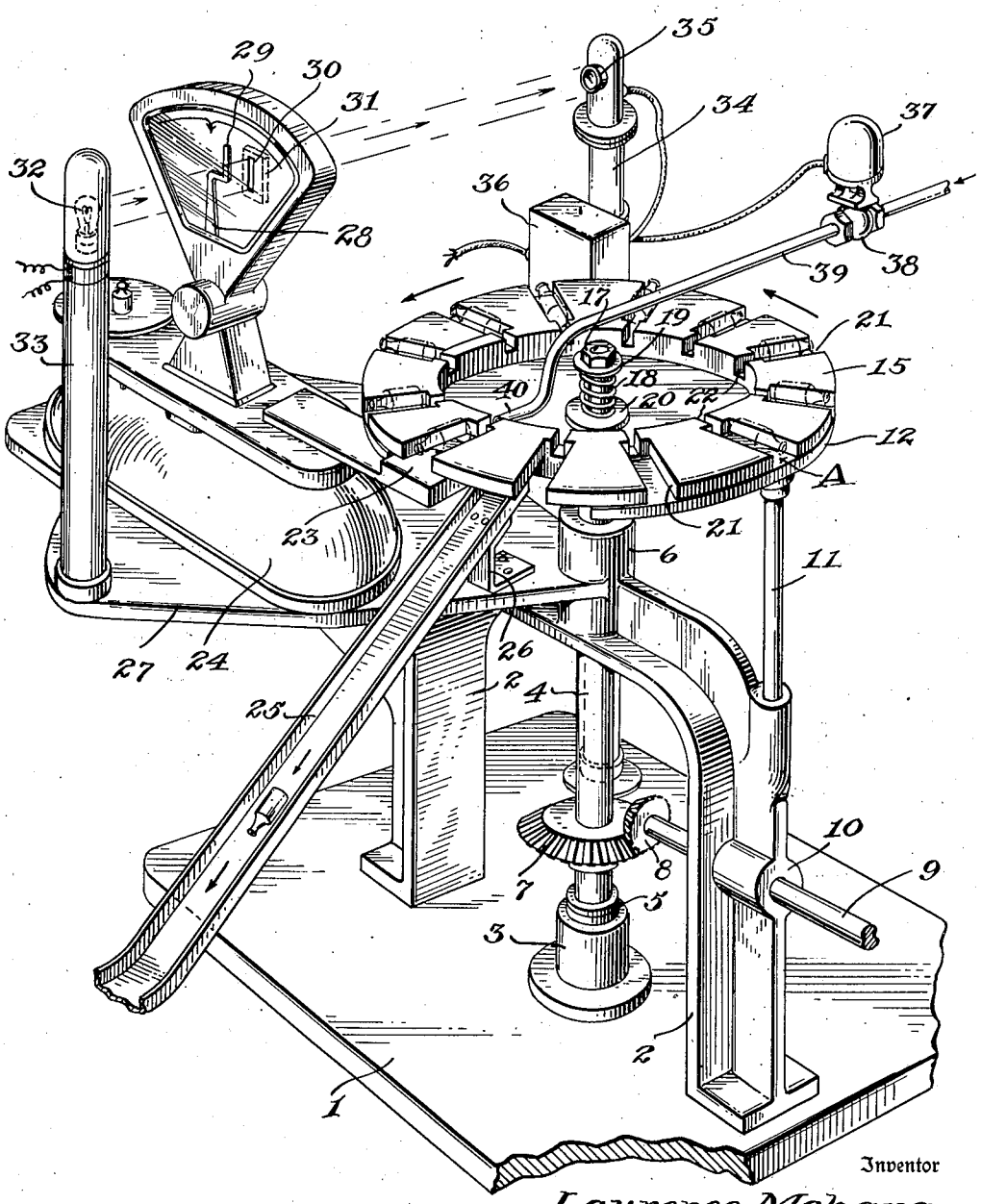
July 2, 1935. L. MEHARG 2,007,059

AUTOMATIC ACCEPTING AND REJECTING APPARATUS

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Fig. 1.



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Fig. 2.

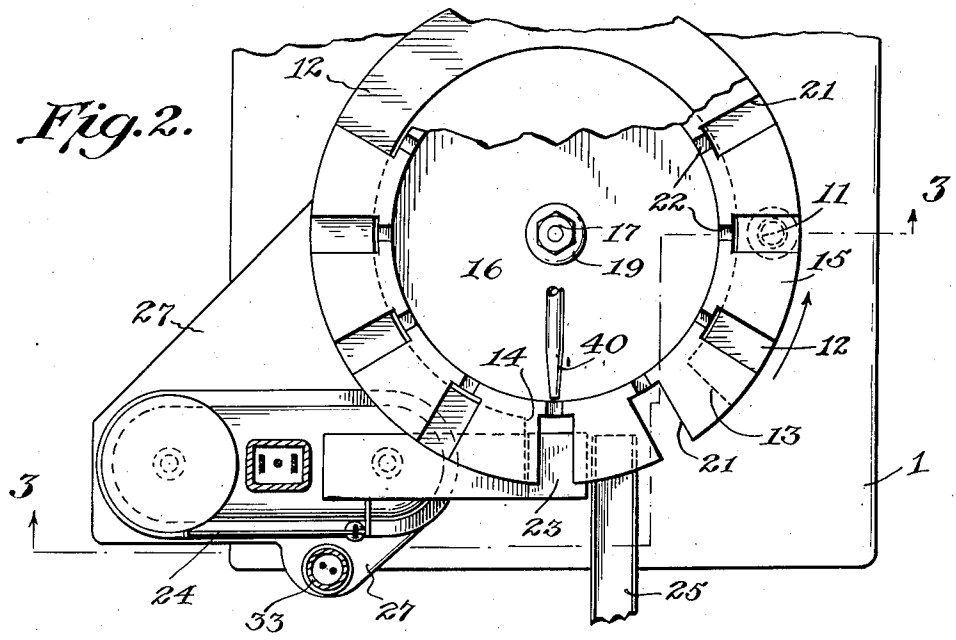


Fig. 4.

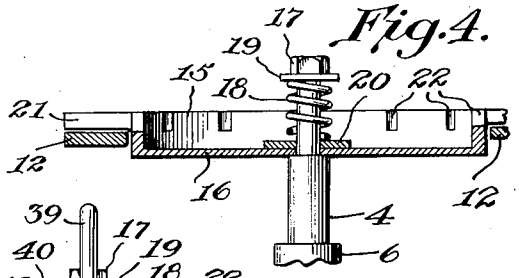


Fig. 3.

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AUTOMATIC ACCEPTING AND REJECTING APPARATUS

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Application February 2, 1933, Serial No. 654,919

4 Claims. (Cl. 209—121)

This invention relates to weighing machines and has for its primary object to provide a continuously operating device of this character which will automatically carry articles, such as bottles, to the scale, weigh them, and reject those articles which are overweight.

Another object of the invention consists in providing a mechanism of this type which is capable of quickly and accurately weighing and classifying large numbers of articles, thereby eliminating the inaccuracies, delays and expense which are involved when the operations are performed by hand.

A further object of the invention resides in the provision of an automatic accepting and rejecting mechanism which is of simple and inexpensive construction and which will not easily become disorganized.

Other objects and advantages of the invention will be apparent from the following description when considered in connection with the accompanying drawings; in which,

Figure 1 is a perspective view of the complete apparatus.

Figure 2 is a plan view, parts being broken away.

Figure 3 is a vertical sectional view taken on line 3—3 of Figure 2, and

Figure 4 is a detail sectional view through the rotating carrier and related parts.

Referring to the drawings in greater detail, the numeral 1 designates a suitable base plate for the apparatus which is supported on an upright bracket 2. Also mounted on the base plate 1 is a step bearing 3 for a vertically-disposed shaft 4; a ball thrust bearing 5 being also provided. The upper portion of the shaft 4 extends through a bearing 6 formed in a horizontal portion of the bracket 2.

The shaft 4 may be continuously rotated by means of bevel gears 7 and 8, the former being secured to the vertical shaft 4 and the latter to a horizontal shaft 9 which is rotatably mounted in a bearing 10 on the bracket 2. The shaft 9 may be driven by an electric motor and speed reducer (not shown), or any other preferred means may be employed for continuously rotating the article transporting mechanism about to be described.

Numeral 12 refers to a fixed table supported by standards 11. This table consists of a rather narrow strip arranged in the form of a circle with the shaft 4 at its center and having its ends terminating at the points 13 and 14, as indicated in Figure 2. The width of the strip forming the table 12 may vary as desired but is here shown as relatively narrow although of sufficient dimensions to accommodate the small bottles for which the present apparatus is primarily intended.

For cooperation with the table 12, a rotary bottle carrier 15 is provided. This member 15 is substantially disc-shaped and is formed with a depressed central portion 16 which is seated on a reduced portion of the shaft 4. The upper end of shaft 4 which projects above the bottle carrier is provided with a nut 17, and a compression spring 18 encircles the shaft and has its ends in engagement with washers 19 and 20. By this arrangement a friction drive is provided for the carrier, which will allow the shaft to continue to rotate in the event that the carrier should inadvertently become clogged or locked against rotation.

The peripheral portion of the carrier 15 which extends over the arcuate table 12, is provided with a plurality of radially-extending slots or pockets 21, there being twelve of such pockets indicated in the present embodiment of the invention. The pockets extend entirely through the material of the carrier and hence are open at the top and bottom as well as at the outer edge of the disc. The inner end of each pocket 21 is provided with a small opening 22 for a purpose which will presently appear. The lower sides or bottoms of the pockets are closed throughout the major portion of their travel by means of the arcuate table 12, i. e., until such time as the pocket passes beyond the end 14 of the table when the carrier is rotating in the direction of the arrow (Figs. 2 and 3).

Disposed within a portion of the space between the ends 13 and 14 of the table 12 and substantially flush with the top of the table, is a scale pan 23 which forms a part of a weighing mechanism 24. Arranged beside the scale pan 23 is the upper end of a chute 25 which is supported by a bracket 26 secured to the upper face of a platform 27. By reason of the relative positions of the scale pan 23 and chute 25 it will be apparent that any articles which are carried off of the scale pan 23 by the rotary member 15 will be deposited in the chute 25 and transported to the desired destination. Bottles which are overweight must therefore be removed from the scale pan before the pocket in which the bottle is located leaves the scale pan. The mechanism for selecting and ejecting such bottles will now be described.

Any type of weighing mechanism 24 may be employed. An arm such as 28 is associated with

the weighing beam in a manner to be responsive to the weight of the article placed on the pan 23. In the specific form illustrated a finger 29, which projects from the arm 28, is adapted to extend across a slot 30 formed in a plate 31, when an overweight article is deposited on the scale pan. The slot 30 is normally unobstructed, and an electric lamp 32 is supported on a post 33 at the level of the slot to normally project a beam of light therethrough. Mounted on a post 34, on the opposite side of the weighing mechanism, is a photo-electric cell 35 or any other type of light-sensitive device. Associated with the cell 35 are one or more relays and auxiliary apparatus generally indicated by the numeral 36, for energizing a solenoid 37. This solenoid is operatively connected with a valve 38 in a compressed air conduit 39, leading from a compressed air tank (not shown) or from any other desired source of air pressure. The conduit 39 terminates in a nozzle 40 positioned within the depressed portion 16 of the rotary carrier 15 and in the plane of the openings 22 formed in the inner ends of the pockets 21. The position of the nozzle is directly behind the scale pan 23, and if the valve 38 is opened a blast of air through the nozzle will remove the bottle from the pan before the continued rotation of the carrier 15 sweeps the bottle onward to the chute 25. It will be understood, of course, that the selected bottles may be deposited in a receptacle or upon any form of conveyer, in place of the chute; and that the rejected bottles which are blown or otherwise removed from the carrier may fall into a receptacle or be otherwise disposed of.

The operation of accepting and rejecting the bottles, as they are continuously carried across the scale pan, will now be described.

The carrier 15 is continuously rotated by any desired means, and bottles formed on any preferred forming machine are placed in the openings or pockets 21, either automatically or by hand. The bottles may be supplied to the pockets of the carrier at any desired point beyond the front end 13 of the table 12, for example at the point indicated by letter A. These bottles are carried around the table and individually drawn across the pan 23 of the weighing mechanism. As the particular bottle being weighed passes off the end 14 of the table onto the pan 23 the pan is not depressed if the bottle is within the tolerance allowed for the bottles being manufactured, and the bottle will be carried off the pan to the chute 25 or to any conveyer or receptacle which may be provided.

If the particular bottle being weighed is overweight, beyond the allowed tolerance, the arrangement is such that the downward movement of the scale pan will cause the finger 29 to move across the slot 31 to momentarily obstruct the beam of light which normally passes from the source of light 34 to the light-sensitive cell 35. The cutting off of the light beam to cell 35 instantly causes the solenoid 37 to operate to open the valve 38 in the air pressure line 39. Thus a blast of air issues from the nozzle 40 and passes through the opening 22 across pan 23 to sweep the overweight bottle from the pan before it is carried forward to the chute. As soon as the overweight bottle or other article has been removed from the scale pan, the finger 29 returns to its normal position, whereby the beam of light again impinges on the cell 35, causing the solenoid 37 to close the valve 38 and shut off the air blast.

No adjustment of the slot 30 is necessary for articles of different weight, unless the tolerance is different, for the weight indicator will always assume a vertical position whether light articles or heavy articles are being tested, providing of course that the articles are of the correct weight. But different tolerances are usually permitted with articles of different weight, and often different tolerances are permitted with articles of the same weight. To take care of different tolerances, I usually make provision for the lateral adjustment of the slot 30, the lamp 32 and the photo-electric cell 35, while maintaining these parts in alignment.

In accordance with the patent statutes I have described what I now believe to be the preferred form of the invention, but obviously various changes and modifications may be made without departing from the spirit of the invention, and all such changes and modifications are intended to be included within the scope of the appended claims.

What I claim is:

1. An accepting and rejecting apparatus including a weighing mechanism, means for continuously transferring articles to the weighing mechanism, means for ejecting articles of incorrect weight from the weighing mechanism including a conduit for conveying air under pressure to a point adjacent the weighing mechanism, a valve for controlling said conduit, and a light-sensitive cell operatively associated with the weighing mechanism and valve.

2. An accepting and rejecting apparatus including a weighing mechanism, means for continuously transferring articles to the weighing mechanism, means for removing overweight articles from the weighing mechanism including a conduit for conveying air under pressure to a point adjacent the weighing mechanism, a valve for controlling said conduit, a light-sensitive cell operatively associated with the valve, and means on the weighing mechanism for intercepting the projection of light onto the cell when an overweight article is on the weighing mechanism.

3. An accepting and rejecting apparatus including a weighing mechanism, means for drawing articles across the pan of said mechanism and suitably disposing of articles of proper weight, a compressed air system having a nozzle directed toward the pan for removing certain articles while traversing the pan, and a light-sensitive cell associated with the weighing mechanism for rendering said system operative when an overweight article is on the pan.

4. An accepting and rejecting apparatus including a weighing mechanism provided with an article-receiving pan, an arcuate table mounted in the plane of the pan and contiguous thereto, a rotary member provided with a plurality of open-ended, article-receiving pockets adapted to traverse the table and pan, means for continuously rotating said pocketed member, a compressed air system having a nozzle positioned to align with each pocket successively as it traverses the pan, and means under the control of the weighing mechanism for rendering the compressed air system operative.

LAURENCE MEHARG.