

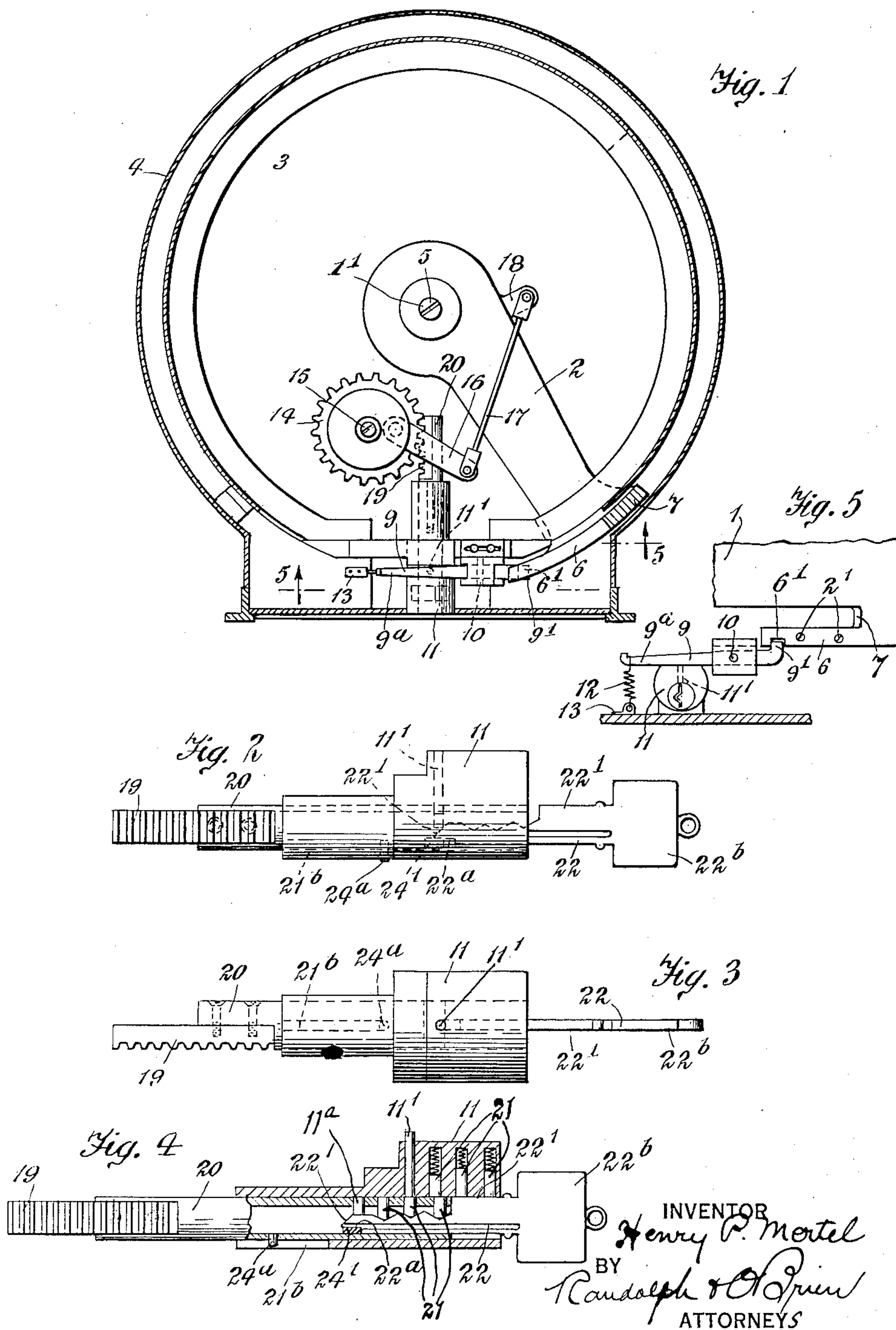
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DOOR MOVING AND LOCKING MECHANISM FOR TABERNACLE SAFES AND THE LIKE

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DOOR MOVING AND LOCKING MECHANISM FOR TABERNACLE SAFES AND THE LIKE

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This invention relates to improvements in door-moving and locking mechanism for tabernacle safes and the like.

In my co-pending applications, Serial Nos. 410,230, filed November 7, 1929 and 445,565, filed April 19, 1930, I have shown and described a tabernacle safe having combined door-locking and door-moving mechanism in which the parts are so arranged that the insertion of the key into the lock the full or proper distance first, will withdraw the locking bolt to unlock the door and second, will release the lock spindle of a lock to permit turning movement thereof, and third, a turning of the lock spindle by the key will swing the door about a suitable axis into open or closed position. The locking bolt is also maintained in withdrawn position during the swinging movement and until the door is in closed position when a socket therein comes into registry with the locking bolt (the key being locked within the spindle during the turning movement thereof,) whereupon withdrawal of the key will cause the bolt to be shot into the socket.

In accordance with my present invention, I provide a combined door-locking and door-moving mechanism in which I am enabled by the inward or insertion movement of the key into the lock to cause a latch to be disengaged to cause unlocking of a door and the said door to be moved into open position, and, furthermore, am enabled by the outward or withdrawal movement of the key from the lock to cause the door to be swung into closed position and to be locked, the said unlocking or disengagement of the latch bolt, the movements into open and closed positions of the door and the engagement of the latch bolt with the door, all being accomplished by rectilinear inward and outward movements of the key without any turning movement thereof.

Another object of my invention is to provide in a mechanism of the type specified a locking mechanism in which the locking spindle, instead of being released upon insertion of the key the full distance to permit conventional turning movement in relation to the lock casing, is upon such insertion of the key a predetermined partial distance

adapted to release and disengage the door-locking mechanism and upon further insertion movement of the key for an additional part of the full distance to cause release of the spindle for sliding movement during the remainder of the full distance of insertion with the key and this sliding movement is utilized to swing the door. The tumbling mechanism of the lock is conventional, but registration of the grooves and notches of the key with the usual tumblers of the locking mechanism is arranged to cause release of the spindle for sliding movement and the end of the spindle is provided with a rack adapted upon such sliding movement to actuate a pinion for the purpose of moving or swinging a door.

With these and other objects in view, the invention comprises the combination of members and arrangement of parts so combined as to co-act and cooperate with each other in the performance of the functions and the accomplishment of the results herein contemplated, and comprises in one of its adaptations the species or preferred form illustrated in the accompanying drawing, in which—

Fig. 1 is a plan view of my improved door-moving and locking mechanism, the same being shown mounted in the bottom compartment of a tabernacle safe to move and lock the door thereof;

Fig. 2 is a side elevation of my rack and key-controlled locking mechanism demounted from the tabernacle safe and separated from the other parts of the door-swinging mechanism, the parts being shown in initial locked position with the key partially inserted;

Fig. 3 is a top or plan view of the mechanism shown in Fig. 2;

Fig. 4 is a view, partly in side elevation similar to Fig. 2 and partly in section showing the key inserted the full distance in the locking casing and the spindle moved with the key relatively to the casing; and

Fig. 5 is a view of the latching and lock mechanism substantially on the line 5—5 of Fig. 1.

Referring now to the drawing, which illustrates a preferred embodiment of my in-

vention, 1 indicates a door movable about an axis 1' and 2 indicates a door-moving arm pivoted at said axis. As illustrated, the arm 2 is mounted in the bottom compartment 3 of a tabernacle safe 4, is pivoted on the screw 5 and fastened at its outer end to a lower segmental portion 6 of the door and connected with the segmental door portion 6 through the neck or joining portion 7, the door, of course, extending vertically in the same plane with the said segmental portion 6 and being adapted to open and close an opening in the safe 4.

In the embodiment illustrated, the door is latched and released by the raising and lowering of a projection 9' on one end of a latching lever 9 into and out of engagement with a socket 6' in the segmental portion 6. The lever 9 is, as shown, pivoted at 10 and has its other end 9^a extending over a key-controlled locking mechanism 11 in which is mounted a key-actuated member 11' adapted to rock the lever 9 and release the projection 9' from latching engagement with the door 1. As shown, the lever 9 is normally held in locked position by a spring 12 stretched between the end 9^a of the lever and a fixed cleat 13 fastened in any suitable way to the tabernacle safe, the lever 9 being thus normally spring-pressed to cause its end 9' when free from restraint to be moved into locking engagement with the socket in the segmental portion 6 of the door.

Door-moving mechanism is provided for swinging the arm 2 about its pivot to move the door, and in the form of my invention shown, the door-moving arm 2 of the door-moving mechanism is fastened to the segment 6 by screws 2' and is swung about its pivot by link and lever mechanism having at one end a connection intermediate the ends of said lever and at the other end connected with a pinion 14 pivoted eccentrically of the axis 1' and pivot 5. The arm 2 is thus capable of being swung about its pivot by the rotation of the pinion 14 which is pivoted at 15 and, as shown, said pinion has an operative connection with the arm 2 by means of an arm 16, rod 17 and projection or arm 18, the arm 16 having a fixed eccentric connection with the pinion and adapted upon rotation to swing the arm 16 and thus to apply power through the rod 17 to the short arm 18 on the side and intermediate the ends of the main door-moving arm or member 2.

In accordance with my present invention, mechanism of the type hereinabove described or any similar door-moving mechanism is operated by a sliding rack 19 connected to and, as shown, fastened to a sliding lock spindle 20 forming part of the key-controlled lock 11. The lock mechanism 21, in so far as tumbler mechanism is concerned, is conventional, the spindle being released for movement in relation to the casing upon the inser-

tion of the key and the key being locked to the spindle during movement of said spindle and until it is again brought into registration with the locking elements in the casing. In the form shown, the locking elements are operated by a key 22. By the use of my invention, however, the key 22 not only operates the tumblers so as to release the spindle from the lock casing in the conventional manner, but a rod 11' is so arranged in alignment with a member 11^b which is in the path of the key that an inclined end 22' thereof during its inward movement will cause the raising of said rod 11' which, when lifted, will raise the end 9^a of the lever 9 and depress the opposite end to move the projection 9' out of the socket 6' in the segment 6 of the door, thus releasing the door from its locking mechanism so as to permit a swinging thereof.

The door now being unlatched, further inward movement of the key is adapted to actuate the door-moving mechanism to swing the door and, as illustrated, this is accomplished by providing the key 22 or other operating element with the tumbler actuating projections and grooves at the forward end of the shank of the key and providing an elongated extension portion 22' between the tumbler-controlling elements and the handle 22^b so that after release of the spindle by the tumblers in the lock casing, the spindle may be moved inwardly to operate the door-moving mechanism, and the upper edge of the extension portion 22' will engage and hold the tumblers in the lock casing in elevated position.

As illustrated, the lower edge of the key has a notch forming an elbow 22^a arranged to engage and push an engaging element 24' on the lock-spindle 20 and to move the same rearwardly in relation to the lock casing 11, it being understood that the usual stop for preventing sliding movement and enabling turning movement only is eliminated, and means is provided instead for preventing a turning movement and for guiding and limiting the sliding movement of the lock-spindle in relation to the lock casing.

In the preferred embodiment of my invention, the spindle is provided with a pin 24^a which is slidable within a groove 21^b in the lock casing, thus guiding and limiting the sliding movement of the spindle and also limiting the movement of the rack 19 which engages the pinion 14. The key is at all times during the sliding movement of the spindle locked thereto by the tumblers in the spindle and when the key is moved outwardly, the spindle will first be moved outwardly into proper registration with the lock tumblers or tumbler portions and the key may then be withdrawn. Partial withdrawal of the key will thus, through the action of the rack, cause the turning of the pinion 14 in the opposite direction which, in turn, will operate

the arm 16, rod 17, arm 18 and arm 2 to swing the door into closed position. The door will be so swung into closed position prior to the movement of the key out of the spindle and prior to the movement of the inclined portion 22' beneath the member 11^b and rod 11'. When the key is released from and starts to move out of the spindle, this rod 11' will be depressed which will cause the spring-actuated lever 9 to be moved pivotally by the spring 12 to extend its projection 9' into the socket 6' of the door.

Further outward movement of the key will cause the tumblers of the lock to again engage the spindle and the parts will thus be locked against movement by the key-controlled lock, it being understood that when the key 22 is completely withdrawn, the door will not only be swung into closed position and locked or latched in such closed position by the projection 9' of the lever 9, but as the door-moving and locking or latching elements are arranged within the key-controlled lock 11, no access thereto can be had until a proper key has first actuated the conventional tumbler mechanism of this lock. The door will thus be securely locked and protected against opening except by the key.

Having described my invention, I claim:—

1. Door-moving and locking mechanism for tabernacle safes and the like comprising, in combination, a door, door-latching mechanism, door-moving mechanism, a key-controlled lock having a casing, a slidable lock spindle and tumbler mechanism, a key for said lock having means for releasing the spindle from the casing to allow relative sliding movement between the casing and spindle, controlling means having an operative connection with the lock and the door-latching mechanism and also operable by the movement of the key in the lock, means for guiding the spindle during its sliding movement, and means at the end of the spindle for engaging and operating the door-moving mechanism by said sliding movement of the spindle.

2. Door-moving and locking mechanism for tabernacle safes and the like comprising, in combination, a door, door-latching mechanism, door-moving mechanism, a key-controlled lock having a casing, a slidable lock spindle and tumbler mechanism, an elongated key for said lock having at its outer end means for operating the tumbler mechanism to release the spindle from the casing and to lock the spindle to the key, said key having a handle portion and an intermediate shank extension to permit inward movement with the spindle, controlling means for the door-latching mechanism connected with the lock and operable by the movement of the key, means for guiding the spindle during its sliding movement, and means at the end of the spindle for engaging and op-

erating the door-moving mechanism by said sliding movement of the spindle.

3. Door-moving and locking mechanism for tabernacle safes and the like comprising, in combination, a door, door-latching mechanism, door-moving mechanism, a key-controlled lock having a casing, a slidable lock spindle and tumbler mechanism, an elongated key for said lock having at its outer end means for releasing the spindle for sliding movement upon a partial inward movement of the key, a handle portion and an intermediate shank extension engageable with the tumblers of the lock casing during the sliding movement of the spindle, controlling means for the latching mechanism arranged in the key groove and operable by the key during its insertion movement, means for guiding the spindle during its sliding movement, and means at the end of the spindle for engaging and operating the door-moving mechanism by said sliding movement of the spindle.

4. Door-moving and locking mechanism for tabernacle safes and the like comprising, in combination, a door, door-latching mechanism, door-moving mechanism, a key-controlled lock having a casing, a slidable lock spindle and tumbler mechanism, an elongated key for said lock having at its outer end means for releasing the spindle for sliding movement upon a partial inward movement of the key, a handle portion and an intermediate shank extension engageable with the tumblers of the lock casing during the sliding movement of the spindle, controlling means for the latching mechanism arranged in the key groove and operable by the key during its insertion movement, means for guiding the spindle during its sliding movement, a rack secured on the end of said sliding spindle, said door-moving mechanism having a pinion mounted for rotation and meshing with said rack and also having means operable with said pinion to move the door into open and closed positions respectively.

5. Door-moving and locking mechanism for tabernacle safes and the like comprising, in combination, a door, a door-moving mechanism including a pinion mounted for rotation, mechanism having an operative connection at one end with said pinion and at the other end with said door-moving mechanism, a key-controlled lock having a casing, a slidable lock spindle and tumbler mechanism, an elongated key for said lock having at its outer end means for releasing the spindle upon a partial inward movement of the key, a handle portion and an intermediate shank extension engageable with the tumblers of the lock casing during the sliding movement of the spindle, controlling means for the latching mechanism arranged in the key groove and operable by the key during its insertion movement,

means for guiding the spindle during its sliding movement, and a rack secured on the end of said sliding spindle and having an operative connection with said pinion.

5 In witness whereof, I have signed my name to the foregoing specification.

HENRY P. MERTEL.

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