March 23, 1965 F. W. DUHM 3,174,782

LATCHES

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Fig. 1

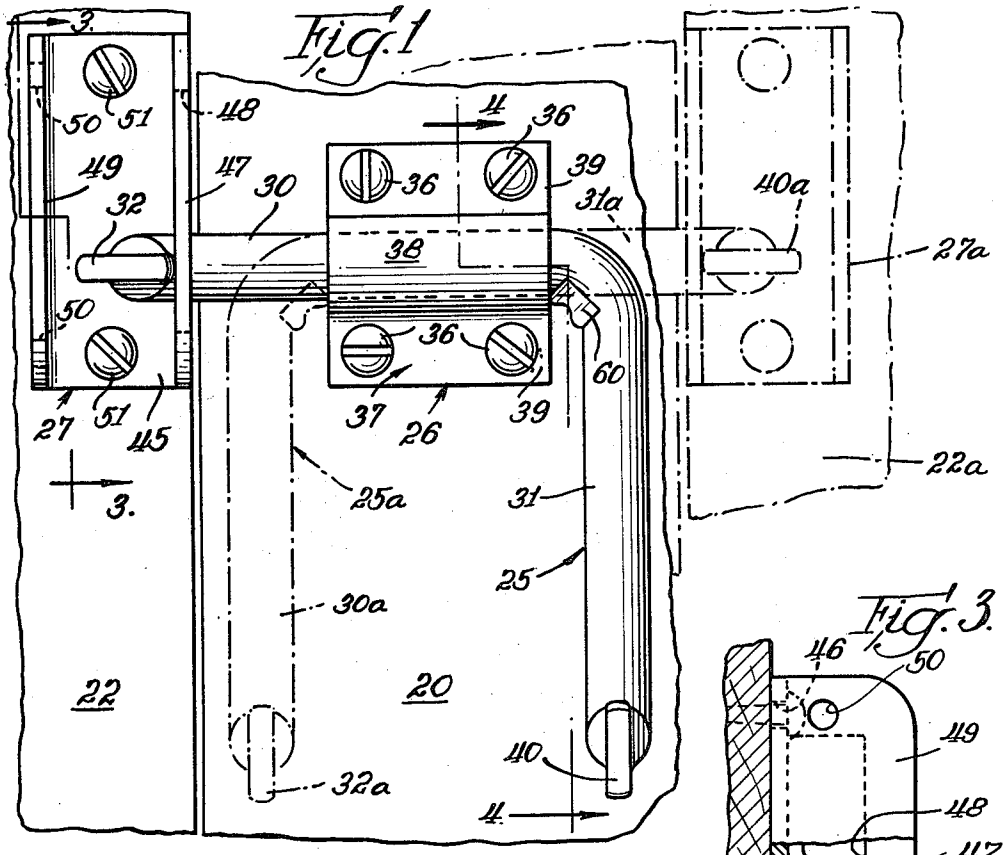


Fig. 3

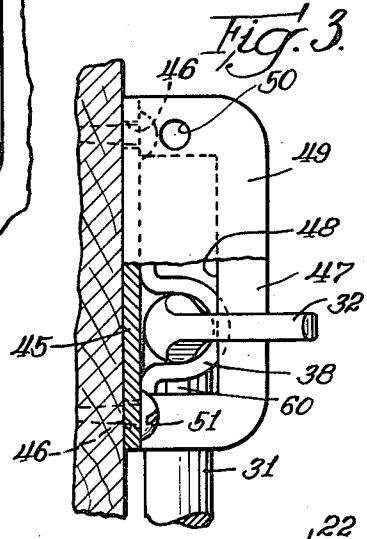
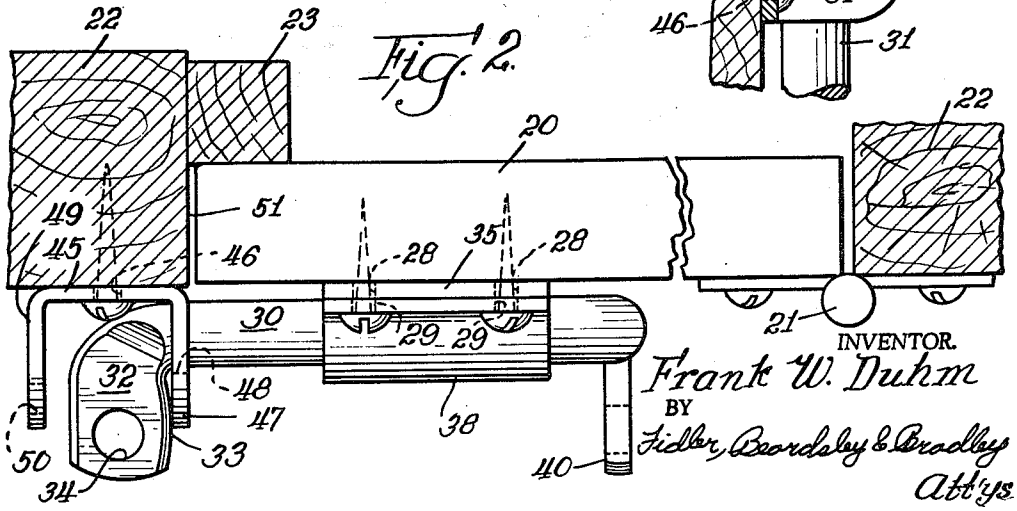


Fig. 2



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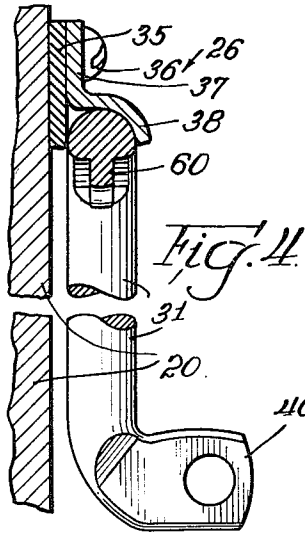


Fig. 4.

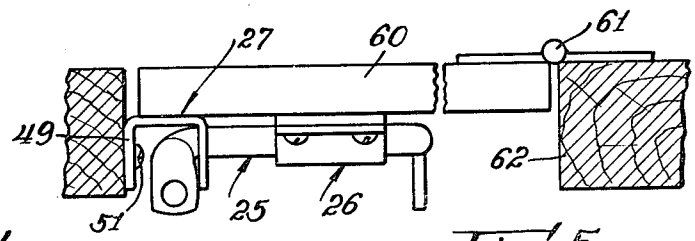


Fig. 5.

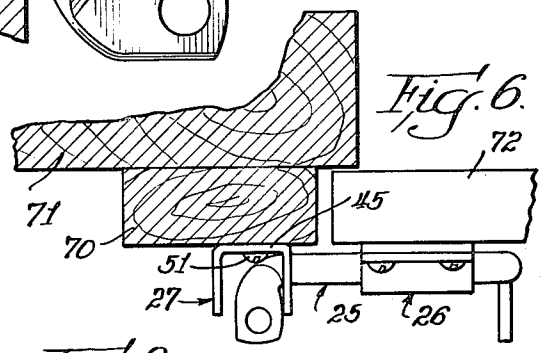


Fig. 6.

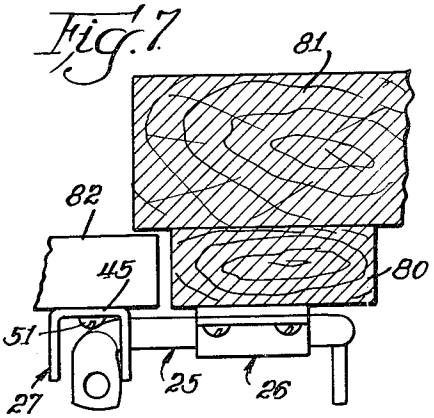


Fig. 7.

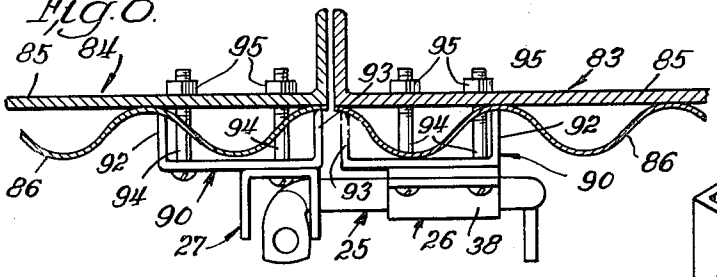


Fig. 8.

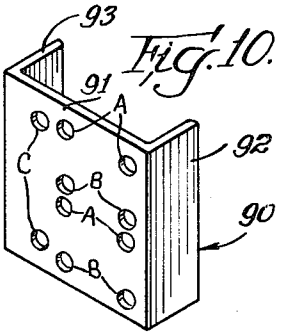


Fig. 10.

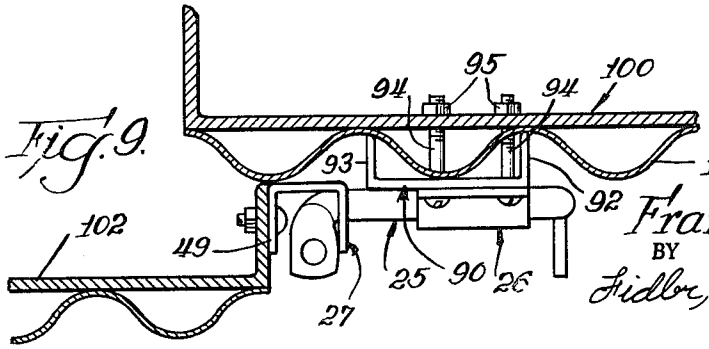


Fig. 9.

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Fig. 11.

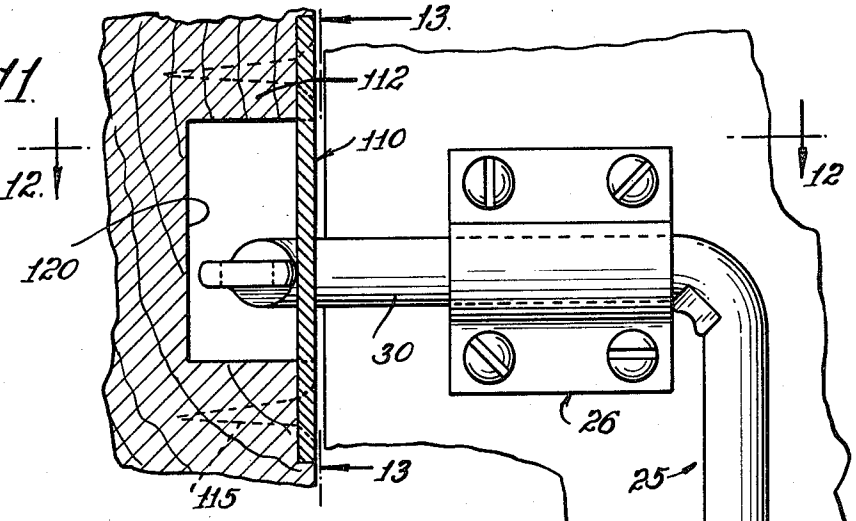


Fig. 13

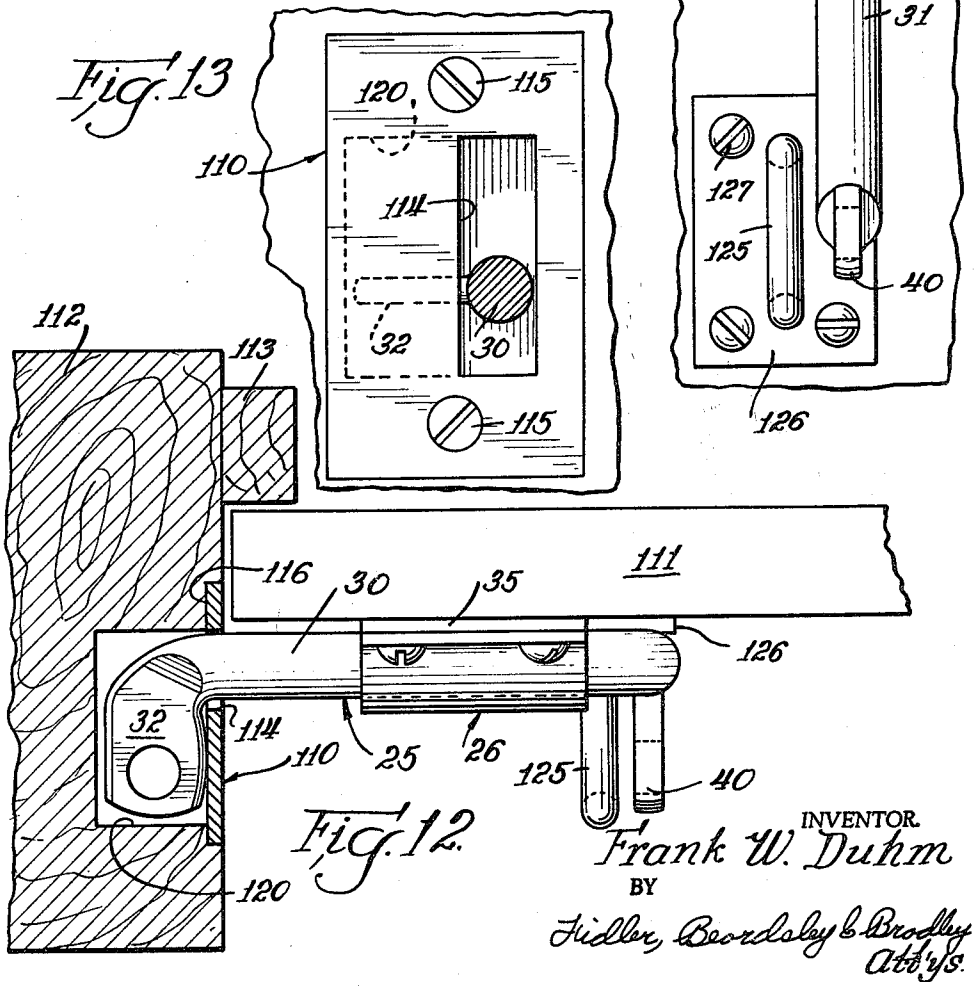


Fig. 12.

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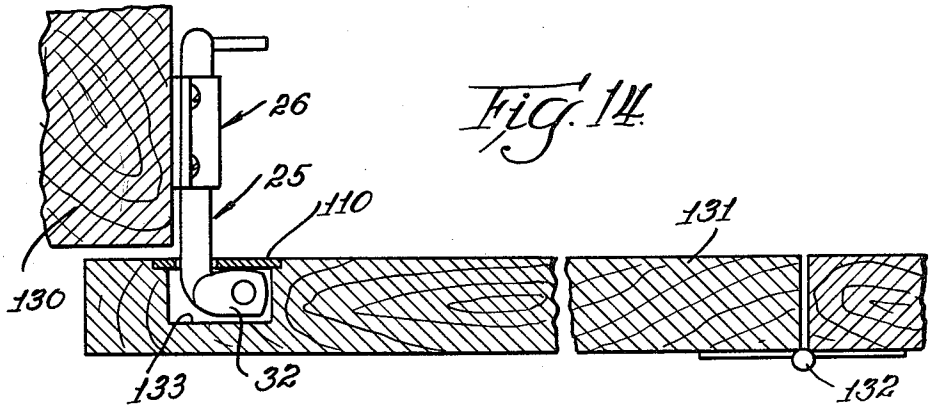


Fig. 14.

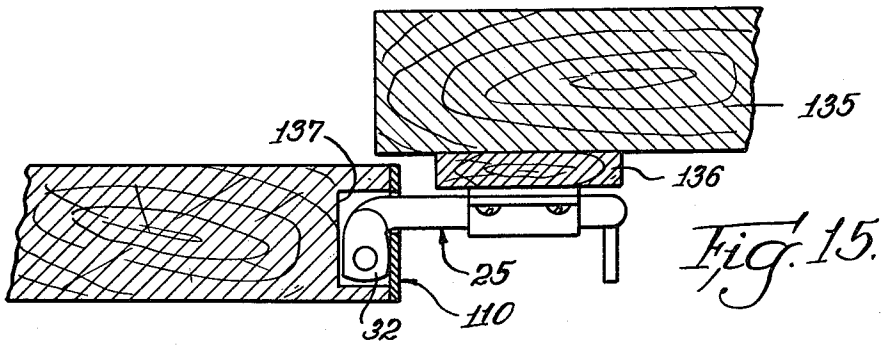


Fig. 15.

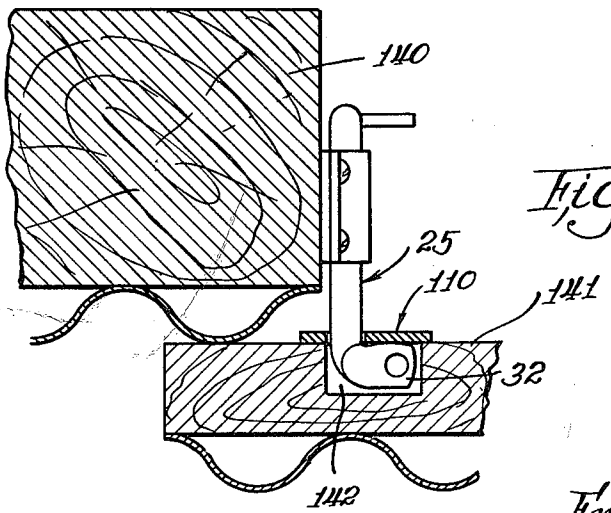


Fig. 16.

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LATCHES

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Filed Mar. 8, 1962, Ser. No. 178,485
20 Claims. (Cl. 292—59)

This invenion relates to latches and has to do more particularly with an improved latch of very simple construction.

Latches for closure members are made in a wide variety of forms. Some latches are of relatively complicated construction and consequently are expensive to manufacture and are likely to get out of order even during normal use. Other latches, even though of simple and less expensive construction have certain disadvantages, for example, some have limited application and designed for only one or a small number of different applications. Also, some simple latches are of such construction that they can be released by animals such as horses, cattle or dogs. Many buildings are now built with doors and/or walls having a corrugated metal facing, and the latches heretofore known are not adapted to attachment to the faces of such doors or walls. Hence such latches cannot be used with closure members having corrugated faces.

Overhead swinging doors, that is doors mounted at the upper edge for swinging movement about a horizontal axis are in common use in buildings, such as garages and sheds. The installation of a latch on such buildings presents certain difficulties and requires the use of a latch wherein there is no part which project into the path of movement of the door. Attempt to overcome this difficulty have resulted in the use of latches which are either costly to manufacture and install or which do not permit of being locked with a padlock.

An object of the present invention is to provide an improved latch of extremely simple construction.

Another object is to provide an improved latch which is simple and rugged in construction, effective in operation, inexpensive to manufacture and easy to install and operate.

Another object is to provide an improved latch which is excellently well adapted for installation and use in connection with any one of a large number of different types of closure members such as doors or gates, whether mounted for sliding, horizontal swinging, or vertical swinging movement; whether mounted for movement into closed position abutting a jamb or stop, or flush with a jamb or stop; or whether provided with a flat, or a corrugated or other non-planar surface.

Another object is to provide an improved latch which is capable of being installed for either "right-hand" or "left-hand" operation, without modification of the latch elements.

A further object is to provide an improved latch which is capable of securely retaining a closure member in closed position by merely turning a handle and is also adapted to receive a retaining pin or padlock to hold the latching member in latching position.

Another object is to provide a latch of such construction that it can not be opened by animals such as horses, cattle or dogs.

Another object is to provide an improved latch which can be made in relatively small sizes but which nevertheless has great strength.

Another object is to provide an improved latch of such simple and rugged construction that it will not get out of order and will not become inoperative through use over a long period of use, even though subjected to hard and rough usage.

Another object is to provide a latch which can be readily

attached to the face of a door or a door jamb having a corrugated facing.

Another object is to provide an improved latch of such construction that the strike prevents the latch from hitting against the jamb should the movable closure member be closed with the latching member in projected position.

Another object is to provide an improved latch having an over-centering action which is effective to hold the latch in latched position.

Another object is to provide an improved latch having a camming action which is effective to draw the movable closure member toward the jamb and to aid in holding the latch in latched position.

Another object is to provide an improved latch having a strike of the type wherein the latching portion of the latching member is adapted to enter a mortise under the strike, which latch is adapted to be locked by a padlock.

Another object is to provide a latch having a strike of such construction that it may serve as a stop for a swingably mounted closure member.

A further object is to provide a latch wherein the latch operating handle is of such size and so arranged that it conveniently may be employed as a handle for opening or closing the movable closure member.

Other objects and advantages of the invention will appear from the following description taken in connection with the appended drawings herein:

FIGURE 1 is a front elevational view of a latch constructed in accordance with the invention and showing in full lines such latch mounted for "right-hand" operation and in broken lines the same latch mounted for "left-hand" operation;

FIG. 2 is a top view, partially in cross section, of the latch of FIG. 1;

FIG. 3 is a view of a section taken along line **3—3** of FIG. 1 with parts broken away and sectioned to show the interior;

FIG. 4 is a view of a section taken along line **4—4** of FIG. 1;

FIG. 5 is a top view, partially in section, showing a second application of the latch of FIG. 1;

FIG. 6 is a top view, partially in section, showing a third application of the latch of FIG. 1;

FIG. 7 is a top view, partially in section, showing a fourth application of the latch of FIG. 1;

FIG. 8 is a top view, partially in section, showing a second embodiment of the latch of FIG. 1;

FIG. 9 is a top view, partially in section, showing a third embodiment of the invention;

FIG. 10 is a perspective view of an adapter bracket forming a portion of the latches of FIGS. 8 and 9;

FIG. 11 is a front elevational view, partially in section, showing a fourth embodiment of the invention, in one application thereof;

FIG. 12 is a view of a section taken along line **12—12** of FIG. 11;

FIG. 13 is a view of a section taken along line **13—13** of FIG. 11;

FIG. 14 is a top view, partially in section, showing a second application of the latch of FIG. 11;

FIG. 15 is a top view, partially in section, showing a third application of the latch of FIG. 11; and

FIG. 16 is a top view, partially in section, showing a fourth application of the latch of FIG. 12.

The latch of the present invention is adapted for various uses. For example, it may be used for latching a door or other movable closure member in closed position in a wall. The door may be mounted either for swinging movement about a vertical axis, or swinging movement about, a horizontal axis, or sliding movement. Moreover, the latch may be used for latching two mov-

able doors together in closed position. It also may be used for latching a gate or a pair of gates in closed position with respect to a fence.

Thus it will be understood that where the term "closure member" is used herein, without qualification, such term includes not only a movable closure member such as a door or gate member but also a relatively fixed closure member such as wall, fence or another door or gate member as well as the frame or jamb in such wall or fence with which the movable closure member cooperates.

Referring now particularly to FIGS. 1–4 the latch is shown in its application to a door **20** supported by hinges, one of which hinges **21** is shown, for swinging movement about a vertical axis between open and closed position in a door jamb **22** provided with a stop **23**. It will be understood that the door may be supported for swinging movement about a horizontal axis in a manner not shown, or may be mounted for sliding movement in a manner not shown in which latter case the door **20**, of course, would be of lesser width than the door jamb to permit such movement to take place.

The latch includes a latching member, or bolt **25**, a mounting bracket **26**, secured to the door **20** and carrying the latching member **25** and a strike **27** secured to the door jamb **22** in position to be engaged by the latching member **25** when the door is in closed position.

The latching member **25** preferably is formed from a single length of cylindrical rod stock which is bent and formed to the shape shown and hereinafter described. The latching member **25** includes a first leg **30** adapted to serve as a shaft portion and a second leg **31** extending at an angle to the first leg **30** and preferably perpendicularly thereto, and adapted to serve as a handle portion. The leg **30** carries at its free end a latching portion or head **32** which extends at an angle to the axis of the leg **30** and preferably perpendicularly thereto and to the common plane of the axes **2** the legs **30** and **31**. The head **32** is flattened and has a major cross sectional dimension in the plane of the axis of the leg **30** and parallel to such axis which is greater than the diameter of the leg **30** and a minor dimension in a direction perpendicular to such plane which is less than the diameter of the leg **30**. The head **32** extends from the leg **30** for a sufficient length to insure its latching function as hereinafter explained.

The head **32** is formed with an edge **33** preferably of arcuate form for a purpose which will hereinafter appear.

The head **32** also preferably is provided with an opening **34** therethrough of such size as to accommodate the shackle of a padlock (not shown) so that the latch may be padlocked in locked position where such is desired.

The mounting bracket **26** includes a base or mounting plate **35** adapted to lie against the face of the door and having openings **25** for receiving screws **36** for securing the base plate to the face of the door. The mounting bracket **26** also includes a bearing member **37** having an arcuate bearing portion **38** and mounting flanges **39** adapted to lie against the base plate **35** and having openings **29** therethrough registering with the openings **28** in the base plate **35** and through which the screws **36** pass for securing the bearing member **37** on the door.

The latching member **25** is mounted on the door **20** by journaling the leg or shaft portion **30** in the bearing provided by the bearing portion **38** and the base plate **35**. The shaft portion **30** is of such length as to permit the latching member to be moved between latching and unlatched positions as hereinafter explained.

The latching member **25** is rotatable in the mounting bracket **26** between a latching position (as shown in FIGS. 1 to 4) wherein the head **32** is in horizontal position and the handle **31** extends downwardly and parallel to the face of the door and an unlatching position wherein the head **32** is in vertically upright position and the handle **31** projects generally perpendicularly from the door.

The leg or handle portion **31** perferably is identical with the leg **30** and has a head **40** identical with the head **32** and disposed with respect to the leg **30** in a manner similar to which the head **32** is disposed with respect to its leg **30** except that both of the heads **32** and **40** extend in the same direction out of the common plane of the axes of the legs **30** and **31**.

The strike **27** is of generally channel shape and has a web **45** provided with screw holes **46** therein, a flange **47** formed with an elongated opening **48** and a flange **49** formed with screw holes **50**.

In the application of the latch shown in FIGS. 1–3 the strike **27** is secured by screws **51** to the face of the door jamb **22** which corresponds to the face of the door on which the mounting bracket **26** is secured. The strike **27** is mounted in position with the outer face of the flange **47** preferably flush with the adjacent edge **51** of the door jamb as seen particularly in FIGS. 1 and 2. The strike also is mounted in position whereby the elongated opening **48** is aligned with the bearing whereby the head **32** and the adjacent portion of the leg **30** may be projected through the opening **48**. To this end the opening **48** is of sufficient vertical extent to receive the head **32** therethrough when the latching member **25** is in a position of rotation wherein the head **32** is upright. That is to say a position wherein the leg **30** is rotated 90° in a counterclockwise direction from that seen in FIG. 3. In this position the leg **31** extends perpendicularly outwardly from the plane of the face of the door **20**.

The dimension of the head **32** in a direction out of the common plane of the axes of legs **30** and **31** is sufficient so that when it is in latching position it extends beyond the edge of the opening **45** which is remote from the web **45** and is adapted to extend behind the inner face of the flange **47**.

The base plate **35** serves as part of the bearing for the latching member and at the same time holds the latter away from the face of the door. It also serves to position the bearing member at a distance from the face of the door equal to the thickness of the web **45** so that when the strike **27** and bearing bracket are mounted on surfaces which are flush, the latching member is properly positioned to enter the opening **48** in the strike.

The latching member **25** is provided at the inside of the bend between the legs **30** and **31** with a bearing lug or stop **60** which may be formed by upsetting the material of the latching member. The stop **60** is positioned to bear against the adjacent edge of the bearing portion **38** to prevent binding of the latching member when the latter is rotated between latching and unlatched positions. It also serves to notify the user that the latching member has been projeced in the bearing sufficient so that the head is fully inserted in the strike.

When the door is in open position and the latching member is therefore disengaged from the strike, the weight of the leg **31** will normally cause the latching member **25** to rotate to the position shown in FIG. 1 with the leg **31** in vertical position.

When the door is to be closed and latched, the latching member is manually rotated to its unlatched position (wherein the head **32** is upright and the leg **31** projects generally perpendicularly from the plane of the door face). The latching **25** member may be manually rotated between its two positions by grasping the leg **31** which serves as a handle and therefore is sometimes designated herein as a "handle portion." The latching member is held in a position with the latching member moved to the right (as viewed in FIG. 1) with the head **32** closely adjacent or abutting the left-hand edge of the bearing portion **38** so that the head will clear the flange **47** as the door is moved into closed position. At this point, it should be noted that should the latching member be in

projected position when the door is moved toward closed position, the latching member will hit against the edge of the flange 47 and therefore will not damage or mar the door jamb.

After the door is moved into closed position, the latch is moved into latching engagement with the strike by projecting the latching member (that is moving it to the left as viewed in FIG. 1) until the head has passed through the opening 48 and is disposed between the flanges 47 and 49. The latching member is then rotated by rocking the handle portion 31 downwardly which rotates the head32 into locking position as shown in FIGS. 1–3. In this position the head 32 extends outwardly beyond the outer edge of the opening 48 and is in position to engage the inner wall of the flange 47. Thus, the latching member cannot be retracted without again rotating it to unlatching position.

Preferably, the mounting bracket 26 and the strike 27 are mounted at such distances apart that when the latching member is in latching position the stop 60 bears against the adjacent edge of the bearing portion 38 and the edge 33 of the head 32 bears against the inner face of the flange 47. In fact the location of the mounting bracket and strike are preferably such that a slight camming action takes place between the edge 33 and the inner face of the flange 47 when the latching member is rotated into latching position. Thus, the door is held against rattling when the latch is in latching position.

Owing to the fact that the shaft portion 30 is spaced from the face of the door a distance approximately equal to the thickness of the mounting plate 35, the free end of the handle 31 can be moved inwardly toward the door face out of a true vertical plane so that there is a slight over-centering action which aids in holding the latching member in latching position. In this connection, it will be understood that the weight of the handle portion 31 together with the friction between the stop 60 and the edge of the bearing portion 38 and the friction between the head 32 and the inner face of the flange 47 securely holds the latching member in latching position.

Where it is desired to lock the latching member in latching position, the shackle of a padlock (not shown) may be passed through the opening 34 in the head 32 and the padlock locked.

In order to move the latching member into unlatched position, the latching member 25 is rotated to move the handle portion 31 to horizontal position and at the same time to move the head 32 to vertical position whereupon the head may be moved out of the strike by retracting the latching member (moving it to the right as viewed in FIG. 1. The handle portion 31 may be grasped by hand for the purpose of actuating the latching member. However, the head 40 may conveniently serve as a finger piece which may be grasped between the thumb and fingers of the user for moving the handle portion 31 away from the face of the door sufficiently so that the handle may be grasped by the hand.

The latch is shown in FIGS. 1–4 in its application for "right-hand" operation. That is with the handle portion 31 disposed to the right of the strike. The latch consisting of the same latching members, without any modification of such members, may be assembled on a door of jamb for "left-hand" operation, that is with the handle portion to the left of -the strike. The foregoing mode of assembly is shown in FIG. 1 by representing the latching member and strike in dashed lines with the mounting bracket being shown in full lines. The parts shown in dashed lines are designated by the same reference characters followed by the letter "*a*," as are applied to the corresponding parts in full line.

In this arrangement of the latch, the mounting bracket 26 is mounted on the door as before. The strike 27*a* is mounted on the jamb 22*a* to the right of the door. The leg 31*a* is journaled in the mounting bracket 26 and serves as the shaft portion with the head 40*a* being positioned to be inserted into and retracted from the strike 27*a*. The leg 30*a* is located on the opposite side of the bearing bracket 26 from the head 40*a* and serves as the handle portion for manipulating the latching member. In this arrangement of the latch it is operated in a similar manner to its operation when mounted for right-hand operation except for the change in the position and the functions of the several portions of the latching member.

A second application of the latch of FIGS. 1–4 is illustrated in FIG. 5 wherein is shown a door 60 supported as by a hinge 61 for swinging movement into and out of closed position in a jamb 62. The latching member 25 is supported on the face of the door by the mounting bracket 26 and the strike 27 is supported on the adjacent edge of the jamb 62. In this case, the strike is supported by screws 51 (one of which is shown) extending through the flange 49. It will be seen that in this application, the strike 27 serves not only as a strike but also as a stop for the door.

A third application of the latch of FIGS. 1–4 is shown in FIG. 6 wherein a stop 70 is mounted on the jamb 71 in position to be abutted by a door 72 supported for sliding movement into and out of closed position. The latching member 25 is mounted on the door by the mounting bracket 26 and the strike 27 is secured to the face of the stop 70 by screws 51 extending through the web 45.

A further application of the latch of FIGS. 1–4 is illustrated in FIG. 7 wherein the latching member 25 is mounted by means of the mounting bracket 26 on a stop 80 carried on a jamb 81 and adapted to be engaged by a sliding door 82. The strike 27 is secured to the door by screws 51 passing through the web 45.

The invention also provides a latch which can be mounted on closure members one or both of which are provided with a ribbed face such as one formed by corrugated metal or having a face which is otherwise nonplanar and is of such form that a mounting bracket or a strike such as shown in FIGS. 1–4 cannot conveniently be secured to such face.

A latch suitable for mounting on a ribbed or corrugated face is illustrated in FIG. 8 to which reference is now made. The latch includes a latching member 25, a mounting bracket 26 and a strike 27 all of which may be similar to the corresponding elements shown in FIGS. 1–4. In this embodiment, two doors 83 and 84 are shown which are supported for swinging or sliding movement into and out of closed position. The closure member 83 includes a panel member 85 having a corrugated facing member 86 attached to a face thereof. The other closure member 84 is similarly formed.

An adapter 90 is provided for mounting the mounting bracket 26 on the closure member 83 and a similar adapter is provided for mounting the strike 27 on the closure member 84. The adapter 90 (see FIG. 10) is formed as a channel shaped member having a web 91 and two side flanges 92 and 93. The web 91 is provided with a set of openings A arranged similarly to the screw holes (not shown) in the mounting plate 35 and the bearing member 37 (FIGS. 1 and 2). Four screws 94 are provided which extend through the openings in the bearing member 38, the mounting plate 35, the web 91 and the panel member 85 and are secured by nuts 95. The adapter 90 is secured on the door 83 with its web 91 spanning one of the corrugations and with the edges of its flanges 92, 93 bearing against the trough portions on either side of the corrugation. The adapter is of such size that the web clears the corrugation and does not deform the corrugation when the adapter is in place on the door. It will be understood that the adapter may be of such width that the web spans two or more of the corrugations. It is desirable, however, that it be of such width that the flanges are positioned to bear against the trough portions of the corrugated facing 86 so that the adapter does not deform the facing.

The web 91 of the adapter 90 is formed with a second

set of openings B arranged similarly to the set of openings A but displaced from the first set whereby the mounting bracket may be secured to the web in a different position than where the first set of openings A is utilized.

A third set of openings C is provided in the web spaced apart a distance corresponding to the openings 46 in the strike 27 and located inwardly from the adjacent web 93 at a distance which is substantially equal to the distance of the openings 46 from either flange of the strike 27. The adapter 90 thus can be employed for mounting the strike 27 on the corrugated face of the door 84 as shown in FIG. 8.

The strike 27 is secured by two screws 94 (one of which is shown) extending through the web of the strike 27, the holes C in the web 91 and through the panel 85 of the door 84 and secured by a nut 95. The adapter 90 is further secured to the door by a pair of screws 94 extending through one or more of the openings A and B adjacent the flange 92. It will be noted that the adapter 90 when used to secure the strike to its door 84 is inverted from the position of the adapter 90 used to secure the mounting bracket 26 on its door 83.

The latch as used in the application shown in FIG. 8 operates in substantially the same manner as the latch shown in FIGS. 1–4 and described in connection therewith. However, it will be seen that the latching member is not halted by the door face with the handle portion in depending vertical position but may be moved past such position when moving it into latching position. However, the latching member will normally be maintained in latching position by the action of gravity on the handle portion and the friction between the latching member and the bearing member and the friction between the head and the strike. Moreover, even if the handle is moved inwardly toward the door to a position well past the vertical position the head 32 cannot be released from the strike owing to the arrangement of the opening in the strike (see FIG. 3).

The latch also can be employed in an application such as shown in FIG. 9 wherein an adapter 90 is used only with the mounting bracket 26 for supporting the latching member 25 on the face of a corrugated door 100 and wherein the strike 27 is secured to the end of a door (which may have a corrugated face) by attachment of the web 49 to the end face of the door.

It will be seen that the adapter 90 serves not only to secure the latching member 25 on the face of the door 100 without damage to the facing member 101, but also supports the latching member 25 in such position that the strike can be engaged by the latching member when the other door 102 is spaced from the door 100 a sufficient distance to prevent interference between the door 102 (including the strike 27) and the facing 101. Ordinarily this construction will be employed when either door 101 or 102 or both such doors are slidable into and out of closed position.

Closure members having corrugated faces are commonly constructed from a solid panel member formed from wood. Where the latch members are attached to such closure members, screws are used instead of the bolts and nuts shown in FIGS. 8 and 9.

It will be understood that the latches shown in FIGS. 8 or 9 may be used where either of the closure members is a fixed member and the other a movable member. Moreover, the movable member may be mounted for either silding, or horizontal swinging, or vertical swinging movement.

The latch of the present invention is also adapted, using a modified form of strike, for use in applications where it is desired that the strike be flush or substantially flush with the face or the edge of the door or jamb.

In this employment of the invention, the latching member 25 and the mounting bracket 26 are identical with such members as shown in FIGS. 1–4 and described above.

In the application shown in FIGS. 11–13 a door 111 is provided which is suitably mounted (as by a hinge, not shown) for movement into and out of closed position relatively to a jamb 112 having a stop 113. The latching member 25 is secured on the door 111 by the mounting bracket 26.

The strike 110 takes the form of a flat plate which may be of any shape but which preferably is rectangular and is provided with an opening 114 therethrough preferably of an elongate, rectangular form. In the application shown in FIGS. 11–13, the strike 110 is secured as by screws 115 to the edge of the jamb 112, the strike 110 being set into a mortise 116 in the edge of the jamb 112. The jamb is provided with a mortise or recess 120 of sufficient size to receive the head 32 therein and to permit the head to be moved to latching position by rotation of the shaft portion 30. The mounting bracket 26 is mounted on the door 111 in such position that when the head 32 is projected through the opening 114 and moved into latching position it engages the inner face of the strike 110 as seen in FIGS. 11 and 12. This form of latch is operated in generally the same manner as the latch shown in FIGS. 1–4 and described in connection therewith.

Inasmuch as the latching head 32 is completely enclosed and concealed by the strike 110 when the latch is in latching position, the latch cannot be locked by attaching a padlock to the latching head 32. However, it may be locked by providing a staple 125 which is attached to the door 111 in a position in registry with and adjacent the opening in the head 40 when the latching member is in its latching position. Thus, the shackle of a padlock (not shown) may be passed through the staple 125 and through the opening in the head 40. While the staple 125 may take the form of a simple staple which has sharpened ends (not shown) and is driven into the door 111 preferably a plate staple is used wherein the staple is rigidly and non-removably covered by a plate 126 which is secured to the face of the door as by screws 127. The plate 126 serves not only to support the staple 125 on the door but also prevents the handle portion 31 from marring the door when moved into latching position. While the latch application of FIGS. 11–13 is adapted for use with doors mounted for either swinging or sliding movement it is especially well adapted for use with an overhead door which is mounted for swinging movement about a horizontal axis at the top of the door.

The mortise form of strike is suitable for a number of different applications, both those in which the door is mounted for swinging movement and in which it is mounted for sliding movement relatively to the door jamb.

Referring now to FIG. 14, the latching member 25 is shown as secured by the mounting bracket 26 to the edge of a jamb 130 with which cooperates a door 131 mounted for swinging movement as by a hinge 32. The door is provided with a mortise 133 in the face thereof which is closed by the strike 110 mortised into the face of the door and secured thereto as by screws (not shown) over the mortise opening 133. The strike 110 and the mortise 133 are positioned to receive the head 32 when the door 131 is in closed position.

The latch employing the mortise form of strike may also be employed where it is desired that the strike be attached to the edge of the door. As shown in FIG. 15, the latching member 25 is attached to the door jamb 135 by use of a mounting bracket 136 attached to the jamb 135. The edge of the door is provided with a mortise 137 dimensioned and positioned to receive the head 32 and the strike 110 is secured as by screws (not shown) over the mortise 137.

Where the mortise form of strike is used it preferably is mortised into the face or edge of the door or jamb so that its outer surface is flush with the face or edge as seen in the applications shown in FIGS. 11–15. However, it may be found desirable to secure the strike to the face or

edge of the door or jamb in such position that it overlies the face or edge and is not inset.

Such a construction is shown in FIG. 16 wherein the latching member **25** is secured to an edge of a jamb **140** having a corrugated face and a door **141** having a flat face is formed with a mortise **142** to receive the head **32** of the latching member and the strike **110** is secured to the mortise face as by screws (not shown) in overlying relation to the mortise **142** and not inset in the face.

It will be understood that while no staple is shown in the applications shown in FIGS. 14–16, a staple may be employed in which event it is mounted on the same closure member adjacent the head carried on the end of the handle portion and in registry with the opening in such head so as to permit the shackle of a padlock to be passed through the staple and the opening.

It will be understood that any of the latch mounting arrangements disclosed herein may be employed in connection with either a swingably mounted or a slidably mounted door or doors. Thus, where a latch is shown in connection with a swingably mounted door it may be similarly employed with a slidably mounted door and vice versa.

It will be seen from the foregoing that the present invention provides a latch of extremely simple construction which can be manufactured relatively inexpensively. The latching member can be formed from a single piece of rod stock by merely bending it to angular form and by upsetting the ends to form the heads and by drilling or punching the openings in the heads. The bearing lug may be formed by a simple upsetting operation. The mounting bracket is made from plate stock, the bearing member being formed to the desired shape by a simple forming operation and both the mounting plate and bearing member being drilled or punched to provide the screw holes. The channel form of strike may be formed merely by bending up the flanges and punching the elongated opening and punching or drilling the screw holes. The mortise form of strike may be formed by simply punching the openings in plate stock.

The latch may be assembled on the two closure members by merely inserting the latching member between the mounting plate and the bearing member and attaching these members to the closure members by screws. The strike is attached to the other closure member merely by screws. Where the adapter is used the latch member may be attached by bolts where the closure member is formed as shown in FIGS. 8 and 9 or by screws where the closure member is of wood panel construction. The dimensions of the latch are not critical and in fact even the mounting arrangement is not highly critical. It is necessary that the latching member and the strike be disposed in such relative positions that the latching end of the latching member can be projected through the opening in the strike and rotated into latching position. It is preferable that the members be so mounted that there is a slight camming action when the latching member is moved into latching position so as to hold the closure member against rattling, although this is not essential in all cases.

Inasmuch as the latch elements are attached to the outside of the two closure members, the latch can be attached in a very simple manner and without any necessity for modifying either closure member to any substantial extent. Where the first form of strike is used the latch is installed merely by attaching the latching elements to the two closure members. Where the mortised form of strike is used the only additional operation necessary is to form the mortise for the latching head, and the mortise for the strike, where the latch is inset in the surface of the closure member to which it is attached.

The several parts forming the latch are of extremely simple construction and can be made of relatively strong material so that even though the latch is relatively small in size it has great resistance to breakage. Moreover, even though there may be wear on the adjacent parts, as for example between the stop and the bearing member and between the head and the strike, such wear will not adversely affect the latch over a long period of use. Because of its strength and the fact that it will not become inoperative through wear over a long period of use, the latch will enjoy a long life even though subjected to severe operating conditions.

Inasmuch as it is necessary in opening the latch to first move the handle portion away from the door or jamb and then move the latching member in a direction axially of the shaft portion, the latch cannot readily be opened by animals such as horses, cattle and dogs even though it is not padlocked. On the other hand, the manipulation of the latch to open or close it is extremely simple and it can be readily operated by human beings.

It will be seen that the latch of the present invention is excellently well adapted for latching and padlocking any of a wide variety of differently mounted closure members. It is especially well adapted for latching and locking overhead swinging doors. In such an application the form of latch and the mounting arrangement shown in FIGS. 11–13 is especially suitable since there is no projecting member on the end face of the jamb which would interfere with the swinging movement of the door. The other form of the latch also may be used.

I claim:

1. A latch for latching a movable closure member in closed position relatively to a second closure member, in combination a latching member comprising a latching lever having a straight elongate first shaft portion, a first latching portion extending from one end of said first shaft portion and at an angle to the axis thereof, a handle portion having a straight elongate second shaft portion extending from the other end of said first shaft portion and at an angle to the common plane of the axes of said first shaft portion and said first latching portion, a second latching portion extending from the free end of said handle portion and out of the common plane of said shaft and handle portions in the same direction as said first latching portion, a mounting bracket adapted to be secured to one of said closure members and for receiving either of said shaft portions and journaling said latching member for sliding movement along the axis of said shaft portions and for rotation about said axes to move said latching portions between a latching position and an unlatching position, and a keeper adapted to be secured to the other of said closure members and having an opening therein of sufficient size to receive either of said latching portions therethrough, said keeper being adapted to be secured on the second closure member in a position wherein when either latching portion of said latching member is inserted in said opening and rotated into latching position said latching portion is located adjacent the face of said keeper on the other side from said bracket.

2. A latch member as set forth in claim 1 wherein each latching portion is formed as a flattened, enlarged head and is provided with an opening therethrough.

3. A latch as set forth in claim 1 wherein said keeper is of channel shape and said opening is formed in a flange thereof.

4. A latch as set forth in claim 1 wherein said keeper is of channel shape and said opening is formed in a flange thereof and wherein said keeper is secured to said one closure member with the web thereof abutting the face of said one closure member.

5. A latch as set forth in claim 1 wherein said keeper is of channel shape and said opening is formed in one flange thereof and wherein said keeper is adapted to be secured to said one closure member with the second flange abutting the face of said one closure member.

6. A latch as set forth in claim 1 further comprising a staple, means mounting said staple on said first closure member, and said latching lever having a hole therein in registration with said staple when said lever is in said latching position.

7. A latch as set forth in claim 1 further comprising an adapter having a web portion and a pair of spaced flanges projecting from said web portion, and means mounting said adapter between said first closure member and said bracket with said projections extending toward said closure member, whereby said latch is adapted to be mounted on a closure member having a ribbed face.

8. A latch comprising, in combination, a latch member having a first straight, elongate portion; a second, straight, elongate portion substantially similar to said first portion and extending from an end of said first portion at an angle to the axis thereof; end portions extending from the free ends of said first and second portions respectively and both in the same direction out of and substantially perpendicularly to the common plane of the axes of said first and second portion, a mounting bracket for journalling either of said elongate portions for axial and rotational movements therein, and a strike cooperable with either of said end portions for accomplishing a latching function.

9. A gravity operable universally mountable latch for two relatively movable closure members comprising, in combination, strike means secured to one of said closure members adjacent an edge thereof, said strike means having an elongate slot therein facing and substantially parallel to the path of relative movement of the edges of said closure members; elongate bearing means secured to the other of said closure members adjacent an edge thereof, said bearing means having an axis aligned to intercept said slot when said closure members are adjacent one another; and a latch member mounted in said bearing means, said latch member having two substantially identically sized and shaped angularly arranged legs having axes lying in a plane, each leg having a substantially cylindrical portion adapted to be operatively associated with said bearing means and being rotatable and axially movable therein, each leg having an end substantially at right angles to the plane of the axes of said legs, said ends being shaped to pass through said elongate slot when in a first position in substantial registry with said slot and not to pass through said slot when in at least one other position not in registry with said slot.

10. A universally mountable latch for two relatively movable closure members comprising, in combination, strike means secured to one of said closure members adjacent an edge thereof, said strike means having an elongate opening therein facing an area of adjacency of the edges of said closure members; elongate bearing means secured to the other of said closure members adjacent the edge thereof, said bearing means having an axis aligned to intercept said slot when said closure members are adjacent one another; and a latch member mounted in said bearing means, said latch member having two substantially similarly sized and shaped angularly arranged legs, each leg having a substantially cylindrical portion adapted to be operatively associated and axially aligned with said bearing means and being rotatable and axially movable therein, each leg having an end shaped to pass through said elongated opening in said strike means when in a first position in substantial registry with said opening and not to pass through said opening when in at least one other position not in registry with said opening.

11. The combination as set forth in claim 10 wherein one of said closure members is relatively fixed and said strike means includes a pair of angularly disposed walls and said opening is provided in one of said walls, and wherein said strike means is mounted on said relatively fixed member with the other wall in abutment therewith.

12. The combination as set forth in claim 10 wherein one of said closure members is relatively fixed and said strike means includes a pair of opposed walls and a connecting wall and said opening is positioned in one of said opposed walls and wherein said strike means is mounted on said relatively fixed closure member with the other of said opposed walls in abutment therewith.

13. The combination as set forth in claim 10 wherein one of said closure members is relatively fixed and has a stop thereon for the other closure member and said strike means includes a pair of angularly disposed walls and said opening is provided in one of said walls and wherein said strike means is mounted on said stop with the said other wall in abutment therewith.

14. The combination as set forth in claim 10 wherein one of said closure members is relatively fixed and said latching member is mounted thereon and wherein said strike means includes a pair of angularly disposed walls and said opening is provided in one of said walls and wherein said strike means is mounted on said movable closure member with the other wall in abutment therewith.

15. The combination as set forth in claim 10 wherein one of said closure members is relatively fixed and has a stop thereon for the other closure member and said latching member is mounted on said stop and wherein said strike means includes a pair of angularly disposed walls and said opening is provided in one of said walls and said strike means is mounted on said movable closure member with the other wall in abutment therewith.

16. The combination as set forth in claim 10 wherein a channel shaped adapter is mounted on each of said closure members with the edges of its flanges abutting the walls of said closure members respectively and said latching member and said strike means are mounted on the webs of said adapters respectively.

17. The combination as set forth in claim 10 wherein a channel shaped adapter is mounted on one of said closure members with the edges of its flanges abutting the wall of said closure member and wherein said strike means includes a pair of opposed walls and a connecting wall and said opening is provided in one of said opposed walls and said strike means is mounted on the other of said closure members with the other of said opposed walls in abutment therewith.

18. The combination as set forth in claim 10 wherein one of said closure members is relatively fixed and said latching member is mounted thereon and wherein said strike means is secured on a face of said movable closure member in position to receive said latching portion through said opening and said movable closure member is formed with a mortise under said strike means to receive said latching portion.

19. The combination as set forth in claim 10 wherein one of said closure members is relatively fixed and said strike means is mounted thereon and said relatively fixed closure member is provided with a mortise under said strike means to receive said latching portion and wherein said latching member is mounted on said movable member with said latching portion positioned to enter said opening and said mortise.

20. The combination as set forth in claim 10 wherein one of said closure members is relatively fixed and said latching member is mounted thereon and wherein said strike means is mounted on an edge of said movable closure member in position to receive said latching portion therethrough and said movable closure member is provided with a mortise under said strike means to receive said latching portion.

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