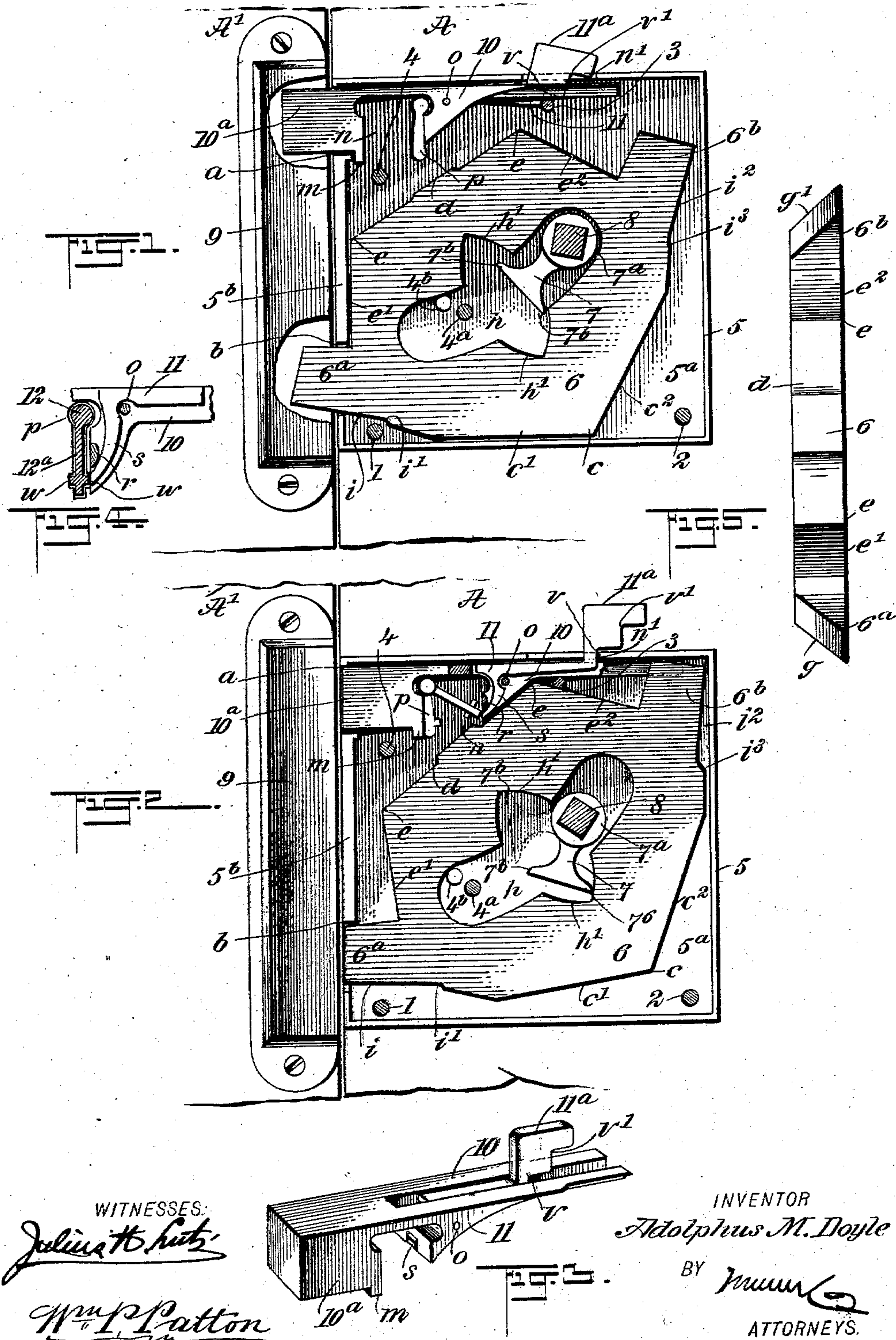


No. 740,826.

PATENTED OCT. 6, 1903.

A. M. DOYLE.
COMBINED LOCK AND LATCH.
APPLICATION FILED JAN. 2, 1903.

NO MODEL.



WITNESSES.

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COMBINED LOCK AND LATCH.

SPECIFICATION forming part of Letters Patent No. 740,826, dated October 6, 1903.

Application filed January 2, 1903. Serial No. 137,465. (No model.)

To all whom it may concern:

Be it known that I, ADOLPHUS M. DOYLE, a citizen of the United States, and a resident of Leoti, in the county of Wichita and State of Kansas, have invented a new and Improved Combined Door Lock and Latch, of which the following is a full, clear, and exact description.

This invention relates to combined door locks and latches, and particularly to a class of such devices wherein a gravity-actuated latch is employed; and the invention has for its object to provide novel details of construction for a device of the character indicated which afford an extremely simple secure lock that is devoid of springs, may be locked or unlocked with a key or by manipulation, and a right and left hand latch that is reversible readily, is adapted to operate to lock it entirely by its gravity, and consisting of a single piece operative by a knob-spindle rotatable in either direction, the improved lock and latch being adapted for easy and cheap manufacture.

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 figures.

Figure 1 is a side view of the lock and latch with parts in locked adjustment, one side wall of the lock-case being removed to expose the interior parts. Fig. 2 is a view essentially the same as Fig. 1, but showing the working details in unlocked adjustment. Fig. 3 is a perspective view of a novel locking-bolt employed. Fig. 4 is a fragmentary partly-sectional side view of details of the locking-bolt and a transverse sectional view of a key that is specially adapted to unlock the improved lock; and Fig. 5 is a plan view of the improved latch-bolt, showing the duplicate latching-noses thereon.

The improvements are well adapted for the construction of a rim or surface lock and combined latch for room-doors or outer doors in buildings and are represented as embodied to produce a lock of that character.

The lock and latch case 5 is of an ordinary

form, being rectangular peripherally, having thin edge walls formed integral with one side wall 5^a, the other side wall (not shown) being removable and securable upon the edge walls by the transverse screws 1, 2, 3, 4, and 4^a, the dimensions of the lock-case being duly proportioned to the size of lock desired. The screws 1 2 are respectively located near the lower corners of the case 5 and the screws 3 4 near the upper edge thereof, all serving to secure the case on a door, while the bolt 4^a may engage only the sides of the case to retain the loose side wall in place or may be dispensed with, if found unnecessary.

In one edge wall 5^b of the case 5 two openings *a b* are formed, respectively, near the upper and lower edge walls of said case for the accommodation of a locking-bolt and a duplex latch-bolt, as will be hereinafter described.

The gravity-latch comprises a single block 6, of metal or other available material having a suitable thickness and of essentially polygonal form peripherally. As shown, the latch-block 6 is formed with an obtuse angle *c* on the periphery that defines the angular divergence of the two edge portions *c' c''*, and opposite said obtuse angle lies a nearly-straight portion *d* of the periphery, that is defined in length by the two similar obtuse angular formations *e e'*, having a degree defined by the divergence of the two edge portions *e' e''* of the latch-block.

Between the adjacent end of the edge portion *e'* and the edge portion *c'* a latch-nose 6^a is integrally projected from the latch-block 6, said nose having a sloped side *g* and a lower surface *i*, ending in an offset *i'*, formed at the base of the latch-nose, the lower edge of the latch-block 6 being cut away at the offset to afford room for the screw 1 to pass through the case 5.

A latch-nose 6^b, similar to the latch-nose 6^a, is projected from the latch-block 6, where the edge portions *c''* and *e''* approach each other, and on said latch-nose 6^b a sloped side *g'* is formed, these sloped sides *g g'* of the latch-noses 6^a 6^b having equal inclination from the side of the latch-block that loosely contacts with the integral side wall 5^a of the case 5. A side wall *i''* is formed on the latch-nose 6^b and terminates in the offset shoulder *i'''*, so as

to provide room for the screw 1 in case the latch-block is reversed in position.

In the latch-block 6, extending between the latch-noses 6^a 6^b , a slot h of suitable form is produced, the ends thereof being respectively near said latch-noses, and at the longitudinal center of the slot h in its side edges an ovate notch h' is formed, said notches being opposite each other.

The side wall 5^a of the lock and latch-case 5 is perforated opposite the slot h , near the end thereof which approaches the latch-nose 6^b , and in said perforation one end of the hub 7^a of the tripping-dog 7 is loosely held, from which hub projects axially a portion of the knob-spindle 8 for the reception of an ordinary door-latch knob. (Not shown.)

The tripping-dog 7 consists of a T-shaped arm located centrally in the slot h , so that by a rotative movement of the knob-spindle 8 in either direction the wings 7^b of the tripping-dog may be caused to have contact respectively with a side of an ovate notch h' , toward which the dog may be rocked.

A strike-plate 9 of ordinary form is provided for engagement of a latch-nose 6^a therewith, said plate being fixed upon the case-jamb A' of the doorway, wherein the door A is held to swing in the usual way, and, as shown in Fig. 1, the latch-nose 6^a by gravity of the block 6 is projected into the recess in the strike-plate, this engagement being effected by an enforced impinge of the sloped face g upon the striking edge of the plate 9 due to closure of the door against the jamb A' .

A stud 4^b projects from the side 5^a of the case 5 adjacent to the screw 4^a , and, as shown, the stud has contact with the upper edge of the slot h in the latch-block 6 and affords support to the block, so that it may be readily moved by partial rotation of the knob-spindle 8 for release of the latch-nose from the strike-plate 9, or a screw may be employed in place of the stud 4^b , if desired.

It will be seen that when the latch-block 6 is actuated by a turning movement of the tripping-dog 7 the pressure of one wing 7^b of the dog on the inclined side of the lower ovate notch h' in said block will cause the block to slide upward and rearward on the stud 4^b until the latch-nose 6^a is drawn into the case 5, and thus released from the strike-plate 9. Furthermore, the partial rotation of the tripping-dog 7 in an opposite direction, so as to impinge the uppermost wing 7^b upon the upper ovate notch h' at the side nearest the knob-spindle 8, as indicated by dotted lines in Fig. 2, will in like manner elevate the latch-block 6 and retract the latch-nose 6^a from a locked engagement with the strike-plate 9, so that the latch may be operated for release when a spindle-knob is turned in either direction.

Upon opening the door A and release of the knob on the spindle 8 the latch-block will by its gravity slide toward the edge wall 5^b and

project the nose 6^a through the aperture b ready for a reengagement with the strike-plate 9 upon a subsequent closure of the door, and it will be seen in Fig. 2 that the downward and forward inclination of the upper edge of the slot h in the latch-block conduces to such an automatic sliding movement of the block 6 on the stud 4^b .

Above the latch-block 6, opposite the upper opening a in the edge wall 5^b of the case 5, a locking-bolt 10 is held to slide longitudinally. As shown, the locking-bolt is in the form of a bar having a locking-nose 10^a on one end, which is parallel on the upper and lower sides, that loosely contact with corresponding edges of the opening a , and the degree of outward movement of said nose is defined by a depending rib m , formed on the lower side thereof, as is shown in Fig. 1.

The upper edge of the locking-bolt 10 is straight throughout its length, and in the lower edge thereof an opening n is formed in the bolt-body, extending to a point near said upper edge, the upper defining edge of the opening n being parallel with the upper edge of the bolt-body. The side edges of the opening n are parallel with each other and substantially at right angles with the upper edge of the same, the side edge nearest to the locking-nose 10^a being aligned vertically with a side of the rib m .

From the opposite side of the opening n the lower edge portion of the bolt-body 10 is sloped upwardly and rearwardly, merging into a nearly straight lower edge portion that rests on the screw 3, and it may here be explained that this screw may be supplanted by a stud or other integral projection from the side wall or walls of the case 5.

The portion of the bolt-body 10 that extends rearward from the opening n is slotted longitudinally for the loose reception of a tumbler-bar 11, and, as indicated in Figs. 1 and 2, the tumbler-bar is pivoted at o , near the front end thereof, or adjacent to the opening n .

At a proper distance from the edge wall 5^b of the case 5 a keyhole p is formed in the case side wall 5^a , and this keyhole, which may be duplicated in the removed side wall of the case, is of such width and is so relatively positioned that when the nose 10^a on the locking-bolt is outwardly thrown to engage within the strike-plate 9, as shown in Fig. 1, the keyhole p will lie close to the rear side wall or edge of the opening n . Furthermore, the keyhole p will be disposed closely to the rib m at the opposite side edge of the opening n when the locking-bolt is fully retracted, as represented in Fig. 2.

The slot in the locking-bolt body 10 cuts through the rear wall or edge of the opening n above and below the transverse brace r , that unites the parallel side walls of said slot, and a tripping-finger s , that curves downward and forward from the body of the tumbler-bar 11 at its forward end, projects below the

brace *r*, so as to aline its free end with the rear edge of the opening *n*, as is clearly shown in Fig. 4.

A slot-opening *n'* is formed in the upper edge wall of the lock-case 5 at a proper point, preferably behind the keyhole *p* and above the stud or bolt 3, and in said slot a projecting detent-ear 11^a is held to slide, this projection being formed or secured on the rear end of the tumbler-bar 11, as best shown in Fig. 2. The detent-ear 11^a may have an ornamental form, but for practical service should have two offsets *v v'* formed on the rear edge one above and rearward of the other.

The position of the slot-opening *n'* is such with regard to the offsets *v v'* on the ear 11^a that when the locking-bolt nose 10^a is fully retracted the lower offset or shoulder *v* on said ear will contact with the rear end of the slot-opening *n'* and prevent a further recession of the locking-bolt, the tumbler-bar 11 now resting on the stud or bolt 3.

When the locking-bolt 10 is operated upon by a suitable key and slid forwardly therewith, so as to fully project the locking-nose 10^a, the ear 11^a will be correspondingly moved and the tumbler-bar will drop off of the screw 3, so that the latter will engage with the lower offset *v*, whereby the locking-bolt will be held in projected adjustment, as clearly shown in Fig. 1.

The key 12, provided for locking and releasing the locking-bolt 10, is adapted to pass freely through the keyhole *p*, and upon the key-bit 12^a two nipple-like projections *w* are oppositely formed or secured, said projections being respectively disposed opposite the forward termination of the tumbler-bar 11 when the key is introduced from either side of the lock.

It will be seen that upon insertion of the key 12 within the keyhole *p* and rocking it toward the tumbler-bar 11 the nipple *w* nearest the end of the tumbler-bar will be pressed into engagement therewith, which will rock said bar on its pivot *o* and elevate the rear end thereof, which will raise the offset *v* off of the screw 3 and release the locking-bolt therefrom.

After release of the ear 11^a a continued pressure of the key-bit upon the forward end of the bolt-body will slide the bolt rearward and release its nose 10^a from the strike-plate 9.

Obviously the tumbler-bar 11 and locking-bolt 10 may be operated for unlocking the door on the inner side of the latter by manipulation of the ear 11^a, and the door may also be locked by the same means.

The drawings show the lock and latch arranged for use on a door that swings to the right; but by reversing the latch-block, so that its opposite side will have contact with the case side wall 5^a, and disposing the latch-nose 6^b in the opening *h* the device will serve as a left-hand latch and the locking mechanism will be available in either arrangement of the

latching mechanism. It will also be seen that as the dog 7 is provided with two wings 7^a, that may alternately engage an appropriate ovate notch *h'* in the latch-block, the knob-spindle and means to rock it are available for manipulation in case the latch is arranged to serve as a left-hand latch in the improved lock and latch that has been described.

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

1. The combination with a case having an apertured edge wall, of a polygonally-shaped latch-block, two oppositely-projected latch-noses on the latch-block, either nose being operative when arranged opposite the aperture, said latch-block having an elongated slot-opening therein extended between the latch-noses and notched in one edge, a rockable knob-spindle passing into the slot-opening, and a tripping-dog secured on the spindle and having a wing which may enter the notch in the edge of said slot-opening, whereby the rocking movement of the spindle will raise the latch-block and then slide it laterally for retraction of a projected latch-nose.

2. The combination with a case having an apertured edge wall, of a polygonal-shaped latch-block having two latch-noses projected oppositely thereon, either nose being adapted to slide in the case-aperture and be projected therethrough by gravity of the block, said latch-block having an elongated slot-opening extended between the latch-noses, a projection from the side of the case having slidable engagement within the slot-opening at its upper edge, and means to slidably move the latch-block on said projection for retraction of one latch-nose that projects through the aperture in the case.

3. The combination with a case having an apertured upright edge wall, an apertured upper edge wall, and a keyhole near said upper edge wall, formed in a side wall of the case, of a locking-bolt adapted to slide through an opposite aperture in the upright edge wall, said bolt having an opening in its lower edge opposite the keyhole in the case, and a longitudinal slot therein extended from the rear edge of the opening, a tumbler-bar pivoted near its forward end in the slot and having a tripping-finger thereon that is curved down and forward ending at the rear wall of the opening in the locking-bolt, said tumbler-bar having an ear on the rear end extended up through the aperture in the upper edge wall of the case, and having an offset for locking engagement with a projection on a side wall of the case.

4. The combination with a case, a locking-bolt held to slide therein and work through an aperture in the front edge of the case said bolt having a longitudinal slot, and an opening in its lower edge opposite a keyhole in a side wall of the case, a tumbler-bar pivoted in the slot having an ear adapted to interlock with a projection on the case and prevent the

bolt from sliding, a curved depending finger
on the front end of the tumbler-bar, and a
key having a projection on its bit, that by
impinging on an end of the finger rocks the
5 ear out of locking engagement with the pro-
jection on the case.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

ADOLPHUS M. DOYLE.

Witnesses:

CLYDE H. ALLPHINE,
OLIVER SCOTT.