J. R. GAMMETER.

DOOR MOUNTING FOR HEATERS.

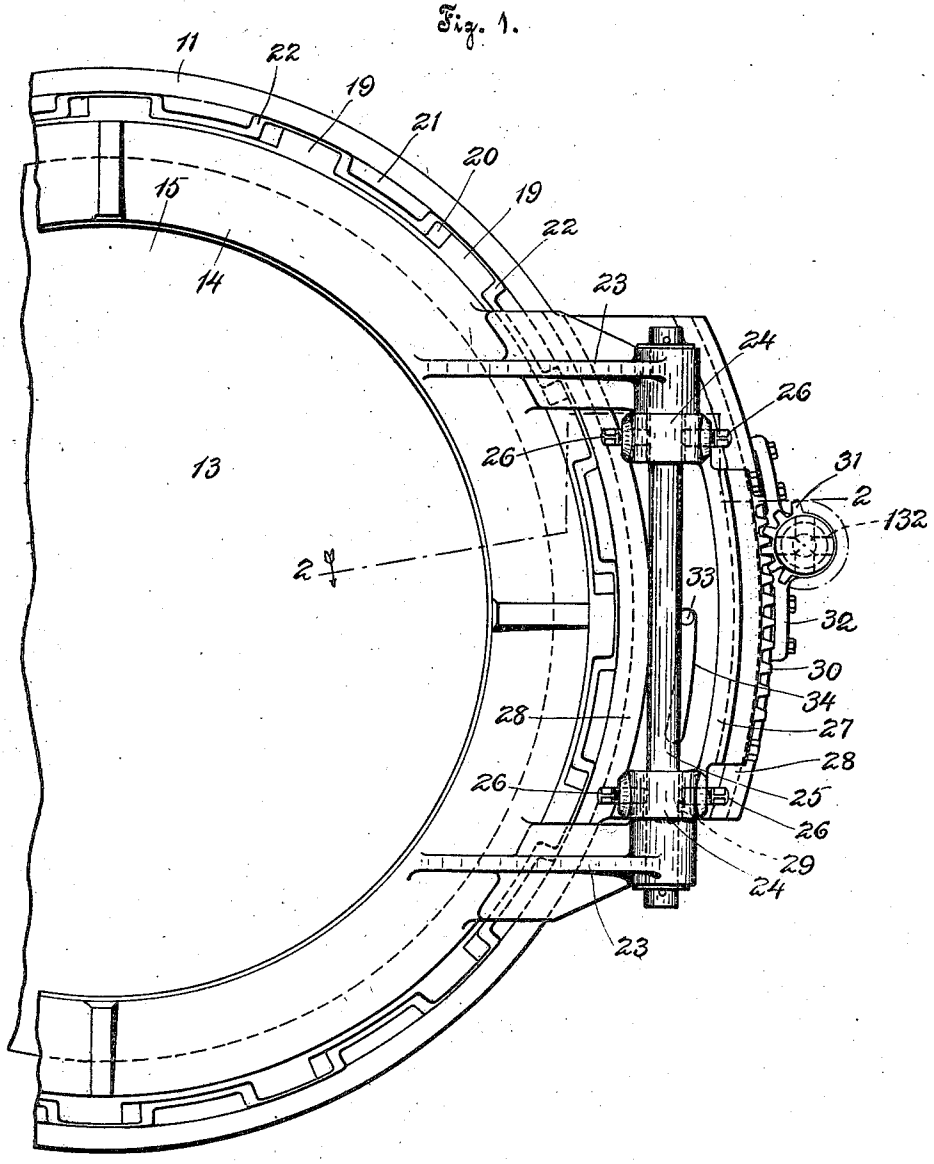
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1,226,766.

Patented May 22, 1917.

2 SHEETS—SHEET 1.

Fig. 1.



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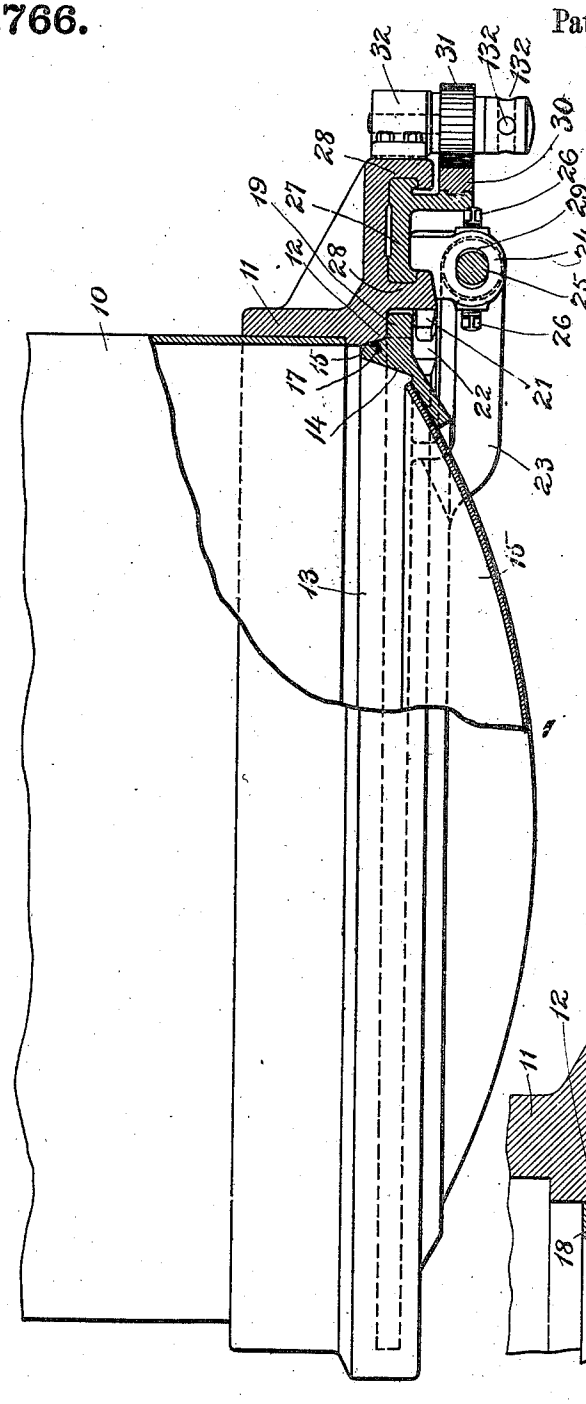
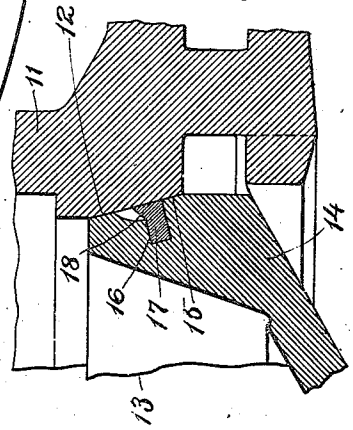


Fig. 2.

Fig. 3.



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DOOR-MOUNTING FOR HEATERS.

1,226,766. Specification of Letters Patent. Patented May 22, 1917.

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To all whom it may concern:

Be it known that I, JOHN R. GAMMETER, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Door-Mountings for Heaters, of which the following is a specification.

This invention relates to the mounting of hinged doors for large chambers, and especially horizontal open-heat steam vulcanizers. My object is to provide a structure whereby the door may be readily swung on its hinge and easily and quickly locked and unlocked.

Of the accompanying drawings,

Figure 1 is a partial front elevation of a vulcanizer door structure embodying my invention.

Fig. 2 is a plan view thereof partly in section on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged section illustrating the door packing.

In the drawings, 10 is the cylindrical body of the vulcanizer composed of a large tube on the front end of which is fitted an annular casting 11 forming the door jamb or frame, said frame having a conical door-seat or joint-forming member 12. 13 is the door consisting of an annular rim casting 14 and a concavo-convex plate 15, said rim casting being formed with a conical joint-forming member 15 complemental to the member 12 and interrupted by an annular groove 16 in which is fitted a soft rubber packing ring 17 having a rearwardly or inwardly extending lip 18 which works in an enlarged recess at the mouth of the groove 16. This form of packing permits a limited outward movement of the locked cover, due to the steam pressure behind it, without causing leakage, and constitutes an improved form of the general type of packing described in my Patent No. 1,199,296 of July 18, 1916.

The usual form of breech-block or bayonet lock is provided, consisting of short radial projections 19 with beveled forward ends 20 on the rim of the door, adapted to take under similar inwardly-projecting radial members 21 on the door frame when said door is rotated in its own plane, the projections 21 being separated by spaces 22 permitting the endwise opening and closing movement of the door when the latter is swung on its hinge.

My present invention provides for a circumferential or angular movement of the entire door hinge in order to effect the locking and unlocking action. 23, 23 are a pair of arms cast on the door rim 14 and forming the door portion of the hinge, and 24, 24 are a pair of coöperating arms or bosses located between the door arms 23 and pivotally connected therewith by an upright hinge pintle 25 which is secured by set-screws 26 to the bosses 24 and journaled in the arms 23.

The hinge bosses 24 are cast on a segmental carrier-plate 27 which is curved on the arc of a circle concentric with the center of the door 13, and is mounted to slide in similarly curved guides 28 formed on the door frame 11. The holes for the hinge pintle 25 in the bosses 24 are short slots 29 elongated transversely of the heater axis to permit the accurate centering of the door in its frame by means of the set-screws 26 and its readjustment when necessary because of wear or sagging.

The outer edge of carrier-plate 27 is provided with a gear segment 30 whose teeth mesh with those of a gear pinion 31, having its shaft journaled in a bearing bracket 32 on the door frame, the outer end of the pinion shaft being formed with holes 132 for the reception of a turning-bar.

The movement of carrier-plate 27 is limited in both directions by a stationary pin 33 occupying a slot 34 in said carrier plate. Fig. 1 shows the door unlocked. In this position it may readily be swung on its hinge to open and close the heater. With the door closed, its locking is effected by inserting a turning-bar in one of the holes 132 and rotating pinion 31 clockwise in order to slide the carrier plate 27 in a contrary or upward direction. Said plate 27, carrying the entire hinge, rotates the door 13, and forces the locking projections 19 thereon under the stationary projections 21. Sufficient clearance or lost motion is provided in a direction axially of the heater to permit the locking and unlocking movements of the door to take place without undue friction, but by reason of the improved form of

packed joint, represented in Figs. 2 and 3, whose conical surfaces permit the swinging movement of the door and whose flexible packing ring 17 compensates for this slight axial movement, a tight joint is maintained without substantial leakage when the steam pressure is turned onto the interior of the heater and serves to force the door outward against the locking projections 21.

It is possible to reconstruct horizontal heaters of other types by substituting for their door frames and doors the structure herein described.

It will be understood that the above details of construction may be considerably varied without departing from my invention.

I claim:

1. The combination of a heater-body and a hinged door thereon having members which interlock by an angular movement of the door in the plane of the latter, and a hinge connecting said door and body and angularly movable with the door.

2. The combination of a heater-body having a circular door opening, a circular door adapted to close said opening, a hinge carrying said door and mounted to slide concentrically of the door axis to lock and unlock the latter, and complemental locking members on the door and heater body engaged and disengaged by said sliding movement of the door hinge.

3. The combination of a heater-body having a circular door opening and door therefor provided with complemental locking members engaged and disengaged by an angular movement of the door in its own plane, a hinge connecting said door and body and angularly movable with the door to produce the locking and unlocking movements thereof, and gearing for effecting such angular movements of the door hinge.

4. A door structure for heaters comprising an annular door frame and a circular door having complemental locking members engaged and disengaged by angular movements of the door in its own plane, said door having a hinge member, a segmental guide on the door frame concentric therewith, and a carrier plate mounted in said guide and provided with a hinge member pivotally connected with the hinge member on the door.

5. A door structure for heaters comprising an annular door frame provided with a concentric guide, a carrier plate slidably mounted in said guide and provided with a gear member engaging a gear which is journaled on said frame, said plate having a hinge member, a door having a complemental hinge member pivoted to the first-said hinge member, and interlocking members on said door and frame engaged and disengaged by angular movements of the door produced by sliding said carrier plate in its guide.

6. The combination of a heater body having a circular door opening and door at one end thereof provided with interfitting conical joint-forming members, one of which has an annular packing engaging the other and adapted to permit a limited axial movement of the door without leakage, a hinge connection between said door and heater body, and complemental interlocking members on said door and body adapted to be engaged and disengaged by relative angular movements of the two.

In testimony whereof I have hereunto set my hand this 26 day of January, 1917.

JOHN R. GAMMETER.