No. 688,001. Patented Dec. 3, 1901.

F. H. MILLS.

LOCK.

(Application filed May 17, 1898.)

(No Model.)

Fig. 1.

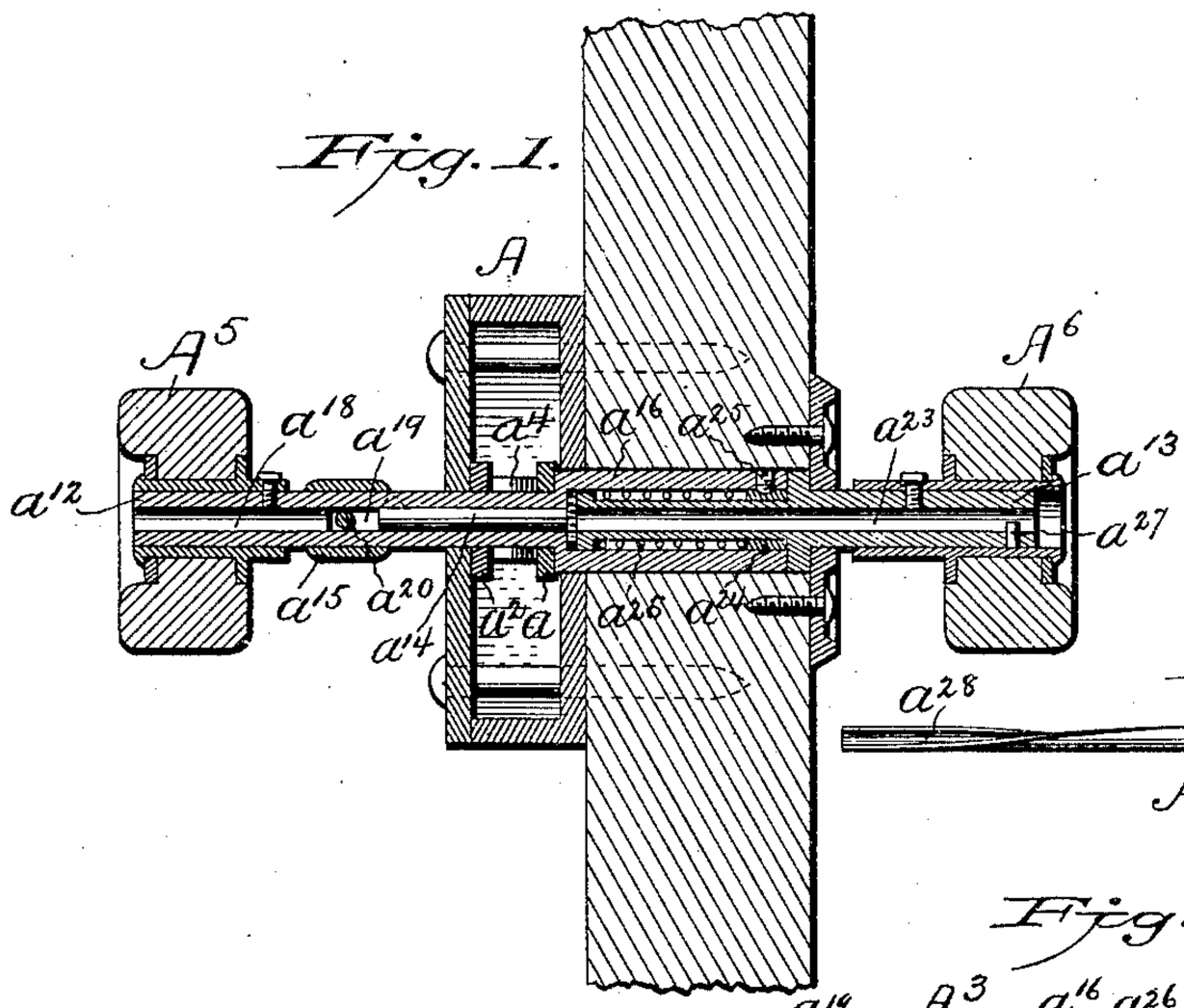


Fig. 7.

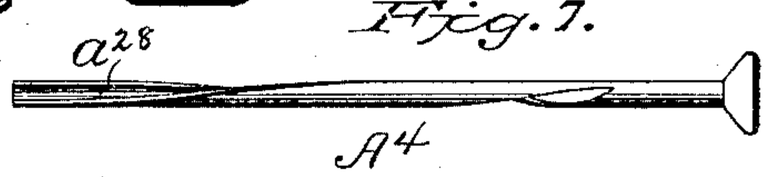


Fig. 4.

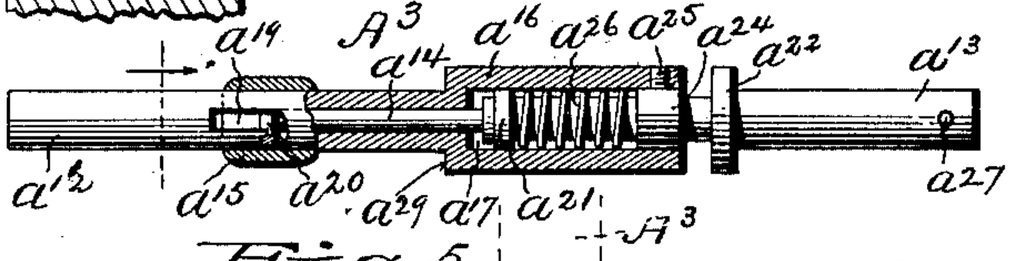


Fig. 2.

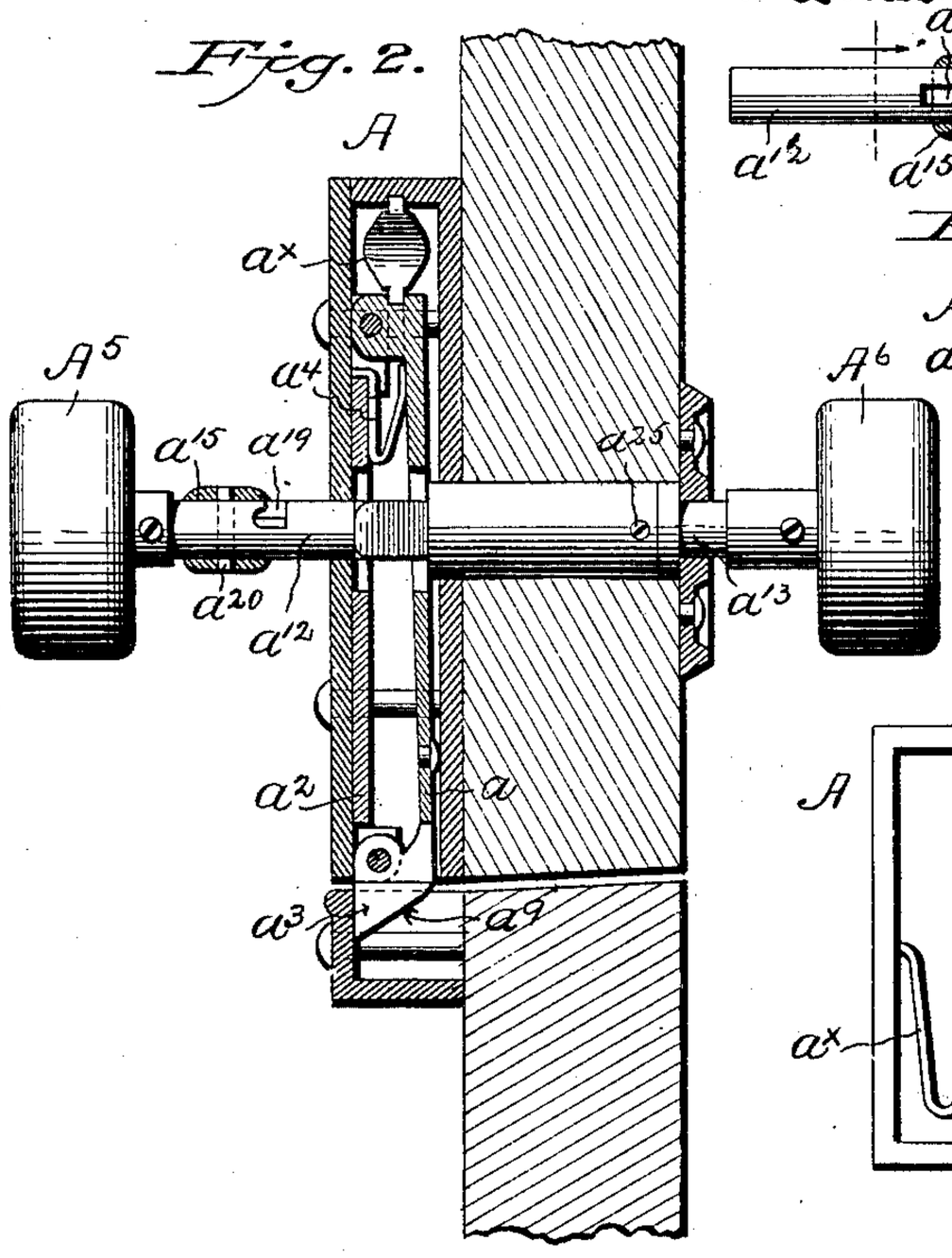


Fig. 5.

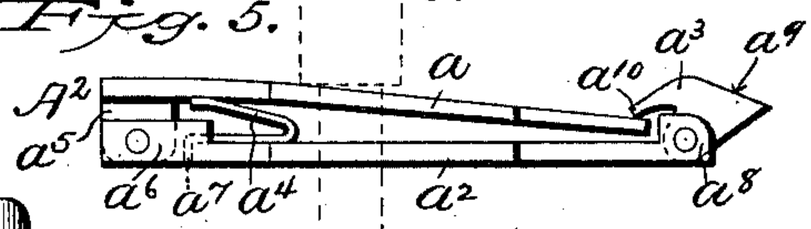


Fig. 6.

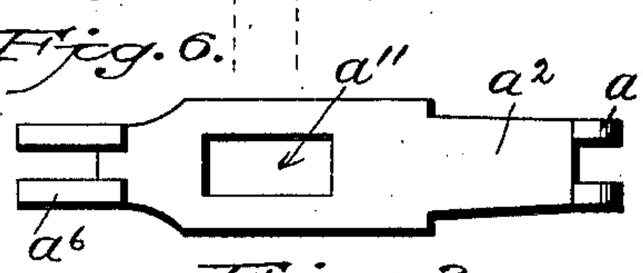
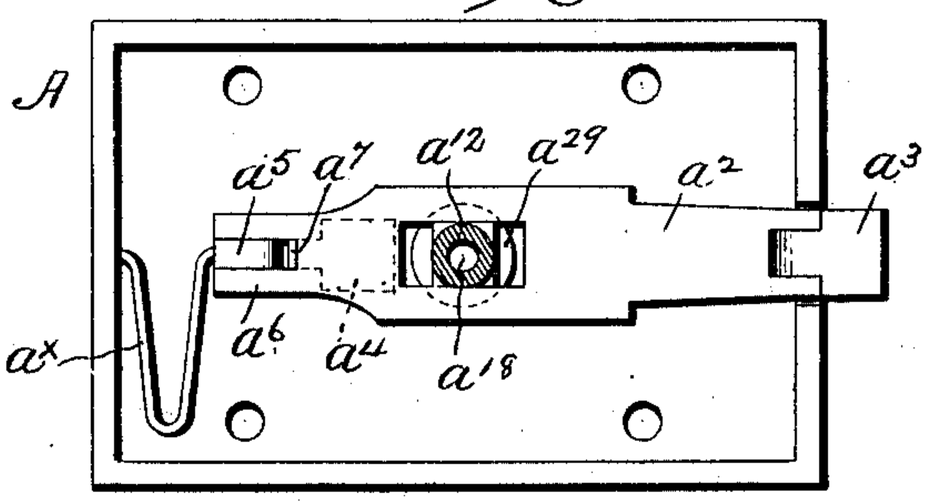


Fig. 3.



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UNITED STATES PATENT OFFICE.

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LOCK.

SPECIFICATION forming part of Letters Patent No. 688,001, dated December 3, 1901.

Application filed May 17, 1898. Serial No. 681,002. (No model.)

To all whom it may concern:

Be it known that I, FRED H. MILLS, of Klamath Falls, county of Klamath, and State of Oregon, have invented certain new and useful Improvements in Door-Locks, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The object is to present a lock, more particularly one adapted for use in connection with swinging doors, in which the unlocking is effected from the outside by a direct thrust of the key and on the inside by a direct pull on the knob, whereby the turning of the key and of the knob in unlocking a door, as is necessary with door-locks in universal use, is rendered wholly unnecessary, thereby permitting a person having but one hand free for use to open a door equipped with such a lock with perfect readiness; furthermore, to present a lock which may with readiness and ease be converted from a day lock or latch—that is to say, one in which the employment of a key to permit opening of the door from either side is rendered unnecessary at the time—to a night lock or latch—that is to say, one in which the employment of a key to permit opening of the door from the outside is necessary; furthermore, to present a lock in which the provision of a keyhole in the door is obviated, thereby saving trouble and expense in fitting the lock in position; furthermore, to present a lock which shall offer great obstacles to any attempt at "picking," and, finally, to present a lock which shall in a simple and effective manner combine all of the advantages enumerated.

With these objects in view the invention consists in the novel construction and arrangement of parts of a lock, as will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, and in which like letters of reference indicate corresponding parts, I have illustrated one form of embodiment of my invention, it being understood that other forms of embodiment thereof may be employed without departing from the spirit of the same, and in these drawings—

Figure 1 is a view in vertical section, taken through the center of the lock. Fig. 2 is a view in longitudinal section, also taken through the center of the lock. Fig. 3 is a view in plan, partly in section, displaying the lock-casing and the arrangement of the spring by which the part hereinafter designated as the "lock and latch" is held in position therein for proper operation. Fig. 4 is a view in elevation, partly in section, displaying the arrangement of parts of a sectional bar or shank to which the knob is secured, this bar from its function being hereinafter designated as the "dog-releasing bar." Fig. 5 is view in side elevation displaying the lock and latch removed from the casing, the position of the dog-releasing bar occupies when releasing the dog being shown in dotted lines. Fig. 6 is a view in plan of one of the members of the lock and latch. Fig. 7 is a detail view of the key for unlocking the lock.

Referring to the drawings, A designates the lock-casing, which, as is usual, is composed of a box portion and lid. The lock shown in this instance is of that class known as "rim-locks;" but it is to be understood that the same may be of that class known as "mortise-locks" and that the improvements hereinafter described are equally adaptable to other kinds of locks than those named—as, for instance, to till-locks and the like. The casing may be constructed of any suitable material and ornamented in any manner to produce a neat and finished effect and is held in place by screws in the ordinary manner.

The operating mechanism comprises generally the combined lock and latch A^2 and the dog-releasing bar A^3. The lock and latch consists of two members a a^2, pivotally connected at one end and reciprocatory in the lock-casing, a pivoted dog a^3, carried by the member a^2, and a spring a^4 for keeping the members of the lock and latch normally separated or in the position shown in Fig. 2. One manner of assembling the members of the lock and latch as herein shown is to provide the member a with a tongue a^5 and pivot this between the walls of a bifurcated lug a^6 on the member a^2. The spring a^4 is provided with a toe a^7, which fits between the walls

of the lug, and is thereby held in position against displacement. The member a^2 is provided at the end opposite the lug a^6 with a second bifurcated lug a^8, between the walls of which the dog a^3 is pivoted. The dog has the usual rounded or inclined striking-face a^9 for engaging the keeper on the door-jamb and is provided with a rearward-projecting toe a^{10}, which is designed normally to engage with the free end of the member a, as shown in Fig. 2, and thus prevent the dog from rocking to the position shown in Fig. 5. Each of the members a a^2 is provided with an opening a^{11}, preferably rectangular in shape, through which projects a squared portion of the dog-releasing bar, as clearly shown in full lines in Figs. 2 and 3 and in dotted lines in Fig. 5, the function of the openings and of the squared portion of the dog-releasing bar being by coaction to cause the lock and latch to move in a right line, and thus at all times to effect proper working of the device. The lock and latch is held for yielding reciprocatory movement by a spring $a^\times$, in this instance a V-shaped spring the extremity of the two members whereof are reduced to engage openings formed for their reception, respectively, in one end of the casing and in the rear end of the lock and latch.

The dog-releasing bar consists generally of two telescopic members a^{12} and a^{13}, a spring-pressed pin a^{14}, and a locking-sleeve a^{15}, mounted on the member a^{12}. This latter member is provided with an enlarged head a^{16}, formed with a concentric socket a^{17}, with a bore a^{18}, constituting a continuation of the socket, and with a transverse bayonet-slot a^{19}, in which works a pin a^{20}, carried by the sleeve a^{15}, the function of the pin appearing later on.

The member a^{13} of the dog-releasing bar is provided with a head a^{21}, adapted to fit and work in the socket a^{17}, and with a rigid collar a^{22} to abut against the head a^{16} to limit the inward movement of the member a^{13}, and with a bore a^{23}, extending throughout its length. Mounted on the member a^{13}, between the head a^{21} and the collar a^{22}, is a sleeve a^{24}, which is held against movement in the socket by a pin or screw a^{25}, carried by the head and on the said member, between the head a^{21} and the sleeve a^{24}, is a coiled spring a^{26}, which exerts force to hold the member a^{13} and a pin a^{14} normally in the position shown in Fig. 1, so that the lock-and-latch members will occupy the position shown in Fig. 2, which latter position is that which they hold when the lock is set for a night-latch. The bore a^{23} of the member a^{13} has projecting into it a pin a^{27}, located in this instance near the outer portion of the said bore, which bore constitutes the keyhole, the object of the pin being to prevent entrance into the bore of a piece of metal shaped otherwise than the key for the purpose of picking the lock. The key A^4, as shown in Fig. 7, is formed with a groove a^{28}, which will permit insertion into the bore, and as the pin a^{27} nearly spans the diameter of the bore it follows that the key must be made very thin to pass the pin. If made of a piece of thin straight metal, it would not possess sufficient rigidity to operate the lock, and to obviate this difficulty the key is twisted in the manner of a twist-drill, with only one groove, however, and for the purpose is practically as rigid as would be a solid bar of metal.

The knobs A^5 and A^6 are secured to the two end portions of the dog-releasing bar in any suitable manner, as by screws, so that they may be removed with readiness and ease.

The operation of the lock when set for a night-latch is as follows: The parts being in the position shown in Fig. 2 and it being desired to open the door from the outside, the key is pushed into the bore a^{23} until its end contacts with the pin a^{14}, and upon inward pressure being applied to the key the socket is forced away from the collar a^{22}, as shown in Fig. 4. As the socket moves its shoulder a^{29} depresses the member a of the lock and latch, as shown in Fig. 5, thereby freeing the said member from the toe a^{10} of the dog and leaving the latter free to move on its pivot clear of the member a, as also shown in Fig. 5, and upon inward pressure being applied to the knob the straight face of the dog by contact with the keeper will force the lock and latch inward and clear the dog from the keeper, whereupon the door may be opened. To open the door from the inside, it is merely necessary to pull inward on the knob A^5, thus to close the members of the lock and latch in the same manner as when the key is used.

The operation of the lock when set for a day-latch is as follows: The knob A^5 is first drawn inward to close the members of the lock and latch, and the sleeve a^{15} is then moved from the point indicated by the dotted line and arrow in Fig. 4 to the position shown in this figure, and the sleeve is then given a turn to lock the pin a^{20} in the angle of the bayonet-slot, thereby holding the parts in the position shown in the said figure. When thus positioned, the members of the lock and latch are held positively against opening; but the members are not moved in a sufficient distance to free the dog, as shown in Fig. 5, but merely far enough that when inward pressure is applied to the outer knob or a pull on the inner knob the pressure or pull will depress the member a of the lock and latch sufficiently to clear the dog, so that a door will be securely held from accidental opening, as from wind-pressure or the like, until the requisite pressure is applied to the knob. Now should a person desire to open the door it will only be necessary to push the knob inward, if entrance is desired from the outside, or pull the knob outward, if exit is desired from the inside, to release the dog. As shown in Figs. 1 and 2, there is sufficient

play left between the knob-shanks and the shank-plates to afford the requisite play for operating the knob.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a lock, the combination with a reciprocatory, two-membered lock and latch and a pivoted dog carried by one of the members, said dog being normally engaged and locked against movement by the other member, of means for moving said last-named member out of engagement with the dog, whereby the latter is released, substantially as described.

2. In a lock, the combination with two members having a hinged connection at one end and extending in the same direction, a dog pivotally secured to the free end of one member and a spring adapted to maintain the free end of the other member in engagement with the dog, whereby said dog is normally held locked against independent movement, substantially as described.

3. In a lock, the combination with a reciprocatory two-membered lock and latch, and a pivoted dog carried by one of the members and adapted to be held normally locked against movement by the other member, of a two-part dog-releasing bar, one of which parts is adapted, upon having pressure applied thereto, to release the dog, substantially as described.

4. In a lock, the combination with a reciprocatory two-membered lock and latch and a pivoted dog carried by one of the members, said dog being normally engaged and locked against movement by the other member, of a two-part dog-releasing bar coacting with said lock and latch, one of said parts of the dog-releasing bar being adapted to actuate the second-named member to release said dog, and a connection between the parts of the dog-releasing bar, whereby pressure upon either part will release the dog, substantially as described.

5. In a lock, the combination with a reciprocatory two-membered lock and latch and a pivoted dog carried by one of the members, said dog being normally engaged and locked against movement by the other member, a two-part dog-releasing bar, one of said parts being adapted, when pressure is applied thereto, to release said dog, and the other part being provided with a central bore to admit a key for transmitting pressure to the first part, substantially as described.

6. In a lock, a two-membered lock and latch capable of reciprocatory motion independent of the control of a knob or key, said lock and latch comprising two members and a dog pivoted to one of said members, the other member being adapted to engage said dog and normally maintain the same locked against independent movement, together with means for releasing said dog, substantially as described.

7. In a lock, the combination with a two-membered lock and latch and a pivoted dog carried by one of the members and adapted normally to be locked against movement by the other member, and a spring interposed between the two members, whereby to keep them normally separated, of a dog-releasing bar comprising two members, both axially bored, one of which members is provided with a head having a socket, and a headed pin mounted in the bore and having its head housed within the socket, a head carried by the other member and working in the socket and bearing against the said pin, a collar secured in the open end of the socket, a spring interposed between the head and the collar, and means for limiting the movement of the last-named part with relation to the socket, substantially as described.

8. In a lock, the combination with a lock and latch having a spring, of a two-part dog-releasing bar, both of which parts are axially bored, an enlarged head carried by one of the members and provided with a socket, a pin mounted within the bore of the headed member, a spring carried by the part of the other member working within the socket and adapted to keep the same in contact with the head of the pin, and a sliding sleeve carried by the headed member and having a pin therein working in a transverse bayonet-slot within the latter part, substantially as described.

In testimony of which I have hereunto subscribed my name.

FRED H. MILLS. [L. S.]

In presence of—

WM. TERRILL,

HIRAM F. MURDOCH.