

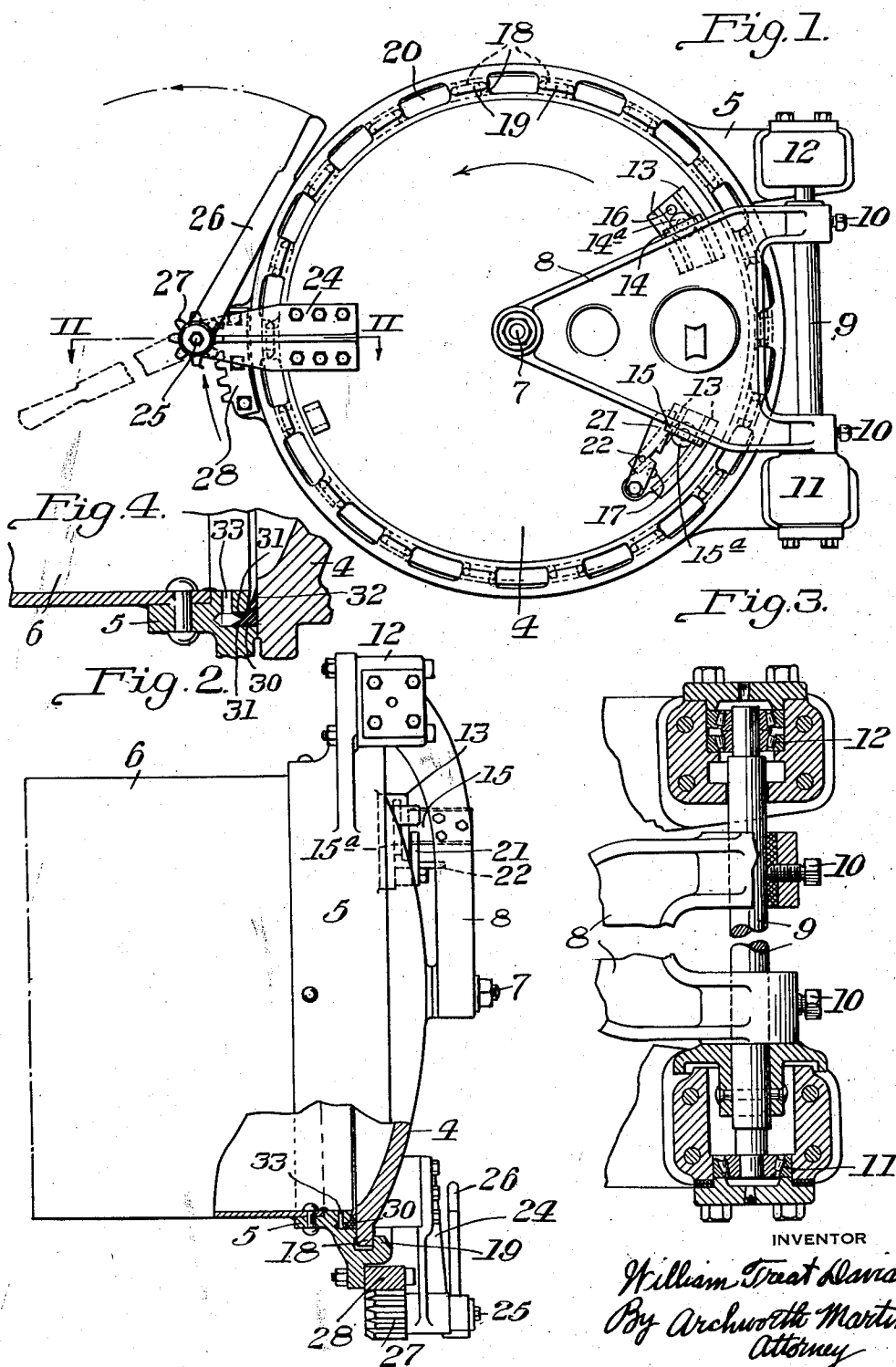
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W. T. DAVIDSON

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DOOR FOR RETORT CHAMBERS

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UNITED STATES PATENT OFFICE

WILLIAM TREAT DAVIDSON, OF WARREN, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO STRUTHERS WELLS-TITUSVILLE CORPORATION, OF WARREN, PENNSYLVANIA, A CORPORATION OF MARYLAND

DOOR FOR RETORT CHAMBERS

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My invention relates to doors for retort chambers and the like, and particularly to means for supporting and operating said doors.

5 As hereinafter described, the invention is particularly suitable for use in connection with vulcanizing chambers, wherein the doors are of considerable weight and wherein provision must be made for quick operation of the door and for tightly and firmly holding the same in snugly closed position, either under pressure or under vacuum.

One object of my invention is to provide an improved means for moving the door to locked and unlocked position with respect to the door frame of a chamber.

Another object of my invention is to provide an improved form of latching device for maintaining the door in a desired position.

20 A further object of my invention is to provide an improved sealing device for the door and its frame.

Another object of my invention is to provide an improved means for alining the door with respect to a door frame.

Still another object of my invention is to simplify and improve generally the structure and operation of doors of various types.

30 One form which my invention may take is shown in the accompanying drawings, wherein Figure 1 is a front elevational view of door structure embodying my invention; Fig. 2 is a view of the apparatus of Fig. 1, partially in plan and partially in section, but with the upper guide member removed; Fig. 3 is a vertical sectional view of a portion of the apparatus of Fig. 1, and Fig. 4 is an enlarged view of a portion of the apparatus of Fig. 2.

40 A door 4 is shown as mounted upon and co-operating with a door frame 5 that is riveted to a vulcanizing chamber 6. The door 4 is mounted for oscillatory movement upon a pivot bolt 7 that is supported in a bracket 8. The bracket 8 is connected to a shaft or hinge pin 9 in the manner shown more clearly in Fig. 3, the shaft 9 extending through the rear end portions of the bracket 8. The openings in the bracket 8 through which the shaft 9 extend are of greater diameter than the shaft, so that the bracket can be angularly adjusted

relative thereto, in a vertical plane, to insure that the door will be properly alined with respect to the door frame. This adjustment is effected by means of set screws 10. These screws also permit of the door being adjusted vertically on the shaft 9. After the door has been properly adjusted relative to the frame, Babbitt metal may be poured into the space between the bracket bearing and the shaft 9, as shown in Fig. 3. The ends of the shaft 9 are supported in thrust-bearings 11 and 12 and are carried by the door frame 5.

Two pairs of undercut or grooved ribs 13 are formed integrally with, or otherwise connected to the door 4, while guide brackets 14 and 15 are bolted to the edges of the door bracket 8 and have their head portions 14^a and 15^a extending into the grooves of the ribs 13, so that while the door may have rotating movement on the pivot pin 7, it is held by said head portions against tilting. Stud 16 and 17 have threaded connection with the door and serve to limit rotative movements of the door, through engagement with the guides 14 and 15, respectively.

75 The outer edge of the door 4 is provided with a series of radially extending and circumferentially spaced lugs 18 that are shown in the drawings as lying behind complementally-formed lugs 19 on the frame 5. The lugs 18 are disengaged from the lugs 19 by giving the door 4 a slight rotative movement, in a manner to be hereinafter described, to bring the lugs 18 opposite the spaces or openings 20 between the lugs 19, thereby permitting the door 4 to be swung open. The stops 16 and 17 are so positioned that the stop 17 will engage the guide 15 and limit rotative movement of the door about its pivot 7 in counter-clockwise direction, so that lugs 18 will be positioned directly opposite to the spaces 20, while at the opposite extreme of rotative movement, with the guide 14 against the stop 16, the lugs 18 will be behind the lugs 19. A considerable number of lugs 18 and 19 is required to hold the door tightly against pressures developed within the chamber 6.

In order to releasably hold the door 4 against rotative movement, I provide a lock-

ing bar or latch 21 that is pivotally connected to the door 4 and is provided with two recesses by means of which it may have latching engagement with the arms 15, to hold the door in either of its extreme positions of rotative movement on the pin 7. In the position shown in Fig. 1, the door is held against accidental opening, while in its other latching position, the door lugs 18 will be held in alinement with the spaces 20 in the door frame when the door is open, thereby preventing damage to the lugs in case the door is swung about its axis 9 to closed position, and also facilitating the closing and locking of the door. The latch 21 carries a stud 22 by means of which it can be conveniently swung on its pivot.

A bracket 24 is secured to the door 4 and serves as a bearing for a shaft 25 to which an operating lever 26 and a pinion 27 are rigidly connected. The pinion 27 meshes with a rack 28 of arcuate form that is secured to the frame 5. There is sufficient clearance between the teeth of the pinion 7 and the teeth of the rack bar 28 that the door 4 may be freely swung about its hinge support, to permit such teeth to pass into and out of intermeshing engagement. If the latch 21 be thrown back to release the bracket arm 15, movement of the lever 26 to the position indicated in dotted lines in Fig. 1, will move the door 4 in a counter-clockwise direction about its pivot 7, to bring the door lugs 18 opposite to the openings 20. The door can then be swung about its hinge to expose the interior of the chamber 6, the lever 26 serving as a convenient handle to effect swinging movement.

As shown in Figs. 2 and 4, the door frame 5 is provided with a gasket 30 (preferably of rubber) against which the door 4 abuts, to provide a tight joint. The gasket 30 is provided with two inwardly extending ribs 31 that are cut away along adjacent edges to produce a flaring effect and whose outer edges lie against the walls of a groove that is formed in the frame 5. The gasket is provided with a third rib or extended body portion 32 with which the door 4 has abutting engagement. The frame 5 has a series of openings 33 that communicate with the groove in which the gasket 30 is contained, so that in those cases wherein there is compression within the chamber 6, instead of a vacuum, the gasket 30 will be held tightly against the door 4 by the pressure within the chamber 6, such pressure acting against the ribs 31 and also tending to spread such ribs apart, thus increasing the effectiveness of the seal. The degree of compression of the gasket will vary with the pressure within the chamber 6, which is, of course, a desirable feature.

In case the gasket 30 is to be employed to preserve a vacuum instead of to permit

the escape of pressure, its arrangement would be substantially the reverse of that shown in Figs. 2 and 4, or stated in another manner, the arrangement of the gasket in the door would be similar to its arrangement in the frame 5, and the door 4 would correspond to the end portion of a chamber or door frame.

I claim as my invention:—

1. Door structure comprising a door frame, a hingedly-mounted bracket, means for vertically adjusting the bracket, a door mounted on said bracket for rotative movement, a pair of undercut guide members secured to said door at spaced points along a line concentric to the axis thereof, extensions on said bracket each mounted adjacent to one of the guide members, a head portion on each extension fitting within one of the undercut guide members for directing said guide members in a given circular path during rotative movements of the door, and maintaining said door against movement with respect to the bracket in a direction transversely of its plane, a stop member at the outer end of one guide member for limiting rotative movement of the door in one direction, and a latch at the outer end of the other guide member for locking the door in its other extreme position of rotative movement.

2. Door structure comprising a door frame, a hingedly-mounted bracket, means for vertically adjusting the bracket, a door mounted on said bracket for rotative movement, a pair of guide members secured to said door at spaced points along a line concentric to the axis thereof, extensions on said bracket each mounted adjacent to one of said guide members, and inter-engaging means between each of said extensions and its guide member for directing said guide members in a given circular path during rotative movements of the door, and maintaining said door against movement with respect to the bracket in a direction transversely of its plane.

In testimony whereof I, the said WILLIAM TREAT DAVIDSON, have hereunto set my hand.

WILLIAM TREAT DAVIDSON.