July 9, 1929. W. E. WREAD 1,720,640

LATCH HOUSING

Filed Sept. 4, 1926

Fig. 5

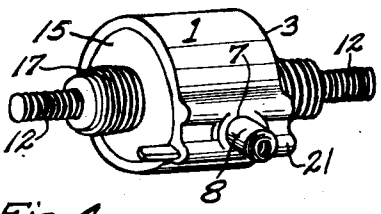


Fig. 2

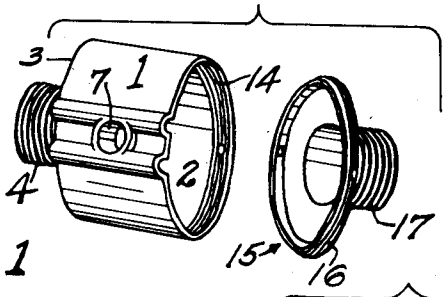


Fig. 4

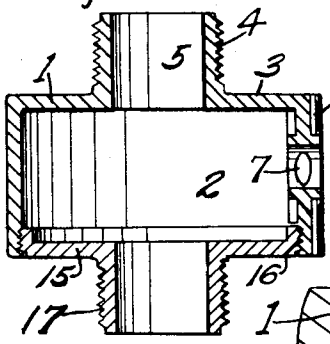


Fig. 1

Fig. 3

Fig. 6

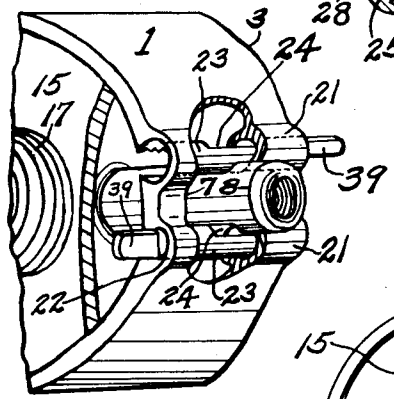


Fig. 7

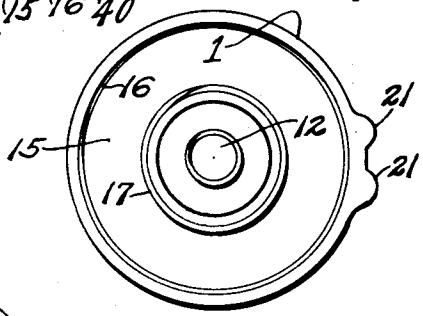


Fig. 8

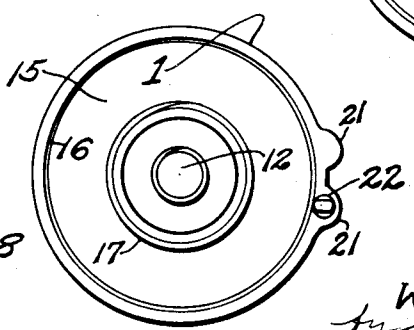
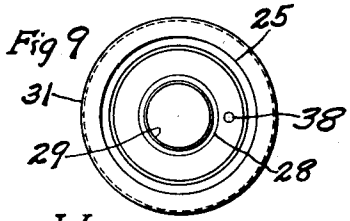


Fig 9



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UNITED STATES PATENT OFFICE.

WILLIAM E. WREAD, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO McKINNEY MANUFACTURING COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

LATCH HOUSING.

Application filed September 4, 1926. Serial No. 133,630.

This invention comprises a new article of manufacture which is preferably made of only two pieces, adapted to be detached from each other to allow the application thereto of bolt operating and locking mechanism for which the housing is fitted; said pieces being adapted to be connected together for the purpose of application to a closure in connection with various mountings and finishing parts selectively adapted to various assemblings and latching processes.

In the state of the art as commonly practiced, many different kinds of locks and latches are employed for various kinds of closures and required service; and the present invention is more particularly intended for use in closures for doors such as front doors, back doors, suite doors, closet doors, bed chamber doors, bath room doors, garage doors, public bath house doors, warehouse doors, locker doors, and doors for office buildings, hotels, apartment houses, flats and tenements.

For general convenience the locks for the various kinds of service required of locks and latches for the doors mentioned are expensively dissimilar in construction and arrangement in order to afford different kinds of security or convenience for locking and unlocking; for example, it is considered desirable that front doors be provided with a key-operated bolt which can be operated from the outside, and a separate bolt by which the door can be locked on the inside and can not be locked or unlocked by one on the outside when the door is shut; that back doors, being outside doors, be provided with locks adapted to be operated in practically the same way as the front door locks and latches, but installed in a less ornamental form; with suite doors it is desirable that there be a latch operable by a knob from either side, and individual bolt locking means whereby the occupants of rooms on opposite sides of the door may respectively secure the door from being opened by one on the other side of the door; with closet doors it is desirable that the door be simply lockable and unlockable from the outside, and in many instances, merely a bolt is required to hold the door closed without the necessity of a lock, because it is customary that very few closets in homes are locked; bed room doors in private homes are desirably secured with a latch on the inside only, for giving bed chamber privacy without any lock on the outside; with bath room doors, it is desirable that the door be locked against accidental intrusion, but that the lock be of such character that it may be readily opened from either side, so that entrance from the outside without delay may be had if occasion arises in case of children, or infirm or demented persons; with front garage doors it is only necessary to have entrance with a key from the outside; in back garage doors and warehouse doors, a lock is desirable that opens with a key on the outside and a knob on the inside; with public bath house doors it is desirable to provide for entrance with a key from the outside and a latch against the key from the inside; and locker doors may be provided with a bolt operable only by a key on the outside. In office buildings, hotels, apartments and flats, it is considered desirable to have for each door a bolt operable from the outside by a key, a master key, and a grand master key, for the tenant, the floor janitor, and for the manager of the building, respectively.

In the present general practice these various locks are provided with various forms of housing mechanisms and mountings, and an object of this invention is to provide a housing which can be die-cast at minimum expense and which will universally serve as the housing for all of these different forms and uses of latch and lock and which with slight changes of die can be made up in different forms each of which is non-usable except for the particular type of lock to which it is intended; so that a manufacturer may maintain different scales of prices for locks according to the mounting and service, and prevent use of any housing with any type of mounting except that for which it is authorized.

Another object of the invention is to provide a housing for latch or lock operated mechanisms which is composed of a minimum number of pieces and can be assembled with minimum skill, attention and labor and with practical impossibility of wrong assembly.

Another object of the invention is to provide a housing which will afford a solid attachment for the finish plates, and will also afford a non-rattling mounting for the knob spindle.

A further object is to eliminate the neces-

sity of screws for holding the plates firmly to the sides of the door.

Another object is to make provision for readily and positively adjusting the position of latch mechanism relative to the sides of the door closure without interfering with the face plates on the sides of such closure.

Another object is to make provision whereby the internally threaded shank of the door-knob will be supported in tight relation to the housing without in any way binding the interior mechanism of the latch.

Another object is to simplify and minimize the labor and cost of lock and latch installation and to enable unskilled labor to install locks and latches with ease, speed and accuracy.

I provide a latch housing comprising a shell having a bearing hub end and an open end, with threaded connection on the hub end, a lateral opening for a bolt connection between the ends, and a detachable end piece provided with external connections, and adapted to engage the open end of the housing.

The open end of the housing is preferably internally threaded for connection with the end piece and said end piece may be in the form of a knob holder in some cases and in the form of the cylinder of a lock in other cases; and in carrying out the general idea of my invention, the lock cylinder and the end piece are interchangeably adapted to the housing, so that any housing shell may be employed either for a lock mounting or for a knob mounting.

The invention includes a housing having a lateral way for a bolt and cross-head to effect connection, and includes the provision on the housing wall adjacent to and transversely of the way, of one or more journal bearings open to such way and adapted to allow the application to the housing, of one or more dogging pins to dog the bolt connection against operation.

A further object is to make provision for superior guiding of the bolt connection.

Another object is to provide a superior mounting for bolt operating cam.

Another object is to make provision for centering the latch between the finish plates and for clamping the finish plates to the door and thereby avoiding the use of any finish plate fasteners, as screws driven into the door; thus adapting the latch for application to armored or steel faced doors.

The housing complete for application to a closure comprises in combination with the assembled shell, and the detachable end piece having the threaded hubs, rosettes around the hubs to engage opposite sides of the closure, and nuts on the hubs, respectively to clamp the rosettes against the sides of the closure.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description, and the appended claims.

The accompanying drawing illustrates the invention.

Figure 1 is a section in a horizontal plane of a housing constructed in accordance with this invention including rosettes and nuts with the shell and detachable end piece, adapted for use with knob spindle; the bolt and bolt connection, and the mechanism for operating such connection are shown in place as adapted for a latch.

Fig. 2 is a perspective view of the housing shell and end piece disassembled.

Fig. 3 is a perspective view of the outer side of the detachable end piece detached, and its hub nut detached therefrom.

Fig. 4 is an axial section of the housing with the detachable end piece in place.

Fig. 5 is a perspective view of the housing with the detachable end piece in place.

Fig. 6 is a fragmental broken view on enlarged scale showing the housing with respect to its accommodation of the dogging pins that are shown notched to free the bolt connection, which is also shown notched to engage the dogging pins.

Fig. 7 is an end view of the housing shell without the pin bearing bores.

Fig. 8 is an end view of the housing shell with only one pin bearing bore.

Fig. 9 is a reduced diagrammatical face view of one of the rosettes.

The housing shell 1 is preferably of cylindrical form having a cylindrical chamber 2 open at one end and having a hub end 3 provided with an externally threaded hollow hub 4 forming a bearing 5 suitable for journalling a knob spindle 6. The walls of said chamber are closed except at an intermediate lateral way 7 for a bolt connection, which, for convenience of description is shown at 8 connected to a cross head 9 forming a tappet that is operable by a cam 10 mounted on a disc 11 inside the chamber 2, and provided with a knob spindle 12 which is shown threaded to receive the internally threaded shank or stem of a knob not shown.

The open end of the shell is provided with screw threads 14 into which the knob mounting 15, or an externally threaded cylinder lock, not shown, may be screwed.

The detachable end piece forming the knob mounting 15 is externally threaded as at 16 to screw into the open end of the shell, and is provided with an externally threaded hub 17 corresponding to the hub 4 on the closed end of the shell. The shell is provided with a hole 18 axially alined with the way 7 and adapted to form a seat for the reduced end of a guide pin 19 that is of less diameter than the way 7. The guide pin 19 is adapted to form a guide for the inside of the tubular bolt connection 8 that is slidable in the way

7 and said bolt connection 8 is provided with the cross head 9 which is operable by a spring 20 surrounding the guide pin 19 and located between and engaging the cross-head 9 and the side of the shell, to normally extend the bolt connection 8.

The shell is mainly cylindrical, being ribbed as at 21 on opposite sides of the way 7; and may or may not be provided with one or two bores 22 as the case may require, each bore being at a side of the axis of the way 7 and intersecting and cutting across such way, as indicated in Fig. 6 to form pinways for one or two bolt dogging pins 23 that are notched as at 24 to accommodate the full body of the bolt connection 8.

The shell may be cast with the bores 22 intersecting the way 7 sufficiently to allow a pin inserted through a bore to form a projection in the way 7 so as to prevent movement through the way of the bolt connection and so that by providing a bolt connection having one or more notches 24 to accommodate the dogging pin or pins, such pin or pins may be inserted through the bearings formed by the bores 22 while the bolt connector is in a predetermined position in the way. Said bores or bearings are cylindrical so that the pins may be turned, and so that by notching the pins as at 24 the bolt connection 8 is not interfered with.

The arrangement of the pins and bolt connection, and the construction of the bolt operating mechanism, forms no part of the present invention and is more particularly described and claimed in my application, Serial No. 133,631 filed contemporaneously herewith and only referred to herein to explain the purpose of the specific construction of the housing which is the subject matter of this application.

It is thus seen that this housing is especially adapted to be fitted in holes bored through a closure and to be held central therein by hub nuts 25 screwed onto the hubs and engaging the finish plates in the form of rosettes 26; and that when the knobs, not shown, are screwed home on the knob spindles they do not engage any portion of the hub or stationary parts connected thereto so that no matter how tightly they are screwed home they do not bind on any stationary part, but by screwing the knob nuts on the hubs firmly against the finish plates, the housing is firmly fixed to the closure 27.

The facing plates of said housing are shown constructed with an out-turned annular stiffening flange 28 around the central hole 29 to surround the nut 25; and said nut is provided with a shoulder 30 to engage the stiffening flange 28 so that when the nuts on the opposite side of the closure 27 are screwed home, they clamp the finishing plates onto the closure. Said finishing plates are shown with an internal stiffening flange 31 to engage the closure. By screwing the hub nuts 25 more upon one and less on the other, of the hubs, the shell may be adjusted toward one and from the other of the finishing plates to accommodate any mistakes which may be made in boring the bolt hole 32 into which the guide 33 for the bolt 34 is seated.

That is to say, to assemble the latch in its closure 27, a hole 35 will be bored through the closure from side to side and a hole 32 will be bored into the edge of the closure and will extend to the transverse hole 35, and it may be found that the hole 32 is closer to one side than to the other side of the closure so that the threaded bolt shank 36 would not be axially alined with the hole 32 if the bore 37 of the connection 8 were central between the sides of the closure 27. By the arrangement shown, the person installing the latch may bring the latch to position where the connection 8 is central to the hole 32 and when the shell is clamped in that position the bolt shank may be screwed into the connection 8 and then the guide 33 may be placed over the bolt 34 and driven home into the hole 32, as more particularly described and claimed in my applications, Serial No. 133,628 and Serial No. 133,629, filed contemporaneously herewith.

The finish plates of the housing are provided wtih holes 38 to accommodate the bolt dogging pin heads 39 which are non-rotatably connected to the handles 40, respectively so that the bolt-dogging pins may be independently turned in the pin journalling bores. For convenience of manufacture the facing plates may be stamped out of sheet metal and the pin holes 38 will then be punched in such facing plates as may be intended for application to locks or latches with pin dogging members. Since the facing plates are concentrically circular in every feature, except the hole 38, it is only necessary that the hole be punched at the predetermined distance from the center of the plate.

The hub nuts are shown as having an externally smooth sleeve 41 that is inserted through and snugly fits the central hole of the finish plate and thus insures against looseness and rattling.

The manufacture comprising the parts and combinations of parts is thus adapted for manufacture in large quantities by die casting, stamping and punching operations at minimum cost of time, attention, labor and material and may be assembled at the same place of manufacture at which the parts or any of them are made, or may be assembled at a place of final manufacture or a finishing plant, or, if desired they may be assembled at the place of use by the workman intending to install the latches, or by unskilled labor at such place of use, without special tools, screw drivers or wrenches.

The hub nut is shown internally threaded

from end to end and its threaded portion is shorter than the sleeve outside said threads so that it has a considerable range of adjustment, and the collars are large enough to afford convenient finger holds or hand holds by which the nuts may be grasped to screw them onto the hub far enough to clamp the finish plates as desired.

I claim:

1. A latch housing comprising a shell having a threaded open end and a detachable end piece screwed into said open end; said shell and end piece being provided with externally threaded hubs; plates having holes and mounted on said hubs and adapted to engage a closure in which the shell and hubs may be installed; and nuts screwed onto the hubs and provided with collars to engage the plates and to form finger holds by which they may be turned.

2. A structure of the class described comprising a housing having a hub-like extension, and a spindle journalled in said extension and having a reduced outer end detachably to receive and position a knob normally to abut against the enlarged body portion of the spindle.

3. A structure of the class described comprising a housing having a hub-like extension at each end, and a spindle journalled in each of said extensions and having reduced threaded outer ends detachably to receive and petition knobs to normally abut against the enlarged body portion of said spindle.

4. A structure of the class described comprising a housing having a hub-like extension at each end, one at least of which said extensions is removable, and a spindle journalled in said extensions and having a reduced outer end detachably to receive and position a knob normally to abut against the enlarged body portion of said spindle.

5. A structure of the class described comprising a housing having a hub-like extension, a finish plate surrounding said extension, a spindle journalled in said extension and having a reduced outer end, detachably to receive and position a knob normally to abut against the body portion of said spindle, and a hub nut carried by said extension and adjustable axially thereof for engagement with the finish plate.

6. A structure of the class described, comprising a housing having a hub-like extension, a finish plate fitted over said extension, means adjustable axially of said extension for securing said finish plate in place, and a spindle journalled in said extension and having a reduced outer end, detachably to receive and position a knob normally to abut against the body portion of said spindle.

7. A structure of the class described comprising a housing having a hub-like extension, a finish plate fitted over said extension, means engaging said extension to secure said finish plate in place, and a spindle journalled in said extension and having a reduced outer end, detachably to receive and position a knob normally to abut against the body portion of said spindle.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 1st day of July, 1926.

WILLIAM E. WREAD.