No. 699,301. Patented May 6, 1902.

E. A. FOGEL.

COMBINED LOCK AND LATCH.

(Application filed Oct. 8, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

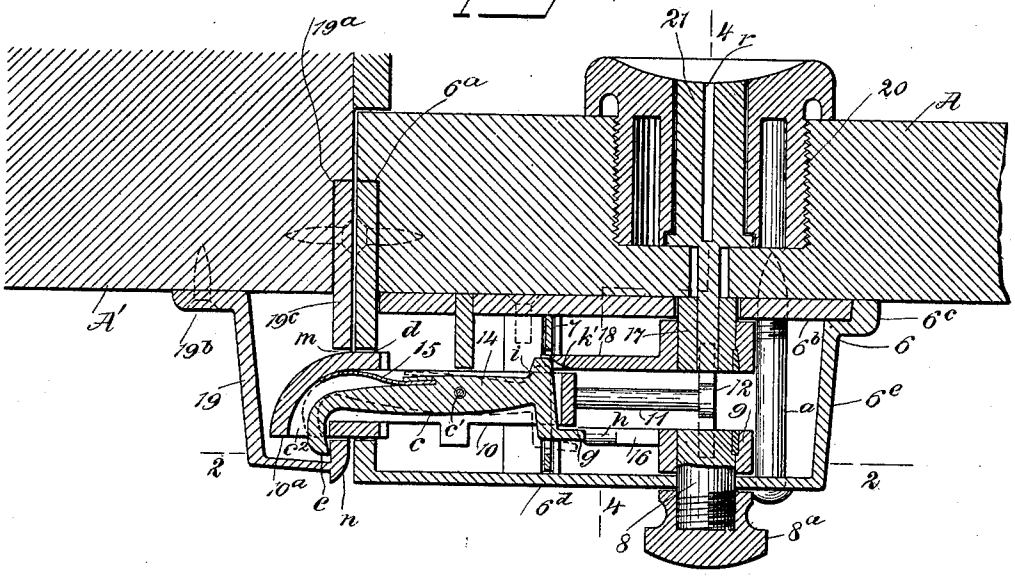
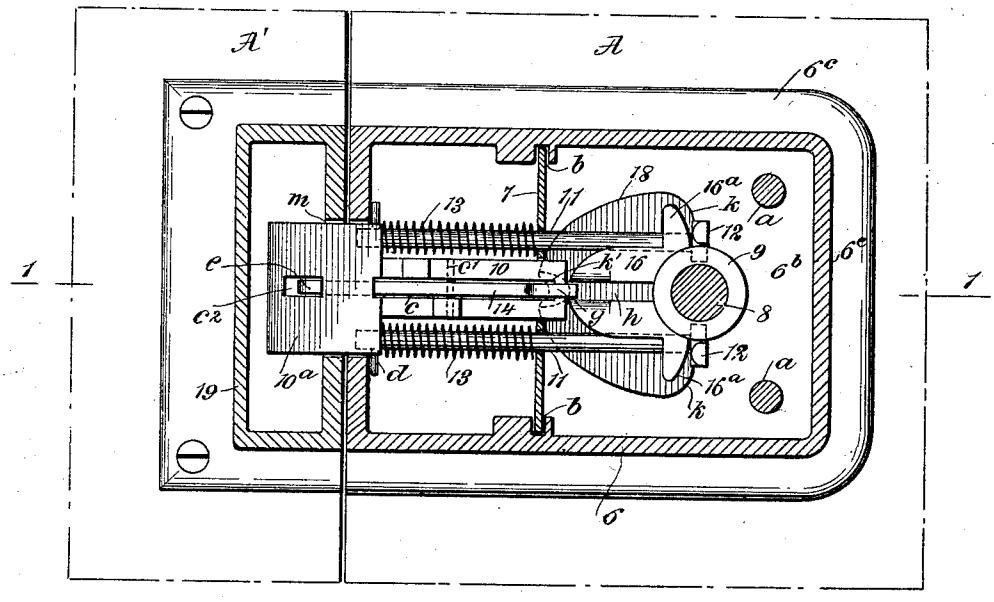


Fig. 2



WITNESSES:
J. T. Boothby
Wm. I. Patton

INVENTOR
Edward A. Fogel
BY
Munn & Co
ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 3

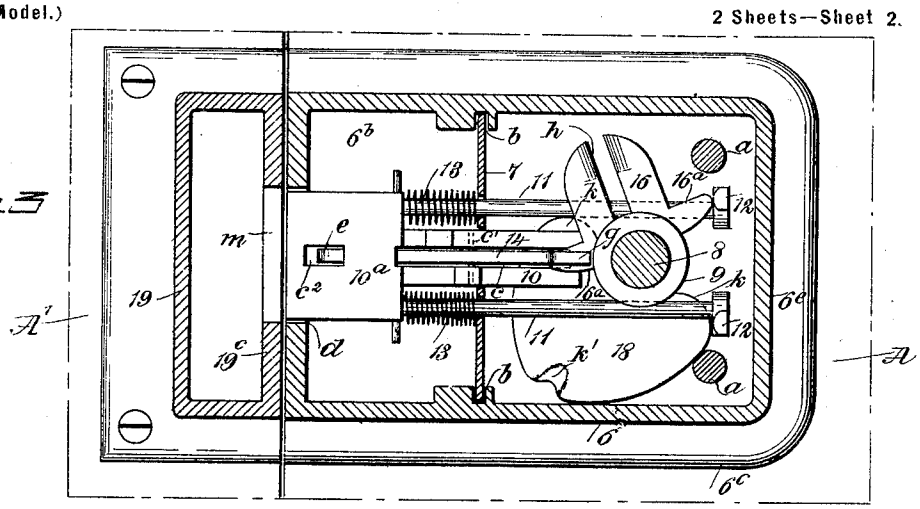
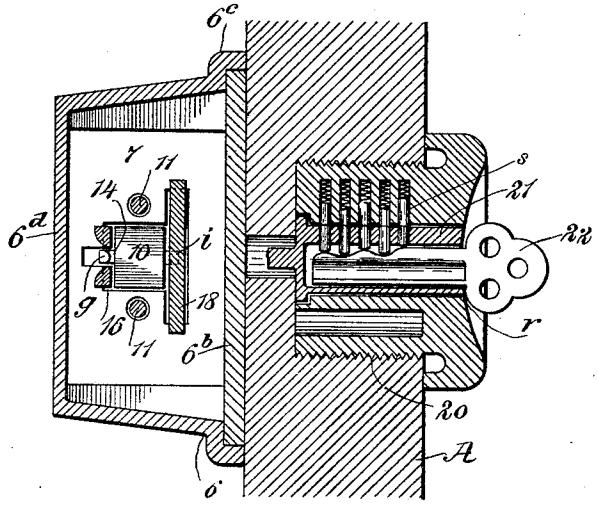


Fig. 4



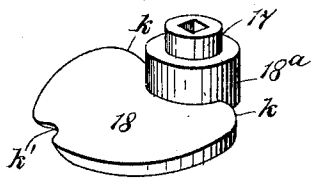


Fig. 5

WITNESSES:

J. A. Brophy

Wm. P. Patton

INVENTOR

Edward A. Fogel

BY Munn & Co.

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWARD A. FOGEL, OF BURLINGTON, IOWA.

COMBINED LOCK AND LATCH.

SPECIFICATION forming part of Letters Patent No. 699,301, dated May 6, 1902.

Application filed October 8, 1901. Serial No. 77,961. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. FOGEL, a citizen of the United States, and a resident of Burlington, in the county of Des Moines and State of Iowa, have invented a new and Improved Combined Lock and Latch, of which the following is a full, clear, and exact description.

This invention relates to rim or night-latch locks, and has for its object to provide novel details of construction for a lock of the class indicated which renders it very durable and reliable either as a latch or lock.

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 longitudinal sectional view of the improved latch and lock substantially on the line 1 1 in Fig. 2. Fig. 2 is a plan view of the mechonism of the lock, the case and strike being cut away on the line 2 2 in Fig. 1 and the working parts being locked. Fig. 3 is a view similar to Fig. 2, but showing the working parts unlocked. Fig. 4 is a transverse sectional view substantially on the line 4 4 in Fig. 1, and Fig. 5 is a perspective view of a cam-plate that is a novel detail of construction.

The casing 6 is of substantially rectangular form and has a flange 6^a extended from one end at a right angle to the back plate 6^b, which is seated in the rabbeted edge of the casing, which latter may be formed with an outwardly-extended seating-flange 6^c, said back plate having perforations that aline with like perforations in the face-plate 6^d of the casing for the insertion of screws *a* to secure the lock in place upon a door A, as usual, other screws passing through the flange 6^a into the edge of the door for a like purpose. In opposite recesses *b*, formed in the sides of the casing 6 at a suitable distance from the flange 6^a, the transverse guide-plate 7 is held.

Between the guide-plate 7 and rear end wall 6^e of the casing 6 at a suitable point the face-plate 6^d is circularly perforated for reception of the cylindric stub-spindle 8, that is inserted from the exterior face of the plate 6^a and at the outer end is secured within the knob 8^a. Upon the inwardly-projected portion of the spindle 8, adjacent to the face-plate 6^d, a collar 9 is mounted and secured, which collar is the hub of a cam-plate, that will be hereinafter described.

The latch-bolt 10, which is also a locking-bolt, is provided with a nose-block 10^a on one end, and the bolt projects centrally from said block in the form of a rectangular bar. The body 10 of the latch-bolt is horizontally slotted from a point near its rear end to the other end adjacent to the nose-block, said slot *c* having parallel sides and extending through the bolt-body.

The nose-block 10^a is of the usual form, having a mainly rectangular body that fits loosely in a mating aperture *d*, formed in the front end wall of the casing 6. One side of the nose-block is convexly sloped, and the opposite side thereof is flat for proper engagement with a strike-plate of novel construction, which will be hereinafter described.

A suitable orifice is formed in the guide-plate 7 to permit the insertion therethrough of the rear portion of the latch-bolt 10 and adapt it for free reciprocation. The nose-block 10^a projects at each side of the bar 10, and in said projections of the nose-block the forward ends of two similar slide-rods 11 are secured, these rods extending rearwardly through spaced perforations in the guide-plate 7, whereby they are supported in the same plane parallel with the latch-bolt body 10 and with each other.

Two similar arms 12 are secured on the rear ends of the slide-rods 11 at the longitudinal centers of said arms and are disposed horizontal and parallel with each other. Above and below the slide-rods 11 the forward surfaces of the arms 12 are rounded, these portions having clearance from the hub 9 and sides of the casing 6.

Two coiled springs 13 are mounted upon the slide-rods 11 between the nose-block 10^a and guide-plate 7 and normally press the nose-block outward a proper degree and cor-

respondingly draw the arms 12 forwardly when the latter are free to receive such adjustment.

A locking-dog 14 is held loosely in the slot c by a pivot c', secured by its ends in the side walls of the slot and engaging the dog near its longitudinal center. The slot c extends into the nose-block 10^a and curves laterally, so as to cut through the straight side of the nose-block opposite its sloped wall, as shown at c^2 in Figs. 1, 2, and 3. The forward end of the locking-dog 14 is curved laterally in direction of the opening c^2 and may be rocked so that the free end e of said bent toe will project through the opening c^2, as shown clearly in Fig. 1.

Upon the forward end of the dog 14 a plate-spring 15 is secured by one end, its free end engaging the curved wall of the slot in the nose-block 10^a, so that the toe e is pressed outward through the opening c^2 when the dog 14 is in normal adjustment. At the rear end of the dog 14 a lug g is formed, which extends down and rearwardly, so as to be positioned mainly behind the guide-plate 7 and below the inner end of the latch-bolt 6.

A cam-plate 16 is formed on the collar 9, which in service is the hub of the cam-plate, as before stated, said cam-plate consisting, essentially, of a flat body having its edges convexed and of such length as locates its forward end in close relation with the lip or rear end of the lug g. The cam-plate 16 is radially slotted at h, as shown in Figs. 2 and 3, said slot extending from the hub 9 through the forward edge of the plate at its transverse center.

The rear end of the lug g projects into the slot h when the parts are arranged as shown in Fig. 2. The side of the lug nearest the cam-plate 16 is convexed to remove its corners, and the adjacent corners of the walls of the slot are in a like manner rounded, so that the cam-plate may ride upon the rounded face of the lug and depress it when the spindle 8 is rotatably moved in either direction.

Upon opposite edges of the cam-plate 16, near the hub 9, two similar cam-wings 16^a are outwardly extended, said wings having convexed rear edges, and said edges are held normally in engagement with the adjacent ends of the arms 12 by stress of the springs 13, which disposes the cam-plate 16 so that its slot h is alined with the dog 14.

In the back plate 6^b of the casing 6 a short spindle 17 is held to rotate in axial alinement with the stub-spindle 8, said spindle 17 having the hub 18^a of the cam-plate 18 secured thereon. The cam-plate 18 is substantially heart-shaped and projects from the hub 18^a at one side thereof from the transverse center of the widest end of said plate, and, as best shown in Fig. 5, the shape of said end portion of the cam-plate provides two convex edges k, one at each side of the hub 18^a. From the relative position of the cam-plate 18 the convex edges k are disposed oppositely to and in contact with the adjacent end portions of the arms 12 and are, in effect, cam-wings, that will respectively receive pressure from a contacting arm when the spindle 17 is rocked in either direction, as shown in Fig. 3.

Upon the inner end of the dog 14, opposite the lug g, a knob i is formed, which is rounded on the surface, over which the edge portion of the cam-plate 18 projects. A scalloped notch k' is formed in the curved periphery of the cam-plate 18, and the edges of said notch are rounded on the side of the plate which is adapted to have contact with the knob i, and it will be seen that the turning movement of the stub-spindle 17 in either direction will cause an appropriate rounded edge of the notch k' to ride upon the knob i and depress the inner end of the dog 14, which will obviously retract the toe e, so that the nose-block 10^a may be retracted.

The strike-plate 19, before mentioned, consists of a hollow box having two flanges 19^a 19^b formed on it to afford a seat and means to secure the same on the casement-jamb A′ of a door A, whereon the lock is secured. The flange 19^a is an extension of the strike-plate wall 19^c, which in service is engaged with the nose-block 10^a, and said wall 19^c has an opening m therein, which is disposed opposite the aperture d, wherein the nose-block is held to slide when the door is closed, as represented in Figs. 1, 2, and 3.

The free corner n of the strike-plate 19^c is rounded for proper engagement with the sloped side of the nose-block 10^a, and, as shown clearly in Fig. 1, the toe e on the rockable dog 14 will have hooked engagement with the inner surface of the strike-plate near said corner when the nose-block is projected through the opening m, that results upon closure of the door A.

A dead-latch of the pin type is preferably used in conjunction with the improved latch and lock for control of the latter from the outer side of a door, and, as shown, comprises the following details:

A cylindrical case 20, threaded on the exterior, is inserted into a suitably-diametered hole in the door A directly opposite the stub-spindle 17. A central bore is formed in the case 20, that receives and rotatably supports the cylinder 21, wherein a key-slot r is formed longitudinally and adapted to permit the free insertion of the shank of the key 22, that is concavo-convex in cross-section, the outer end of the case 20 being dished, as shown in Figs. 1 and 4, to facilitate the insertion of the key 22 into the key-slot.

The usual pin-tumblers s are provided in sufficient number and are arranged as shown in Fig. 4, occupying spaced perforations that are partly in the cylinder 21 and partly in the case 20, said tumblers being spring-pressed, so as to enter the perforations in the cylinder when free to do so, and thus hold it from turn-

ing, but releasable by insertion of the key 22, as shown in Fig. 4. The cylinder 21 is extended at the inner end and has interlocked engagement at said end within an axial perforation in the stub-spindle 17.

It will be seen from the foregoing description that the act of closing the door A, so as to cause the nose-block 10^a to engage with and pass into the opening *m* in the strike-plate, will permit the toe *e* on the dog 14 to hook upon the strike-plate and securely lock the latch-bolt 10 from a sliding movement, which would release the nose-block 10^a from the strike-plate.

In case the door is to be opened from the side, which may be in a room or a hall, or, in other words, the inner side of the door whereon the casing 6 is secured, this can be conveniently effected by turning the knob 8^a in either direction, as this will rock the cam-plate 16 and depress the engaged end of the lug *g*, so as to reversely move the toe *e* and release it from the strike-plate.

Upon turning the knob 8^a sufficiently one of the cam-wings 16^a impinges upon an adjacent end of one of the arms 12, which will slide the latch bolt or bar 10 rearward consecutively with the release of the toe *e* and withdraw the nose-block 10^a from the strike-plate 19 for complete release of the door.

Should the person desiring to open the door A be upon the outside of the room or building closed by said door, a key 22 of exactly proper shape must be introduced within the slot *r* sufficiently to work all the tumblers *s* for release of the cylinder 21. This permits a rotatable movement of said cylinder by means of the key, which will correspondingly turn the spindle 17 and rock the cam-plate 18, so as to depress the dog 14, release the toe *e* thereon from the strike-plate 19, and subsequently impinge one of the cam-wings *k* of the cam-plate 18 upon an end portion of one of the arms 12 for retraction of the nose-block 10^a and its release from the strike-plate 19.

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

1. The combination with a casing, a slidable latch-bolt having a longitudinal slot, and a coiled spring adapted to normally project the latch-bolt at one end from the casing, of a dog in bar form, having a laterally-hooking toe at one end and pivoted between its ends in the slot, so as to rock on the latch-bolt, a spring held between the latch-bolt and dog, normally pressing its toe outwardly, and a cam rockable in the casing at the rear of the dog and adapted to press its edge laterally on the inner end of the dog to retract its toe within the latch-bolt.

2. The combination with a casing, a slidable latch-bolt having parallel guide-rods thereon, and a longitudinal slot therein, and springs mounted on the guide-rods which press the latch-bolt outwardly, of a dog having a lateral toe at one end and pivoted to rock in the slot of the latch-bolt, a cam in plate form rockable in the casing at the rear of the dog, the edge of said cam being adapted to press laterally on the dog to rock it, said cam being adapted to subsequently slide the bolt against stress of the springs.

3. The combination with a casing, and a slidable latch-bolt in said casing having a latching-nose, of a dog pivoted to the bolt between its ends, a lateral toe on the end of the dog, a spring pressing the toe beyond one side of the nose, and manually-operated means for rocking the dog to withdraw the toe and subsequently retract the latch-bolt, said means being operative from either side of the lock-casing.

4. In a combined latch and lock, the combination of a casing, a strike-plate, a spring-pressed latch-bolt, a rockable dog mounted on the latch-bolt and adapted to interlock with the strike-plate when the latch-bolt is engaged therewith, a stub-spindle rockable in each side wall of the casing, and a cam-plate on each spindle, which will independently depress the dog for its release from the strike-plate, when the spindle that carries said cam-plate is rotatably moved.

5. In a combined latch and lock, the combination of a casing, a strike-plate, a spring-pressed latch-bolt slidable in the casing for engagement of its nose with the strike-plate, a rockable dog on the latch-bolt, spring-pressed at one bent end to interlock said end with the strike-plate when the latch-bolt is engaged therewith, two stub-spindles oppositely held to rock in respective sides of the casing, a cam-plate on each spindle, each adapted to independently rock the dog for its release from the strike-plate when the spindle carrying said cam-plate is rocked, cam-wings on each cam-plate, and arms carried by the latch-bolt, whereon said cam-wings on the cam-plates have spring-pressed contact.

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

EDWARD A. FOGEL.

Witnesses:
FRANK L. HOUKE,
T. W. ALEXANDER.