A. B. GRUBER.

LATCH.

APPLICATION FILED SEPT. 1, 1916.

1,215,649.

Patented Feb. 13, 1917.

2 SHEETS—SHEET 1.

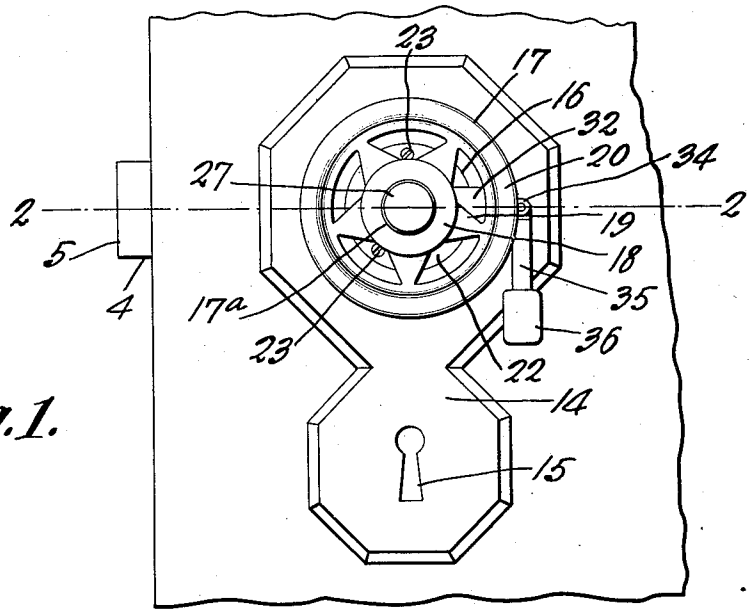


Fig. 1.

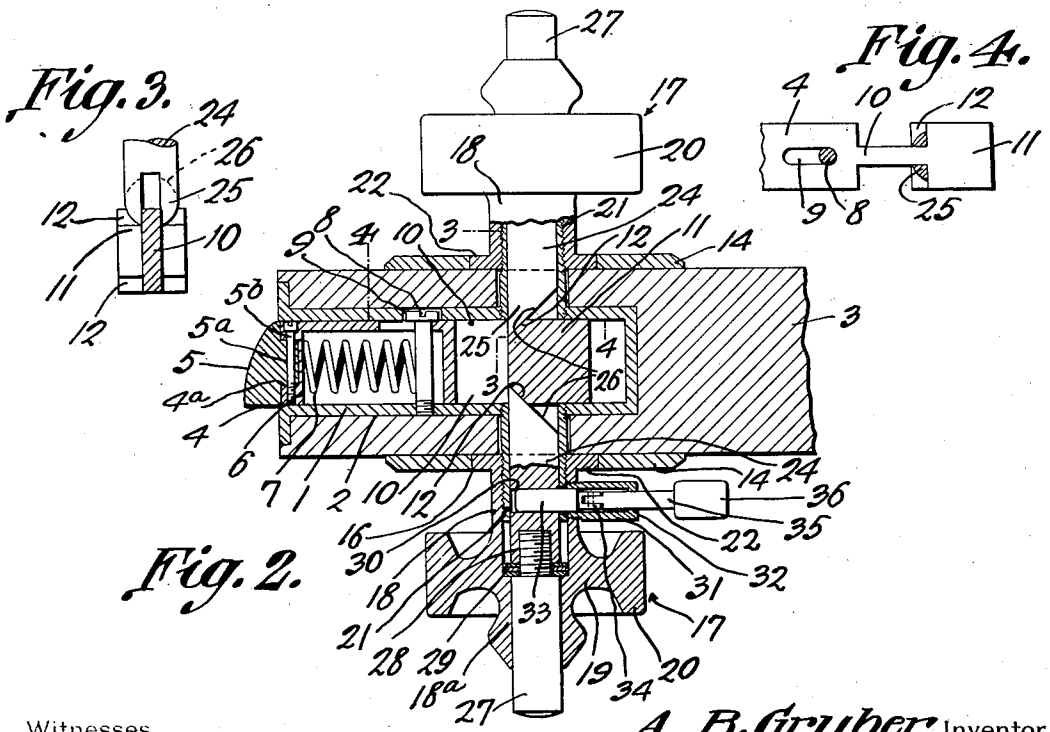


Fig. 2.

Fig. 3.

Fig. 4.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

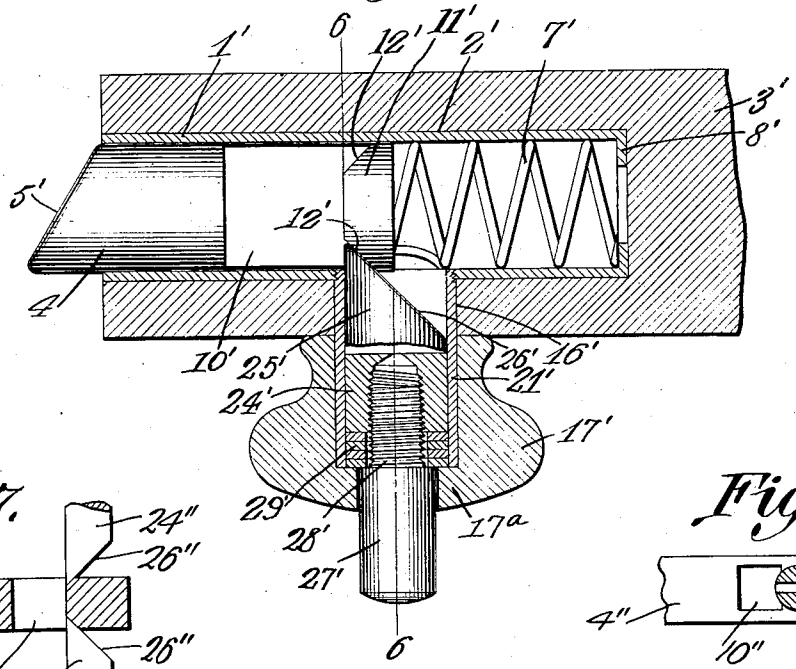


Fig. 7.

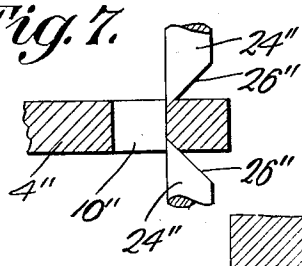


Fig. 8.

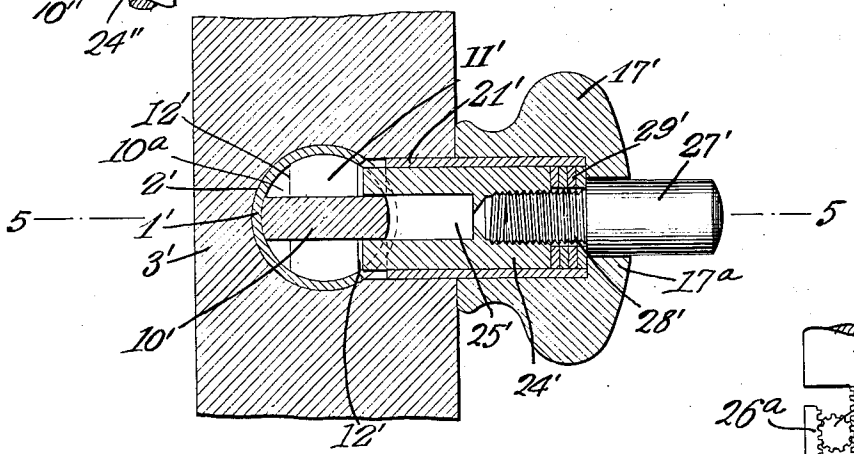


Fig. 6.

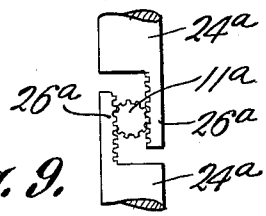


Fig. 9.

Witnesses

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UNITED STATES PATENT OFFICE.

ARCHIBALD B. GRUBER, OF SAN BERNARDINO, CALIFORNIA.

LATCH.

1,215,649. Specification of Letters Patent. Patented Feb. 13, 1917.

Application filed September 1, 1916. Serial No. 118,120.

To all whom it may concern:

Be it known that I, ARCHIBALD B. GRUBER, a citizen of the United States, residing at San Bernardino, in the county of San Bernardino and State of California, have invented a new and useful Latch, of which the following is a specification.

The present invention appertains to latches, and aims to provide a novel and improved yet extremely simple and inexpensive latch for use generally upon doors, drawers, and other closures or barriers.

It is the object of the invention to provide a device of the character described embodying a novel assemblage of the component elements to enhance the utility and efficiency of the device, the latch bolt being retracted by the pushing movement of a manually operated member associated with a fixed knob.

It is also the object of the invention to provide a latch which cannot only be used upon residence, office and other doors or barriers which are operated from both sides, but which can also be used upon the doors and drawers of kitchen cabinets, cupboards, buffets, china closets, refrigerators, and the like, wherein the doors and drawers are operated from one side only.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is an elevation of the latch.

Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1, portions being shown in elevation, and the detent being illustrated in operative position.

Figs. 3 and 4 are sectional details taken on the respective lines 3—3 and 4—4 of Fig. 2.

Fig. 5 is a horizontal section of a simplified and modified form taken on the line 5—5 of Fig. 6, portions being shown in plan.

Fig. 6 is a vertical section taken on the line 6—6 of Fig. 5, portions being shown in elevation.

Fig. 7 is a detail view of a modification.

Fig. 8 is another view of the parts shown in Fig. 7.

Fig. 9 is a detail view showing one means for connecting the opposite plungers.

In the construction shown in Figs. 1, 2, 3 and 4, there is provided a suitable case 1 adapted to be fitted within a mortise or recess 2 provided in the free edge of the door or other member 3, when a mortise lock is desired, but it will be understood that the case 1 can be applied to one side of the door if desired. Slidably mounted in any suitable manner within the case 1 is a latch bolt 4 which has its outer protruding end cut obliquely to form a cam 5 to snap into engagement with the keeper (not shown). The cam 5 is detachable and reversible. Thus, the cam is provided with a lug 5^a received by a recess 4^a in the outer end of the body of the latch bolt, and held therein by means of a transverse screw 5^b or other retaining element, which when removed permits the cam 5 to be removed and reversed. This also permits the cam to be replaced when worn out. The cam in being reversed, together with the keeper for the latch bolt, enables the latch to be used upon doors swinging in either direction. In order to project the latch bolt, the same is provided with a recess 6 in which a coiled wire expansion spring 7 is housed, the outer end thereof bearing against the outer end of the recess 6, and the inner end of the spring bearing against a pin 8 carried by the case. The pin 8 projects through the recess 6 and through a slot 9 of the latch bolt, to assist in guiding the latch bolt for reciprocatory movement. The spring 7 in expanding will project the latch bolt.

The latch bolt is provided adjacent its rear or inner end with a flat longitudinal web 10 and a T-head 11 at the rear or heel

end of the latch bolt connected to the body portion of the latch bolt by the web. The head 11 is provided with the beveled portions 12 adjacent the web.

Ornamental side plates 14 are secured to the opposite sides of the door in any suitable manner at the opposite sides of the case 1 and are provided with key holes 15 for the reception of a key to operate a lock bolt (not shown) of the lock mechanism carried by the case 1. The plates 14 are provided with openings 16 of circular or other suitable form at opposite sides of the latch bolt 4, and circular or other suitable knobs 17 are disposed at the opposite sides of the openings 16 of the plates 14. Said knobs 17 have tubular shanks or hubs 18 provided with stars or spiders 19 between their ends and adjacent to the remote or outer ends of said shanks, and rims 20 of annular form are either integral with or engaged upon the stars or spiders 19. The shanks 18 are provided at their inner or adjacent ends with outstanding flanges 22 of the same shape as and fitting within the openings 16 to rest against the sides of the door, and said flanges 22 are secured to the door by means of screws 23 or other securing elements. The stars 19 which may be of any suitable shape for purpose of ornamentation, provide openings in the knob for the introduction of the blade or bit of a screw driver for applying and removing the screws 23.

Sleeves or tubular guides 21 have their remote ends threaded or otherwise detachably engaged within the inner end portions of the shanks 18, and project within openings provided in the door 3 at the opposite sides of the case 1, and the inner or adjacent ends of the sleeves 21 are threadedly or otherwise detachably engaged with the opposite sides of the case. The sleeves 21 provide guides for cylindrical plungers 24 which have their inner ends bifurcated or forked, as at 25, to straddle the web 10 of the latch bolt, and the inner ends of said plungers are cut obliquely to provide cams 26 bearing against the beveled shoulders 12 of the T-head 11. The plungers have push stems or buttons 27 at their outer ends slidable through the reduced outer end portions 18^a of the shanks 18 so as to project therefrom, and the inner ends of said stems have reduced threaded projections 28 threadedly engaging within the outer ends of the plungers, to adjustably connect said stems and plungers. Washers 29 are disposed between the outer ends of the plungers and the inner ends of the stems, whereby to provide for the proper adjustment of the stems when they are tightened. The number of washers 29 used can be changed, whereby to adjust the stems 27 for doors of various thicknesses when the knobs and shanks are spaced apart at different distances. The washers 29 are movable within the shanks 18 between the sleeves 21 and the shoulders formed by the reduced portions 18^a whereby to limit the movement of the plungers, and to prevent the withdrawal thereof.

When the plunger stem 27 at either side of the door is pushed, this being conveniently done when the knob is grasped so that the thumb or palm of the hand can be employed for pushing the plunger, the cam 26 of the plunger will force the T-head 11 rearwardly, to thus retract the latch bolt, which will permit the door to be opened. As soon as the plunger is released, the spring 7 will again project the latch bolt for engagement with the keeper when the door is closed, and the latch bolt being projected will move the plunger back to initial position.

As a means for holding one plunger, or that plunger at the inner side of the door, said plunger is provided with a diametrical aperture or socket 30, and an outstanding tubular guide 31 has one end threadedly engaging the respective shank 18 behind the knob, and is provided with an inturned flange 32 at its free end. A detent 33 is slidable within the guide 31, on the inside of the door, and is adapted to be projected into the aperture 30 for holding the plunger, whereby to prevent the movement thereof by small children on the inside, and to prevent the movement of either plunger from the outside of the door, when the two plungers are connected for proper movement. For example, as illustrated in Fig. 9, the two opposite plungers 24^a can be operatively connected by the provision of racks 26^a at their ends meshing with a pinion 11^a, whereby when one plunger is held against movement, neither of the plungers can be moved. The detent 33 is provided at one end with a reduced extension 34 movable through the aperture provided by the flange 32 when the detent 33 is withdrawn from the plunger, and the extension 34 is bifurcated and has pivoted therein one end of a stem 35 which is provided at its free end with a knob or finger piece 36. When the detent 33 is retracted by means of the stem 35, said stem can swing downwardly to a dependent position, as seen in Fig. 1, and this will hold the detent in released position. By swinging the stem 35 into alinement with the detent, said stem can be pushed into the guide 31 for moving the detent into the apertures 30. The detent can be mounted and operated in other suitable manners.

The several parts of the latch can be readily assembled, it being noted that after the case 1 is inserted in the mortise 2, the sleeves 21 can be attached to the sides of the case, thereby holding the case in place, and the shanks of the knobs can then be engaged upon the sleeves 21 whereby the flanges 22

in bearing against the door, will serve to hold the case, sleeves 21 and the knob firmly in place. If it is desired to operate the latch bolt from one side of the door only, as upon china closets, refrigerators, cupboards, buffets, and other articles of furniture, one knob and its sleeve 21 and plunger are eliminated, and the detent 33 is also eliminated, the remaining plunger being upon the outer side of the door to enable the latch bolt to be retracted.

The latch illustrated in Figs. 5 and 6 is intended for use upon the doors and drawers of china closets, buffets, refrigerators, and the like. In the simplified construction shown in said figures, there is provided a tubular latch bolt case 1′ which is adapted to be slipped into a bore 2′ drilled into the free edge of the door, drawer or other member 3′ which is to be latched in closed or other position, and a latch bolt 4′, preferably of circular cross section, is slidable within the case 1′, and has its outer end cut obliquely to form a cam 5′ to snap into engagement with the keeper (not shown). The latch bolt 4′ is provided in the case 1′ adjacent its inner end with a flat diametrical web 10′, and a T-head 11′ at the rear or heel end of the latch bolt which is connected to the body portion of the bolt 4′ by the web 10′. The head 11′ has beveled shoulders 12′.

The latch bolt 4′ is normally projected under the influence of a coiled wire expansion spring 7′ disposed within the casing 1′ between the heel of the latch bolt 4′ and the inner or rear end of the case 1′, which may be provided with an inturned flange 8′ for holding the spring in place, although the inner end of the case 1′ can be formed in any other suitable manner.

A tubular guide or sleeve 21′ is adapted to be fitted in any suitable manner within a bore drilled into the outer side of the door 3′ and extending to the bore 2′ between the ends thereof, the case 1′ being provided with an opening or aperture at one side in which the inner end of the guide 21′ is threaded. A knob 17′ can be secured or fitted in any suitable manner upon the protruding portion of the guide 21′, in order that the knob can be grasped for opening the door. A plunger 24′, preferably of circular cross section, is slidable within the guide 21′ and the inner end of the plunger 24′ is cut obliquely to provide a cam 26′, and is bifurcated or provided with a longitudinal diametrical slot 25′ receiving the web 10′. The plunger 24′ has the reduced stem 27′ provided with a reduced extension 28′ threadedly connected with the plunger, in order that the stem of the plunger can be adjusted for various doors. The stem 27′ slides through a reduced apertured portion 17ª of the knob 17′ to limit the outward movement of the plunger and to prevent the accidental withdrawal thereof. Washers 29′ can be disposed between the plunger and its stem.

This device can be constructed on a small scale so as not to be too conspicuous, and to render it as simple and inexpensive as possible, as well as enabling the device to be quickly and conveniently applied to the door.

The bifurcated or slotted end of the plunger in straddling the web of the T-shaped heel 11′ of the latch bolt 4′, will prevent the latch bolt from rotating out of proper position, and this will also prevent the plunger from being rotated. The T-head 11′ has its corners or shoulders beveled off, as at 12′, for the engagement of the cam end of the plunger, and ordinarily when the plunger is released, the spring 7′ will project the latch bolt, and the head 11′ in bearing against the cam 26′ will project the plunger also. Since the outward movement of the plunger is limited, the tip of the cam 26′ will project into the case 1′, and this will limit the outward movement of the latch bolt 4′, and the parts are thus held in proper position, in order that when the door is to be opened, the knob 17′ in being grasped by the hand renders it convenient to press the plunger stem inwardly, so that the cam 26′ in bearing against the head 11, will force the same rearwardly to retract the latch bolt.

Another manner of connecting the latch bolt and the plungers is illustrated in Figs. 7 and 8, wherein the latch bolt 4″ has an opening 10″ receiving the tips of the cam ends 26″ of the plungers 24″, whereby either plunger in being pushed will retract the latch bolt.

Having thus described the invention, what is claimed as new is:

1. In a latch, a slidable latch bolt having a T-portion, and a slidable plunger having a bifurcated cam straddling said portion and bearing against the head thereof.

2. A latch embodying a case, a spring pressed latch bolt slidable in said case and having a T-shaped heel, a guide attached to one side of the case, and a plunger slidable in said guide and having a bifurcated cam projecting into the case, straddling said heel and bearing against the head thereof.

3. A latch embodying a case, a spring pressed latch belt slidable in said case and having a T-shaped heel, a guide attached to one side of the case, a plunger slidable in said guide and having a bifurcated cam projecting into the case, straddling said heel and bearing against the head thereof, and a knob secured upon said guide and having a reduced portion, the plunger having a stem slidable through said reduced portion and means to bear thereagainst for limiting the outward movement of the plunger.

4. A latch embodying a case, a guide at-

tached to one side thereof, a latch bolt slidable within the case, a plunger slidable within the guide for operating the latch bolt, said guide being provided at one side with a detent guide, a detent slidable in the detent guide to engage the plunger and prevent movement thereof, and a stem pivoted to the detent and swingable into alinement therewith to operate it.

5. A latch embodying a case, a latch bolt slidable therein, a guide attached to one side of the case, a knob having a tubular shank engaged upon said guide, a plunger slidable in said guide and having a stem projecting from the shank of said knob, said plunger being operatively connected with the latch bolt for retracting it, an outstanding guide carried by said shank behind the said knob, and a detent slidable in the second mentioned guide, the latch bolt having an aperture for receiving said detent.

6. A latch embodying a latch bolt, a knob having a tubular shank, a plunger slidable within said shank and having a stem projecting from one end thereof, the plunger being operatively connected with the latch bolt, an outstanding guide carried by said shank, a detent slidable in said guide, the latch bolt having an aperture for receiving said detent, and a stem pivoted to the detent and movable into said guide for moving the detent into said aperture, said stem of the detent being swingable out of alinement with the detent when the detent is pulled outwardly into said guide.

7. A latch embodying a case, a spring pressed latch bolt slidable therein, a guide attached to one side of the case, a knob having a tubular shank engaged upon said guide, a plunger slidable in said guide and operatively connected with the latch bolt, the plunger having a stem projecting out of said shank and an aperture, a second guide attached to said shank behind the knob and having an inturned flange at its free end, a detent slidable in the second guide and movable into said aperture, the detent having a reduced extension movable past said flange, and a stem pivoted to said extension for manipulating the detent.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ARCHIBALD B. GRUBER.

Witnesses:
J. B. STEGALL,
L. G. MOYERS.