Jan. 24, 1933. J. H. MOSEL 1,895,169

CLOSURE

Filed March 14, 1930

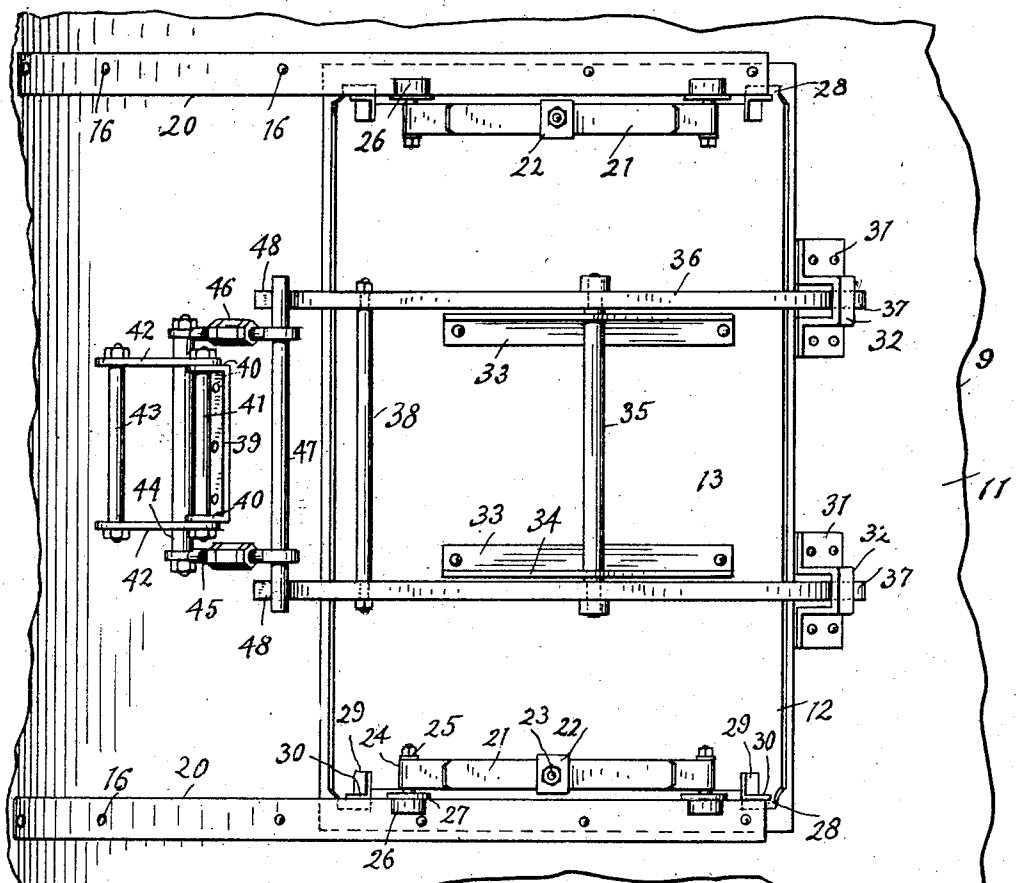


Fig. 1.

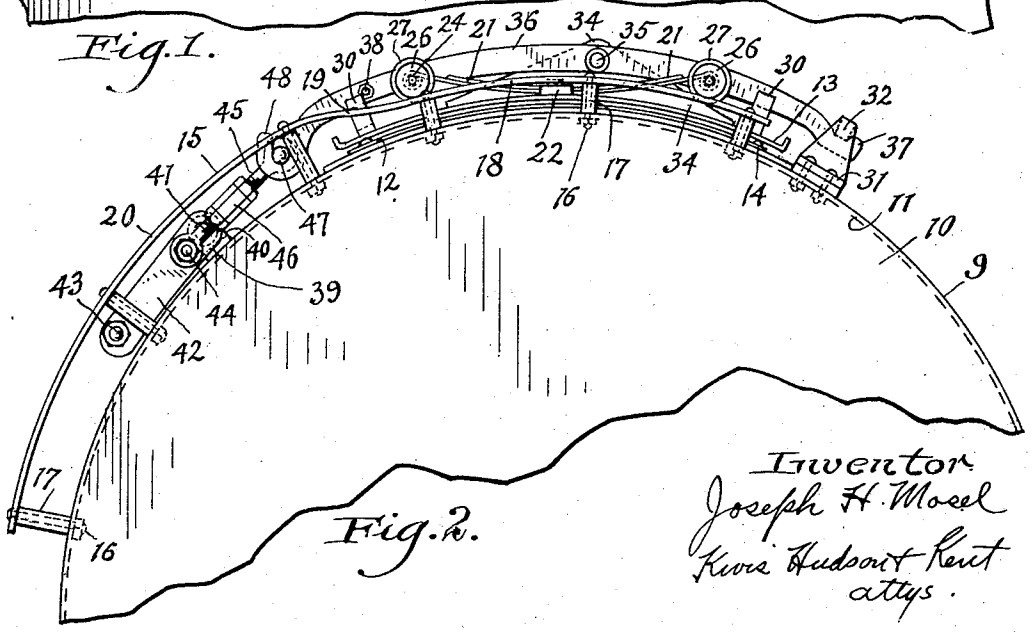


Fig. 2.

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Patented Jan. 24, 1933 1,895,169

UNITED STATES PATENT OFFICE

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CLOSURE

Application filed March 14, 1930. Serial No. 435,843.

This invention relates to closures, and while it is of general application, it relates more particularly to closures for rotatable receptacles, such as those of portable concrete mixers.

With portable concrete mixing machines which have been developed to mix the concrete while the same is being transported from the loading yard to the construction work, closures have been provided which are hinged to the receptacle, and other closures have been provided which are removed bodily. Inasmuch as the loading hoppers from which the receptacles or drums of these machines are filled at the loading yard generally have very little clearance between the receptacle and the bottom of the hopper, it has been necessary heretofore to open the closure before the receptacle is moved under the loading hopper. This procedure required either the services of a helper in addition to the driver of the truck, or necessitated that the driver dismount, open the receptacle, return to the driving compartment, and then move the receptacle under the hopper, either expedient resulting in loss of labor and time.

It is, therefore, an object of the present invention to provide a closure for a receptacle of the character described, which is operable with a minimum clearance beyond the receptacle wall.

Another object of the invention is to provide a simple and convenient means for operating the closure and securing the same in position.

A further object of the invention is to provide a device of the character described which will be simple, efficient, and economical in construction and operation, substantially fool-proof, not likely to get out of order, and otherwise well adapted for the purposes set forth.

Other objects and features of novelty will be apparent as the following description proceeds, reference being had to the accompanying drawing, in which:

Fig. 1 is a plan view of a portion of a receptacle of the character described showing the closure and operating means therefor according to the present invention as applied thereto; and

Fig. 2 is an elevation of the structure shown in Fig. 1.

Referring more particularly to the drawing, in connection with the following description of the preferred embodiment of the invention, there has been illustrated a receptacle 9 having a cylindrical side wall 11 and a circular end wall 10. This shape is not essential, and the receptacle may be used for any desired purpose, but it is particularly suitable for the rotatable receptacle of a concrete mixer which is adapted to mix the concrete while in transit.

An opening 12 is formed in the wall 11, and a closure member such as a door 13 is adapted to close the opening. Sealing means 14, such as a gasket or other packing is interposed between the opening and the door so as to seal the same when the door is closed. The contour of the door 13 is the same as the wall 11 and is adapted, in moving from closed position to open position, to move along a path close to, and substantially parallel to the surface of the wall 11.

For guiding the door in its movement, guide tracks 15 are provided adjacent the edges of the opening, which are substantially parallel to the curvature of the wall 11. The tracks 15 are secured to the wall 11 by bolts 16, and are held in spaced relation therefrom by spacer sleeves 17. Each of the tracks 15 comprises a portion 18 substantially co-extensive with the width of the door, an inclined or cam portion 19, and a portion 20 spaced further from the wall 11 and adapted to receive the door when it is in its open position.

For supporting the door 13 upon the track 15, leaf springs 21 are provided, which are secured intermediate their ends, as by clips 22 and bolts 23 to the outer surface of the door 13. The outer end of the main leaf of each spring 21 is provided with a rolled end 24, receiving a pin 25 on which is journalled a roller 26 having a flange 27, the rollers 26 being adapted to engage the outer surface of the guide tracks 15, and the flanges

27 being adapted to engage the inner edges thereof.

The springs 21 described above will normally tend to urge the door 13 outwardly clear of the opening. Extensions 28 which underlie the track 15 are provided at the ends of the door and angle clips 29 are secured to the outer surface of the door in such position that the upstanding flanges 30 thereof engage the inner edges of the guide tracks 15.

It will be obvious that the door mounting just described will tend to raise the door 13 from the sealing means 14 and cause the same to follow the outline of the track 15 as it moves to open position on the portion 20 thereof.

For securing the door in its closed position, a pair of strap members 31 are secured to the wall 11 adjacent one edge of the door opening, each of these members having an upstanding U-shaped portion 32. A pair of angle clips 33 are secured to the surface of the door 13 and substantially in alignment with the portions 32 and the members 31. The members 33 each have an upstanding triangular flange 34 which supports a rod 35. Pivoted on the rod 35 are transverse bars 36 having hooks 37 at corresponding ends thereof and adapted to engage the abutments formed by the members 32. A spacer rod 38 is provided for the bars 36.

Means are provided for engaging the other ends of the bar 36 to urge the door 13 inwardly about the abutments 32, and for this purpose, a toggle mechanism is mounted on the wall 13 at the other side of the opening. A strap member 39 is secured to the wall 11 and provided with upstanding ears 40 receiving a rod 41. The ends of the rod 41 carry levers 42, the opposite ends of which are connected by a handle 43. Adjacent the rod 41, a rod 44 passes through the links 42, intermediate their ends, and projects laterally therebeyond at each side. The inner ends of links 45 in which are interposed turn-buckles 46, are secured on the outer ends of the rod 44. A rod 47 is carried by the other ends of the links 45 and is adapted to engage the hooks 48 at the ends of the bars 36.

The toggle mechanism thus described is shown in the drawing in its closed position, and it will be obvious that moving the handle 43 away from the wall 11 will raise the rod 44, thus moving the rod 47 clear of the hooks 48. The rod 38 may then be moved away from the door, permitting the hooked ends 37 to move from under the abutments 32, so that the door may be moved along the track to the open position. The greater spacing of the portion 20, together with the cam action of the cam 19, will cause the door to ride clear of the toggle mechanism, which may lie flat against the wall 11.

From the foregoing description, it will readily be apparent that the door control means, according to the present invention, may be readily operated with a minimum clearance outside the surface of the wall and that the novel mechanism is otherwise well adapted for the purposes set forth.

While the preferred embodiment of the invention has been illustrated and described in such detail as to enable anyone skilled in the art to practice the invention, nevertheless the scope of the invention is not to be limited to any of the details disclosed, other than as necessitated by the development of the prior art, but instead includes such embodiments of the broad idea as fall within the scope of the appended claims, it being obvious that various changes and modifications may be resorted to without departing from the spirit of the invention.

Having thus described my invention, what I claim is:

1. In a device of the character described, in combination with a rotatable receptacle having a wall with an opening therein, a closure member adapted to close said opening, a toggle device for urging said closure member toward closed position, and means effective upon release of said toggle device for guiding said closure member along a path adjacent to said receptacle wall and substantially parallel thereto from closed position to an open position and for urging said closure member to a position clear of said toggle device.

2. In a device of the character described, in combination with a wall having an opening, a closure member for said opening, a guide track carried by said wall, leaf springs secured to said closure member, and rollers carried by said springs and engaging said guide track.

3. In a device of the character described, in combination with a wall having an opening and an abutment adjacent said opening, a closure member adapted to close said opening, a bar pivoted intermediate its ends to said closure member and having one end extending from said closure member and engaging said abutment, and toggle means carried by said wall and engaging the other end of said bar for urging said closure member into closed position.

4. In a device of the character described, in combination with a receptacle having a wall with an opening therein, a closure member adapted to close said opening, means for guiding said closure member to and from an open position clear of said opening to a position above said opening, means for forcing said closure member into position closing said opening, and resilient means for mounting said closure member for cooperation with said guiding means and constantly urging said closure member away from said wall.

5. In a mixing machine adapted to mix materials while in transit, a rotatable drum

for containing the material being mixed and having an opening therein, a door for said opening, guide tracks adjacent opposite sides of said opening and substantially parallel to each other and relatively close to the wall of said drum and substantially parallel thereto, rollers engaging said tracks, spring mountings for supporting said door on said rollers, and lever means for forcing said door to close said opening against the action of said spring mountings.

6. In a device of the character described, in combination with a wall having an opening and an abutment adjacent said opening, a door for said opening, guide tracks adjacent opposite sides of said opening and substantially parallel to each other and relatively close to said wall, springs secured to said door and supporting rollers adapted to engage said tracks, a bar pivoted intermediate its ends to said door and having one end extending therefrom and engaging said abutment, and toggle means carried by said wall and cooperating with the other end of said bar for urging said door into closed position.

7. In a device of the character described, in combination with a wall having an opening therein and an abutment adjacent said opening, a door adapted to close said opening, guide tracks adjacent opposite sides of said opening and substantially parallel to each other and extending along the wall laterally beyond the opening, said guide tracks being spaced outwardly of said wall with the laterally extended portions thereof spaced a greater distance from the wall than the portions thereof that are closely adjacent to said opening, rollers resiliently carried by said door and engaging said tracks, a bar pivoted intermediate its ends to said door and having one end engaging said abutment, and toggle means carried by said wall and arranged intermediate the laterally extending portions of said tracks for engaging with the other end of said bar and urging said closure member into closed position.

In testimony whereof, I hereunto affix my signature.

JOSEPH H. MOSEL.