(No Model.) 2 Sheets—Sheet 1.

E. T. FRAIM.

PADLOCK.

No. 582,632. Patented May 18, 1897.

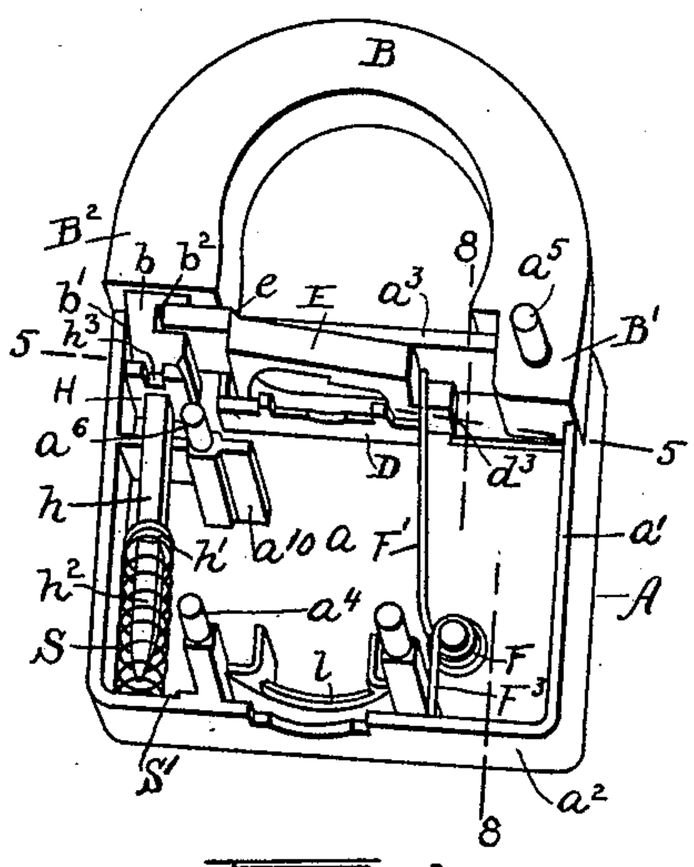


Fig. 1.

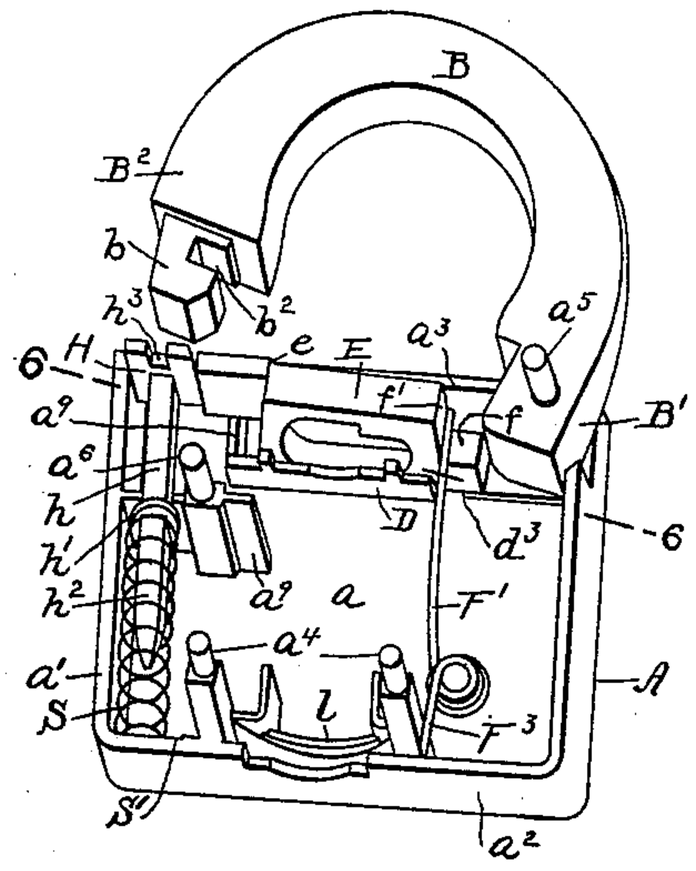
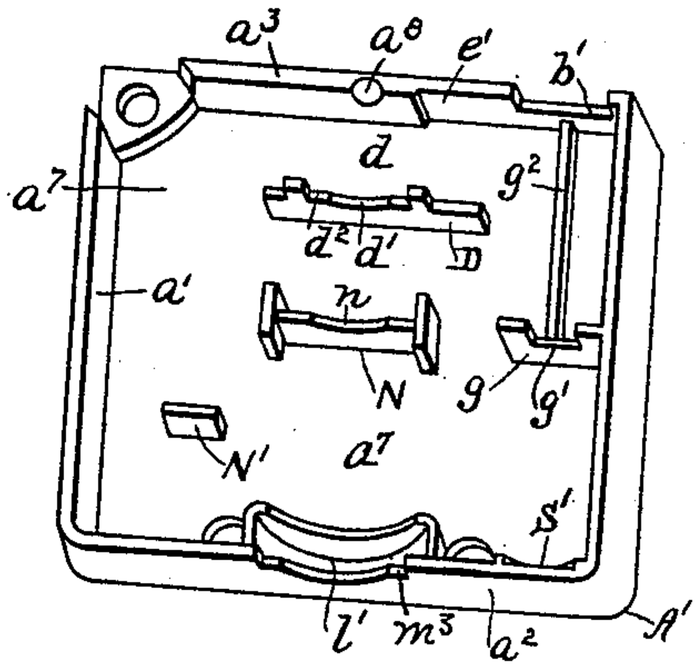


Fig. 2.



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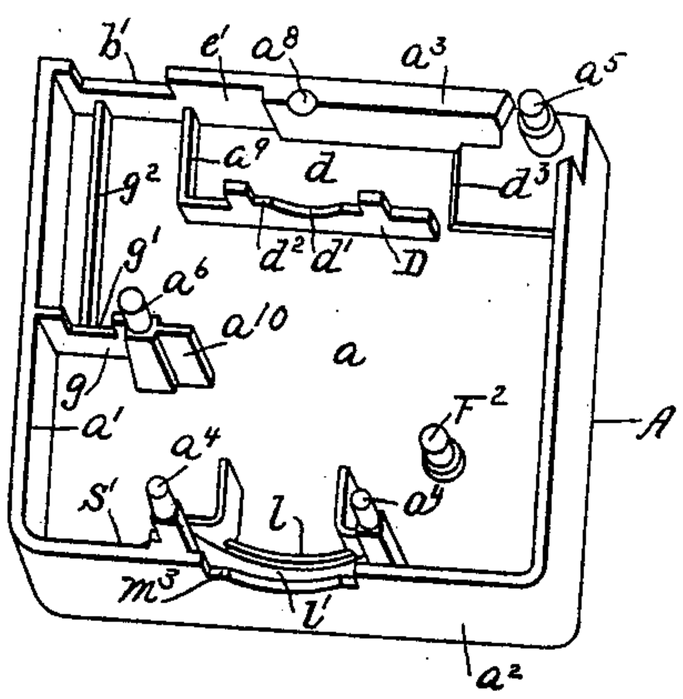

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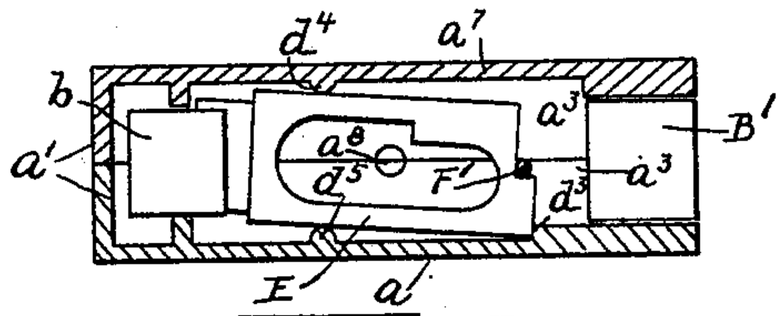

Fig. 13.

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(No Model.) 2 Sheets—Sheet 2.

E. T. FRAIM.

PADLOCK.

No. 582,632. Patented May 18, 1897.

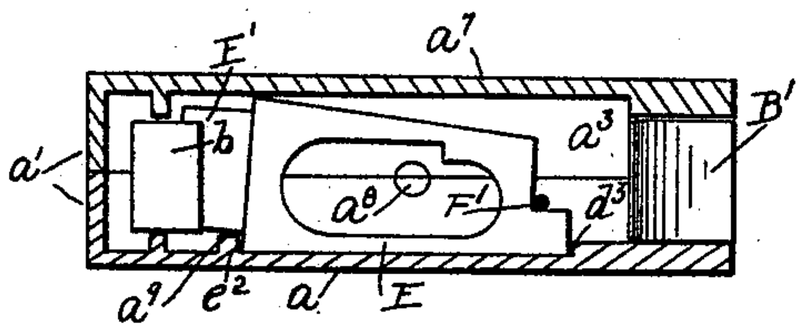
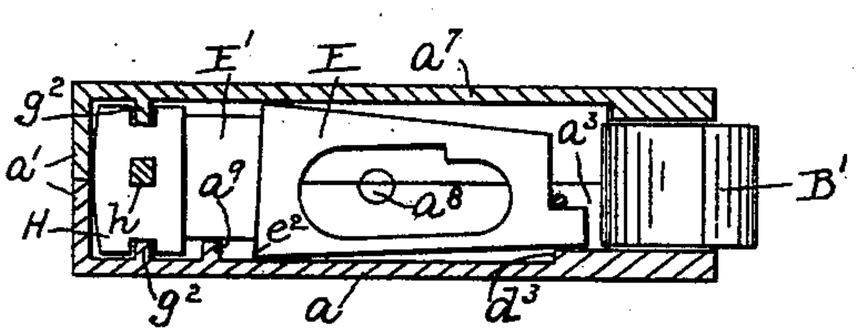


Fig. 5.



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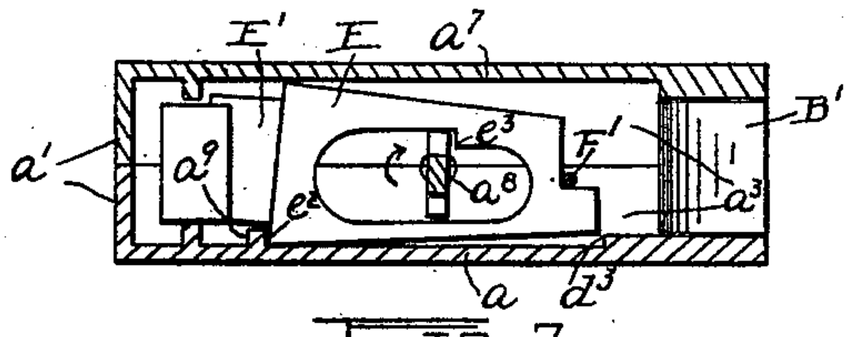


Fig. 7.

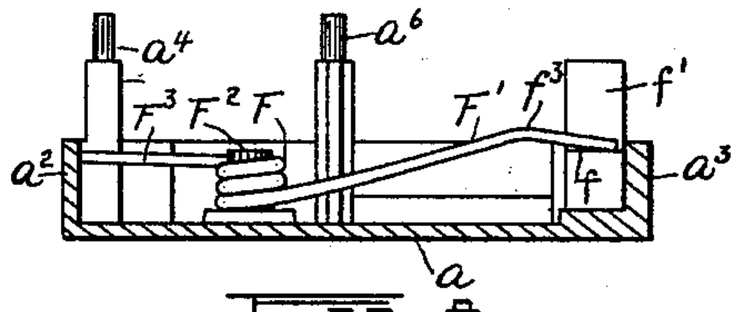


Fig. 8.

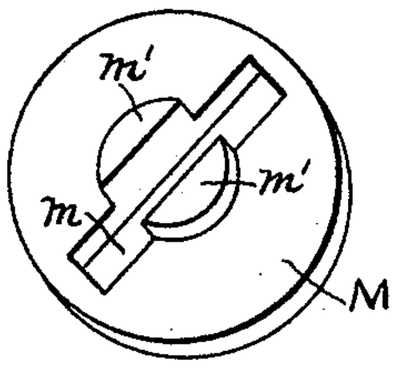


Fig. 10.

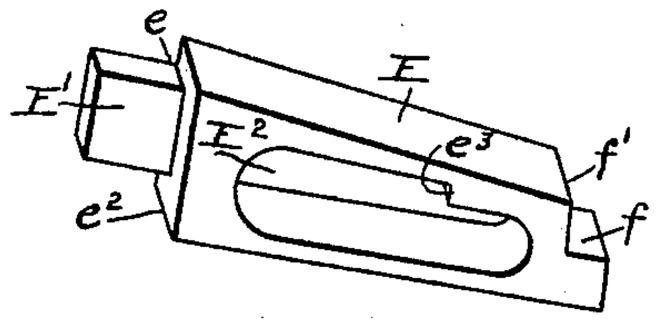
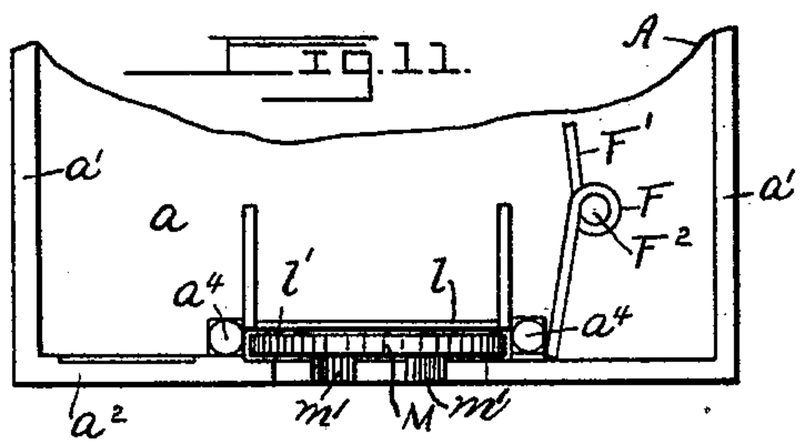


Fig. 9.

Fig. 11.



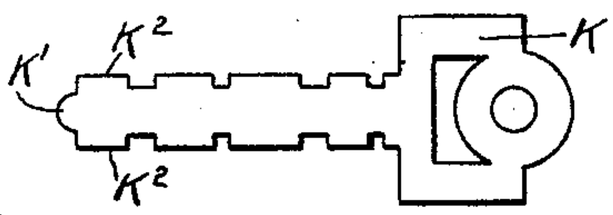


Fig. 12.

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UNITED STATES PATENT OFFICE.

EDWARD T. FRAIM, OF LANCASTER, PENNSYLVANIA.

PADLOCK.

SPECIFICATION forming part of Letters Patent No. 582,632, dated May 18, 1897.

Application filed April 15, 1896. Serial No. 587,588. (No model.)

To all whom it may concern:

Be it known that I, EDWARD T. FRAIM, a citizen of the United States, residing at Lancaster, in the county of Lancaster, State of Pennsylvania, have invented certain Improvements in Padlocks, of which the following is a specification.

This invention relates to improvements in that class of padlocks in which the shackle is engaged in the case by a transversely-sliding bolt; and the objects of my improvements are, first, to produce a cheap, simple, and secure lock wherein the bolt is positively held in a fixed position when engaged with or disengaged from the shackle, and, second, to produce a keyhole-guard of cheaper construction than those now in use.

The invention consists in the construction and combination of the various parts hereinafter fully described, and then pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a perspective view of a lock embodying my improvements, showing the shackle in a locked position; and Fig. 2, a similar view showing the position of the parts when the swinging limb of the shackle is disengaged from the case. Fig. 3 is a perspective inside view of the body of the lock-case; Fig. 4, a similar inner face view of the closing-cap; Fig. 5, a vertical section on broken line 5 5, Fig. 1; Fig. 6, a similar view on broken line 6 6, Fig. 2; and Fig. 7, a like view on the said broken lines, the parts being shown in the position occupied thereby when the bolt is raised to be disengaged from the swinging limb of the shackle. Fig. 8 is a vertical section on broken line 8 8, Fig. 1. Fig. 9 is a perspective view of the locking-bolt; Fig. 10, a similar view of the keyhole-guard; Fig. 11, a top view of the lower end of the body of the case, showing the keyhole-guard in place; Fig. 12, a face view of the key; and Fig. 13, a vertical transverse section of the case, showing a modification in the construction of the bolt.

In this lock the case is centrally divided parallel with the front and back plates thereof, and for the purposes of this specification the section of the case containing the shoulder preventing longitudinal movement of the bolt is termed the "body" of the case and the other section the "closing-cap."

Referring to the details of the drawings, A indicates the body of the case, comprising the back plate a, side walls a', bottom wall a^2, and top wall a^3. This portion of the case is provided with the usual rivet-pins a^4, a^5, and a^6, whereby the closing-cap, to be described, is secured to the body of the case.

B is the shackle, having its fast limb B′ pivoted on the base of rivet-pin a^5. The swinging limb B^2 of the shackle has a tongue or reduced end b thereon, adapted to enter an aperture b' in top wall a^3 of the case, and in one side of tongue b is a notch b^2, constructed to be engaged by a tongue on the locking-bolt to be described.

A^4 indicates the closing-cap, having a front plate a^7 and walls a', a^2, and a^3, similar to and constructed to register with the walls of the body of the case.

D D are registering partitions located in both sections of the case parallel with top wall a^3, leaving a channel d between said partitions and wall, and in the meeting edges of the parts of partitions D D are semicircular recesses d', having wings d^2, which when said edges are united form a key-opening for a flat key K, recesses a^8 also being formed in the meeting edges of the parts of top wall a^3 opposite key-opening d' d^2, that form a seat for the heel K′ of key K. On the back plate a is a shoulder d^3 in line with channel d and adjacent to the base of rivet-pin a^5.

E represents a sliding bolt having a tongue E′ thereon, constructed to engage notch b^2 of the shackle. Tongue E′ forms a shoulder e on the top or outer face of bolt E, constructed to engage a groove e', located in top wall a^3 and opening into aperture b' of said wall, whereby the retraction of the bolt is limited. This tongue also forms a shoulder e^2 on the back of the bolt, constructed to engage a rib a^9 on back plate a and extending across the end of channel d adjacent to aperture b', so that the movement of the bolt to engage the notch in the shackle may be limited to prevent undue pressure on tongue b. Through the bolt is an opening E^2, oval in general outline and having a lip e^3 in its upper periphery.

The front of the bolt is of a depth to fit

snugly between the front and back plates of the case, and from the front the bolt tapers to the back or rear end, whereby that end may be raised to travel over shoulder d^3, the shoulder e^2 constituting a fulcrum about which the rear end of the bolt vibrates, as will be explained.

If desirable, the bolt may be made of uniform depth throughout its length and bearing-lugs d^4 d^5 be constructed, respectively, on the front plate a^7 and the back plate a to guide the bolt in its movement and to form a fulcrum for its forward end, as shown in Fig. 13, or said forward end may be fulcrumed in any other desirable manner, but I prefer that first described.

The outer or front corner of the back or rear end of the bolt is cut away, so as to form a horizontal bearing f and a vertical bearing f', engaged by an arm F′ of a spring F. This spring is coiled around a stud F^2 on back plate a, and the arm F^3 thereof bears against the base of the adjacent rivet-pin a^4. Arm F′ of this spring has an upward or outward curve f^3 therein, as shown in Fig. 8, to increase its downward pressure on bearing f.

Rivet-pin a^6 is set in from the adjacent side wall a' and is connected with said wall by a partition g, having therein a notch g', this partition and notch being located to register with a similar partition and notch g and g', respectively, in the closing-cap, and on the back and front plates, respectively, are ribs g^2, connecting the centers of partitions g with the middle of the side walls of aperture b', through which the tongue of the swinging limb of the shackle engages the lock-case. The base of rivet-pin a^6 also has an inwardly-extended projection a^{10}, that forms a support for the front plate when said pin a^6 is being riveted over.

Through the opening formed in united partitions g by notches g' there passes the stem h of a plunger, having a head II, adapted to engage between tongue E′ of bolt E and the adjacent side wall a' of the case to close aperture b'. In the opposite bearing sides of head II are grooves h^3, that receive or take over ribs g^2 and guide said head in its movement. On stem h, behind partition g, is a boss h', and around the extremity h^2 of said stem is coiled a spring S, the free end whereof rests in a recess S′ in bottom wall a^2.

In operating, the swinging limb of the shackle being locked in the case, the key is inserted in the lock until heel K′ thereof enters its seat a^8 in top wall a^3 and the forward portion K^2 of the bit of said key engages key-opening E^2 of bolt E. As the key is turned, as shown by the arrow in Fig. 7, bit K^2 engages the curved upper wall of key-opening E^2 and raises the rear end of bolt E until the same is lifted above shoulder d^3, at which time said bit contacts with lip e^3 of the bolt and forces said bolt back against the tension of spring-arm F′ until shoulder e on the top of the bolt bears against the shoulder formed by groove e'. At the same time tongue E′ of said bolt is withdrawn from notch b^2 of the swinging limb of the shackle, when plunger-head II, acting under the impulse of spring S, ejects said swinging limb of the shackle from the case and is interposed between the bolt-tongue E′ and the adjacent side wall of the case. In again locking the shackle in the case the swinging limb is closed down, tongue b pushing in the plunger-head and clearing the tongue on the bolt, which is again engaged with said limb under the tension of spring-arm F′, that not only urges the bolt forward, but also forces the rear end thereof into engagement with shoulder d^3.

Rivet-pins a^4 are located adjacent to bottom wall a^2 on opposite sides of the keyhole, and parallel with said wall, on both the front and back plates of the case, are formed oppositely-located concave-edged ribs l, the ends whereof are connected with said bottom plate, the sockets l' between said ribs l and the bottom plate having annularly-shaped bottoms that form bearings for an annular keyhole-guard M, having therein a slot m, that extends through a cylindrical boss m' on the outer face thereof. Boss m' engages the central annular portion of the keyhole in the bottom wall of the case, said central portion of the keyhole having the usual wings, and when the keyhole-guard is in its normal position the slot therein and in boss m' registers with wing-openings m^3. Heretofore these keyhole guard-plates have been made with a cylindrical boss on each side. My keyhole guard-plate only has one on the outer face. The advantage in this construction is that the plate can be cast without the use of a core, thus lessening the cost of production.

In addition to the projections on front plate a^7 heretofore described there is a rib N on said plate, located between partition D and the keyhole, that serves as a ward for the key and has a notch n therein to receive the portion of the stem of said key connecting the adjacent portions of the bit thereof. There is also a stud N′ on the front plate, which engages and holds in position arm F′ of spring F.

The key used with this lock is flat, as shown, but I do not limit myself to the use of a key of that shape, as any key that can be adapted to the lock may be employed; neither do I restrict myself to the other details of the construction herein shown and described, as it is obvious that many changes may be made therein without departing from the principle and scope of my invention.

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

1. The combination, in a lock, of a wall of the case, having a recess or groove therein, a partition parallel with said wall, a rib across the forward end of the channel between said wall of the case and said partition, a bolt in said channel, and a tongue on the forward

end of the bolt and forming a shoulder on each of two sides thereof, one of said shoulders engaging said recess or groove in the wall of the case and the other shoulder engaging said rib, substantially as and for the purpose specified.

2. The combination, in a lock, of a wall of the case, having a recess or groove therein, a partition parallel with said wall, a shoulder in the case at the rear end of the channel between said wall of the case and the partition, a bolt in the channel, having a shoulder adapted to engage the shoulder at the rear end of said channel, a tongue on the forward end of the bolt and forming a shoulder on the face thereof adjacent to said wall, said shoulder adjacent to the wall engaging the recess or groove therein, and a spring having a downward and forward pressure on the rear end of the bolt, substantially as and for the purpose specified.

3. The combination, in a lock, of a wall of the case, having a recess or groove therein, a partition parallel with said wall, a shoulder in the case at the rear end of the channel between said wall of the case and the partition, a rib across the forward end of said channel, a bolt in the channel, having a shoulder adapted to engage the shoulder in the rear end of said channel, a tongue on the forward end of the bolt and forming a shoulder on each of two sides thereof, one of said shoulders engaging said recess or groove in the wall of the case and the other shoulder engaging said rib, and a spring having a downward and forward pressure on the rear end of the bolt, substantially as and for the purpose specified.

4. The combination, in a lock, of a shoulder in the case, a bolt having an opening therein with a curved wall, a lip projecting from said wall, a shoulder on the rear end of the bolt constructed to take against the shoulder in the case, and a key having a bit adapted to engage the said curved wall and raise the rear end of the bolt and then to contact with said lip and retract the bolt.

5. The combination, in a lock, of a partition located below the top wall of the case and having a key-opening therein, a bolt in the channel between said top wall and the partition and having an opening therein with a curved wall, a lip projecting from said curved wall, a fulcrum for the front end of the bolt, a shoulder on the rear end of the bolt taking against a shoulder in the case, a tongue on the bolt constructed to engage the swinging limb of the shackle, a plunger-head adapted to play in line with the end of the swinging limb of the shackle and interpose between the tongue of the bolt and the side wall of the case, and a key having a bit constructed to engage the curved wall of the bolt and disengage the shoulder thereon from the shoulder in the case and then to contact with said lip and retract the bolt, substantially as and for the purpose specified.

6. The combination, in a lock, of a partition located below the top wall of the case and having a key-opening therein, a bolt in the channel between said top wall and the partition and having an opening therein with a curved wall, a lip projecting from said curved wall, a fulcrum for the front end of the bolt, a shoulder on the rear end of the bolt taking against a shoulder in the case, the bolt having a recess in its rear end, a spring engaging said recess and bearing downward and forward thereon, and a key having a bit constructed to engage the curved wall of the bolt and disengage the shoulder thereon from the shoulder in the case and then to contact with said lip and retract the bolt, substantially as and for the purpose specified.

7. The combination, in a lock, of a partition located below the top wall of the case and having a key-opening therein, a bolt in the channel between said top wall and the partition and having an opening therein with a curved wall, a lip projecting from said curved wall, a fulcrum for the front end of the bolt, a shoulder on the rear end of the bolt taking against a shoulder in the case, a shoulder on the bolt engaging a recess in the top wall of the case, to limit the backward movement of the bolt, the bolt having a recess in its rear end, a spring engaging said recess in the bolt and bearing downward and forward thereon, and a key having a bit constructed to engage the curved wall of the bolt and disengage the shoulder thereon from the shoulder in the case and then to contact with said lip and retract the bolt, substantially as and for the purpose specified.

8. The combination, in a lock, of a partition located below the top wall of the case and having a key-opening therein, a bolt in the channel between said top wall and the partition and having an opening therein with a curved wall, a lip projecting from said curved wall, a fulcrum for the front end of the bolt, a shoulder on the rear end of the bolt taking against a shoulder in the case, a shoulder on the bolt engaging a recess in the top wall of the case, to limit the backward movement of the bolt, the bolt having a recess in its rear end, a spring engaging said recess in the bolt and bearing downward and forward thereon, a tongue on the bolt constructed to engage the swinging limb of the shackle, a spring-actuated plunger-head playing in line with the end of the swinging limb of the shackle and adapted to interpose between the tongue of the bolt and the side wall of the case, and a key having a bit constructed to engage the curved wall of the bolt and disengage the shoulder thereon from the shoulder in the case and then to contact with said lip and retract the bolt, substantially as and for the purpose specified.

9. The combination, in a lock, of a partition located below the top wall of the case and having a key-opening therein, a bolt fulcrumed on its forward end and tapering to-

ward its rear end, the bolt sliding in the channel between said top wall and the partition and having an opening therein with a curved wall, a lip projecting from said curved wall, a tongue on the forward end of the bolt constructed to engage the swinging limb of the shackle and forming a shoulder engaging a recess in the top wall of the case, to limit the backward movement of the bolt, a shoulder on the rear end of the bolt taking against a shoulder in the case, the bolt having a recess in its rear end, a spring engaging said recess in the bolt and bearing downward and forward thereon, a rib across the forward end of said channel and limiting the forward movement of the bolt, a spring-actuated plunger-head playing in line with the end of the swinging limb of the shackle and adapted to interpose between the tongue of the bolt and the side wall of the case, and a key having a bit constructed to engage the curved wall of the bolt and disengage the shoulder on the rear end thereof from the shoulder in the case and then to contact with said lip and retract the bolt, substantially as and for the purpose specified.

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