

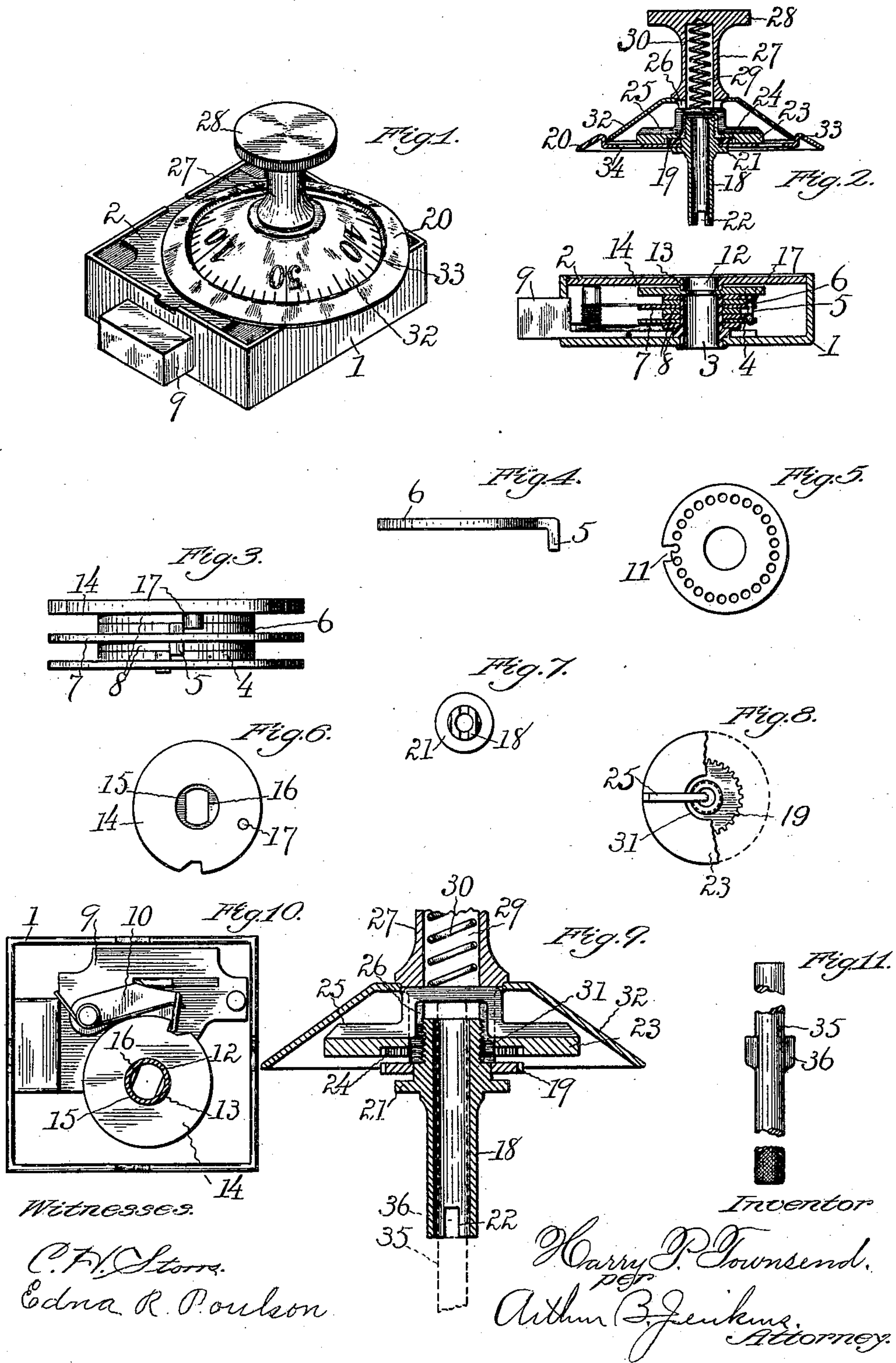
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LOCK.

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UNITED STATES PATENT OFFICE.

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LOCK.

No. 922,065.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY P. TOWNSEND, a citizen of the United States, and a resident of New Britain, in the county of Hartford and State of Connecticut, have invented a new and Improved Lock, of which the following is a specification.

My invention relates more especially to the class of locks known as "permutation" locks, and the object of the invention is to provide a lock of this class having means whereby the combination may be readily and easily changed.

A further object of the invention is to provide a lock of this class in which the parts cannot be readily disengaged for illegitimate reasons, but in which the parts may be readily assembled or separated for legitimate purposes; and a further object of the invention is to provide such a lock with means whereby the combination may be changed without separation of parts; and a still further object of the invention is to provide such a lock extremely simple in construction and consequently cheap to manufacture.

A structure in the use of which the above objects may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a lock embodying my invention. Fig. 2 is a view in section through the parts shown as separated for purposes of clearness. Fig. 3 is a detail view on enlarged scale of the tumblers, couplers and spacers. Fig. 4 is a detail edge view, on enlarged scale, of one of the couplers. Fig. 5 is a detail plan view of one of the tumblers. Fig. 6 is a detail plan view of the bolt actuator. Fig. 7 is a detail end view of the actuating spindle. Fig. 8 is a detail plan view of the locking disk, partially broken away and showing the engaging disk underneath. Fig. 9 is a view in central section, on enlarged scale, through the dial and connected parts showing the locking disk forced to position disengaged from the toothed disk. Fig. 10 is a plan view of the lock case and contained mechanism. Fig. 11 is a detail view showing the tool employed for engaging and disengaging the parts.

In the accompanying drawings the numeral 1 denotes the lock case having a removable cover 2 suitably secured in place thereon. A sleeve 3 is secured within the case and a series of tumblers, couplers and

spacers is mounted on this sleeve. Each of the tumblers is provided with a row of openings, as shown in Fig. 5 of the drawings and a releasing notch in its periphery. The couplers each have prongs projecting into the openings in the tumblers, the prong on the lower coupler 4 extending into the openings sufficiently to cause said tumbler to be rotated with the coupler, but the prong 5 on the upper coupler 6 is of a length to project through any of the openings in the tumbler 7 sufficiently to strike against the side of the prong on the lower coupler. Spacers 8 are properly located to maintain the couplers in proper position with respect to other parts, the spacers being held against rotation on the sleeve 3, while the tumblers and couplers are rotatable thereon.

The bolt 9 is suitably mounted to slide in the case and carries a spring actuated dog arranged, in its pivotal movement on the bolt, to enter the releasing notches 11 in the peripheries of the tumblers.

The construction and operation above described are well known in the art of lock construction, and form, except in combination with other devices, no part of my present invention, and a further detailed description is therefore deemed unnecessary herein.

The cover 2 has an opening 12 located in line with the opening through the sleeve 3, a circular lip 13 surrounding said opening on the inner face of the cover receiving a bolt actuator 14 mounted to rotate on this lip, a circular recess 15 extending partially through the actuator from one face and an opening 16 of non-circular form extending from said recess through the actuator. A pin 17 projects from the face of the actuator in position to engage the prong 5 on the coupler 6.

A hollow actuating spindle 18 is formed to fit the opening 16 in the actuator but is free to be moved lengthwise therein. A toothed disk 19 is rigidly secured to this spindle that is rotatably mounted on a plate 20, the spindle projecting through the plate and the latter being located between the disk 19 and a flange 21 formed on the spindle. The end of the spindle is notched as at 22 for the reception of a tool for a purpose hereinafter described.

A locking disk 23 has a toothed recess 24 formed to receive the disk 19, the teeth of the disk and recess interlocking. A yoke 25 is secured to said locking disk and is located in

a slot 26 in the shank 27 of a knob 28. This shank has a central opening 29 within which is located a spring 30, this spring resting at one end at the closed end of the opening 29 and at the other end pressing against the yoke 25. The opening 29 is threaded at its outer end for the reception of the threaded end of the actuating spindle 18 said shank extending through an opening 31 in the locking disk 23.

A dial 32 is secured to the knob shank 27, this being of the usual cup shape, its lower edge being located within a recess 33 formed on the surface of the plate 20. This dial is provided with the usual graduations for determining the necessary movements of the knob to release the bolt. The plate 20 is provided with holes 34 as a means of securing it to a door or like part and the means of engagement of the spindle 18 and the actuator 14 allows the lock to be affixed to doors of different or varying thickness while maintaining the spindle and actuator in engagement.

It will be noted that the locking disk 23 prevents relative rotation of the spindle 18 and the knob shank 27, but that by pressing the locking disk 23 and yoke 25 to the position shown in Fig. 9 and against the force of the spring 30 the teeth of the locking disk 23 will be disengaged from the teeth of the disk 19, whereby the combination of the lock may be readily changed. This pressure on the yoke may be obtained as by means of a tool 35 inserted through the lock case and through the actuating spindle 18. This tool is provided with lugs 36 arranged to enter the notches 22, so that at the same time that the yoke 25 is forced against the pressure of the spring 27 the spindle 18 may be held from rotating, should the pressure on the yoke not be sufficient to overcome the friction of the threaded engagement of the knob shank 27 and spindle 18, causing simultaneous rotation of said parts and thus preventing change of relative positions and hence of combination.

It will be noted that this construction provides means whereby the knob shank 27 and actuating spindle 18 cannot be disengaged without access to both sides of the door, and this effectually prevents tampering with the lock. The change in the combination of the lock is also readily effected and without separation of the parts by pressing the lock disk 23 backward, as shown in Fig. 9, and while holding the spindle 18 against rotation as by means of the tool 35, by turning the disk 23 and connected dial as by means of the knob 28. This changes the position rotatably of the disk 23 and connected dial 32 with respect to the toothed disk 19 and the bolt actuator 14 connected to rotate the said spindle. This necessitates the use of a new set of graduations in the operation of placing the tumblers in position to allow operation of the bolt, thus effecting a change of combination

in a manner readily understood by those skilled in the art.

By the terms "change of combination" as used herein is meant such relative change of any of the parts as will compel the use of a different set of indicating characters on the plate and dial as well as such relative change of couplers and tumblers as compels a relative change in the indicating characters.

What I claim as my invention and desire to secure by Letters Patent is:

1. A lock case including a cover having a lip projecting from its inner surface, a sleeve secured within said case, and mechanism located within the case and including a bolt, tumblers and couplers mounted on said sleeve, a bolt actuator mounted to rotate on said lip and operatively connected with said bolt, and means for operating the actuator, said means being adapted to be moved longitudinally with respect to the actuator but connected to rotate therewith.

2. A lock case including a cover having a circular lip, a sleeve secured within the case in axial alinement with said lip and mechanism located within the case and including a bolt, tumblers mounted on said sleeve and operatively connected, a bolt actuator mounted on said lip, said tumblers and actuator being operatively connected with said bolt, and means for operating said actuator, said means being adapted for longitudinal movement with respect to the actuator but connected to rotate therewith.

3. A lock case including a cover having a circular lip, a sleeve secured within the case in axial alinement with said lip, and mechanism located within the case and including a bolt, tumblers mounted on said sleeve and operatively connected, a bolt actuator mounted on said lip and having a non-circular opening, said tumblers and actuator being operatively connected with said bolt, and operating means for said mechanism including a spindle fitting said opening and movable lengthwise therein.

4. A lock case, bolt actuating mechanism located within the case and including a spindle connected to rotate said mechanism, means located at one side of the lock case for operating the spindle, and connections between said spindle and its operating means for engaging and disengaging said parts and accessible only from the opposite side of said lock case from said operating means.

5. A lock case, bolt actuating means located within the case and including an operating spindle projecting within the case to operate said mechanism, a plate upon which said spindle is mounted, said plate being provided with means for attachment to a door, mechanism located outside of the lock case and connected to operate said spindle, and connections between said spindle and its operating means for engaging and disen-

gaging said parts and accessible only from the opposite side of said lock case from said mechanism located outside of the case.

6. A lock case, a sleeve secured within the case, lock mechanism located within the case and including a bolt, tumblers and couplers mounted on said sleeve and operatively connected with said bolt, and a spindle projecting within said sleeve and operatively connected with other parts of said mechanism, means located at one side of the lock case for operating said spindle, and connections between said spindle and its operating means arranged to engage and disengage said parts, said connections being accessible only from the opposite side of said lock case from said spindle operating means.

7. Lock mechanism including a bolt, a spindle, operative connections between the bolt and spindle, means for operating the spindle, a dial operatively connected with said spindle operating means, and connections between said spindle and its operating means including a spring pressed member arranged to connect and disconnect said parts.

8. A lock mechanism including a bolt, a hollow spindle, operative connections between the bolt and spindle, means for operating the spindle, a dial operatively connected with said spindle operating means, and connections between said spindle and its operating means including a spring pressed member arranged to connect and disconnect said parts, said spring pressed member being accessible only through said spindle.

9. Lock mechanism including a bolt, a spindle, operative connections between said bolt and spindle, means for operating the spindle, a dial operatively connected with said spindle operating means, connections between said spindle and its operating means including screw-threaded interengaging parts, a locking member to prevent relative turning movement of said interengaging screw-threaded parts, and means for engaging and disengaging said locking member.

10. Lock mechanism including a bolt, a hollow spindle, operative connections between said bolt and spindle, means for operating the spindle, a dial operatively connected with said spindle operating means, connections between said hollow spindle and its operating means including interengaging screw-threaded parts, and a locking member to prevent relative turning movement of said screw-threaded parts, said locking member being accessible only through said spindle.

11. Lock mechanism, including a bolt, a hollow spindle, operative connections between the bolt and spindle, means for operating the spindle, connections between said spindle and its operating means, said connections including screw-threaded parts, and

a spring pressed member to lock said parts against relative turning movement and accessible for engaging and disengaging action only through said spindle.

12. Lock mechanism including a bolt, a hollow spindle, operative connections between the bolt and spindle, means for operating the spindle, a dial operatively connected with said spindle operating means, connections between said spindle and its operating means including a disconnecting locking member, and a yoke secured to the locking member and projecting across the opening through the spindle.

13. A lock mechanism including a bolt, a spindle, operative connections between the bolt and spindle, means for operating the spindle, a dial operatively connected with said spindle operating means, and connections between said spindle and its operating means including a threaded part to engage a threaded portion on said spindle, a locking member having a toothed recess, a toothed part secured to the spindle and engaging within said toothed recess, and a yoke secured to the locking member and projecting across the opening through the spindle.

14. A lock case including a cover having a lip, a sleeve secured within the case, mechanism located within the case and including a bolt, tumblers and couplers mounted on said sleeve, a bolt actuator mounted on said lip, a hollow spindle projecting through said actuator, a toothed disk secured to the spindle, means for operating the spindle, a dial operatively connected with the spindle operating means, and connections between said spindle and its operating means including a screw-threaded part engaging said spindle, a locking member having a toothed recess engaging the disk on the spindle, and a yoke secured to said locking member and extending through said spindle operating member and across the opening in the spindle.

15. Lock mechanism including a dial and a spindle, an operative connection between said dial and spindle including interengaging screw-threaded parts, and a locking member for preventing relative turning movement thereof, said spindle having means to engage a tool in the movement of the latter to operate the locking member to prevent turning movement of the spindle.

16. A lock mechanism including a dial, a hollow spindle, and operative connections between said dial and spindle including interengaging screw-threaded parts, and a locking member for preventing relative turning movement thereof and accessible through said spindle, said spindle having means to engage a tool in the movement of the latter to operate the locking member to prevent turning movement of the spindle in the rotation of the dial.

17. Lock mechanism including a bolt, a

spindle, operative connections between the bolt and spindle, means for operating the spindle, and connections between said spindle and its operating means, said connections
5 including a member movably mounted to connect and disconnect said parts.

18. Lock mechanism including a bolt, a spindle, operative connections between the bolt and spindle, means for operating the
10 spindle, and connections between said spin-

dle and its operating means including means for adjustably locating one longitudinally with respect to the other, means for preventing relative turning movement of said parts, and means for engaging and disengaging said
15 members.

HARRY P. TOWNSEND.

Witnesses:

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ALICE B. MUNSON.