

A. B. GRUBER.

DOOR LATCH.

APPLICATION FILED JAN. 7, 1916.

Patented Sept. 5, 1916.

2 SHEETS—SHEET 1.

1,197,201.

Fig. 1.

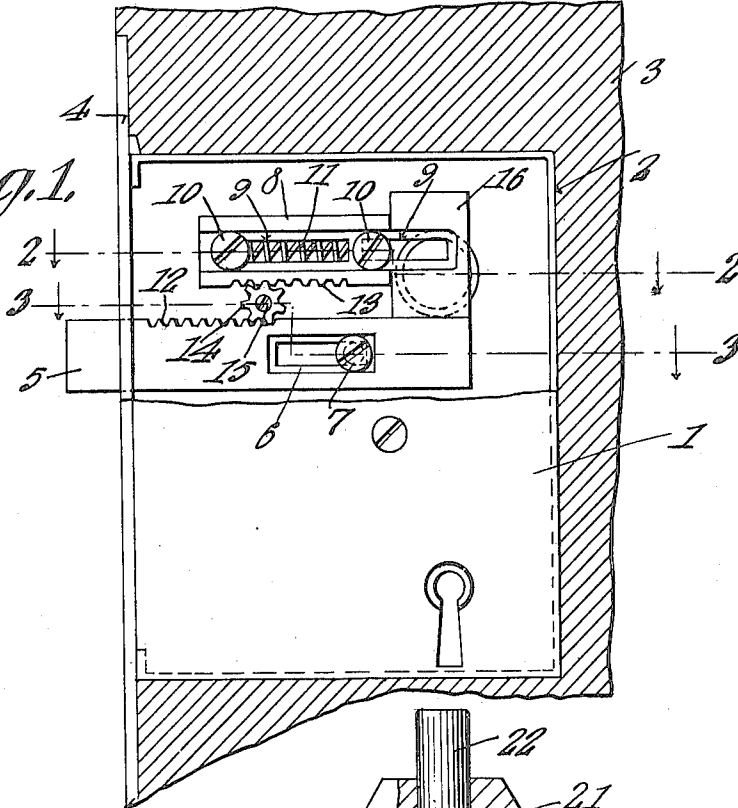


Fig. 2.

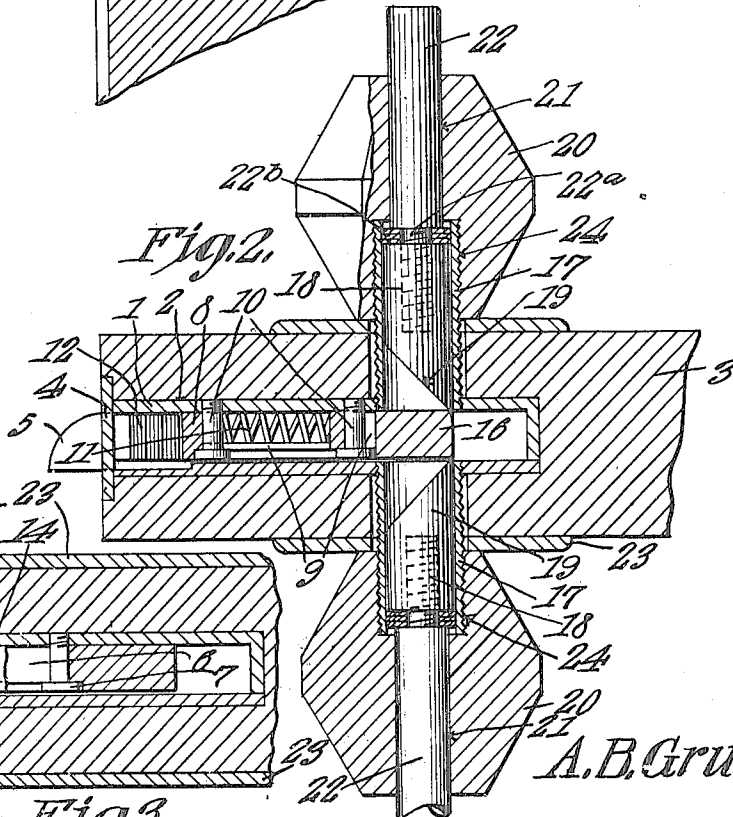
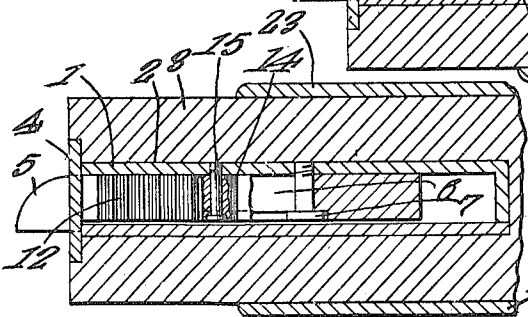


Fig. 3.



Witnesses

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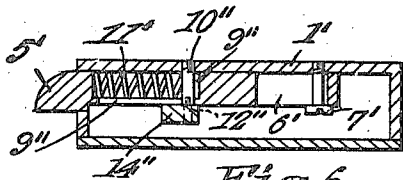
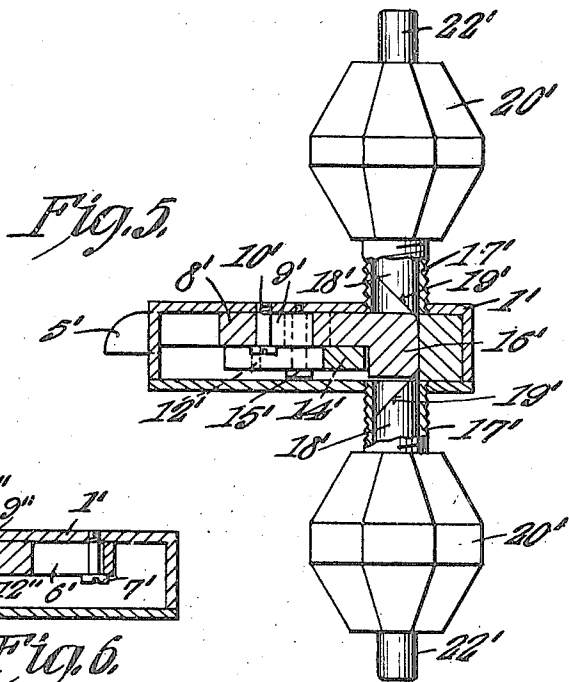
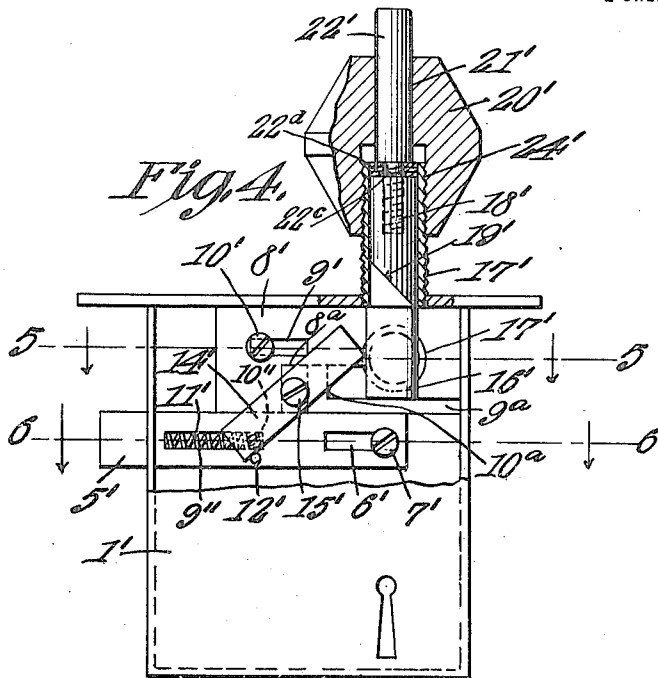
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ARCHIBALD B. GRUBER, OF SAN BERNARDINO, CALIFORNIA.

DOOR-LATCH.

1,197,201.

Specification of Letters Patent.

Patented Sept. 5, 1916.

Application filed January 7, 1916. Serial No. 70,823.

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 Door-Latch, of which the following is a specification.

The present invention appertains to door latches, and aims to provide a novel and improved device of that character.

It is the object of the invention to provide a door latch wherein it is not necessary to rotate the knobs for retracting the latch bolt, but instead, plungers are used, said plungers being operatively connected in a novel manner with the latch bolt, whereby when one of the plungers is pressed or pushed, it will retract the latch bolt to enable the door to swing open easily.

It is also within the scope of the invention to provide a latch device of the nature indicated, which is comparatively simple and inexpensive construction, as well as being practical and efficient in use.

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 a door lock embodying the improved latch device, a portion of the casing being broken away to expose the latch device. Figs. 2 and 3 are sectional views taken on the lines 2-2 and 3-3, respectively, of Fig. 1. Fig. 4 is a view similar to Fig. 1 of a modification. Figs. 5 and 6 are sectional views taken on the lines 5-5 and 6-6, respectively, of Fig. 4.

As illustrated, the device is employed in a mortise lock, although it is to be understood that the latch device can be used upon various locks and for various purposes. In carrying out the invention, there is provided a case 1 adapted to fit within a mortise 2 in the edge of a door 3, said case hav-

ing a face plate 4 attached to the edge of the door as usual.

A latch bolt 5 is slidable through the face plate 4, and is provided within the case 1 with a longitudinal slot 6 through which a screw or retaining element 7 extends, said screw being in threaded engagement with one side of the case 1, and having its head overlapping the opposite side of the latch bolt to hold said latch bolt for sliding movement within the case.

Mounted for reciprocatory movement within the case 1 above and parallel with the latch bolt 5 is an elongated member 8, provided with a pair of alining longitudinal slots 9, and a screw or retaining element 10 is engaged through each of the slots 9 and threadedly or otherwise engages that side of the case 1 engaged by the screw 7. The screws 10 have heads overlapping the member 8 to hold said member in position, and a coiled wire expansion spring 11 is disposed within one slot 9 between the respective screw 10 and the remote end of the said slot 9 to move the member 8 rearwardly when it is released.

The latch bolt 5 is operatively connected with the member 8, whereby when the member 8 is forced forwardly, the bolt 5 will be retracted, and to this end the upper edge of the bolt 5 has a longitudinal series of rack teeth 12, while the lower edge of the member 8 is provided with a complementing longitudinal series of rack teeth 13. A pinion 14 intermeshing with both sets of teeth is mounted for rotation upon a pintle 15 threadedly or otherwise engaged with that side of the case 1 carrying the screws 7 and 10. The pinion 14 thus connects the member 8 and bolt 5 for simultaneous movement in opposite directions, whereby it is possible to apply a forward pressure to the member 8 for retracting the latch bolt. The spring 11 will normally move the member 8 rearwardly, and thus project the latch bolt, so that the latch bolt will snap into the keeper (not shown) attached to the jamb of the door frame or casing. The member 8 is provided at its rear end with an enlarged heel or head 16.

Threadedly or otherwise engaged with the opposite sides of the case 1 is an alining or coaxial pair of tubular guides or sleeves

17 projecting in opposite directions away from one another, and slidably receiving the plungers 18 having their adjacent ends cut obliquely to provide cams 19 coöperable with the heel 16 of the member 8, as clearly seen by reference to Fig. 2, whereby when one of the plungers is pressed inwardly, it will force the member 8 forwardly to retract the latch bolt.

Suitable knobs 20 are engaged upon the remote ends of the tubular guides 17 and are provided with bores 21 through which reduced stems 22 of the plungers 18 project slidably, the plungers being held within the guides 17 by means of the knobs 20, and said knobs are preferably threaded upon the guides 17 to also hold the plates 23 against the sides of the door 3. The knobs 20 have counter bores 24 receiving the guides 17. Each stem 22 has a reduced extension 22^a threaded into the respective plunger 18, whereby the stem can be adjusted relative to the plunger to project properly from the knob under various circumstances, washers 22^b being disposed between the plunger 18 and stem 22 around the extension 22^a.

To retract the latch bolt, from either side of the door, it is only necessary to push or press the stem of the respective plunger, which will force the member 8 forwardly, and therefore retract the latch bolt. As soon as the plunger is released, parts will be returned to initial position under the influence of the spring 11.

With the present arrangement, the cams 19 are applied to the rear end or heel of a member to force the same forwardly for retracting the latch bolt, instead of utilizing the movement of the plungers for forcing the member rearwardly which would necessitate certain objectionable features.

In the modification depicted in Figs. 4, 5 and 6, the latch bolt 5' is slidable through one edge of a case 1' and is provided within the case with a longitudinal slot 6' engaged by a screw 7' threadedly engaging one side of the case. Mounted within the case 1' above and parallel with the latch bolt 5' is a reciprocatory member 8' having a longitudinal slot 9' through which is engaged a retaining screw 10' threadedly engaging one side of the case. The latch bolt 5' has a second longitudinal slot 9'' in which is disposed a pin or screw 10'' threadedly engaging one side of the casing, and a coiled wire expansion spring 11' is disposed between the screw 10'' and forward end of the slot 9'' for normally projecting the latch bolt 5'. The member 8' has an enlarged heel or head 16', and is provided with a lower recess 8^a between the heel 16' and forward portion of the member 8'. The member 8' slidably engages the upper edge of the case 1', and the heel 16' is slidable upon a longitudinal wall 9^a between the member 8' and

bolt 5'. The forward end of the wall 9^a has an upwardly projecting lug 10^a within the recess 8^a and contacting with the member 8' to assist in guiding the same for longitudinal movement.

In order to operatively connect the member 8' and bolt 5', a lever 14' is fulcrumed between its ends upon a screw or fulcrum element 15' threadedly or otherwise engaging the aforesaid side of the case 1' and disposed within the recess 8^a immediately in advance of the lug 10^a. The upper end of the lever 14, which is normally arranged obliquely, as seen in Fig. 4, bears against the back of the heel 16', and the lower end or arm of the lever 14' bears against an outstanding lug or pin 12' with which the bolt 5' is provided at one side thereof. The lever 14' is disposed at those sides of the member 8' and bolt 5' remote from the side of the case carrying the screws, and the lever overlaps said member and bolt.

Threadedly or otherwise engaged with the case 1' are a plurality of tubular guides or sleeves 17' in which the plungers 18' are slidable, said plungers having the cam ends 19' engaging the heel 16'. Said plungers have the reduced stems 22' slidable through the bores 21' of the knobs 20' provided with the counter bores 24' threadedly receiving the remote ends of the guides 17'. Each of the stems 22' has a reduced threaded extension 22^c threaded into its plunger 18', whereby the stem can be adjusted, and washers 22^d are disposed between the stem and plunger around the threaded extension. In this form, three plungers are illustrated, two of them being in alinement at the opposite sides of the case, and the other working through the upper edge of the case. The upper plunger is useful when the latch device is used on automobile doors, and the like, when the latch bolt is operated from above, while the horizontal plungers are useful on ordinary doors which are operated from opposite sides. Any one or two, or all three plungers can be used, as may be found expedient or necessary. It is evident that when any of the plungers is pressed inwardly, the forward movement of the member 8' will be effected, so that the lever 14' being swung by the movement of the member 8' will force the lug 12' and the bolt 5' rearwardly.

The use of the plungers in the various positions is also applicable to the form illustrated in Figs. 1 and 2, the same as with the form illustrated in Figs. 4 and 5.

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

1. In a latch, a reciprocatory latch bolt, a reciprocatory member parallel with the latch bolt, an operative connection between said member and bolt whereby they reciprocate simultaneously in opposite directions,

and a plunger having a cam end engaging the heel end of said member whereby when the plunger is pushed, the cam end thereof will advance said member for retracting the
5 latch bolt.

2. In a latch, a case, a slidable latch bolt mounted therein, a slidable member mounted within the case parallel with said bolt, a member mounted for rotary movement with-
10 in the case and engaged with said member and bolt whereby they are reciprocated simultaneously in opposite directions, a tu-

bular guide carried by the case, and a plunger slidable in said guide and having a cam end bearing against the heel end of said
15 second mentioned member to advance said member for retracting the latch bolt.

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:

R. A. COOK,
EUGENE T. GREER.