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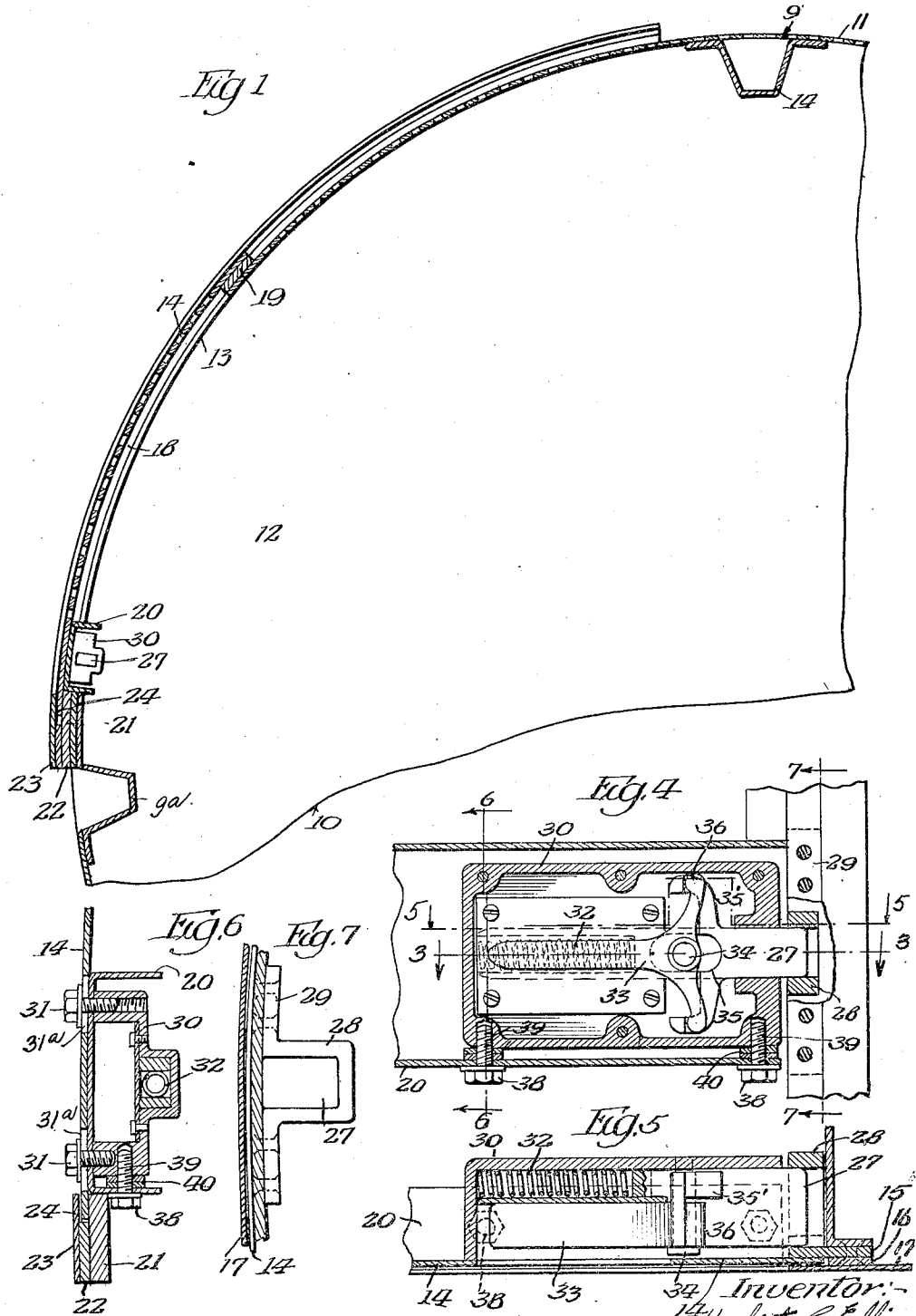
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1,883,646

DOOR FOR CYLINDRICAL RECEPTACLES

Filed June 17, 1929

2 Sheets-Sheet 1



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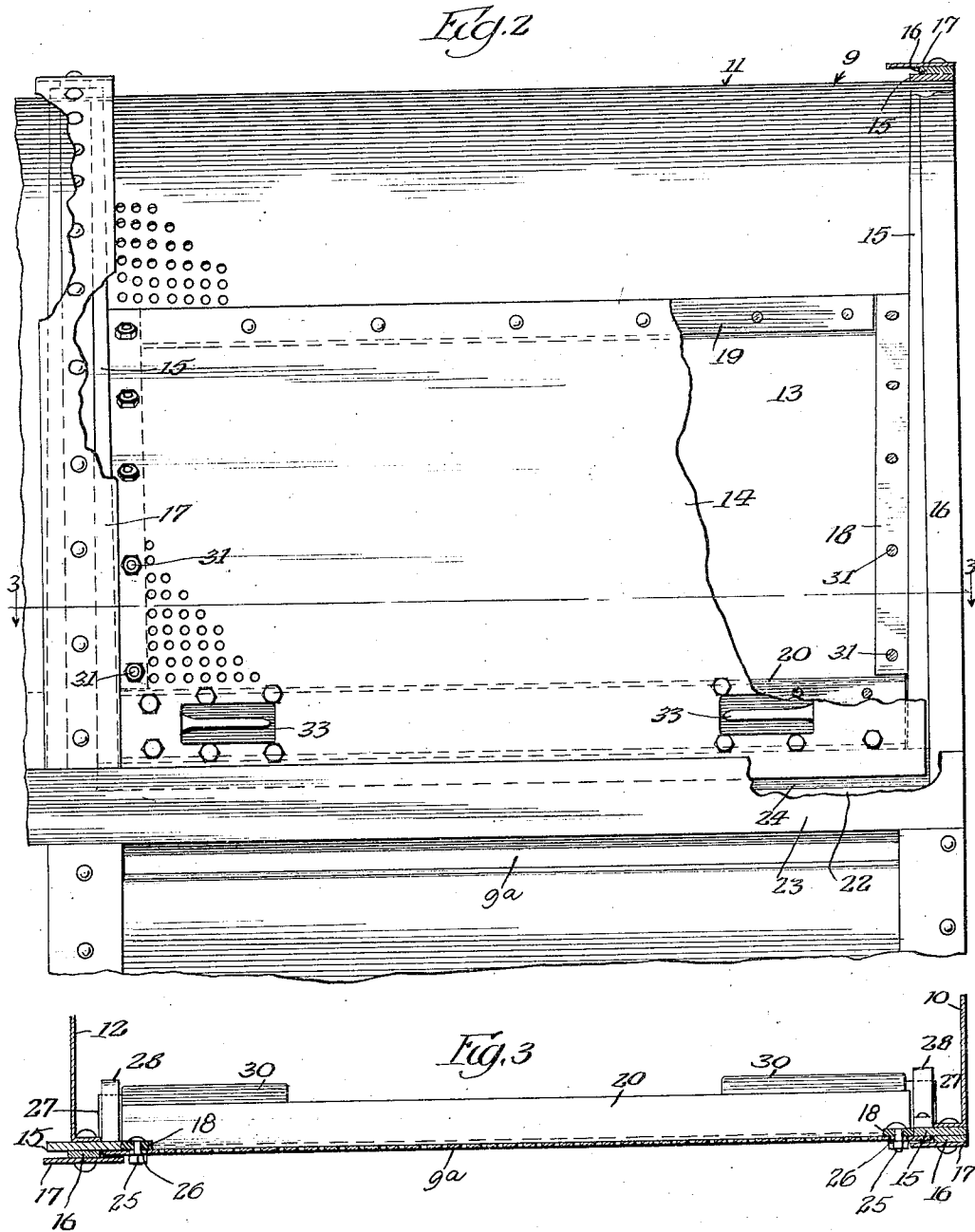
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DOOR FOR CYLINDRICAL RECEPTACLES

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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DOOR FOR CYLINDRICAL RECEPTACLES

Application filed June 17, 1929. Serial No. 371,461.

The invention relates to doors for cylindrical receptacles.

In tumblers for washing machines and other purposes, it is desirable to provide doors which, when closed, will fit securely in the guides therefor, and which will slide freely when they are to be opened or closed.

One object of the present invention is to provide an improved sliding door for receptacles of this type which is provided with means whereby it will be wedged in its guides when it is closed, so that it will not rattle during the operation of the receptacle, and which will slide freely when it is to be manually opened or closed.

Another object of the invention is to provide a door of this type with improved means for keeping the door-lock operative to secure the door accurately in its closed position.

Other objects of the invention will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings: Fig. 1 is a section of a tumbler embodying the invention. Fig. 2 is a front elevation, parts being broken away. Fig. 3 is a section taken on line 3—3 of Fig. 2. Fig. 4 is a longitudinal section through the door-lock. Fig. 5 is a section taken on line 5—5 of Fig. 4. Fig. 6 is a section on line 6—6 of Fig. 4. Fig. 7 is a section on line 7—7 of Fig. 4.

The invention is exemplified as applied to the cylinder 9 of a rotary washer. The cylinder comprises circular or disk-like ends 10, a cylindrical wall 11, and a partition 12 which divide the space within the cylinder into two compartments. Openings 13 are formed in the cylinder to provide access to the compartments respectively. The cylinder is provided with longitudinal ribs 9^a for lifting the material as the cylinder is rotated. The wall 11 is perforated and usually enclosed in a casing, as well understood in the art.

Doors, formed of sheet metal plates 14 curved to conform to the cylinder, for closing the openings 13, are slidable in curved guides

fixed to the margins of the cylinder adjacent the opening 13. Each guide comprises a runner-bar 15, an outer bar 17, and an intermediate bar 16, all of which are fixed to the cylinder. Bars 16 are narrower than bars 15 and 17, to form grooves in which the margins of the door will be slidably confined. The inner periphery of the marginal portions of the door-plate 14 is adapted to engage and slide on runner bars 15 of the guides on the cylinder, which extend around the cylinder a sufficient distance to support the door in its open and closed positions. The end edges of the door-plate are parallel, and bars 16 are also parallel conformably to the edges of the door to confine the door against substantial endwise movement, and there is sufficient clearance between the bars 16 and the contiguous edges of the door-plate to permit the door to slide freely in the guides. Bars 17 lap the contiguous margins of the door to hold the latter on the cylinder. The inner edges of the runner bars 15, adjacent the ends of the door respectively, are upwardly divergent from the lower end of opening 13, and bars 18 which are secured to the inner periphery and inwardly of the ends of the door, have their contiguous edges correspondingly divergent, so that when the door is closed, the bars 18 will be wedged between the bars 15 to cause the door to be firmly held and positioned so that it will not rattle during the rotation of the cylinder. As the door is lifted or moved from its open position, the bars 18 are released from their wedging against the bars 15 so that the door, after its initial movement, will be free to move circumferentially in its guides. The parallel end-edges of the door-plate will be guided by the bars 16, as it is moved to its open position and into its closed position, and after the wedging has ceased, there being sufficient looseness between the edges of bars 16 and the contiguous edges of the door-plate to permit it to slide freely. As the door moves away from its closed position, the clearance between the wedge bars 18 and the inner edges of the coacting bars 15 will be increased until the bars 18 reach the position shown by dotted lines in Fig. 2. The wedge-bars 18 are

secured to the door by bolts 25 which extend through slightly elongated slots 26 in the door-plate, so that the wedge plates may be accurately set and secured to engage the inclined edges of the bars 15 when the door is in its correct closed position.

A reinforcing bar 19 is secured to the inner face of and at the upper margin of the door-plate 14, and a channelled reinforcing bar 20 is secured to the inner face of the door adjacent its lower end. A longitudinal bar 21, corresponding in thickness to the bars 15, is secured to the cylinder at the lower end of the opening 13, and the lower margin of the door when closed, laps said bar 21. A longitudinal bar 22, corresponding in thickness to the guide-bars 16, is also secured to the cylinder outside of the bar 22, and a bar 23 is secured to the front of bar 22 to form a channel 24 to receive the lower end of the door. This channel is sufficient in depth so the lower edge of the door will not be arrested, and to permit the wedge-bars 15, 17 to stop the door.

In the construction illustrated, the guide at one side is adapted for the outer end of a door and the guide at the other is adapted to guide the adjacent ends of a pair of doors arranged longitudinally of one another, and it is to be understood that the invention may be applied to a cylinder with any number of doors.

This construction exemplifies one in which a door, while in its closed position, is confined by the wedging action of the bars on the door and cylinder respectively, so that all rattling of the door during the operation of the cylinder will be avoided; also such a construction in which certain of the wedge-bars are adjustable to hold the door in its correct position when closed; also one in which the door will be released to slide freely after its initial movement from its closed position.

The door carries, adjacent each end, a bolt 27 which is adapted to slide longitudinally and enter a keeper 28 which has lugs 29 which are riveted to the bar 16. Each bolt 27 is slidably mounted in a casing 30 which is secured by screws 31, to the door and channel-bar 20. A spring 32 normally projects the bolt from the casing. A finger lever 33, pivoted on a stud 34 which passes through a slot 35 in the bolt 27, is provided with arms 35 to engage lugs 36, so that the bolts may be withdrawn from the keepers by pivotal movement of the lever 33 in either direction. In practice, it is important to have the lock-bolts 27 positioned to enter keepers 28 and lock the door precisely at the point where the wedge-bars 18 engage the bars 15, so that the wedge-faces of these bars will be held in engaging relation so that the door will not rattle. To compensate for wear of the bolt or the keeper, and to permit the bolts to be accurately positioned for this purpose, the lock-casings 30 are circumferentially adjust-

able on the door. Elongated holes 31^a are provided in the door-plate and channel 20 for screws 31. So that the casings may be accurately positioned, set-screws 38 are extended through the lower flange of bar 20 and threaded into sockets 39 in the bolt casing. Spring washers 40 are interposed between the casing and said flange. By adjusting the screws 38, the bolt casings may be adjusted circumferentially to position the bolts 27 to enter the keepers precisely at the point where the wedge-bars 18 arrest the door. This construction exemplifies means for accurately adjusting the slide bolts to secure the door in its wedged position.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a tumbler, the combination of a rotatable body provided with a rectangular opening, a door for closing said opening, guides at the sides of the opening for engaging the side margins of the door and retaining said door so that it is slidable into and out of its closed position, a pair of coacting wedge elements fixed on one of the side margins of the door and one of the guides respectively for holding the door in its closed position, and a lock for securing the door in its closed position.

2. In a tumbler, the combination of a cylindrical body provided with a rectangular opening, a curved door for closing said opening, comprising a plate, guides at the sides of the opening for engaging the side margins of the plate and retaining the door so that it is slidable circumferentially with respect to the body into and out of position to close the opening, and coacting wedge-bars between the side margins of the plate and the guides for holding the door in its closed position.

3. In a tumbler, the combination of a cylindrical body provided with an opening, a curved door for closing said opening, comprising a plate, guides in which the plate is slidable circumferentially with respect to the body, coacting wedge-bars on the plate and body for holding the door in its closed position, and means for transversely adjusting one of the bars.

4. In a tumbler, the combination of a rotatable body provided with an opening, a door for closing said opening, and comprising a plate having parallel edges, wedge bars secured to the plate adjacent said edges, and guides for retaining the door so that it is slidable into and out of position to close the opening, said guides being provided with parallel guide-surfaces contiguous to

the parallel edges on the plate and with wedge surfaces engaged by the wedge bars on the door plate when the door is closed.

5 5. In a tumbler, the combination of a cylindrical body provided with an opening, a curved door for closing said opening, guides in which the door is slidable circumferentially with respect to the body into and out of position to close the opening, means for locking the door in its closed position, and means for adjusting the locking means in the direction in which the door is slidable.

10 6. In a tumbler, the combination of a cylindrical body provided with an opening, a curved door for closing said opening, guides in which the door is slidable circumferentially with respect to the body into and out of position to close the opening, a lock for holding the door in its closed position comprising a bolt, a casing for the bolt, mounted on the door, a keeper on the body to receive the bolt, and screw-means for adjusting the lock casing in the direction in which the door is slidable.

15 7. In a tumbler, the combination of a cylindrical body provided with an opening, a curved door for closing said opening, guides in which the door is slidable circumferentially with respect to the body into and out of position to close the opening, wedge-means for holding the door in closed position, a lock for the door comprising a bolt, a casing for the bolt, mounted on the door, a keeper on the body to receive the bolt, and screws for adjusting the lock casing in the direction in which the door is slidable.

20 25 Signed at Chicago, Illinois, this 11th day of June, 1929.

HUBERT C. ELLIS.