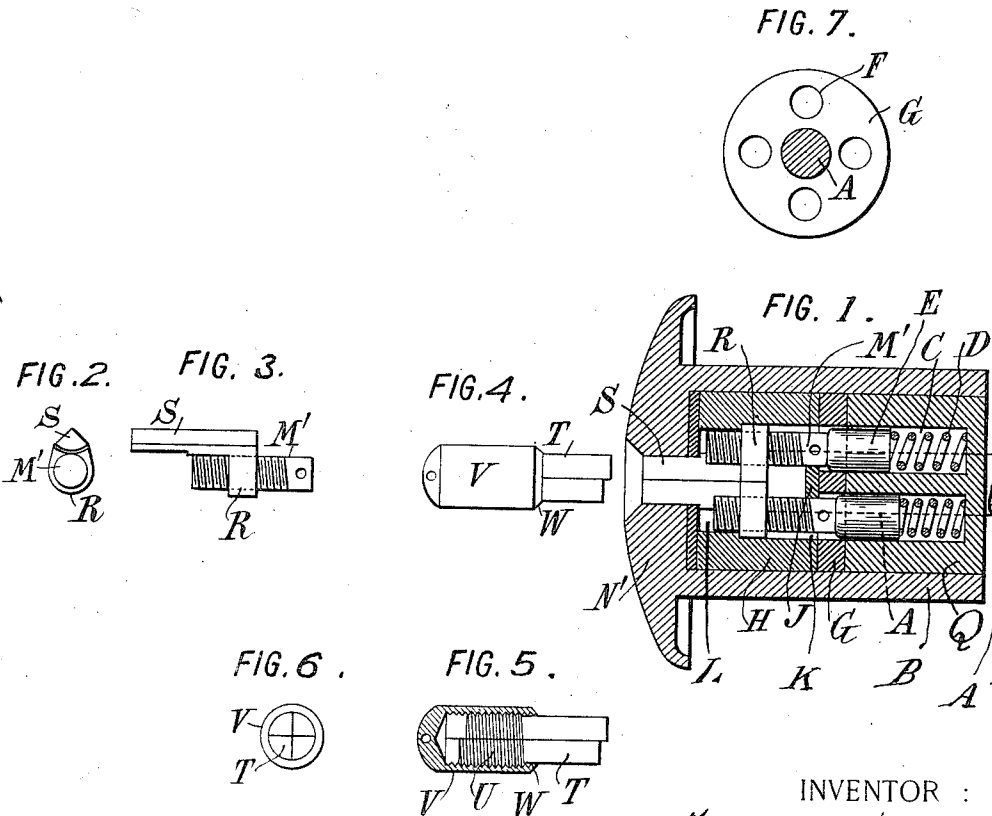


F. F. WILSON.
 LOCKING MECHANISM.
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1,036,764.

Patented Aug. 27, 1912.



WITNESSES.
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LOCKING MECHANISM.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FERGUS F. WILSON, a citizen of the United States, and a resident of the borough of Brooklyn, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Locking Mechanisms, of which the following is a specification.

This invention aims to provide certain improvements in the mechanism of locks for doors or other situations which are similar in a general way to "combination" locks and which are readily changeable from one combination to another; being operated by a key which may be easily adjusted to open locks set to different combinations. Thus with a single key a person may operate his house door, office door and various other locks by modifying the combination for which the key is set.

The accompanying drawing illustrates an embodiment of the invention.

Figure 1 is a sectional view of the mechanism embodying the invention. Fig. 2 is an end view, and Fig. 3 is a side view of an adjustable tumbler. Fig. 4 a side elevation of a key. Fig. 5 a longitudinal section of the same. Fig. 6 an inner end view of the same. Fig. 7 is a plan view of a detail, with parts in section.

Referring to the embodiment of the invention illustrated the operating spindle A of the lock may be attached to any suitable means, not shown, for throwing or withdrawing the bolt. The present invention relates only to the mechanism for permitting or preventing its operation. The casing B carries at its inner end a number of guiding sockets C carrying springs D and serving to guide inner tumblers E so that they may reciprocate in lines parallel with the spindle A, but may not revolve. Normally they are pressed out of their sockets by the springs at their inner ends so that they enter or pass through holes F in a plate or flange G integral with (or otherwise fixed to) the spindle A. The spindle cannot turn therefore until the inner tumblers E are pressed back into their sockets.

Rotatively mounted in the casing B is a member H provided with a base J centered upon the end of the spindle A and having circular apertures K therein corresponding to the apertures F in the flange of the spindle. From the plate J to the outer face of the member H the latter is formed with

apertures L which open into one another at the center of the circle in which the apertures are arranged. The outer tumblers M' have their inner ends resting in the openings K of the member H, being held in by the front plate M' of the casing.

When the spindle A is to be turned the outer tumblers M' must force the inner tumblers out of the openings F in the disk G so as to permit the latter to turn. At the same time the outer tumblers must not project into the fixed sockets C of the inner tumbler since such projection would prevent the turning of the disk G. Therefore all the outer tumblers must be pressed in until their several inner ends are in the plane of the inner face of the disk G. In this position the outer tumblers are turned by the key and with them the disk G and the spindle A. It follows that the key must be provided with a number of axial projections so arranged as to press the several outer tumblers inward and to exactly the desired distances. By making these projecting portions of the key adjustable, the key may be changed to fit any lock whose combination is known. Similarly the combination of the lock may be changed to fit any key. Fig. 3 illustrates in detail a simple construction which permits a ready adjustment of the lengths of the outer tumblers of the lock. The tumblers M' are made with screw threads passing through the offset portions R so that the position of the inner end of each tumbler relatively to the key-hole (and the inner face of the plate G) may be adjusted. Preferably the offset portions R of the tumblers are provided with axial extensions S guided into a suitable socket in the front plate N' of the lock.

The key may be made according to a great variety of constructions to secure the necessary axial projections. For example, it may be made of a number of pins T quadrant shaped in cross section and provided on their cylindrical faces with threads U so that they may be pressed together in such a way as to form a round rod with a continuous screw thread at one end. The adjustment may be effected by shifting the pins forward or backward a distance corresponding to the pitch of the screw thread. When the pins are finally placed in the desired position of adjustment, a cap V with a corresponding internal screw thread may be screwed on the round rod as far as it will

go. The forward edge W of the cap V forms a stop which bears against the outer edge of the key-hole and prevents further inward movement of the key when the tumblers are in position to permit the operation of the lock spindle. The key with the proper one of the pins uppermost is simply inserted in the key-hole as far as possible and then turned, the lock spindle turning with the outer tumblers M', which, of course, are turned by the key.

Besides the advantages above mentioned, the present lock has the advantage of permitting an enormously large number of combinations. One or more tumblers may be used, four being shown in the example illustrated. The number may be easily increased to six or eight and the length of axial movement of the tumblers may also be increased over that shown so as to permit a greater variety of combinations both as to the length and as to the number of tumblers.

What I claim is:—

1. A lock including in combination a central rotatable spindle A, a plate G fixed therewith, a fixed inner member Q engaging the inner face of said plate G, said inner member Q having sockets C, springs D and inner tumblers E carried in said sockets and projecting into openings in said plate G, outer tumblers engaging the ends of said inner tumblers E and of different lengths so that when shifted axially different distances their inner ends and the outer

ends of the inner tumblers E may all lie in the plane of the inner face of the plate G, said outer tumblers being revoluble to turn the plate G and the lock spindle when pressed inward as described, said outer tumblers being adjustable tumblers, whereby they may be adjusted in length to vary the combination.

2. A lock including in combination a central rotatable spindle A, a plate G fixed therewith, a fixed inner member Q engaging the inner face of said plate G, said inner member Q having sockets C, springs D and inner tumblers E carried in said sockets and projecting into openings in said plate G, outer tumblers engaging the ends of said inner tumblers E and of different lengths so that when shifted axially different distances their inner ends and the outer ends of the inner tumblers may all lie in the plane of the inner face of the plate G, said outer tumblers being revoluble to turn the plate G and the lock spindle when pressed inward as described, said outer tumblers comprising two parts displaceable longitudinally relatively to one another and having screw-threaded inter-engaging means.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

FERGUS F. WILSON.

Witnesses:

DOMINGO A. USINA,
FRED WHITE.