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J. F. O'CONNOR

DOOR AND FASTENER THEREFOR

Filed Jan. 30, 1922

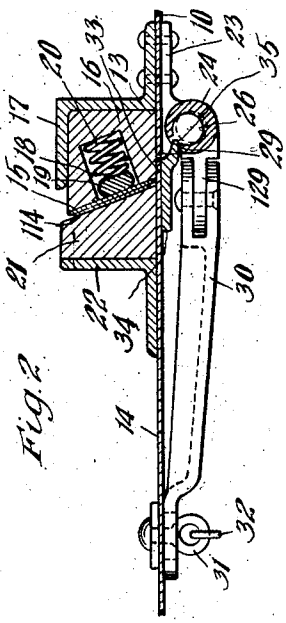


Fig. 2

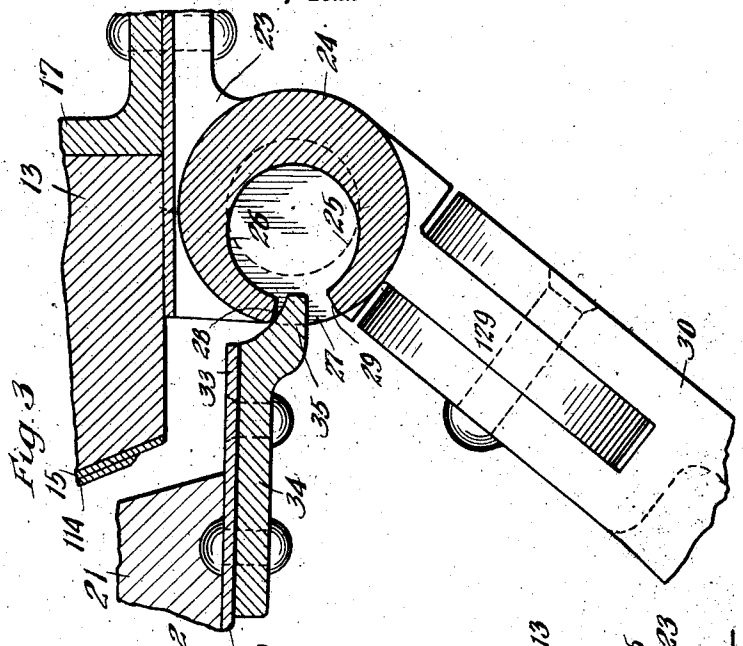


Fig. 3

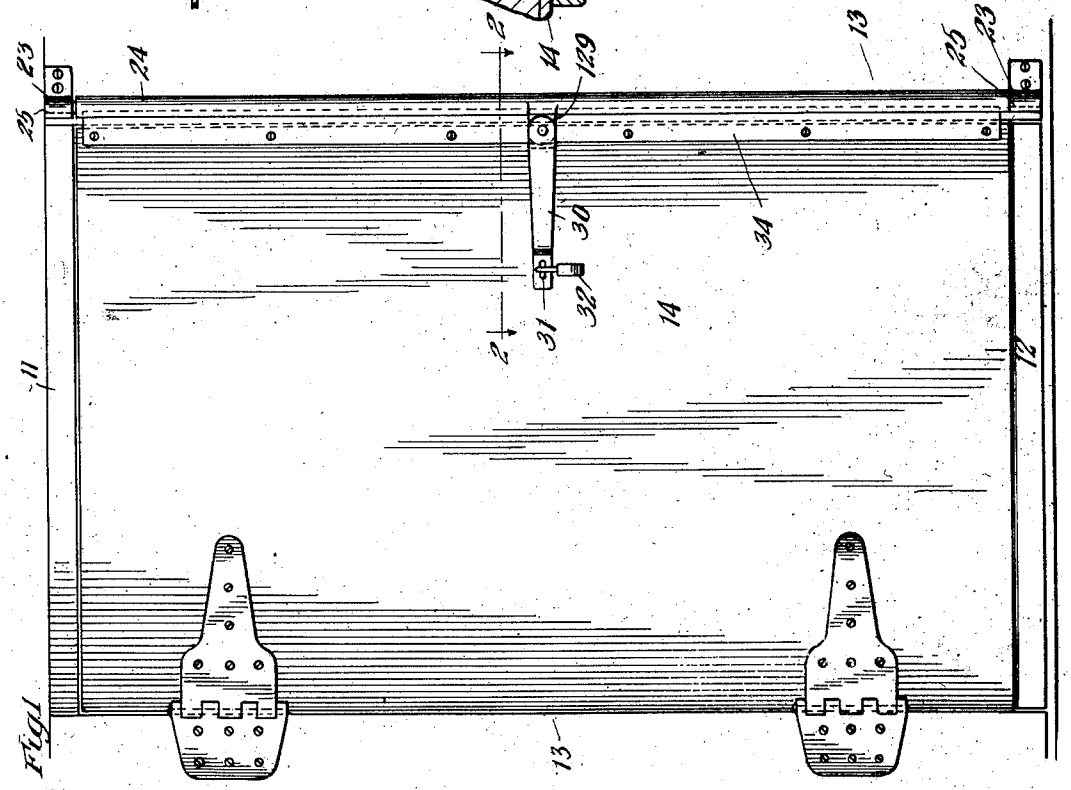


Fig. 1

Witnesses

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Inventor

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By Geo. I. Knight

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UNITED STATES PATENT OFFICE.

JOHN F. O'CONNOR, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO W. H. MINER, INC., A CORPORATION OF DELAWARE.

DOOR AND FASTENER THEREFOR.

Application filed January 30, 1922. Serial No. 532,618.

To all whom it may concern:

Be it known that I, JOHN F. O'CONNOR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Doors and Fasteners Therefor, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in doors and fasteners therefor.

On certain railroads, the practice has been adopted of employing what are known as "containers" for the transporting of mail and high-grade freight, the shippers loading said containers and the containers then being trucked to a special car and a number of such containers placed on each car, the mail or goods being delivered to the proper consignee in the said containers. Such containers, in order to avoid excessive weight, are preferably made of sheet steel to resist the service conditions and each container is provided with a relatively large door to permit loading and unloading of comparatively large packages. Obviously, such containers which are exposed to the weather on the special flat bottom car, must be weatherproof around the door joints as well as elsewhere and to accomplish this result, it is necessary to employ insulation at the joints, such as used for instance in refrigerator cars for a similar purpose. To obtain an effective insulated joint, considerable pressure must be exerted in forcing the door to fully closed position to overcome the resistance offered by the insulation to the closing movement. The doors of the containers referred to, being of sheet metal and of comparatively large size, are necessarily subject to considerable bending strains tending to warp them while being moved to fully closed position and also while being opened, on account of the resistance afforded by the insulation around the joints, above referred to.

The object of my invention is to provide an arrangement which is especially adapted for closing the doors of such containers or other uses wherein a relatively large door is employed, of comparatively light construction, with which considerable force must be employed in forcing the door to fully closed position, my improvements being so constructed and applied as to minimize danger of warping or buckling such doors during the closing and opening movements thereof.

Another object of my invention is the provision of a door fastening device so designed that it effectively serves to prevent accumulation of snow and sleet along the insulated joint of the door, thereby minimizing the tendency of the doors to "freeze" at the joints.

In the drawing forming a part of this specification, Figure 1 is a side elevational view of a portion of a container such as employed on certain railroads for transporting high-class freight and mail and showing my improvements in connection therewith. Figure 2 is an enlarged horizontal sectional view corresponding substantially to the section line 2—2 of Figure 1. Figure 3 is a horizontal sectional view corresponding to Figure 2 but upon a somewhat larger scale and illustrating the positions assumed by certain of the parts when the door is approaching its final closed position or, vice versa, when it has just been partially opened.

In said drawing, the body of the container is shown as having a side wall 10 with a relatively large door opening therein, the door opening being defined by a lintel 11, threshold 12 and jambs 13—13. Suitable insulation will be provided around the door opening, the same being preferably carried by the fixed part of the container rather than by the door 14. In Figure 2 a desirable type of insulation is shown. Said insulation consists of an outer layer of canvas 114 and a layer of felt or other suitable padding 15, nailed to a longitudinally extending strip or block of wood 16 which in turn is secured to the door jamb and braced by a Z-bar 17 riveted to the side wall. The canvas and padding above referred to extend over a longitudinal recess 18 provided in the wood block 16 and the same are pressed outwardly by a backing strip 19 preferably of wood. Said backing strip is yieldingly forced outward by a plurality of springs 20 disposed in the recess 18. A cooperating wood block or strip 21 is carried by the free edge of the door 14, said wood strip being backed by an angle iron 22 riveted to the sheet metal forming the door. The adjacent faces of the door edge and jamb, where the insulation is employed, are beveled so as to pro-

vide a wedge fit when the door is forced home. As will be clear from inspection of Figure 1, the door is adapted to swing about a vertical axis.

To open and close the door, I preferably employ the following arrangement. Secured to the side wall of the container above and below the door opening and in line with the lintel and threshold are bearing brackets 23—23. Rotatably journaled in said brackets 23 is an operating closure shaft 24 having journals 25—25 of reduced diameter at the top and bottom thereof entering the corresponding journal bearings of the brackets 23.

The operating shaft 24, preferably in the form of a malleable casting, is of cylindrical section and eccentrically cored as indicated at 26. On one side and of a length corresponding to the length of the free edge of the door, the shaft is formed with a relatively narrow slot 27 defined by the edges 28 and 29 of the shaft structure.

At any suitable point intermediate its ends, the shaft is provided with a radially extended ear 129 to which is pivotally connected a forked handle 30. The outer or free end of the handle 30 is slotted so as to allow it to pass over a fixed eye 31 carried by the door in the manner of a hasp, the handle being held in closed position by a padlock 32 passed through the eye or other suitable means.

The sheet metal of the door is extended beyond the wood strip 21 for a limited distance as indicated at 33 best in Figure 3, said extended portion being adapted to overlie the wood strip carried by the door jamb which is projected beyond the edge of the sheet metal of the fixed side wall of the container. Secured along the free edge of the door is a plate 34, the same extending substantially the entire length of the free edge and serving as an effective brace or reinforcement for the door edge, as will be understood. The edge of the plate 34 nearest the shaft is formed with an outwardly and more or less diagonally extended lip or flange 35 so located that it is adapted to enter the longitudinal slot 27 formed in the shaft, as shown in Figures 1 and 2.

In operating my invention, the door 14 will first be moved to almost closed position, that is, to the approximate position shown in Figure 3 and the shaft then swung so as to enter the projecting flange or lip 35 within the shaft slot. The shaft is then rotated so as to bring the handle 30 parallel or substantially parallel with the door during which action it will be observed that the edge 29 of the shaft slot will force the door to fully closed position and, when the handle is locked, will maintain the door in closed position. In opening the door, the shaft is swung in the opposite direction, during which time the slot edge 28 will engage the under side of the lip or flange 35 and thus positively open the door sufficiently to clear the insulation, the shaft then passing out of engagement with the plate 34 and allowing the doors to be thereafter fully opened.

With my arrangement, it will be observed that the pressure for closing and opening the door is applied continuously throughout the entire length of the free edge of the door, thereby eliminating tendency to buckle or warp the door which would otherwise result if pressure were applied at separated or isolated points. Furthermore, as will be clear from an inspection of Figure 2, the shaft maintains a tight joint with the plate 34 when the door is closed and the shaft is located so closely to the side wall sheet metal as to prevent any appreciable amount of snow or sleet getting between the shaft and the container wall so that snow and sleet cannot accumulate to any appreciable extent at the joint between the door and jamb.

I have herein shown and described what I now consider the preferred manner of carrying out the invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a member having a door opening and a door for closing the opening, the combination with an operating shaft arranged parallel to the free edge of the door, said shaft having a longitudinally extending slot therein; and a cooperable plate extending parallel to the free edge of the door, said plate entering said slot when the door is moved to approximately closed position, the rotation of said shaft after engagement of the slot and shaft forcing the door to fully closed position.

2. In a container member having a door opening and a door for closing the opening, the combination with an operating shaft arranged parallel to the free edge of the door and rotatably mounted on the corresponding door jamb, said shaft having a longitudinally extending slot therein; and a cooperable plate extending along the free edge of the door and rigid therewith, said plate having a projecting edge adapted to enter said slot when the door is in nearly closed position whereby, rotation of said shaft on the plate is adapted to force the door to fully closed position.

3. In an arrangement of the character described, the combination with a pivotally mounted door and a member against which it is adapted to close; of a shaft rotatably mounted upon one of said parts and cooperable with the door; and means carried by the other of said parts and engageable with said shaft throughout substantially the entire length of the latter, said means co-

operating with said shaft upon rotation of the latter to force the door to fully closed position.

4. In an arrangement of the character described, the combination with a pivotally mounted door and member against which it is adapted to close; of a shaft rotatably mounted upon one of said parts and having a slot extending lengthwise therealong; and means extending outwardly from the other of said parts and adapted to enter said slot when the door is in nearly closed position, said means and shaft cooperating upon rotation of the shaft to move the door to fully closed position.

5. In a container having a door opening and a pivotally mounted door, the door jamb and free edge of the door having cooperable spring-influenced insulation necessitating appreciable pressure to move the door to final closed position, the combination with a shaft rotatably mounted parallel to the pivotal axis of the door; and cooperable means engageable with said shaft throughout substantially the entire length of the latter adapted to force the door to fully closed position upon rotation of the shaft.

6. In a container having a door opening, the combination with a pivotally mounted sheet metal door; of a combined reinforcing and locking plate secured along the free edge of the door and having a portion thereof projecting outwardly therefrom; of a shaft rotatably mounted adjacent the door opening to rotate about an axis parallel to the free edge of the door and having means engageable with said outwardly projecting portion of the plate to effect final closing movement of the door upon rotation of the shaft.

7. In a container of the character described having a door opening and a pivotally mounted door, the combination with a combined reinforcing and locking plate extending continuously along the free edge of the door and having an outwardly projecting continuous lip; of a shaft rotatably mounted on the container adjacent the door opening to rotate about an axis parallel to the free edge of the door, said shaft having a continuously extending slot therealong within which is adapted to enter said projecting edge of the plate when the door is in nearly closed position; and means for rotating said shaft.

8. In an arrangement of the character described, the combination with a pivotally mounted door and a member against which it is adapted to close; of an extension projecting outwardly from the edge of one of said parts and extending along the major portion of said edge; and manually operated means mounted on the other part and engageable with said extension throughout substantially the entire length of the latter adapted to force the door to fully closed position upon operation of said means.

9. In a container having a door opening, the combination with a pivotally mounted sheet metal door for closing said opening and a member against which the door is adapted to close; of an extension along the edge of one of said parts for reinforcing said edge and projecting therebeyond; and operating means mounted on the other of said parts and engageable with said extension along the entire length of the latter when the door is in almost closed position to force the door to fully closed position upon operation of said means.

In witness that I claim the foregoing I have hereunto subscribed my name this 10th day of January 1922.

JOHN F. O'CONNOR.

Witnesses:
UNA C. GRIGSBY,
ANN BAKER.