

Aug. 22, 1933.

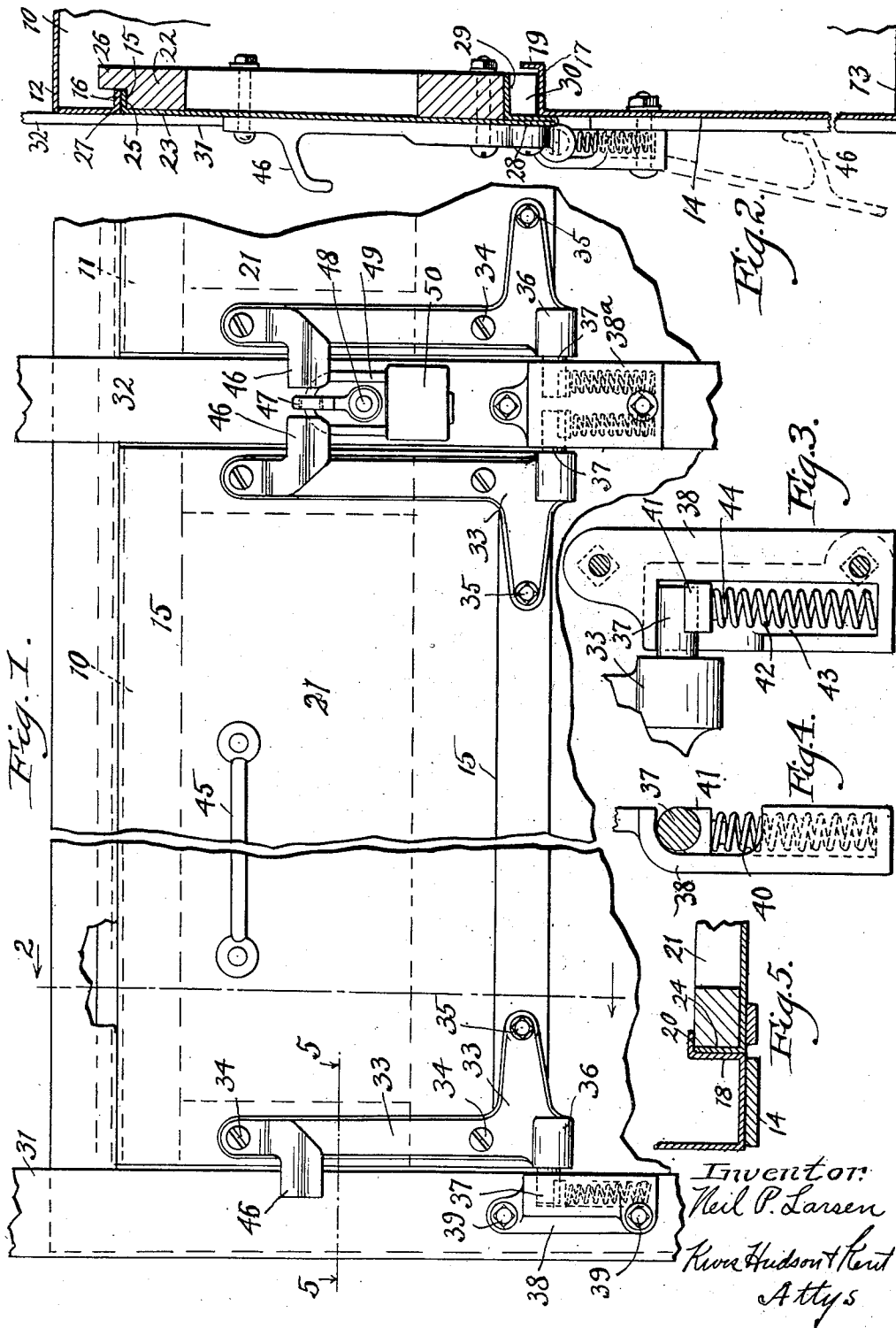
N. P. LARSEN

1,923,787

HINGE

Filed Dec. 28, 1929

2 Sheets-Sheet 1



Aug. 22, 1933.

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2 Sheets-Sheet 2

Fig. 6.

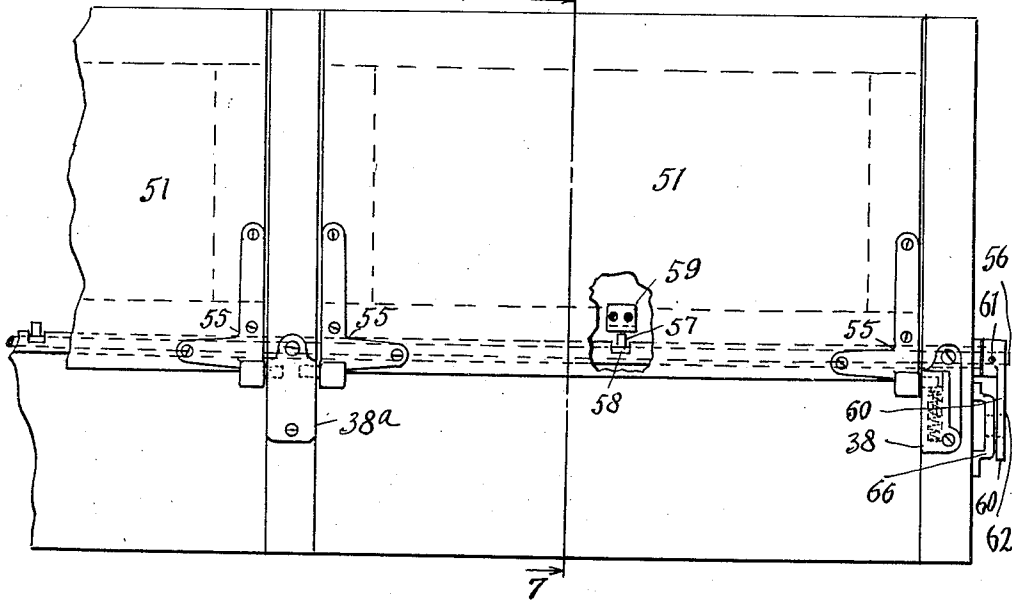


Fig. 7.

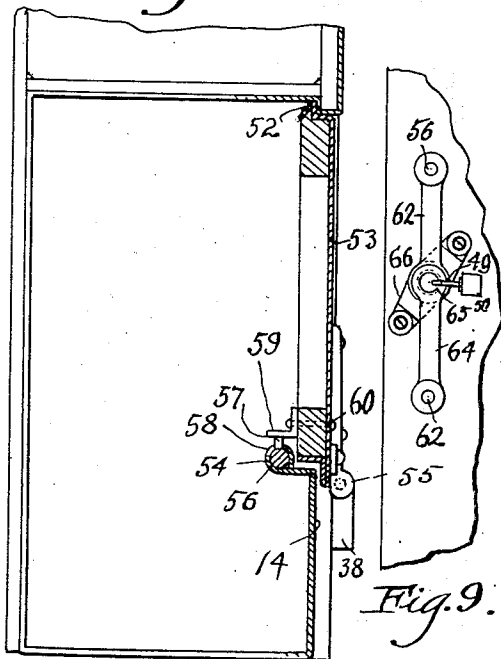


Fig. 8.

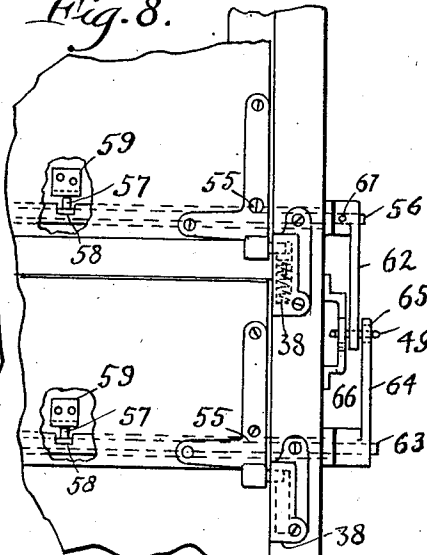


Fig. 9.

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UNITED STATES PATENT OFFICE

1,923,787

HINGE

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Serial No. 417,124

10 Claims. (Cl. 20—16)

This invention relates to a hinged closure construction whereby a closure is normally maintained in closed position within an opening and which is adapted to be bodily moved to disengage the closure from the wall within which it is mounted, in order that the closure may be moved to open position.

One of the objects of the invention is to provide a hinge for use in connection with a closure and the wall on which the closure is mounted that will serve to retain the closure member in closed position, but which will permit bodily movement of the closure to permit opening of the same.

A further object of the invention is to provide a door having a projection which underlies the mating edge of the door opening in closed position, and yieldable hinges for the door, permitting movement of the entire door away from said mating edge to release said projection.

A still further object of the invention is to provide securing means extending between two or more closure means of this character adapted to prevent such other movement of the closure means.

Another object of the invention is to provide a device of the character referred to which is simple in construction, efficient in operation and inexpensive to manufacture.

With the objects above indicated and other objects hereinafter explained in view, my invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawings—

Fig. 1 is a front elevational view of a door showing the hinge embodying the present invention;

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

Fig. 3 is a fragmentary rear view of a portion of the hinge embodying the invention;

Fig. 4 is an inner end view of a portion of the hinge shown in Fig. 3;

Fig. 5 is a horizontal cross sectional view taken on line 5—5 of Fig. 1;

Fig. 6 is a view similar to Fig. 1 but illustrating a modification;

Fig. 7 is a vertical section along the line 7—7 of Fig. 6;

Fig. 8 is a partial view similar to Fig. 1 showing a further modification; and

Fig. 9 is an end elevation of the structure shown in Fig. 8.

The particular type of door construction about

to be described has particular use in connection with repair trucks and the like, in which there are a number of horizontally extending compartments provided upon the opposite sides of the truck in which are kept tools, material, and the like, which articles are needed in connection with the repair work being done. Ordinarily, these compartments have doors which are provided with the usual type of hinges at their lower edges and which open outwardly in the usual manner, the upper portion of the door being provided with the usual hasp which engages the usual keeper in such a manner that the door may be locked in closed position. This particular construction has several disadvantages the one of greatest importance being the inability to prevent leakage of water through the door into the compartment during rainy weather. A further disadvantage is the inability to maintain the door in normally closed position without employing some kind of locking means between the keeper and the hasp, all of which consumes considerable time before access to the interior of the compartment is afforded. These disadvantages have been conveniently overcome in the present construction.

In the drawings, and referring particularly to Fig. 1, one compartment 10 has been herein illustrated and a portion of an adjoining compartment 11, and in the present instance consists of a metal stamping having a top 12, a bottom 13 and a front 14, as will be readily seen from Fig. 2.

The front 14 is cut away to provide a door opening 15 and adjacent the door opening the metal is turned inwardly to provide a rearwardly extending flange 16 at the top thereof, an inwardly extending flange 17 at the bottom thereof and inwardly extending flanges 18 along the sides thereof, all being joined together at the corners in the usual manner. The inner end of the lower flange 17 is then bent upwardly at 19, as shown in Fig. 2, and extends substantially parallel with the front 14. The inner ends of the side flanges 18 are also bent inwardly at 20, as shown in Fig. 5, and these portions extend substantially parallel with the front 14. The portions 19 and 20, therefore, extend inwardly beyond the door opening 15, in order to provide a substantial abutment for the door 21 when in closed position. Additionally, these portions 19 and 20 prevent any water from dropping into the compartment 10 when the door 21 is in closed position.

In the present instance the door comprises a

wooden frame 22 which has attached to its front surface a metal sheet 23. Along the edges of the door 21 the metal sheet is bent inwardly at 24 and suitably secured thereto as by means of nails or otherwise, while at the top of the door the frame is grooved longitudinally at 25 to provide a longitudinal extension 26. The metal sheet 23 at its upper portion is bent inwardly at 27 into cooperation with the longitudinally extending groove 25 and is secured to the frame by nails or other suitable means. The lower portion of the metal sheet 23 extends below the lower portion of the door 21, as indicated at 28, and extends below the inwardly extending flange 17 of the compartment 10. The metal sheet 23 is then bent back upon itself and then laterally to form a flange 29 which cooperates with the lower edge of the frame 22 and is secured thereto by nails or other suitable means providing a longitudinally extending space 30 between the flange 29 and the flange 17 which is of a depth greater than the height of the extension 26 from the base of the groove 25, for the purpose of permitting the door 21 to be moved downwardly until the end of the extension 26 clears the door opening 15 and permits the door 21 to be moved outwardly to open position.

A piece of strap iron 31 is bolted or otherwise secured to the front 14 of the compartment 10 adjacent one side of the door 21 and a similar piece of strap iron 32 is bolted or otherwise secured to the front 14 adjacent the opposite side of the door 21, thereby providing means whereby the compartment may be conveniently attached to the supporting structure such as the side of the motor vehicle.

As the hinges provided for the door are identical in construction and operation, except for the fact that one is right-hand and the other left-hand, a description of one hinge is believed to be sufficient in order to understand the operation. The hinge comprises a hinge member 33, substantially L-shape, of metal, which may be either cast or forged. One leg of the hinge member 33 extends substantially parallel with the strap iron 31 and is secured to the front of the door 21 by means of bolts 34, while the other leg of the hinge member 33 extends laterally with respect to the strap iron 31 and is secured by a bolt 35 to the lower portion of the door 21. An enlarged cylindrical portion 36 is provided at the lower portion of the hinge member 33 and is formed integral therewith and extending outwardly or longitudinally thereof is a cylindrical extension 37 which functions as a pivot for the door 21.

The cooperating hinge member 38 is of metal, either cast or forged as desired, and is secured to the strap iron 31 adjacent the lower portion of the hinge member 33 by bolts 39. The side of the hinge member 38 adjacent the hinge member 33 is cut away to provide an elongated recess 40 having inner rounded corners which cooperate with the extension 37 on the hinge member 33, the upper one of which provides a bearing surface therefor.

A bearing block 41 is provided with a groove which cooperates with the lower peripheral portion of the extension 37 to provide the additional bearing surface therefor and is maintained in engagement therewith by a coil spring 42. The coil spring 42 is housed in a longitudinally extending recess 43 and has one end cooperating with an extension 44 on the lower portion of the bearing block 41 and its opposite end abutting

the base of the recess 43, as clearly shown in Figs. 3 and 4.

When the door 21 is in its normally closed position, as viewed in Figs. 1 and 2, the extension 26 on the door 21 extends above the door opening 15 and is maintained in this position by means of the springs 42, thereby preventing the door from opening accidentally. When it is desired to open the door 21 the handle 45, which is secured to the door 21, may be gripped and the door moved downwardly against the tension of the springs 42 sufficiently to permit the extension 26 to clear the door opening 15. The door 21 may then be moved outwardly past the door opening while at the same time the springs 42 move the door 21 upwardly until the extensions 37 engage the upper rounded corner of the elongated recesses 40, thereby providing a substantial bearing within which the extensions 37 may pivot.

To close the door a reverse operation is required, namely, when the door is moved to approximately its closed position it is then forced downwardly against the tension of the springs 42 until the extension 26 on the upper end of the door 21 is lower than the door opening 15, so that it may be moved therethrough, and when once in closed position the springs 42 move the door 21 upwardly and maintain the same in closed position.

In Fig. 1 a double hinge member 38a has been shown, in view of the fact that this member is placed between two pivoted doors, but the construction and operation is identical so that additional description is believed unnecessary.

The hinge member 33 at its upper portion is provided with a laterally extending finger piece 46 which is formed integral therewith and which may be employed instead of the handle 45. This finger piece additionally serves as a stop for the door 21 when the latter is in open position as indicated in dotted lines in Fig. 2.

The finger pieces 46 adjacent the strap iron 32 extend inwardly toward each other, as shown in Fig. 1, and between them is mounted an eye 47 which is secured to the strap iron 32 by a bolt 48, or other suitable means. The looped end 49 of a lock 50 is adapted to be positioned within the loop 47 and extends beneath the finger pieces 46 in such a manner as to prevent downward movement of the doors 21, when it is desired to maintain the compartment in locked condition.

A slightly modified construction embodying the invention is illustrated in Figs. 6, 7, 8 and 9, providing a modified means for locking the doors in closed position. In this arrangement the doors 51 are identical with those of the preceding figures, with the exception that in lieu of the projection 26 a projection 52 is provided, and the metal sheet 53 extends thereover to form a metallic surface for the projection 52. Furthermore, the metal of the front 14 at the bottom of the door opening is provided with a rolled flange or tube 54 in lieu of the flange 19. The hinge members 55 are identical, with the exception that the portions 46 are omitted. The members 38 and 38a are identical.

A shaft 56 is journaled in the tube 54 and is provided with spaces or lugs 57 which project through slots 58 in the upper portion of the tube 54. Preferably the lugs 57 and slots 58 are located centrally with respect to the doors 51 so as to underlie cooperating engaging means such

as clips 59 secured to the rear face of the door as by means of bolts 60.

As shown in Figs. 6 and 8, the shaft 56 projects laterally beyond the end of the compartment and has rigidly secured thereto, as by means of pin 61, an operating arm or crank 62.

Fig. 8 shows a condition in which there are two superposed compartments, the upper compartment being provided with a shaft 56 and crank 62, as described above, the lower member also being provided with a similar shaft 63, the lower shaft having an upwardly extending crank 64. The outer end of each of the cranks 63 and 64 is provided with a ring or eye 65, and when the doors are closed and the shafts are in position to bring the lugs 57 under the clips 59 the shafts 56 and 63 will take a position with the rings 65 aligned so that the looped end 49 of the lock 50, hereinbefore described, may be passed therethrough to simultaneously lock all of the doors.

A keeper plate 66 is secured to the side of the vehicle or compartment with the eye thereof aligned with the ring 65 as shown in Fig. 6, or as shown in Figs. 8 and 9, the eye is aligned with both rings 65 so that the looped end 49 may be passed through the eye of the pad 66 as well as through both rings 60, thus securely locking the parts in closed position.

It will be obvious that when the lock 50 is unlocked and the looped end 49 removed, access may be had to any of the compartments by moving the desired lever 62 and 64 so as to turn the shaft 56 or 62 and revolve the lug 57 backward clear of the clip 59. Any of the doors may then be opened in the manner previously described. When the doors are returned to closed position all of the compartments may be locked by return operation of the levers 62 and 64.

While several embodiments of the invention have been illustrated and described in detail for the purposes of adequate disclosure, the scope of the invention is not limited to such details except as necessitated by the prior art, but instead includes such modifications and embodiments of the broad idea as fall within the scope of the appended claims.

Having thus described my invention, what I claim is:

1. A wall having an opening, a closure member for said opening, means for pivotally connecting said closure member and wall for normally urging a portion of said closure member into overlapping engagement with said wall to maintain said closure member in closed position, said closure member being bodily movable in a plane substantially parallel with said wall to disengage said overlapping portion from said wall and permit opening of said closure member.

2. A wall having an opening, a closure member for said opening, means for pivotally connecting said closure member to said wall, said closure member and wall having a pair of overlapping edges to maintain said closure member in closed position, and yieldable means permitting shifting of the pivotal axis out of the axial plane of said pivotal connection to bodily move said closure member in a plane substantially parallel with said wall to disengage said overlapping edges and permit opening of the closure member.

3. A wall having an opening, a closure member for said opening, said closure member being pivoted to said wall about an axis, said closure

member and wall having an overlapping portion coextensive with one edge of said opening, yieldable means normally urging said edges into overlapping engagement and permitting shifting of the pivotal axis between said closure member and wall out of the axial plane of said pivotal connection to bodily move said closure member and disengage said overlapping edges to permit opening of said closure member.

4. A hinge construction for pivotally connecting a closure member having a pintle pin thereon to a wall having an opening therein comprising, a casing having a closed chamber therein, a slot extending through said casing communicating with said chamber, said slot being adapted to receive a pintle pin therein, a cradle in said chamber adapted to receive said pin thereon, and means normally urging said cradle and pin upwardly against the top wall of said chamber.

5. A hinge construction for connecting a closure member to a wall adjacent an opening comprising, a casing having a chamber therein, a slot extending through said casing and communicating with said chamber, said chamber having an upper rounded corner, a pintle pin extending through said slot into said casing, and means normally urging said pintle pin upwardly within the chamber into engagement with said rounded corner.

6. A hinge construction comprising a casing having a chamber therein, a slot extending through said casing communicating with said chamber, said chamber having a rounded upper corner, a cradle in said chamber and a coil spring disposed between the bottom wall of said chamber and cradle, and a cylindrical pintle pin extending through said slot and resting in said cradle.

7. A wall having openings, respective closure members for said openings, means normally urging said closure members into interlocking engagement with said wall to maintain said closure members in closed position, said closure members being bodily movable in a plane substantially parallel with said wall to disengage said members and permit opening of said closure members, a finger piece secured to each closure member, said finger pieces having ends extending into close proximity with each other when said closure members are in closed position within the openings, an eyelet secured to said wall between the ends of said finger pieces, said eyelet being adapted to receive a padlock therein adapted to be engaged by said finger pieces to prevent movement of said finger pieces and said closure members.

8. A wall having openings, respective closure members for said openings, means normally urging said closure members into interlocking engagement with said wall to maintain said closure members in closed position, said closure members being movable in a plane substantially parallel with said wall to disengage said closure members and wall to permit opening of said closure members, and locking means common to said closure members for preventing such bodily movement of said closure members.

9. A wall having openings therein, respective closure members for said openings, means normally urging said closure members into interlocking engagement with said wall to maintain said closure members in closed position, said closure members being independently bodily movable in a plane substantially parallel with

said wall to disengage said closure members from said wall and permit opening of said closure members, securing means positioned between said closure members, and cooperating means on said closure members for engaging said securing means and preventing bodily movement of the closure members. 80

10. A wall having openings one above the other, respective closure members for said openings, means for pivoting said closure members to said wall and for normally urging the upper edge of each closure member into overlapping engagement with the upper edge of the respective openings to maintain the closure members in closed position, said closure members being bodily movable in a plane substantially parallel with said wall to disengage said overlapping edges and permit opening of the closure members, and locking means common to said closure members for preventing such bodily movement of the closure members. 85

NEIL P. LARSEN.

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20	95
25	100
30	105
35	110
40	115
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50	125
55	130
60	135
65	140
70	145
75	150