

April 28, 1936.

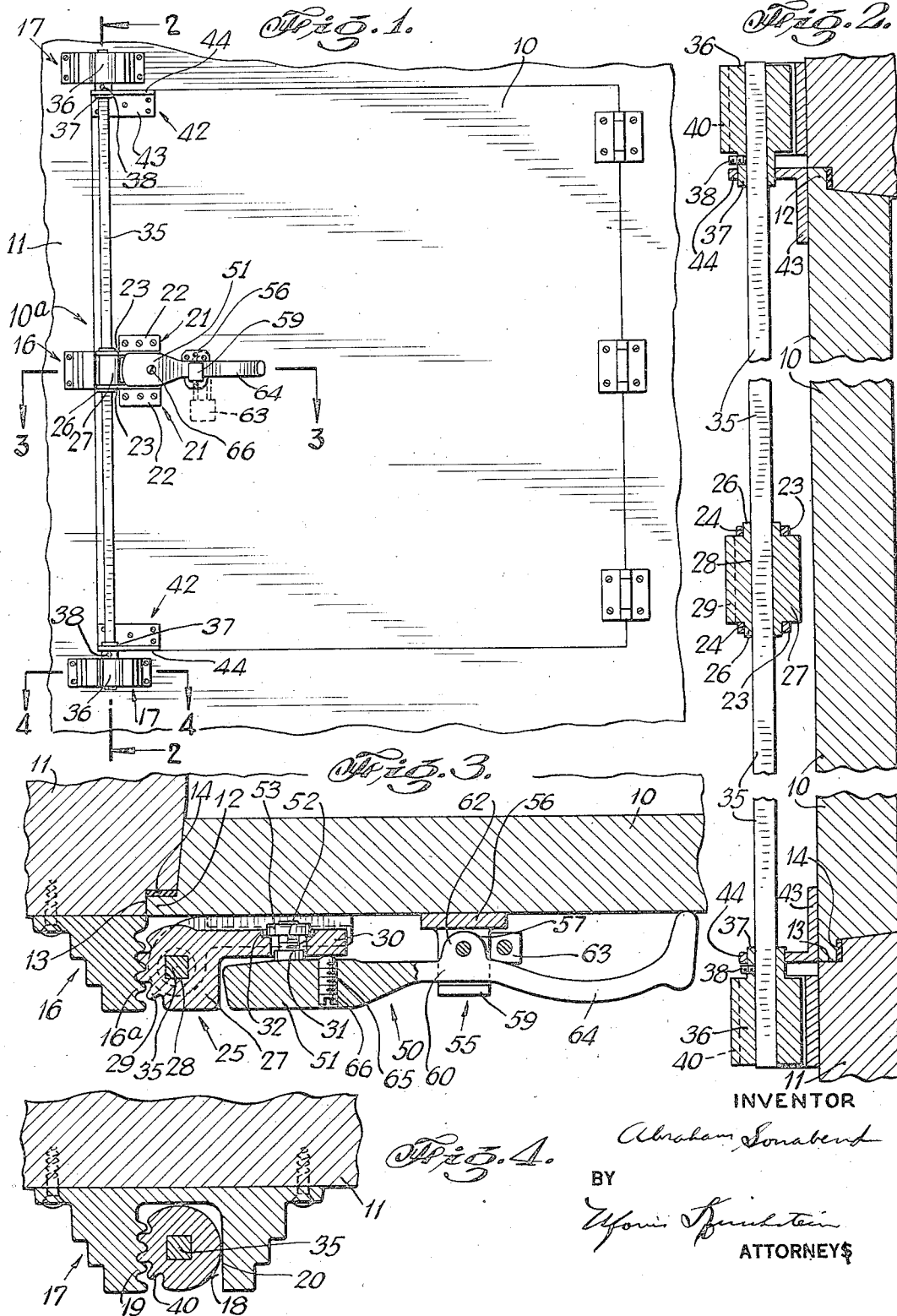
A. SONABEND

2,038,876

LOCK

Filed Nov. 25, 1933

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

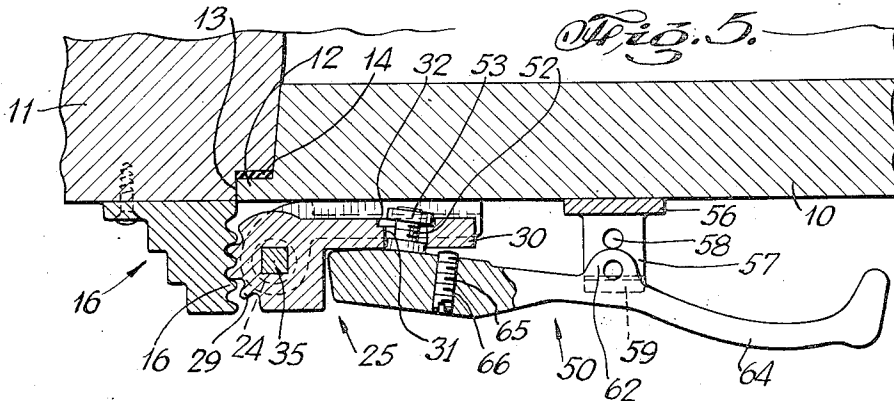


Fig. 6.

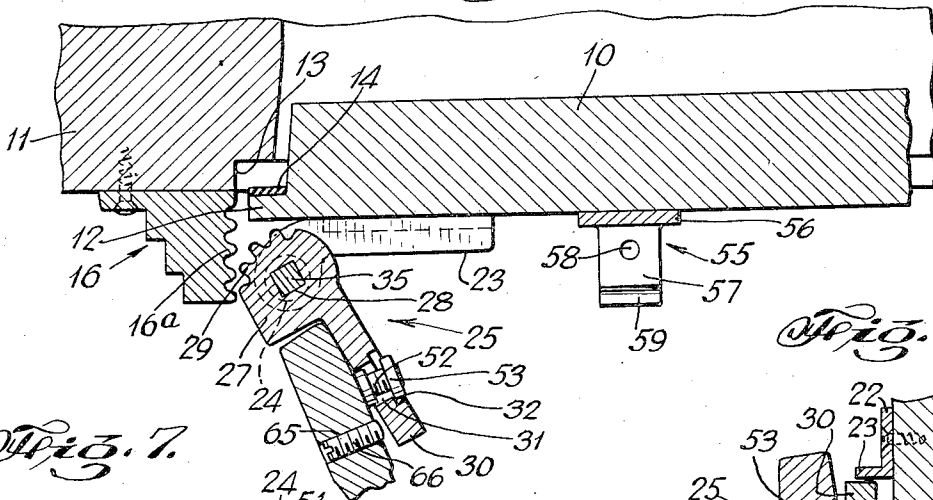


Fig. 7.

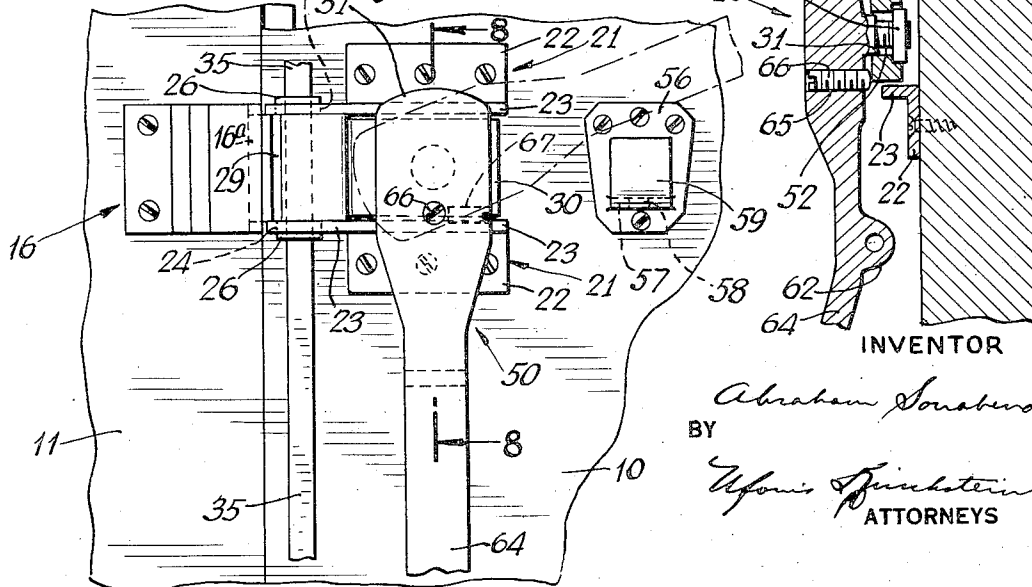


Fig. 8.

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2,038,876

LOCK

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Application November 25, 1933, Serial No. 699,704

3 Claims. (Cl. 292—218)

This invention relates to locks.

An object of this invention is to provide a lock for a door, having means for forcing the door open should the door become stuck in the door jamb, as for example, when a door on a refrigerated truck freezes to the jamb after not being opened for several hours.

A further object of this invention is to provide a lock of the character described, having means for simultaneously applying pressure to force the door open at a plurality of points, the construction including a single handle for actuating the lock.

A further object of this invention is to provide in a lock of the character described, a handle adapted to be pulled away from the door in forcing the door open, the construction of the handle being such that the same will swing downwardly so as to be closely adjacent the door, thus eliminating the danger of injury from a projecting handle.

A still further object of this invention is to provide a strong, compact and rugged lock construction of the character described, which shall be relatively inexpensive to manufacture, easy to assemble, disassemble and install, on either a left hand or a right hand door, and which shall be smooth and positive in operation, and without practical and efficient to a high degree.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawings, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a front elevational view of a door provided with a lock embodying the invention;

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a cross-sectional view taken on line 4—4 of Fig. 1;

Fig. 5 is a view similar to Fig. 3, but showing the handle released from the keeper;

Fig. 6 is a view similar to Fig. 5, but showing the handle pulled outwardly for releasing the door from the door jamb;

Fig. 7 is a front elevational view of the lock

showing the handle swung downwardly when released; and

Fig. 8 is a cross-sectional view taken on line 8—8 of Fig. 7.

Referring now in detail to the drawings, 10 designates a door, for example, a door on a refrigerated truck, and 11 designates a door jamb in which the door is mounted. The door may be of any suitable construction and is here shown for the purpose of illustration, as being provided with a flange 12 received in a recess 13 of the door jamb and provided with a gasket 14.

It has often been found that refrigerator doors become frozen to the door jamb, for example, when a refrigerator truck travels several hours without the door being opened.

My improved lock 10a, therefore, is provided with means for forcing the door away from the door jamb, to break the seal at the inception of the opening movement of the door. To this end, the lock comprises a plurality of keepers attached at suitable points in the door jamb. As shown for the purpose of illustration only, there is provided a central keeper 16, and keepers 17 at the top and bottom of the door jamb. The keeper 16 is provided on the inner face thereof with a gear tooth rack portion 16a perpendicular to the plane of the door, and may be fixed to the door jamb by screws or in any other suitable manner. The keepers 17 may be attached to the door jamb just above and below the door and each is formed with a recess 18, one side 19 of the recess being formed with rack gear teeth similar to the rack teeth 16a of the keeper 16 and aligned therewith.

The recess 18 in each of the keepers 17 also provides a surface 20 substantially parallel to the rack portion 19 for the purpose hereinafter appearing.

Fixed to the door 10 adjacent the keeper 16 are a pair of similar, symmetrically disposed brackets 21, each having a wall 22 fixed to the door, and a wall 23 perpendicular to the door. The walls 23 are thus parallel to one another, and each is formed with a circular opening 24, said openings being aligned with one another. Received between said brackets 21 is a member 25 having aligned circular bosses 26 at the top and bottom thereof rotatably received within the openings 24 in the brackets 21. The member 25 may thus be rotated in a horizontal plane about the axis of said openings 24. The member 25 is furthermore formed with an enlarged head 27 at one end formed with a through, square-shaped opening 28 coaxial with the bosses 26. The outer surface of said head 27 is curved and formed with

gear teeth 29 adapted to engage and coast with the gear teeth 16a. Extending from the head 27 is a portion 30 formed with a through opening 31 having an enlarged portion 32 for the purpose hereinafter appearing.

Extending through the opening 28 is an elongated bar 35 of square cross-section extending above and below the top and bottom of the door. Received on the upper and lower ends of the bar 35 are members 36 disposed within the recesses 18. Each member 36 is formed with a square shaped through opening for receiving the bar and is formed with a downwardly extending circular boss 37 provided with a set screw opening receiving a set screw 38 for fixing the member 36 to the bar. The member 36 is of generally circular cross-section and a portion of the surface thereof is formed with gear teeth 40 meshing with the gear teeth of the rack 19. The members 36 fit somewhat loosely within the recesses 18 and the surfaces 20 of said recesses serve as guides during rotation of said members 36, in a manner hereinafter more fully explained. Fixed to the upper and lower ends of the door are brackets 42 each having a plate portion 43 contacting and attached to the door, and a plate portion 44 perpendicular to the door and formed with a circular opening receiving a collar or boss 37. For rotating the member 25 there is provided a handle 50 having a head 51 substantially contacting the portion 30 of said member and formed with a screw 52 loosely extending through the opening 31 in said portion. A nut 53 screwed to the rear end of the screw 52 serves to pivotally attach the handle 50 to the member 25. It will be noted, however, that the handle may have a slight rocking movement about the member 25 in addition to a pivotal movement about the axis of screw 52.

Mounted on the door 10 is a keeper or hooked member 55 for the handle, said keeper comprising a plate portion 56 contacting the door and attached thereto and from which there extends a horizontal portion 57 formed with a through opening 58. Extending upwardly from the horizontal portion 57 is a vertical wall portion 59. The handle 50 is provided with a portion 60 adapted to be received within the keeper for contacting the inner surface of the vertical wall 59 thereof. The portion 60 of the handle may further be formed with an eyelet extension 62 having an opening registering with the opening 58 for receiving a padlock 63 to lock the handle to the keeper and hence prevent opening of the door.

The operation of the lock will now be described. For opening the door the handle is grasped at the outer portion 64 and swung upwardly about the axis of the screw 52 to clear the keeper wall 59. The handle is then pulled outwardly, thus causing the member 25 to rotate about the axis of the bar 35. This movement will cause the teeth 29 of the member 25 and the teeth 40 of the members 36 to cooperate with the rack teeth 16a and 19, for forcing the door away from the door jamb. During this movement, the members 36 will be guided by the surface 20 of the keepers 17. Due to the leverage of the handle, a strong force will be exerted to start the opening movement of the door by an ordinary pull on the handle. After the door has been opened a small distance, to break the seal, the gear teeth 29 will become disengaged from the gear teeth 16a and the gear teeth 40 will become disengaged from the gear teeth 19. The door may then be swung wide open. After the door is swung open,

the handle may be released and will drop downwardly to the position shown in Fig. 7 so as not to project away from the door.

It will thus be seen that with doors such as doors on refrigerator trucks, which often remain closed for many hours during long trips, freezing and sticking of the doors to the door jambs often result. Ordinary latch locks in such cases often prove insufficient to tear the door away from the door jamb.

With my improved lock, a strong force may easily be exerted on one or more points on the door to break the door away from the door jamb, should the same become frozen. Obviously, the bar 35 and keeper 17 and members 36 may be omitted where it is desired to use the one keeper 16a.

Furthermore, instead of an upper or lower keeper any number of such keepers may be provided. It has been found that after some use, the gasket 14 becomes compressed, causing looseness between the portion 60 of the handle and the wall 59 of the keeper 55. To prevent such looseness, the head 51 of the handle 50 is provided with a screw threaded opening receiving a screw 66 adapted to contact the portion 30 of the member 25.

It will thus be noted that when looseness occurs due to a compressed gasket, the screw 66 may be screwed further inwardly to swing the handle in a clockwise direction, looking at Fig. 3 of the drawings. The handle may thus be made to exert a strong frictional pressure against the plate portion 59 when pressed down into the keeper. The handle may further be provided 35 with a set screw 67 cooperating with the screw 66 to retain the same against accidental rotation.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings, is to be interpreted as illustrative and not in a limiting sense.

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

1. A lock comprising a member rotatably mounted on a door, a handle pivotally attached to said member for rotation about an axis perpendicular to the axis of rotation of said member, a member attached to the door adapted to engage said handle, and a screw screwed to said handle and adapted to engage said member for causing a rocking movement of said handle with respect to said member.

2. In a lock, a member rotatably mounted on a door for rotation about an axis parallel to the edge of the door, and a handle pivoted to said member about an axis perpendicular to said door and means for rocking said handle about an axis perpendicular to the axis of pivotal movement of said handle.

3. In a lock, a member rotatably mounted on a door for rotation about an axis parallel to the edge of the door, a handle pivoted to said member about an axis perpendicular to said door, means for rocking said handle about an axis perpendicular to the axis of pivotal movement of said handle, and a hooked member on said door adapted to receive a portion of said handle.

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