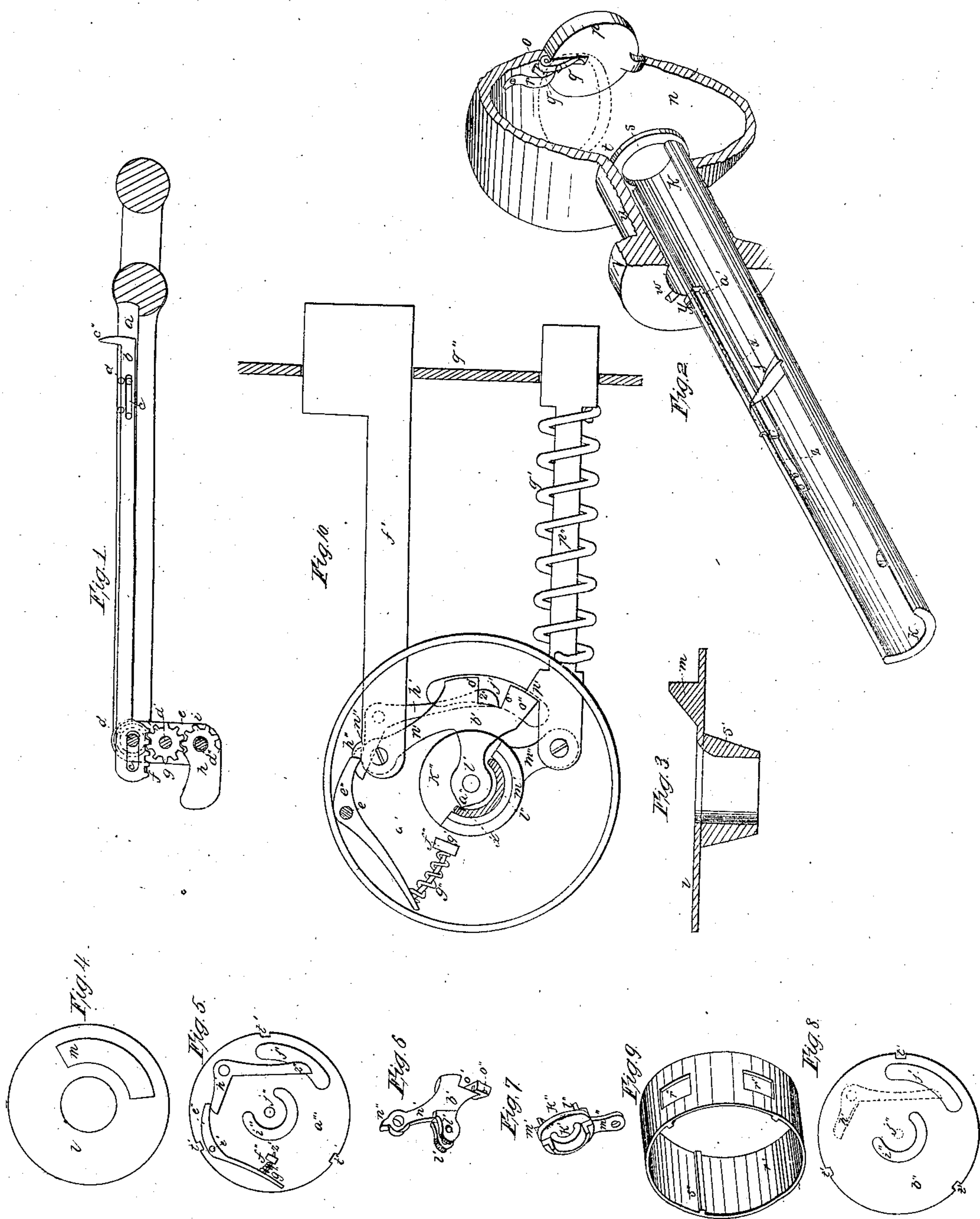


W. Maguire, Lock.

N^o 7,026.

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UNITED STATES PATENT OFFICE.

WM. MAGUIRE, OF CINCINNATI, OHIO.

DOOR-LOCK.

Specification of Letters Patent No. 7,026, dated January 15, 1850.

To all whom it may concern:

Be it known that I, WILLIAM MAGUIRE, of Cincinnati, Hamilton county, Ohio, have invented new and useful Improvements in
5 Combination-Locks for Doors, Bank-Vaults, Safes, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this
10 specification.

Figure 1 of these drawings is a sectional view of the key through its stem and bit, and exhibits the mode of making the key. When a groove (*a*) is made in the shaft of
15 the key for the slide (*b*) which has in its ends slots (*c* and *c'*) the slot (*c*) for a pivot (*d*) on which the jaws (*e*) turn, and the slot (*c'*) for a pin which keeps the slide in place at the end (*c''*). The slide having a
20 rack (*f*) that works a pinion (*g*) which works the bit (*h*) by means of the teeth (*i*) on the end of the bit (*h*) next the pinion (*g*) the pinion (*g*) and bit (*h*) turning on pivots (*d'* and *d''*) that hold the jaws (*e*) together within which jaws (*e*) the rack (*f*)
25 pinion (*g*) and bit (*h*) are operated. The key can however be composed of the three pieces without this gearing and this is sufficient when the inclined plane (*m*) in the
30 disk (*l*, Figs. 3 and 4) is used. (*s'*) is a cylindrical projection on the disk (*l*) and is a rest for the spindle.

Fig. 2 is a perspective view of the semi-cylindrical spindle (*k*) and a sectional view
35 of the hollow knob (*n*). The face (*o*) of the knob (*n*) has a central and circular opening or key hole, which is closed by a disk (*p*) hung at its top from a hinge (*q*) and operated by a spring (*r*). This disk
40 (*p*) protrudes out beyond the face (*o*) of the knob (*u*) and constitutes the usual protuberance found on old fashioned knobs. The disk (*p*) therefore admirably obscures the entrance of the key.

45 The spindle (*k*) has a collar (*s*) which works in a rabbet (*t*) at the inside commencement of the shank (*u*) of the knob. This shank has the usual flange (*v*) on the face of which a cavity (*w*) is made suitable
50 for the reception of the lever (*x*). When the rectangular projection (*y*) of the lever is thrown into the cavity by the spring (*z*); a slot (*a'*) lengthwise and near the right hand edge of the spindle is made for the
55 accommodation of the spring (*z*) and lever (*x*). The projection (*y*) is retracted from

the cavity (*w*) by the cam (*a''*) on the compound tumbler and retractor (*b'* Fig. 10).

a''', Figs. 5 and 10, is the disk next beyond the disk (*l*, Figs. 3 and 4) in the line
60 of the travel of the key. This disk (*a'''*) has in connection with its fellow and opposite disk (*b''* Fig. 8) a bearing (*e'*) for the spring tumbler (*e''*) that prevents the re-
65 traction of the bolt (*f'*).

(*f''*) is a guide for the curved stem (*g'*) around which the spring (*g''*) is wound; the stem projecting from one end of the
70 tumbler in the usual way. The disk (*a'''*) has also upon it a bent lever (*h'*) for lifting the tumbler (*e''*) up from behind the projection (*h''*) on the bolt (*f'*). The disk (*b''*) has a corresponding lever (*h'*), but
75 this may be dispensed with. Both disks (*a'''* and *b''*) have a curved slot (*i''*) around their centers sufficient for the motion required by the spindle (*k*) and also have
80 curved slots (*j'*) near their periphery, of size suitable for the motion required of the key bit while operating the tumbler (*b'*) and
levers (*h'*). The lever (*h'*) interposes its arms (*z''*) between the slot (*j'*) in the
85 disk (*a'''*) and the slot (*o'*) in the compound lever and tumbler (*b'*) and thus compels the key to press it toward the center of the lock before the bit of the key can enter the slot
90 (*o'*) and operate the compound lever and tumbler. The centers of both disks (*a'''* and *b''*) have pins (*j''*) projecting from them, which pins leave a space between
95 their ends sufficient for the passage of the disk or central portion (*k'*) of the latch retractor (*k''*). This central portion (*k'* Fig. 7) of the retractor (*k''*) plays in between the cheeks (*l'* Fig. 6) of the tumbler (*b'*)
100 which arms (*l'*) rotate upon pins (*j''*) aforementioned.

The latch retractor (*k''*) is a semicylinder (*l''* Fig. 7) with a shoulder (*m'*) as one
105 half and a disk midway the length of the cylinder as the other half; the disk portion protruding as at (*k* Fig. 7) into the semicylindrical portion so as to leave only a curved slot therein suitable for the re-
110 ception of the spindle which operates this retractor.

(*m''*) is the projecting arm or lever from the retractor (*k''*) for the purpose of with-
drawing the latch as shown at Fig. 10.

The compound tumbler and retractor (*b'* Figs. 6 and 10) has an arm (*n'*) which re-

tracts the bolt. This arm (n') has a projection (n'') behind which the spring tumbler (e'') falls when the bolt is thrown out. At the base of the arm (n Fig. 10 and n' Fig. 6) the tumbler spreads out so as to form a portion of a disk and has a notch (o' Figs. 6 and 10) for receiving the bit (h) of the key. The portion (o'') is made broad upon its face so as to bear fully upon the projection (p') of the latch bolt (p'') behind which projection the tumbler falls when the bolt (f'') is thrown out; (q') is the spring that keeps the latch bolt thrown forward; (q'') is the face plate of the lock through mortises in which the bolt and latch project; (r' Fig. 9) is the cylinder forming the body cover of the lock; (r'') are the mortises for the bolt and latch to pass in; (s'') are projections on the cylinder (r') to prevent the disks getting out of place the disks having notches (t') into which these projections fit.

The nature of my invention consists in making the usual central protuberance on the face of the knob a spring trap for concealing the entrance for the key; and in making the spindle semicylindrical, and providing it with an annular bearing collar by which to hold on the knob, and providing it with a spring lever, with a clutch which when allowed to drop into a cavity made on the shank end of the knob, enables the knob to turn the spindle, or in other words, prevents the knob rotating without turning the spindle, and providing it also with an inclined plane across its concave, by which the key is bent and guided toward the tumbler, the spindle thus forming a trough along which the key is pushed home. I also effect action on the bolt by means of a key capable of being straightened like a bar and passed through the cylindrical opening in the knob, and along the cavity in the spindle (thus making but one opening into the lock) and having its bit guided by the inclined plane (j) on the spindle (k) and by another inclined plane (m) on a disk in the lock so as to introduce the bit into the notch in the compound tumbler and lever and thus operate the bolt. I also effect the same by gearing within the body of the key when I forego the use of one or both of the aforementioned guides. I also enable the key to operate the compound tumbler and lever by previously compelling it to operate a bent lever, that presses toward the center of the lock, lifts out of the way a spring tumbler, that controls the compound tumbler and lever, before the bit of the key enters the notch in the compound lever and tumbler, by lifting which the key retracts the bolt. I also prevent by the foregoing arrangement, the

retraction of the latch until the bolt is withdrawn. I also prevent the spring lever in the spindle from pressing the catch on the said lever (and effect this by means of the cam on the compound lever and tumbler) until the bolt is retracted by the action of the key on the said compound lever and tumbler, so that until the bolt is withdrawn the knob rotates on the spindle.

Having thus fully clearly and exactly described the nature and construction of my combination lock, what I claim therein as new is.

1. The combination of parts forming the key constructed substantially as described and represented viz: the shaft with its slot (a) the slide (b) with its slots (c c') pins (d) rack (f) jaws (e) pinion (g) and bit (h) with its teeth (i).

2. Constructing the knob with a central opening in its face closed by a spring disk, for the purpose of introducing therethrough, the semicylindrical spindle (k) with its annular shoulder and a key such as aforementioned, the shank of the knob being hollow for the purpose of receiving the same.

3. Arranging the bent lever (h') that lifts the spring tumbler (e'') so that the key must operate this lever before it can be inserted into the notch (o') of the compound lever and tumbler (b') for lifting the same substantially in the manner described.

4. Constructing the compound lever and tumbler (b') with the following characteristics; viz, so that its projection (n'') in combination with the spring lever (e'') prevents the bolt (f) being forced back, by pressure on its face, when the bolt has been thrown forward; so that its projection (o'') in combination with the projection (p') on the latch (p'') prevents the retraction of the same when the bolt (f') is thrown forward; and so that its cam (a'') prevents the spring (z) in the spindle from throwing the catch (y) on the other end of the lever (x) into the cavity (w) on the face of the shank of the knob, so long as the bolt (f) is thrown forward; the knob being thereby permitted to rotate on the spindle when the bolt is thrown forward, and to rotate with the spindle, when by the elevation of the compound lever and tumbler, the cam (a'') is carried below the lever (x); the compound lever and tumbler (b') being thus combined with the spring tumbler (e''), the bolt (f'), the latch (p''), the spindle (k), through its lever (x), and the knob (n), substantially in the manner and for the purposes described.

WILLIAM MAGUIRE.

Witnesses:

THOS. G. CLINTON,
GEO. H. KNIGHT.