

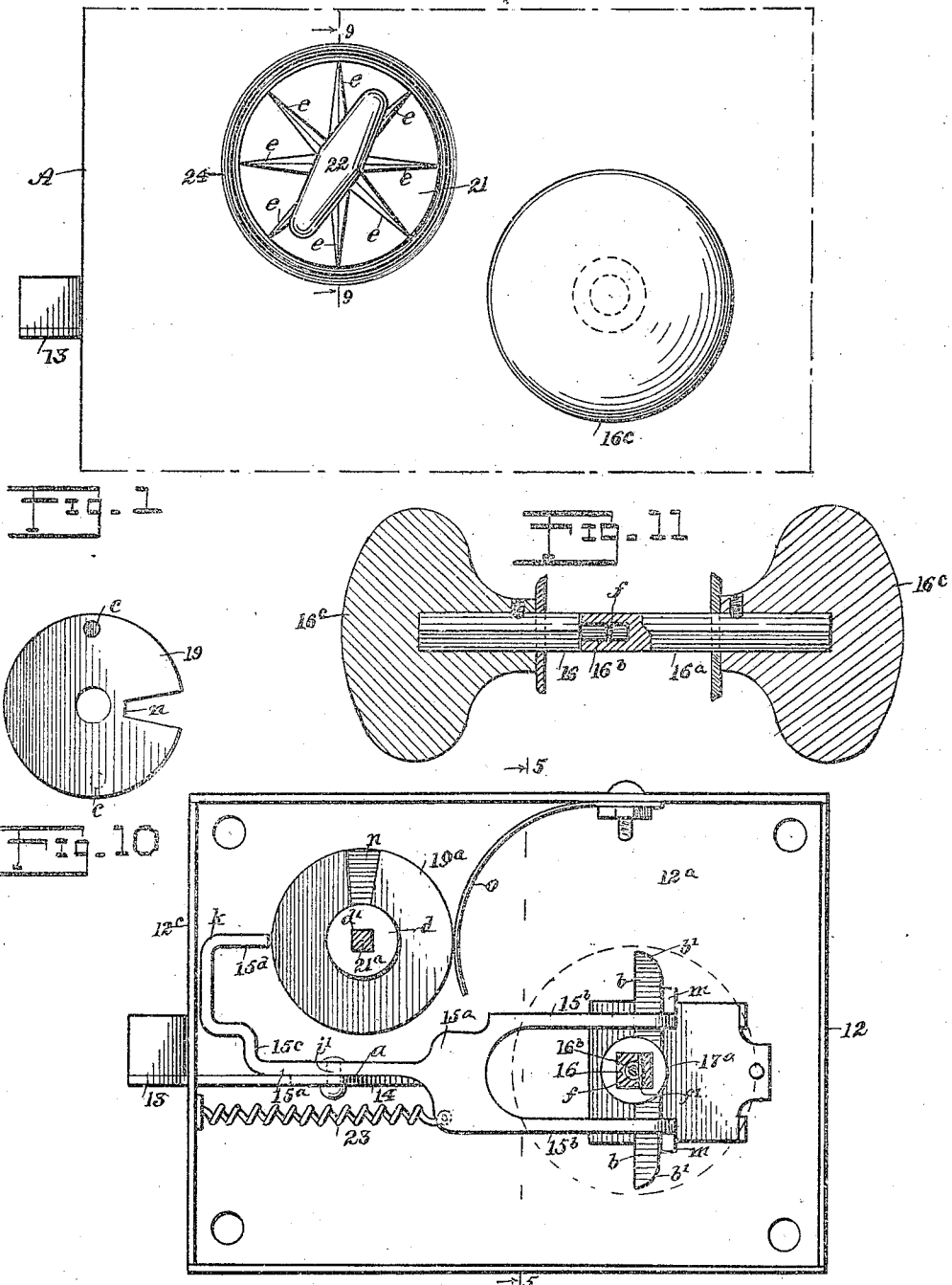
L. F. ROBERTS.
DOOR LOCK.

APPLICATION FILED AUG. 4, 1909.

949,548.

Patented Feb. 15, 1910.

2 SHEETS—SHEET 1.



WITNESSES

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Wm. J. Patton

FIG. 2

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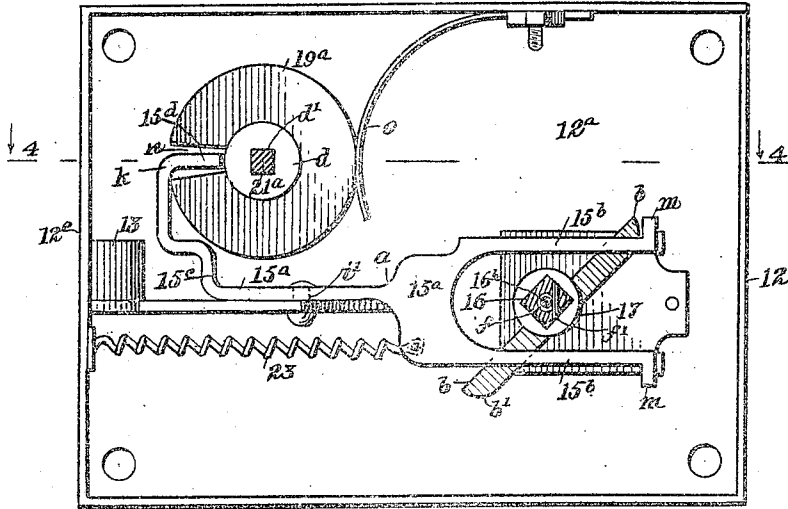


FIG. 1

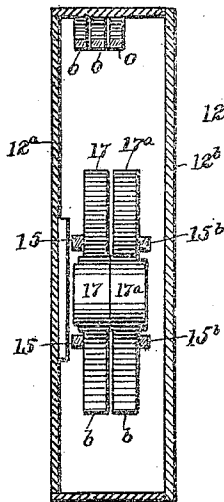


FIG. 2

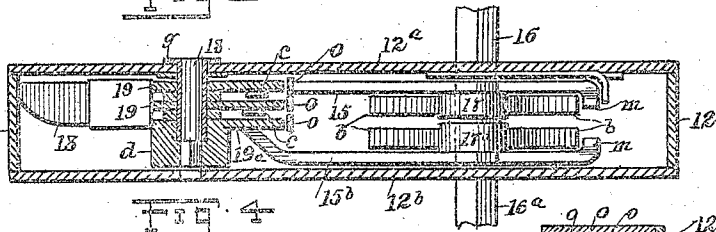


FIG. 3

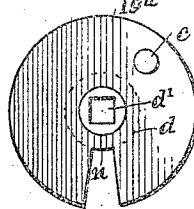


FIG. 4

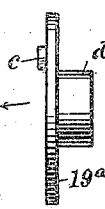


FIG. 5

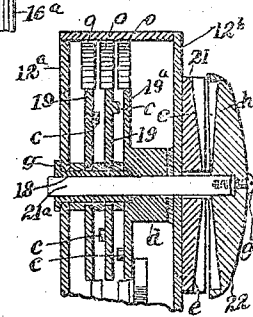


FIG. 6

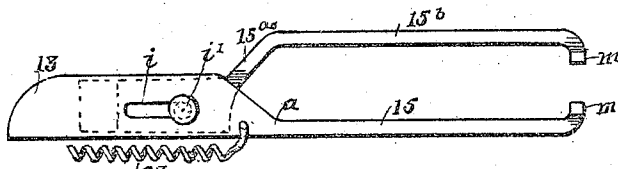


FIG. 7

WITNESSES

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UNITED STATES PATENT OFFICE.

LEANDER F. ROBERTS, OF HOWARD, KANSAS.

DOOR-LOCK.

949,548.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed August 4, 1909. Serial No. 511,157.

To all whom it may concern:

Be it known that I, LEANDER F. ROBERTS, a citizen of the United States, and a resident of Howard, in the county of Elk and State of Kansas, have invented a new and Improved Door-Lock, of which the following is a full, clear, and exact description.

This invention relates to door locks of the combination type, and has for its object to provide a lock of that type, which is very simple and embodies novel details, that adapt the lock for service as a door latch, that may be freely operated by means of a knob on the inner side of the door, but which will require manipulation of latch controlling disks, set to a certain combination, for release of the latch bolt from the exterior of the door.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an outer side view of details of the improved lock mounted upon a face plate that is secured upon a door; Fig. 2 is a partly sectional side view, showing the latch bolt thrown into locked position, a side of the lock case being removed; Fig. 3 is a similar view with Fig. 2, but showing the nose of the latch bolt retracted, by a changed adjustment of working parts of the lock; Fig. 4 is a longitudinal transverse sectional view, substantially on the line 4—4 in Fig. 3; Fig. 5 is a vertical transverse sectional view, substantially on the line 5—5 in Fig. 2; Fig. 6 is a side view of a tumbler disk, that is one of a plurality employed; Fig. 7 is an edge view of the tumbler disk shown in Fig. 6, seen in the direction of an arrow thereat; Fig. 8 is a detached side view of two slide bars slidably connected together, and adapted for independent movement, and of a latch bolt from which one slide-bar is longitudinally extended; Fig. 9 is a vertical transverse sectional view of details of the combination mechanism taken substantially on the line 9—9 in Fig. 1; Fig. 10 is a side view of a tumbler disk, slightly differing in construction from that shown in Fig. 6; and

Fig. 11 is a partly sectional side view of a knob spindle and knobs thereon shown in section.

12 indicates the case of the lock, which is preferably adapted for insertion within a horizontal mortise formed in the edge of a door stile as usual. The case 12 is of oblong, rectangular form, having a removable side wall 12^a, that is parallel with the opposite side wall 12^b, which may also be made removable if this is preferred, as is indicated in Fig. 4. In one end wall 12^c, of the case 12, a rectangular opening is formed for the insertion of a slide bolt from the interior of the case outwardly. The latch nose 13, for the slide bolt, is rectangular in cross section, and fits loosely in the opening provided for its accommodation in the end wall 12^c of the case, said nose having one side thereof sloped and slightly convexed, to adapt it for engagement with a common strike plate on a door casement in the usual manner, not shown. From the latch bolt nose 13, a flat thin slide bar 14 is extended to a point *a*, parallel on its side edges and of an equal width with the latch bolt body and nose 13. Two limbs 15, similar to the limbs 15^b shown in Figs. 2 and 3, and that are covered by said limbs 15^b, are formed on the side bar portion 14, and said limbs 15, that diverge at *a*, are spaced apart and rendered parallel with each other.

At a suitable distance from the front end of the wall 12^c, of the case 12, a knob spindle is transversely inserted through opposite openings in the side walls 12^a, 12^b, said spindle which is rectangular in cross section, consisting of two sections 16, 16^a, that are loosely connected together at their inner ends, by a pin 16^b, on one section that occupies a longitudinal socket in the other section, as shown in Fig. 11. The pin 16^b is peripherally grooved, as shown at *f* in Figs. 2, 3 and 11, said groove being engaged by a detent pin *f'* that is inserted at a proper point transversely through a perforation in the spindle section 16, this swivel connection permitting a free rotation of one section of the knob spindle on the other one. On the knob spindle two similar roll backs 17, 17^a are mounted side by side, and respectively secured on the spindle sections 16, 16^a, and upon the outer ends of said sections knobs 16^c are secured, as indicated in Fig. 11. Each

of the similar roll backs 17, 17^a is formed having two oppositely extended limbs *b*, that are of an equal length and preferably have their corners that are farthest from the end wall 12^c, rendered convex as shown at *b'*.

At a proper distance from the front wall of the case 12, and in the side wall 12^a thereof that is farthest from the outer surface of a door whereon the lock is placed, a tubular post 18 is secured by one end, and thence extends toward the opposite side wall 12^b. On the post 18, a plurality of tumbler disks are loosely mounted, three of said disks being shown, but it is to be understood that the numbers may be increased if a more complicated construction is preferred. Two of the disks designated by the numerals 19 are centrally and circularly perforated, and are rotatably mounted upon the post 18 near the side wall 12^a, one disk being spaced from the other by a washer or collar. The disks 19 are of equal diameter, are circular on their peripheries, and from each on their adjacent sides a stud *c* projects, that may impinge upon each other when said disks are rotatably adjusted for such a purpose. The remaining tumbler disk 19^a, which in service is nearest to the side wall 12^b of the case 12, is circularly recessed in its center, and said recess receives the free end of the post, as is best shown in Fig. 9. A hub *d* is formed or secured on the opposite side of the tumbler disk 19^a, said hub having a loose contact with the inner surface of the outer side wall 12^b of the case or a washer therebetween, and in the hub a central square perforation *d'* is formed. Upon the outer side of the case side wall that is adjacent to the hub *d*, an indicator plate 21 is secured, having a central circular perforation therein that is disposed opposite the square bore in the hub *d*. There are a suitable number of radial ribs *e* formed on the outer surface of the indicator plate 21, the use of which will be hereinafter explained.

A square bodied shaft 21^a is loosely inserted through the indicator plate 21, and slidably passes through the hub *d* wherein it is fitted loosely, the shaft then passing loosely through the post 18 and adjacent side wall 12^a of the case 12, having a washer *g* secured on this end thereof. Upon the opposite end of the shaft 21^a, which extends outside of the indicator plate 21, a turn button 22 is loosely secured by a set screw *g'*. The turn button is recessed in its side that is nearest to the indicator plate 21, and in said recess a ribbed or other projection *h* is formed, which is so disposed that slight pressure on the turn button will cause the rib *h* to ride successively over the radial ribs *e*, when the button 22 is turned in either direction, these successive contacts or registering of the ribs being plainly felt by the per-

son who is operating the lock for opening the door from the outer side thereof.

Referring to the slide bolt 13, and bifurcated slide bar 14 thereon, it will be noted in Figs. 2, 3, 4 and 8, that a complementary slide bar 15^a is provided that is lapped side-wise flat upon one side of the slide bar 14 near the latch bolt nose 13. A longitudinal slot *i* is formed in the slide bar 14 and loosely receives a stud *i'* that projects laterally from the mating slide bar 15^a, said stud having heads thereon which retain the two slide bars in loose engagement with each other. The slide bar 15^a is offset at a point near the pivot stud *i'* and from said point two limbs 15^b, before mentioned, are extended, said limbs being spaced apart in parallel planes as is shown in Figs. 2 and 3. The roll backs 17, 17^a, before mentioned, are disposed rearward of and between the pairs of limbs 15, 15^b, and on the rear ends of said limbs lateral toes *m* are formed, that hook upon the curved ends of the limbs *b* of the roll backs.

A contracting spring 23 is secured by its ends respectively on the front end wall 12^c of the case, and on the slide bar 14, the tension of said spring pulling upon said slide bar and normally projecting the nose 13 of the latch bolt outside of the end wall 12^c of the case 12. The pull of the spring 23 normally rocks the spindle section 16, so as to dispose the limbs *b* on the roll back 17, vertically, so that the rocking movement of the spindle section 16 will retract the latch nose 13, for its release from the jamb of the door casement, this being effected by the slide bar 14 and limbs 15, while the other limbs 15^b remain stationary, due to the swiveled connection between the spindle sections.

In each tumbler disk 19, 19^a, a radial slot *n* is formed, and on the normally upper edge wall of the case 12 three detent springs *o*, *o*, *o* are secured which are curved downward and forward, having their free end portions in enforced contact with the peripheries of the disks, as is shown in Figs. 2, 3 and 9, said springs serving to prevent the tumbler disks from accidentally changing their adjustment. Upon the slide bar 15^a, forward of the stud or pivot bolt *i'*, an arm 15^c is bent laterally and at *k* again rearwardly, thus providing a detent arm 15^c thereon that has contact at its free rear end with the peripheries of all the tumbler disks 19, 19, 19^a when the latter are turned so that the slots *n* therein are not opposite said detent arm. The relative position of the stud *i'* in the slide bar 15^a is such, that it will be disposed at the rear end of the slot *i* when the latch bolt nose 13 is projected from the wall 12^c of the base 12, whereby said nose and the slide bar integral therewith may be moved rearwardly to release said nose from

a casement jamb by turning the spindle section 16 without regard to the adjustment of the disks 19, 19, 19^a or the detent arm 15^a and it will be seen that the door having the improved lock and latch may be freely opened by turning a knob 16^c on the spindle section 16, in either direction.

In the outer side of a door A on which the lock is mounted, a cupped recess 24 is formed as indicated in Fig. 1, said recess being an opening in the outer wall of the door at the mortise therein, which contains the case 12 directly over the indicator plate 21 and turn button 22, affording free access thereto.

As before mentioned, the spindle section 16^a extends loosely through the door outside thereof, and a knob 16^c is mounted on said outwardly-extended portion of the spindle. It will be apparent, however, that if the combination for the alinement of the radial slots *n* has not been made, the detent arm 15^a will be held from moving rearward, and the spindle 16^a can not be turned with the knob on its outer end until a proper adjustment of the tumbler disks 19, 19, 19^a is effected. To this end the operator who has memorized the proper adjustment to be given, first turns the disk 19^a, and through it turns the other disks 19, by taking hold of the turn button 22 and turning it a proper degree, which will cause the projection *c* on the disk 19^a to impinge upon the projection on the middle disk 19, and it in turn will move the remaining disk 19. The proper manipulation of the turn button 22 forward and possibly backward a degree indicated by the means already explained, will quickly dispose all the radial slots *n* in registry with each other, and thus permit the free slidable insertion of the detent arm 15^a thereinto. The knob 16^c on the outer side of the door may now be turned somewhat, which will slide together the limbs 15, 15^b rearward, and retract the latch bolt nose 13 for release of the door, this retraction stretching the spring 23, that will resume its normal condition when the knob 16^c is free to turn, which will project the latch bolt nose 13 outward for engagement with a strike plate on a door jamb when the door is closed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination with a lock case, of a latch bolt working through one end wall of the case, a slide bar on the latch bolt, a transverse spindle, made in sections loosely connected together, means connecting the spindle with the slide bar for its retraction when the spindle is turned from one end thereof on the inner side of the lock, a complementary slide bar to which the slide bar having the latch bolt thereon is slidably secured, the said complementary slide bar be-

ing adapted to cooperate with and move the slide bar carrying the latch bolt to retract the bolt, and means for controlling the sliding movement of the complementary slide bar, the said means being releasable from the outer side of the door.

2. The combination with a lock case, of a bisected spindle transversely therein, the two parts of the spindle being loosely connected together, two slide bars pivoted together laterally, a latch bolt nose on one of said bars, means for connecting said slide bars with the two-part spindle, a plurality of tumbler disks which are adjustable from the outer side of the door whereon the lock is placed, and means on one of said slide bars for engaging the tumbler disks.

3. The combination with a case, of a slide bar having a latch nose, and slidable in the case, a mating slide bar slidably secured on one side of the slide bar having the latch nose, a transverse knob spindle, knobs thereon outside of the case, the mating slide bar having a detent arm at one side thereof and on the forward end, and a combination locking device in the case, adapted for preventing a sliding movement of the mating slide bar and detent arm thereon.

4. In a lock of the character described, the latch bolt having a beveled nose, a flat slide bar extended from said nose, two spaced limbs on the rear end of the slide bar, toes bent laterally on free ends of the limbs, means for engaging the toes of the slide bar to operate the same, a mating slide bar having a lateral stud thereon that loosely engages a slot in the bar carrying the latch nose, the forward end of the slide bar having the stud being bent laterally and rearwardly producing a detent arm thereon, a plurality of tumbler disks for engagement by said detent arm, and means for operating the said mating slide.

5. In a lock of the character described, the combination with a case, a transverse bisected spindle therein operated by a knob on each end, the two parts of the spindle being loosely connected together, a slide bar having spaced limbs on one end, means carried by the spindle engaging said limbs adapted to slide the bar when the spindle is turned, a sloped latch bolt nose on the other end of the slide bar, a mating slide bar, a stud on said bar loosely engaging a slot in the other slide bar, a laterally bent member on the forward portion of the mating slide bar, and a detent arm extended rearward from the lateral member, of a combination locking device in the case, embodying three tumbler disks, a hollow post projected in the case from one side thereof, said disks being centrally mounted thereon, each disk having a lateral stud on its side and a radial slot therein, a shaft extended through one side of the case and through the post,

said shaft being adapted for rotating one disk, and means for rotating said shaft from the outer end thereof.

6. In a lock of the character described, the
5 combination locking and releasing means, comprising a plurality of tumbler disks, a tubular post for loosely supporting said disks side by side in a lock case, each of said disks having a projection on one side and a
10 radial slot therein, one of said disks having a recess on one side receiving the end of the said post and a hub on the opposite side, a central shaft extending through the tubular post and hub and projecting at one side,
15 an indicator plate on one side of the lock case through which the projecting end of the shaft passes, radial ribs on the outer side of the indicator plate, a turn button on the adjacent end of the shaft, and a rib on the turn
20 button, that may register with either of the radial ribs when the shaft is rotated.

7. The combination with a lock case, of a

latch bolt working through one end wall of the case, a slide bar rigid with the latch bolt and provided with a slot, a second slide bar 25 having a stud thereon loosely engaging said slot, the end stud being at the rear end of the said slot when the latch bolt nose is projected, a knob spindle formed in two sections, means for connecting the said slide 30 bars with the respective spindle sections, a spring connected with the first mentioned slide bar for projecting the latch bolt nose from the case, and means for preventing a rearward sliding movement, of the said sec- 35 ond slide bar, the said means being adjustable to release the said slide bar.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEANDER F. ROBERTS.

Witnesses:

C. F. OSBORN,
G. J. SHARP.