

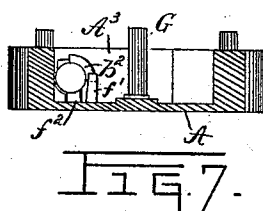
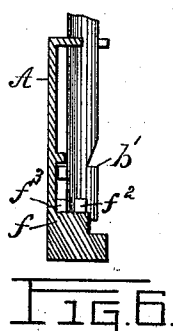
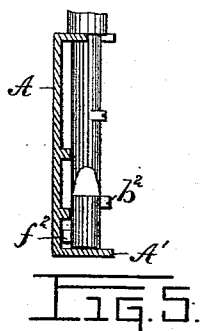
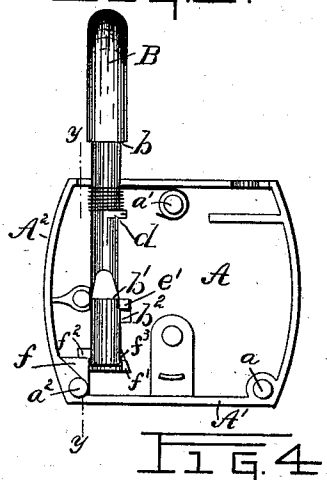
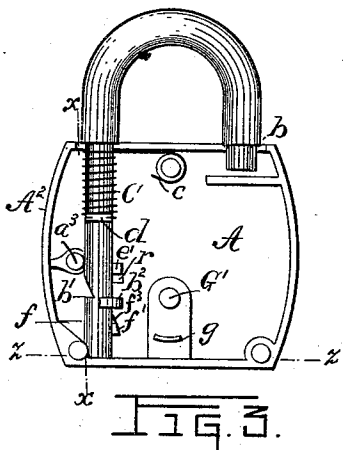
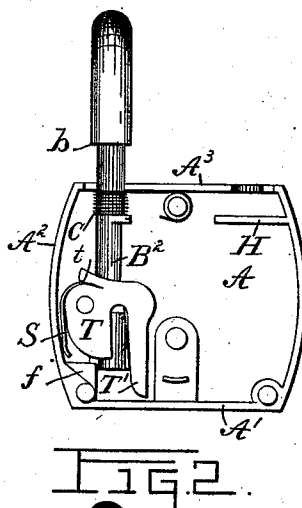
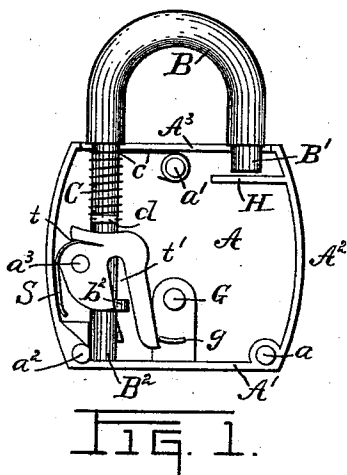
(No Model.)

E. T. FRAIM.
PADLOCK.

2 Sheets—Sheet 1.

No. 532,234.

Patented Jan. 8, 1895.



Witnesses
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H. H. W. Guinier

Inventor
Edw. J. Fraim
By his Attorney
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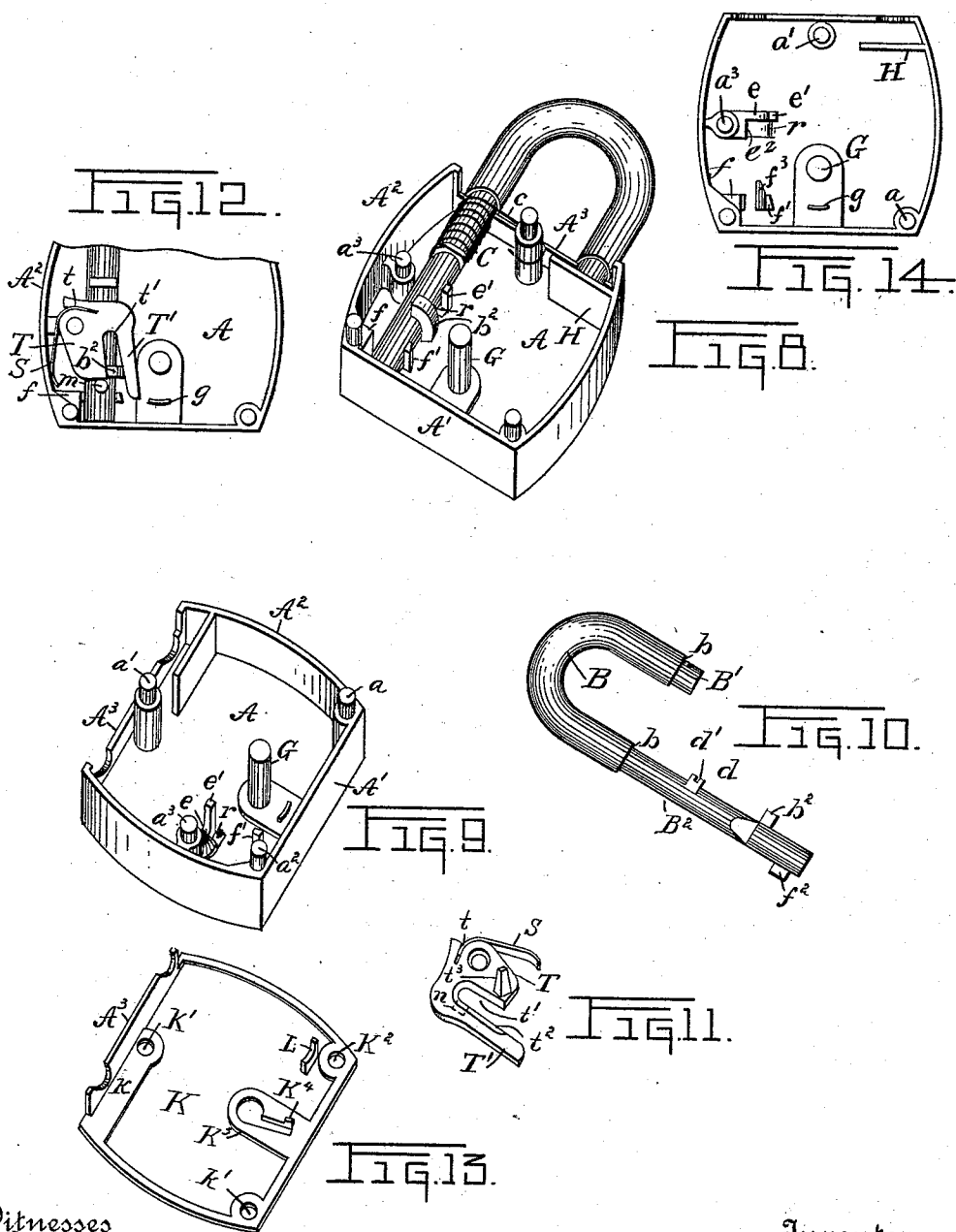
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E. T. FRAIM.
PADLOCK.

2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

EDWARD T. FRAM, OF LANCASTER, PENNSYLVANIA.

PADLOCK.

SPECIFICATION forming part of Letters Patent No. 532,234, dated January 8, 1895.

Application filed August 20, 1894. Serial No. 520,781. (No model.)

To all whom it may concern:

Be it known that I, EDWARD T. FRAM, a citizen of the United States, residing in Lancaster, in the county of Lancaster and 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 one end of the shackle is permanently secured in the case, and in which said shackle has both a vertical and vibratory movement in its bearings; and the object of the invention is to simplify and cheapen the construction of locks of that class.

The invention consists in the construction and combination of the various parts, as hereinafter fully described, and then specifically pointed out in the claims, and is illustrated in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side view of the lock with the front or closing plate removed, showing the shackle in a locked position, and Fig. 2 a similar view, but showing the shackle open and having its free end swung away from the case. Figs. 3 and 4 are similar, respectively, to Figs. 1 and 2, but with the tumbler removed. Figs. 5 and 6 are vertical sections, respectively, on broken lines $x-x$ and $y-y$ of Figs. 3 and 4. Fig. 7 is a transverse section on broken line $z-z$ of Fig. 3. Fig. 8 is a perspective view of the lock, showing the shackle closed and the tumbler removed, and Fig. 9 a similar view with the case in a different position and having both the tumbler and shackle removed. Fig. 10 is a perspective view of the shackle, and Fig. 11 a bottom perspective view of the tumbler. Fig. 12 is an open side view of the lower end of the case, showing a modification in the construction of the operating parts. Fig. 13 is a perspective view of the inner face of the closing-plate. Fig. 14 is a plan view of the case, the closing-plate and the operating parts being removed. Similar letters indicate like parts throughout the several views.

Referring to the details of the drawings, A indicates the back of the case; A', the bottom; A², the sides; A³, the top; and a, a' and a^2 , rivet pins formed with the case and by which the front or closing plate is secured thereto, as is usual.

B indicates a shackle, having the end B' of the short arm reduced, so as to form a shoulder b to close the perforation through which it passes when the shackle is fully engaged with the lock. The lower end B² of the long arm of the shackle is also reduced to form a shoulder b similar to that on arm B, and for a like purpose. In and near the extremity of arm B² there is a recess forming a shoulder b' , and on the opposite side of said arm and about in line with shoulder b' is located a segmental lug b^2 . About midway between shoulders b and b' of arm B² is a projection d having therein a groove d' , as shown in Fig. 10. A spring C is coiled about arm B² and has one end secured in groove d' by the riveting over of the sides thereof and the other c passing over said arm B² and above and around the base of rivet-pin a' . This arrangement of spring C acts to force the free end of the shackle into the case and also swings said free end away from the case when raised above it.

A rib e extends outward from a stud a^3 , located adjacent to one of the sides of the case, and has a post e' on its outer end, the top or outer surface of the rib being concave in side-view and forming a bearing for arm B². Below and adjacent to rib e is formed parallel therewith a concave recess r , which receives lug b^2 when the swinging end of the shackle is freed from the case and swung aside, the swing of the shackle being limited by the engagement of lug b^2 with a shoulder, e^2 , at the end of recess r formed by an inward extension of the base of stud a^3 below rib e . The base of rivet-pin a^2 in the corner of the case below rib e is extended upward and squared to form a bearing, f , for one side of arm B², and outside of said base there is a post, f' , forming a bearing for the other side of said arm. On and near the end of the long arm of the shackle is a lug f^2 , so located that when the short arm of the shackle is freed from the case and swung aside, as before stated, it laps the face of bearing f and prevents the retraction of the shackle. When the shackle is turned to re-engage the short arm thereof with the case such movement is stopped when said short arm registers with the opening through which it enters the case by the engagement of lug f^2 with a tongue f^3 , extending upward from

post f' . Thus, lugs b^2 and f^2 each perform double service. Lug b^2 limits the outward movement and the outward turn of the shackle, and lug f^2 prevents the retraction of the shackle and stops the inward turn thereof when its short arm registers with the opening through which it enters the case.

A downwardly extending tumbler is pivoted on stud a^3 and extends over the long arm of the shackle. This tumbler comprises a main body T and a parallel arm T'. In a cleft in the top of the body T is secured the end t of a flat spring, S, that extends outward and downward between said body and the adjacent side of the case and has its free end bearing against said side. A slot t' separates body T and arm T' and has its lower end open, forming a space for the reception and movement of the upper end of segmental lug b^2 . For the same reason the inner and under edge of arm T' is beveled, as shown at t^2 in Fig. 11. Depending from the under side of body T is a detent t^3 , held in engagement with shoulder b' of the arm B² by spring S when the shackle is locked in the case.

G indicates the key-post, having beneath it a segmental ward, g , adapted to be engaged by a notch in the key. Post f' is also extended toward the key-hole and has its adjacent edge thereto beveled transversely to act as a ward for the edge of the key bit. Beneath the opening in the top of the case for the short end of the shackle there is a partition or wall H.

K indicates the front or closing-plate of the case and has a portion of the top plate A³ of the case formed thereon, a reinforcement, k , adapted to rest on partition or wall H, and holes k' k^2 , constructed to receive rivet-pins a , a' and a^2 . The sides of the key-hole are reinforced, as shown at k^3 , and on one side of the hole is formed a lug K⁴, which bears against the bottom wall A' of the case. Adjacent to rivet-hole k^2 is located a stay-rib, L, having a concave inner edge constructed to take over the end of the long arm of the shackle opposite post f' and prevent lateral movement thereof.

When the shackle is locked in the case and the key is turned to unlock it a portion of the bit engages arm T' and presses the tumbler toward the side of the case sufficiently to disengage detent t^3 from shoulder b' of the long arm of the shackle. As this disengagement is effected another portion of the key bit interlocks behind segmental lug b^2 and forces the shackle upward until the short arm thereof clears the case, when the resilient action of spring C turns said short arm outward from the case. By this outward movement of the short arm of the shackle the long arm thereof is revolved in the case, whereby lug f^2 is lapped over the upper face of the bearing f , formed at the base of rivet-pin a^2 , thus preventing the retraction of the shackle by the action of spring C. Undue

upward movement of the shackle is prevented by the engagement of segmental lug b^2 with rib e and post e' ; a way for the revolving movement of the segmental lug with the turning of the shackle being afforded by the formation of a recess, r , adjacent to the lower side of rib e and post e' . The short arm of the shackle is again locked in the case by turning the same so that its end registers with its opening therein. This movement disengages lug f^2 from the upper face of bearing f and spring C forces the shackle down into the lock, when the pressure of spring S again engages detent t^3 with the shoulder b' of the long arm of the shackle.

In Fig. 12 is shown a modification of the mechanism for locking the shackle in the case. With this construction, the detent t^3 is omitted on the bottom of the tumbler and the slot t' , separating the body T and arm T', is somewhat widened, and a shoulder is formed on the long arm of the shackle by fixing a stud, m , thereon in position to engage the lower edge of the body of the tumbler and lock the shackle in the case when fully engaged therewith. When the key forces the tumbler back the stud m enters and travels up slot t' as the shackle is raised, and as said shackle is turned stud m is turned downward, passing through a groove in the under side of arm T', as shown by dotted lines n , Fig. 11.

I do not confine myself to the details of construction herein shown and described, as it is obvious that many changes may be made therein without departing from the spirit of my invention.

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

1. In a padlock, the combination, with a vertically movable shackle having a shoulder on one arm thereof, of a key adapted to engage said shoulder and raise the short arm of the shackle out of the lock-case.

2. In a padlock, the combination, with a vertically movable shackle having a shoulder on the long arm thereof, of a key adapted to take under said shoulder and raise the short arm of the shackle out of the case, substantially as specified, and a device constructed to engage said long arm of the shackle and lock the short arm thereof in the case.

3. In a padlock, the combination, with a vertically movable shackle having a shoulder on the long arm thereof, of a spring actuated tumbler having a detent adapted to engage the shoulder, and a lug on said arm located to be acted on by the key to raise the shackle as the detent is disengaged from said shoulder, substantially as specified.

4. In a padlock, the combination, with a vertically movable shackle having a shoulder on the long arm thereof, of a spring-actuated tumbler engaging said shoulder, a guide for the long arm of the shackle, and a lug on said arm located to be acted on by the key to raise

the shackle and to engage said guide to limit the outward movement of said shackle, substantially as and for the purpose specified.

5. In a padlock, the combination, with a vertically movable shackle having a shoulder on the long arm thereof, of a spring-actuated tumbler engaging said shoulder, a lug on said arm located to be acted on by the key to raise the shackle, a spring coiled about the long arm of the shackle and adapted to turn the short arm thereof from the case as it clears the same, and a lug on said long arm of the shackle adapted to lap above a shoulder in the case as said short arm is turned from the case, substantially as and for the purpose specified.

6. In a padlock, the combination, with a vertically movable shackle having a shoulder on the long arm thereof, of a spring-actuated tumbler engaging said shoulder, a lug on said arm located to be acted on by the key to raise the shackle, a guide for the long arm of the shackle placed above said lug in position to be engaged thereby as the shackle is raised, a spring coiled around the long arm of the shackle and adapted to turn the short arm thereof from the case as it clears the same, and a lug on said long arm of the shackle adapted to lap above a shoulder in the case, as said short arm is turned from the case, substantially as and for the purpose specified.

7. In a padlock, the combination, with a shackle having a shoulder on the long arm thereof, of a spring actuated tumbler lapping said arm and engaging the shoulder, the tumbler having an open ended slot, a lug on said long arm having one end engaged in said slot, the said lug being located to be engaged by a key and raise the shackle, a spring coiled around said arm of the shackle and adapted to turn the short arm thereof from the case as it clears the same, and a guide for the long arm of the shackle located to be engaged by the lug as the short arm of said shackle turns from the case, substantially as and for the purpose specified.

8. In a padlock, the combination, with a shackle having a shoulder on the long arm thereof, of a spring actuated tumbler lapping said arm and engaging the shoulder, the tumbler having an open ended slot, a lug on said long arm having one end engaged in said slot, the said lug being located to be engaged by a key and raise the shackle, a spring coiled around said arm of the shackle and adapted to turn the short arm thereof from the case as it clears the same, a guide for the long arm of the shackle located to be engaged by the lug as the short arm of said shackle turns from the case, and a lug on said long arm of the shackle adapted to lap above a shoulder

in the case as said short arm is turned from the case, substantially as and for the purpose specified.

9. In a padlock, the combination, with a shackle having a shoulder on the long arm thereof, and a tumbler adapted to lock the shackle in the case, of a lug on said long arm located to be engaged by a key to raise the shackle, a spring coiled around the long arm of the shackle and adapted to turn the short arm thereof from the case as the shackle is lifted by the key and to re-engage said short arm with the case as the short arm registers with an opening in the case, and a lug on said long arm of the shackle adapted to lap above a shoulder in the case as said short arm is turned from the case, substantially as and for the purpose specified.

10. In a padlock, the combination, with a shackle having a shoulder on the long arm thereof, and a tumbler constructed to lock the shackle in the case, of a lug on said long arm, the said lug being located to be engaged by a key to raise the shackle, a guide for the long arm of the shackle placed above said lug in position to be engaged thereby as the shackle is raised, a spring coiled around the long arm of the shackle and adapted to turn the short arm thereof from the case as the shackle is lifted by the key and to re-engage said short arm with the case as the short arm registers with an opening in the case, and a lug on said long arm of the shackle adapted to lap above a shoulder in the case as said short arm is turned from the case, substantially as and for the purpose specified.

11. In a padlock, the combination, with a vertically movable shackle constructed to turn from the case about its long arm, of shoulders in the case, and a lug on said long arm adapted to engage one of said shoulders to limit the upward movement of the shackle and to engage another shoulder to limit the outward turn of said shackle, substantially as specified.

12. In a padlock, the combination, with a vertically movable shackle, of a spring coiled about the long arm thereof and adapted to turn the shackle from the case about said long arm and to retract said shackle, shoulders in the case, and a lug on said long arm constructed to engage one of said shoulders to prevent the retraction of the shackle and to engage another shoulder to limit the inward turn of said shackle, substantially as specified.

EDWARD T. FRAM.

Witnesses:

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WM. R. GERHART.