(No Model.) 2 Sheets—Sheet 1.

H. E. RUSSELL, Jr.

LOCK.

No. 450,341. Patented Apr. 14, 1891.

Fig. 1.

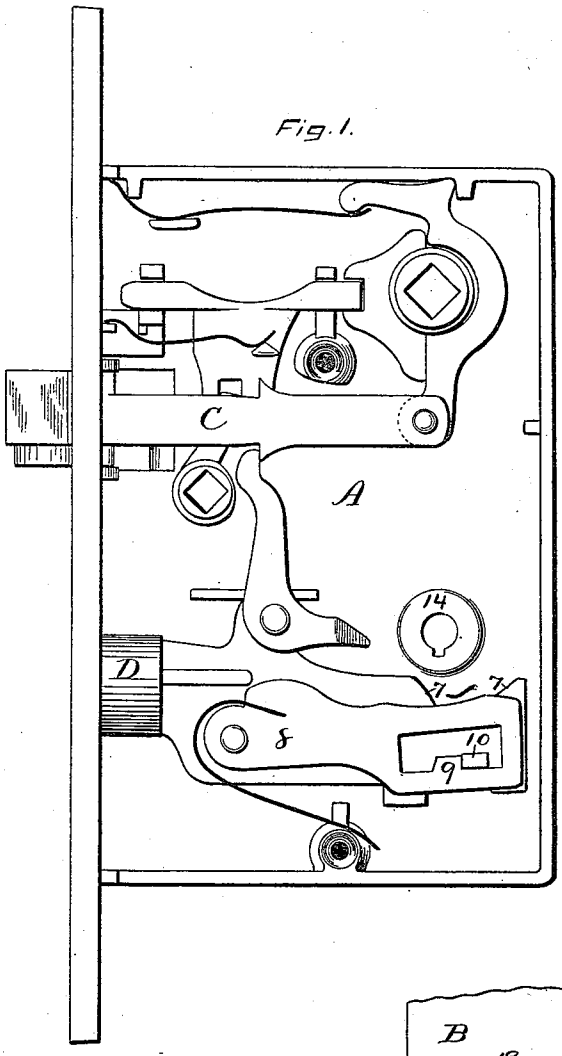


Fig. 2.

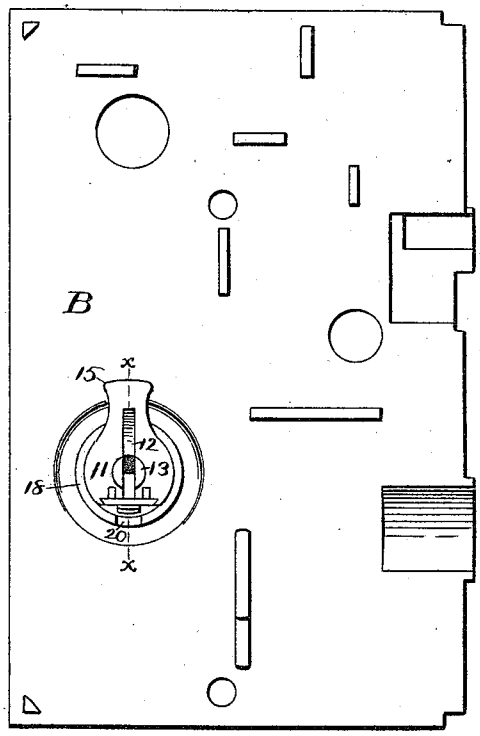
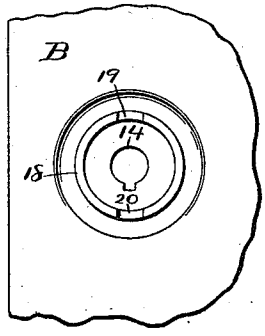


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

H. E. RUSSELL, Jr.

LOCK.

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Fig. 4.

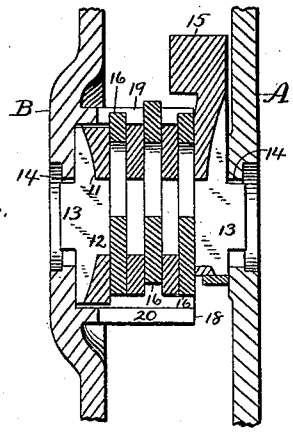


Fig. 5.

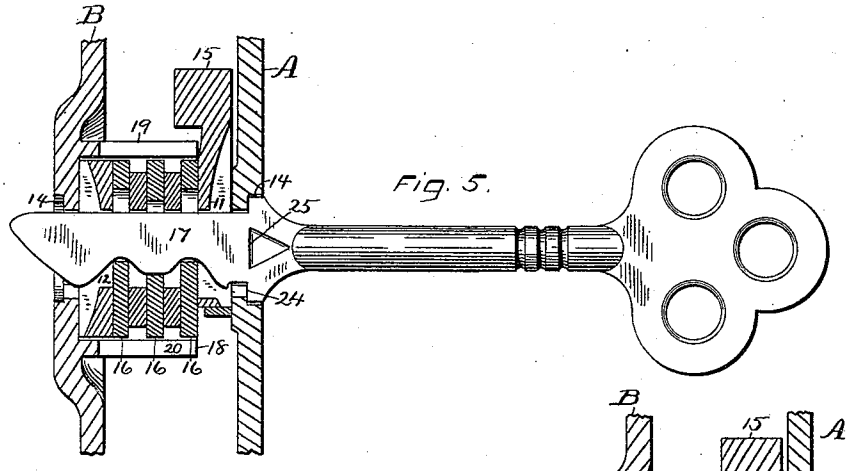
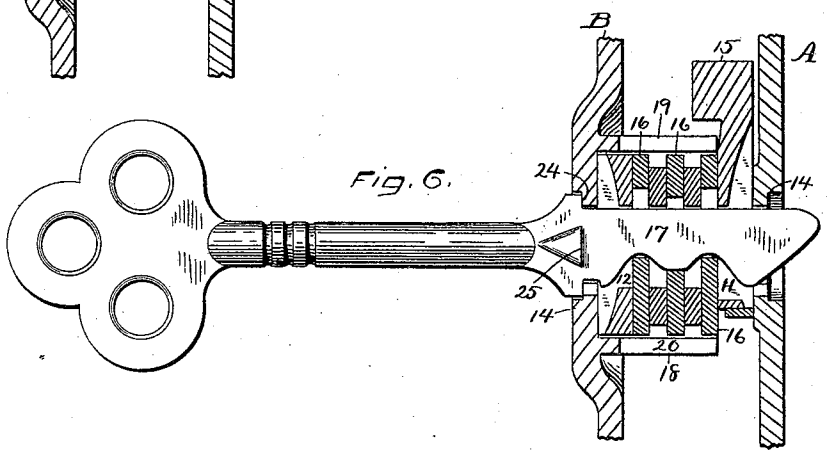


Fig. 6.



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UNITED STATES PATENT OFFICE.

HENRY E. RUSSELL, JR., OF NEW BRITAIN, CONNECTICUT.

LOCK.

SPECIFICATION forming part of Letters Patent No. 450,341, dated April 14, 1891.

Application filed November 11, 1890. Serial No. 371,044. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. RUSSELL, Jr., a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My invention relates to improvements in locks of the class having tumblers in a rotary hub or cylinder that are set by the insertion of a key; and the objects of my improvements are to produce a lock of this class with a single cylinder or hub that may be operated from either side of the lock, and in general to produce an efficient lock of this class at a small cost.

In the accompanying drawings, Figure 1 is a front elevation of a part of a combined latch and lock that embodies my invention, the cap-plate and lock-cylinder being removed. Fig. 2 is a view of the inside of the cap-plate and lock-cylinder. Fig. 3 is an inside view of a portion of the cap-plate with the cylindrical case or shell for my lock-cylinder formed thereon. Fig. 4 is an enlarged vertical section of my lock-cylinder and connected parts on the line *x x* of Fig. 2. Fig. 5 is a like view of the same with the key inserted to set the tumblers preparatory to rotating the cylinder or hub; and Fig. 6 is a like view of the same with the key inserted from the opposite side of the lock.

A designates the lock-case, which in the main is of an ordinary construction and provided with the cap-plate B. The latch-bolt C and its operating mechanism are also of an ordinary construction.

D designates a lock-bolt having talons 7 7 for being acted upon by a rotary wing for throwing the bolt, and also provided with one or more spring-pressed tumblers 8, having a shoulder 9 for engaging a stationary fence or stud 10 on the lock-case, all substantially as in prior locks, the same being adapted to be operated by a rotary key or by the rotary cam or hub of a key-actuated mechanism. Such lock-bolts and tumblers have been heretofore employed in connection with a rotary hub or cylinder bearing tumblers that are set by the insertion of a key when said hub or cylinder was operated from one side of the lock only, and in other cases with two separate hubs or cylinders and their tumblers, one being arranged on one side of the lock for operating it from that side and the other upon the opposite side of the lock for operating the bolt from the other side.

11 designates my cylinder or hub having a flat thin keyway 12 extending longitudinally through it and provided with trunnions 13 at each end by which to support it in its rotary movements in suitable bearings—as, for instance, the bearings 14 in the broad side of the lock-case A and the cap B—said bearings also constituting a circular key-hole at each end of the cylinder or hub. Said hub is also provided with a cam or wing 15 for acting against the talons 7 7 of the lock-bolt for throwing said bolt. It is also provided with a series of sliding tumblers 16, arranged to move transversely to its axis and to be set by the insertion of the key 17. On the inside of the cap-plate B, I form a cylindrical shell 18, that surrounds the cylinder or hub 11, and which is slotted at the sides, as at 19, so that when the key is withdrawn, as shown in Fig. 4, the tumblers, under the influence of their springs, (not shown,) will be projected into said slot and lock the cylinder or hub against rotation. I also prefer to make another slot 20 on the diametrically-opposite side of said cylindrical shell, into which the tumblers may be forced and prevent the rotation of the cylinder or hub in case an improper key is inserted, or any device which shall move the tumblers too far for unlocking. The cylindrical shell I sometimes cast on the case instead of on the cap, and sometimes I form it separately and subsequently secure it in place. I prefer to employ a cylinder or hub of the sub-class shown, in which all of the tumblers are arranged within the rotating cylinder or hub, and any other lock of this sub-class may be substituted for the one herein shown. My invention, however, is broad enough to include locks having rotary hubs, in which the tumblers are set by the insertion of the key, whether all of the tumblers are arranged within the rotary hub or not, and therefore an ordinary pin-tumbler lock having a revolving hub with one set of tumblers arranged therein and another set of tumblers arranged

within a stationary cylinder or case surrounding the rotary hub or cylinder with its tumblers acting in connection with those of the rotary cylinder or hub, may be employed, if desired. Such ordinary pin-tumbler locks are too well known to require a specific description.

The rotary hub or cylinder is not only so constructed that the key may be inserted from either side, but the tumblers and bitting of the key are so related to each other that the tumblers are properly set by the insertion of the key, no matter from which end of the cylinder or hub the key is inserted. The ends of the key-hub serve as stops for the stop 25 or shoulders 24 of the key when it is inserted, so as to bring the bittings into proper relation to the tumblers. In this connection it should be noticed that each of the end tumblers on the sides of the lock is the same distance from its end of the hub. As shown, the ends of the hub come flush with the adjoining surface of the lock-plates in the recessed portion thereof. It is evident that the plates, instead of the ends of the hubs, might be made to serve as stops to limit the extent of insertion of the key.

In the form in which I have illustrated this lock there are three tumblers and three bittings on the key, the hole through the middle tumbler being the farthest from its upper end, so that the middle bit on the key will set the middle tumbler, no matter upon which side of the lock it may be inserted. The two outer tumblers and the two bittings each side of the middle one are alike, so that when the key is inserted through the broad side of the case A, as shown in Fig. 5, the bitting nearest the handle of the key sets the tumbler nearest to that side, and the bitting at the farther end of the key sets the tumbler upon the farther side, while the central bitting sets the central tumbler, all as shown in Fig. 5. When the key is inserted through the cap side, the tumblers are set in like manner, excepting that the tumbler which was before set by the bitting farthest from the key-shank is now set by the bitting which is nearest thereto, and vice versa, as shown in Fig. 6. There may be additional tumblers, if desired, provided those on one side of the central tumbler are duplicates of the set on the other side thereof.

While I have referred to the key-hole 14 as circular, it may of course be notched upon one side to admit of high bittings in the key, if desired. The key-holes are of the same size on each side of the lock. The key which I have herein shown is made the subject-matter of another application of even date herewith, Serial No. 371,043. I have shown the key and the sides of the keyway through the cylinder or hub as plain; but they may, of course, be grooved and ribbed in any ordinary manner. I also prefer at all times, as a matter of economy, to confine the cylinder or hub between the plates of the lock or within the lock-case; but it is evident that my invention will be present if said cylinder or hub is confined to only one of the plates and projected partly on the outside of the case, provided it is arranged for the insertion of the key into the same hub or cylinder from opposite sides of the lock.

I am aware that a pin-tumbler lock with a round key having its bittings at the bottom of a longitudinal slot is shown and described in a prior patent as arranged between the two plates of the lock, with a key-hole at each end of the hub into which the key may be inserted, although the key-bittings and arrangement of the tumblers are such that the lock can be operated with its key from one side of the lock only, and the same is hereby disclaimed.

By my invention I am enabled to employ a lock of this class that may be operated from either side of the door by the employment of a single cylinder or hub only, and the embodiment of this idea in a lock is the essence of my invention. The lock is easily and cheaply constructed and easily applied to the door.

I claim as my invention—

1. A rotary cylinder or hub having a like keyway at both ends and having tumblers adapted to be set in like manner by the insertion of a key from either end, the end tumbler on one side of the lock being the same distance from the stop in the lock for limiting the extent of the insertion of the key as the end tumbler is from said stop on the opposite side of the lock, substantially as described, and for the purpose specified.

2. A rotary hub or cylinder having tumblers adapted to be set by the insertion of a key and provided with one central tumbler and other tumblers upon two sides thereof, the tumbler or tumblers on one side of said central tumbler being like that or those upon the other side and the end tumblers being the same distance from the stops at the opposite ends of the hub, substantially as described, and for the purpose specified.

3. The combination of the lock-bolt D, its tumbler 8, and a single rotary hub or cylinder having tumblers that are adapted to be set in like manner by the insertion of a key from either side of the lock, substantially as described, and for the purpose specified.

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