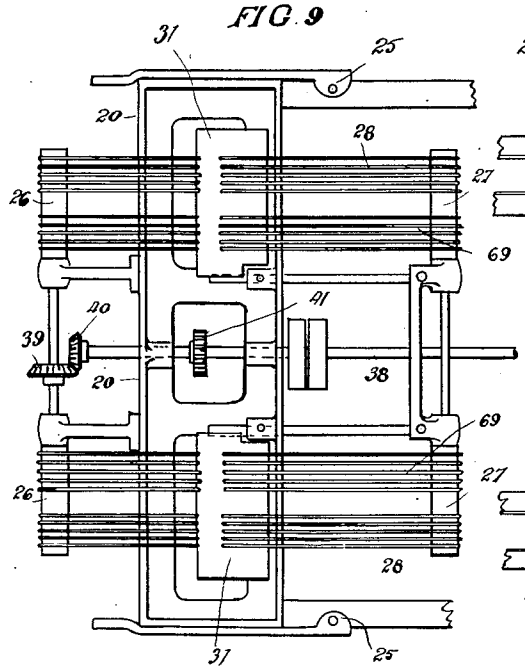
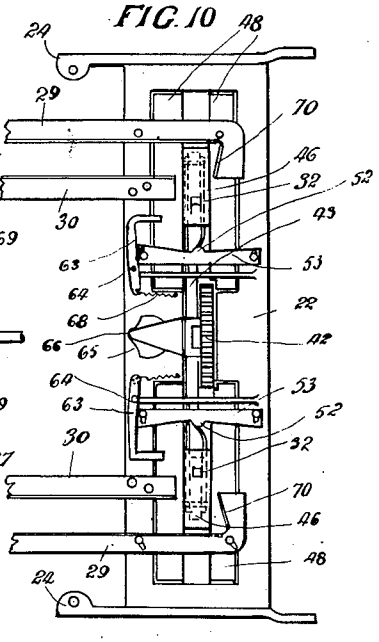


FIG. 10



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3 SHEETS—SHEET 3.

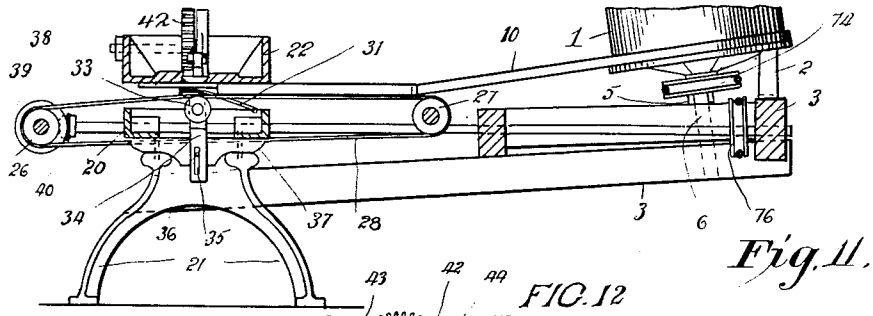


Fig. 11.

FIG. 12

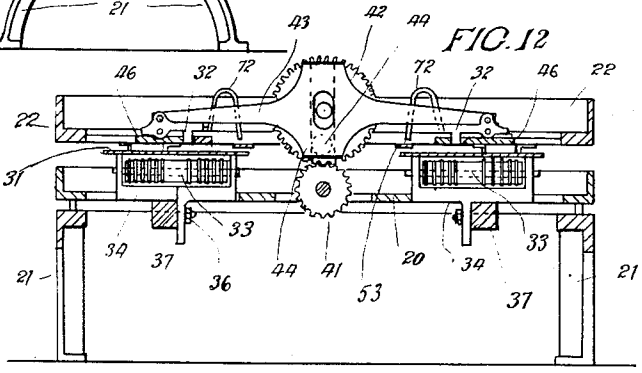


FIG. 13

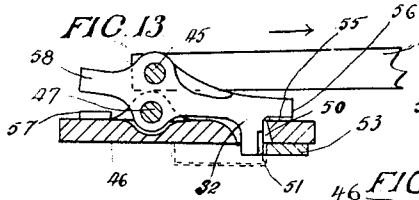


FIG. 14

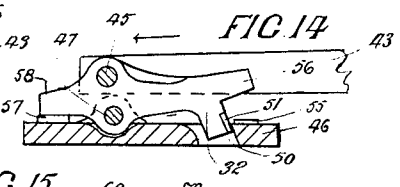


FIG. 15

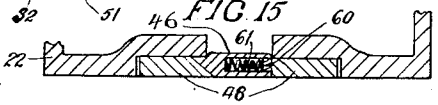


FIG. 16

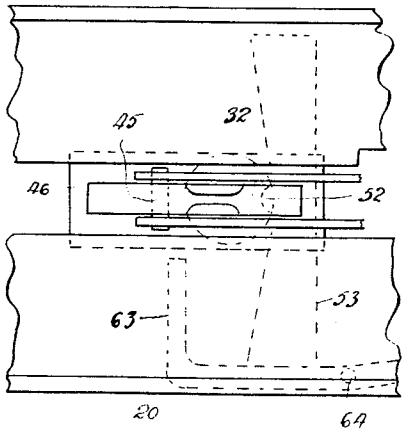
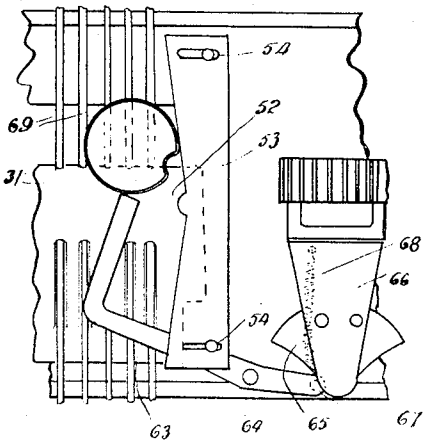


FIG. 17



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MEANS FOR THE SORTING AND DELIVERY OF METAL CONTAINERS.

1,195,054. Specification of Letters Patent. Patented Aug. 15, 1916.

Application filed July 15, 1914. Serial No. 851,119.

To all whom it may concern:

Be it known that I, MATTHEW ALEXANDER McLEOD, subject of the King of Great Britain, residing at Wellington, in the Dominion of New Zealand, have invented a new and useful Means for the Sorting and Delivery of Metal Containers and the like; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention has been devised in order to provide means whereby the metal containers generally used for holding boot polishes, emulsions, tooth pastes and other commodities may be sorted and delivered in a uniform condition as to their open tops, on to a tray for filling or into receptacles for storage and transport.

The containers are generally composed of a body portion and a lid made similarly to one another and the term "container" is in this specification meant to refer either to the body or lid portions separately.

The invention has been particularly designed for use in conjunction with apparatus whereby the edges of the container bodies and lids may be indented to form finger holds or grips to facilitate the opening of the containers and it is herein described as being used in conjunction with such apparatus. It is to be understood however that the sorting and delivery means designed may be used for other purposes than that described.

The essential features of the invention consist in a hopper having a rotating bottom into which the containers are fed so as to fill the hopper. The side of the hopper immediately above the level of the bottom is formed with an aperture opening into a passage extending tangentially from it and made of just sufficient width to permit of one container only passing through it at one time. A flange extends inward from the side of the hopper and this flange is made of sufficient width to cover the width of one container and its inner edge is adjusted so that it shall lie just a sufficient height above the rotating bottom as to permit of the containers in a flat position passing out beneath the flange. The rotation of the bottom will thus by centrifugal force send the containers out through the tangential passage one behind the other.

An inclined conveyer leads from the passage and the containers gravitate down this. The conveyer is provided with means whereby the containers passing bottom up down it are automatically ejected while those passing with their open tops up are allowed to travel on to the delivery end so that they may be delivered on to the tray or other receptacle in that order.

The invention and its working will however be more fully described and ascertained by reference to the accompanying sheets of drawings, in which:—

Figure 1 is an elevation partly in section, and, Fig. 2 is a sectional plan of the hopper and conveyer, Fig. 3 is a plan of the means for ejecting the containers which pass down the conveyer bottom up. Fig. 4 is a similar view to Fig. 3 but in section. Fig. 5 is a cross sectional view on line A—A Fig. 4 showing the action of the containers when they pass down the conveyer bottom down. Fig. 6 is a similar view but showing the action of the containers when they pass down the conveyer bottom up. Fig. 7 illustrates the action of the flange in the hopper. Fig. 8 shows a plan of the hopper and conveyer adapted to deliver containers to a machine for indenting the edges of such containers. Fig. 9 is a plan of the machine shown in Fig. 8 but having its upper carriage removed. Fig. 10 is an inverted plan of the upper carriage. Fig. 11 is a sectional elevation on line B, B Fig. 8. Fig. 12 is a cross section on line C, C Fig. 8. Fig. 13 is a side view of the die for engaging and indenting the edges of the containers. Fig. 14 is a similar view. Fig. 15 is a cross section through the die carrier and its guides. Fig. 16 is a plan of the die and accompanying parts. Fig. 17 is a plan showing how the container is ejected after its edge has been indented.

Referring first more particularly to Figs. 1 to 7 the hopper 1 is stationary and may be fixed by brackets 2 to the framework 3 as shown in Fig. 8. The hopper 1 has a rotating bottom 4 which is mounted in any suitable manner. Fig. 11 shows it mounted by its boss 5 upon a pin 6 projecting from the framework 3. The side of the hopper has an aperture 7 opening into a passage 8 which extends tangentially from the hopper. This is just of sufficient width to permit of one container passing through it at one time.

A circumferential flange 9 extends inwardly from the side of the hopper and is of sufficient width to cover the width of one container. The bottom edge of this flange

is arranged as shown so that it shall be just a sufficient height above the surface of the rotating bottom as to permit of only containers in a flat position passing out beneath the flange.

As the bottom rotates the centrifugal force thereby set up will force the containers out through the tangential passage 8 one behind the other as indicated in dotted lines in Fig. 2. The inner edge of the flange 9 is shown wedge shaped so that where two or more containers have become jammed together, they will be rotated by the rotating bottom 4 until such time that the flange will pass between the two containers and so separate them in the manner indicated in Fig 7, the centrifugal force will then force the lower container beneath the flange.

An inclined conveyer 10 leads from the passage 8 along which the containers gravitate being accelerated in their movement by the pressure of containers behind as they are forced into the passage 8 by the action of the bottom 4. In the drawing the hopper, rotating bottom, and conveyer are on the same inclined plane.

Upon the conveyer 10 is the means for automatically ejecting the containers which pass along it bottom up. It consists of an opening 11 in the bottom of the conveyer (see Figs. 3 to 6 inclusive) while a tongue 12 integral with the bottom of the conveyer projects forwardly from the upper edge of the opening. The form of the opening 11 is clearly shown in Fig. 4. The tongue is situated in the central line of the opening. An opening 13 is formed in the top of the conveyer above the opening 11, and within this opening a plate 14 is located and held in position by fitting beneath and being secured upon a spring 15 which exerts a downward pressure upon this plate. A lip 16 projecting from the top of the conveyer may extend over the forward edge of the plate 14.

When a container 17 passes bottom down along the conveyer as in Fig. 5 the front end of the plate 14 bearing on the upper edges of the container at a point a little to the rear of the forward end of the tongue 12 will cause the container to pass across the opening 11 and travel down the conveyer.

If the container passes bottom up along the conveyer when the edge of such container has passed beyond the front edge of the tongue 12 the pressure of the plate 14 will cause it to assume the position shown in Fig. 6. The oncoming containers will now force it through the opening 11. Guides 18 may be provided to guide the containers to the center of the conveyer at this point.

The machine for indenting the edges of the containers is illustrated in Figs. 8 to 17 inclusive. It comprises a table 20 mounted on legs 21 while a carriage 22 is hinged to the table at 23. The carriage may be bolted down to the table by bolts passing through the lugs 24 of the carriage 22 and lugs 25 of the table 20. Carried on rollers 26 and 27 are a set of conveyer belts 28 on to which the containers are discharged from the conveyer 10. These belts carry the containers between the carriage and the table, being guided by guides 29 and 30 on to the surface of a plate 31 at which point they are engaged by a die 32.

The belts 28 pass through the plate as clearly shown in Fig. 17 so that a portion of the plate is above the top of the belts. A roller 33 beneath the plate 31 guides the belts through the plate while the roller is mounted in a bracket 34 which also carries the plate 31. The height of this bracket is adjustable by means of a slot 35 and stud 36 upon a cross piece 37 which is bolted to the table 20.

The belt rollers are driven from a main driving spindle 38 through the medium of bevel gears 39 and 40. Journaled in the carriage 22 and gearing with a pinion 41 fixed to the main driving spindle is a toothed wheel 42 adapted to reciprocate a connecting rod 43 by means of a roller 44.

Pivoted to the end of the connecting rod by a pin 45 is the die 32 hereinbefore referred to. This die is also pivoted by a pin 47 to a slide 46 which is guided by plates 48 fixed to the under side of the carriage 22 (see Fig. 15). The die 32 projects through a hole 50 in the slide 46 and this projecting portion is fitted with a curved die face 51 adapted to fit the curved die face 52 of a die 53 fitted adjustably to the under side of the carriage 22 by bolts 54.

When the connecting rod 43 is traveling in the direction of the arrow in Fig. 13 the pull will throw the die to the position shown in Fig. 13. A plate 55 of papier mâché or the like is interposed between the slide 46 and the point 56 of the die to prevent undue concussion when the die is suddenly brought to that position by the said travel of the rod 43. When the rod 43 is traveling in the direction of the arrow in Fig. 14 the die will assume the position shown and the die face 51 will be raised clear of the under face of the slide 46. A plate 57 of papier mâché or the like is interposed between the point 58 of the die and the slide 46 for the same purpose as the plate 55.

A tension piece 60 (see Fig. 15) is introduced into the slide 46 and retained against one of the guides 48 by a spring 61. This tension piece insures of the die being brought to either the position shown in Figs. 13 or 14 when the direction of the movement of the rod 43 is reversed.

After the die has indented the edge of a container and the die has been returned by the return stroke of the connecting rod, the container will be ejected by an ejector 63.

This ejector is pivoted upon a pin 64 to the underside of the carriage 22 and is operated by a cam face 65 fixed to a bracket 66 projecting from the central portion of the connecting rod 43. This cam face 65 contacts with a pin 67 projecting from the end of the ejector and moves it against the tension of its spring 68 from the position shown in Figs. 8, 10 and 16 to the position shown in Fig. 17. This movement of the ejector pushes the container off the plate 31 and on to a set of conveyer belts 69 carried on the rollers 26 and 27. The belts carry the containers clear of the plate 31 and deposit them into a suitable receptacle.

The general operation is as follows:—Containers discharged from the conveyers 10 on to the conveyer belts 28 are carried forward beneath the die 32 their forward movement being limited by the end 70 of the guide 29. Upon the connecting rod having reached the rearward end of its stroke the die will lie centrally over the container and immediately the forward stroke commences the die will assume the position in Fig. 13, while the projecting die face will engage the edge of the container and carry it forward to the position shown in Fig. 16 where the action of the two die faces will indent the edge as shown in Figs. 16 and 17. Upon the return or rearward stroke commencing the die will assume the position shown in Fig. 14 and so pass over the container which is ejected by the ejector 63 when the connecting rod 43 reaches the end of its rearward stroke as already described.

In order to prevent the die 32 being raised immediately the rearward stroke of the connecting rod commences and thereby injuring the die faces and the indent formed in the container, a bow spring 72 fixed to the carriage 22 depends over the die 53. The front end of the slide 46 contacts with the end of this spring so that upon the return stroke of the connecting rod the pressure of the spring will retain the slide and die while in the position of Fig. 13 until the slide is clear of the spring when the tension of the slide will cause the connecting rod to force the die clear of the container.

In the machine illustrated the indenting mechanism is duplicated, two hoppers being provided from one of which the containers themselves may be conveyed and from the other the lids may be conveyed to the indenting mechanism. In this case the two hoppers are rotated in the direction of the arrows in Fig. 8 by means of a belt 73 passing around the pulleys 74 of the rotating bottoms 4 and guide pulleys 75 and thence around a driving pulley 76 fixed to the main driving shaft 38.

What I do claim as my invention, and desire to secure by Letters Patent, is:—

1. Means for the purpose described, consisting of a fixed circular hopper having a rotating bottom, a passageway and conveyer extending tangentially from the side of the hopper immediately above the rotating bottom, an opening in the bottom of such conveyer having a tongue extending from its upper edge for a portion of its length situated in the central line of the opening, and a spring plate overlying such tongue, substantially as specified.

2. In means for the purpose described, a conveyer down which the containers are fed in a row, an opening formed in the bottom of such conveyer, a tongue extending centrally downward for a portion of the length of the opening, and a spring pressure plate overlying such opening, substantially as specified.

3. Means for the purpose described, consisting of a fixed circular hopper having a rotating bottom, a passage-way extending tangentially from the side of the hopper at a point immediately above the rotating bottom, a flange extending inward from the side of the hopper and having its lower edge positioned above the rotating bottom slightly more than the height of the containers to be delivered, and an inclined conveyer extending from the said passage-way, an opening in the bottom of such conveyer having a tongue extending centrally from its upper edge for a portion of its length, and a spring plate overlying such edge, substantially as specified.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MATTHEW ALEXANDER McLEOD.

Witnesses:
W. ALEXANDER,
M. E. BROWN.