(No Model.) 2 Sheets—Sheet 1

W. F. TROAST & J. B. AMWAKE.

PADLOCK.

No. 578,791. Patented Mar. 16, 1897.

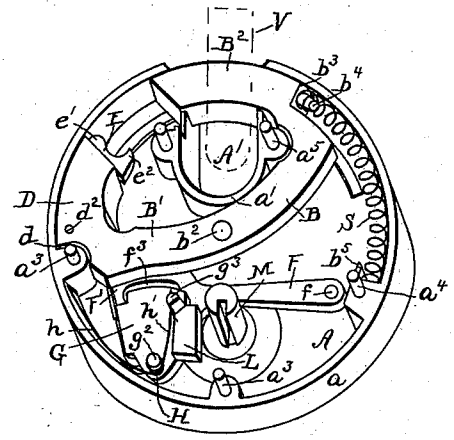


Fig. 1.

Fig. 3.

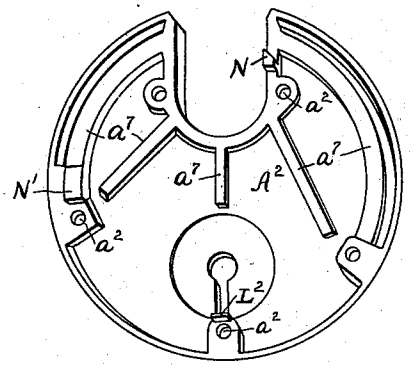
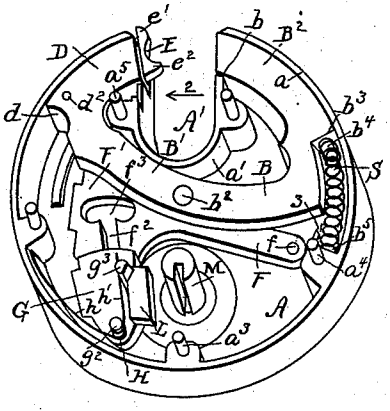


Fig. 2.



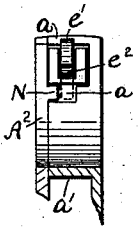


Fig. 12.

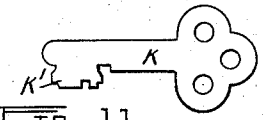


Fig. 11.

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

(No Model.) 2 Sheets—Sheet 2.

W. F. TROAST & J. B. AMWAKE.

PADLOCK.

No. 578,791. Patented Mar. 16, 1897.

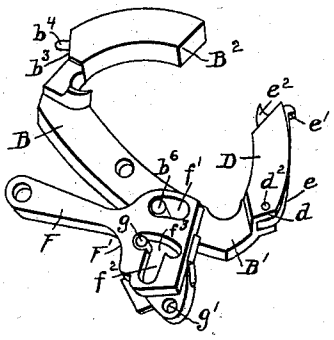

Fig. 5.

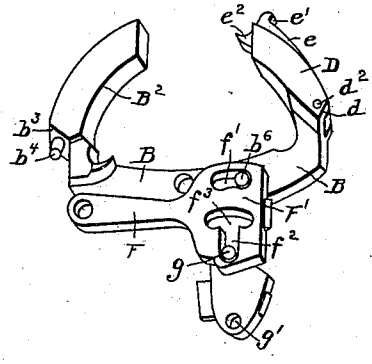

Fig. 6.

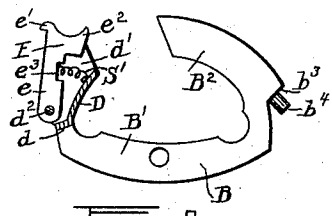

Fig. 8.

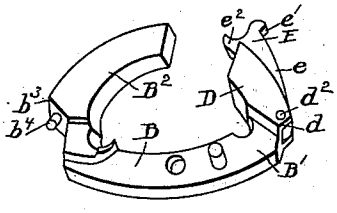

Fig. 7.

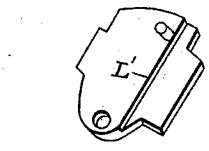

Fig. 10.

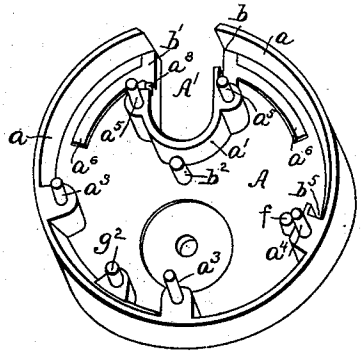

Fig. 4.

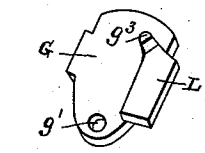

Fig. 9.

Witnesses
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UNITED STATES PATENT OFFICE.

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PADLOCK.

SPECIFICATION forming part of Letters Patent No. 578,791, dated March 16, 1897.

Application filed August 15, 1895. Serial No. 559,371. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM F. TROAST and JACOB B. AMWAKE, citizens of the United States, residing at Lancaster, 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 a shackle is formed by projecting a bolt across the mouth of a bight in the case; and the invention consists in certain novel features of construction and combination of parts, whereby we obtain an easy-working padlock of compact and simple construction, as will be hereinafter fully described, and then pointed out in the claims.

Our invention is illustrated in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of the interior of the lock, the bolt and the operating mechanism being shown in the position occupied thereby when said bolt is engaged with a staple; and Fig. 2, a similar view, but showing the same parts in the position occupied by them when the bolt is drawn back into the case. Fig. 3 is a perspective inner face view of the closing-plate; and Fig. 4, a similar view of the case, the bolt and the actuating mechanism being removed. Fig. 5 is a perspective bottom view of the bolt and locking mechanism detached from the case, showing the parts in the position they occupy when the bolt is engaged with a staple; and Fig. 6, a similar view of the same parts when in the position they occupy when the bolt is drawn back into the case. Fig. 7 is a bottom perspective view of the bolt-lever and bolt; and Fig. 8, a top plan view thereof, a part being cut away. Fig. 9 is a perspective view of the tumbler, and Fig. 10 a similar view of a modified form thereof. Fig. 11 is a face view of the key. Fig. 12 is a view of the side of the bight indicated by arrow 2.

Similar letters indicate like parts throughout the several views.

Referring to the details of the drawings, A indicates an annular back plate, having a rim a formed therewith.

A′ is a bight or recess in the edge of the case, the lower portion of which bight is surrounded by a rim a', the ends whereof are separated from the ends of rim a by openings $b\ b'$.

A^2 is a closing-plate, having perforations a^2, adapted to engage rivet-pins $a^3\ a^4\ a^5$, formed with the body A a of the case, as is usual.

b^2 is a fulcrum-pin located below the center of rim a', and on pin b^2 is fulcrumed a bolt-lever having arms B B′.

B^2 is a segmental bolt on the end of arm B and adapted to oscillate in contact with rim a through opening b. The bolt forms a shoulder b^3 with arm B adjacent to rim a, and from the shoulder projects a horizontal stud b^4, embraced by one end of a coiled spring S, that lies against rim a and has its other end engaging a socket b^5 in the base of rivet-pin a^4.

Lever-arm B′ carries a segmental tongue D, that oscillates in contact with rim a through the adjacent opening b'. Tongue D also has a shoulder d, adapted to engage the base of the rivet-pin a^3 on the side of the case, thereby limiting the backward movement of said tongue. Tongue D has a horizontal groove d' in its outer edge, wherein the inner end of the stem e of a latch is hinged on a pin d^2. On the outer edge of head E of the latch is a hook e', constructed to take over the adjacent extremity of rim a when the tongue is engaged with the opening b', and on the lower portion of head E is a lip e^2, adapted to be engaged by a staple (shown by broken lines V in Fig. 1) entering bight A′ to disengage hook e' from rim a. The hook e' is actuated to engage the extremity of rim a by a coiled spring S′, having one end bearing on the bottom of groove d' and the other end seated in a recess e^3, in the inner edge of stem e, as seen in Fig. 8, and when said hook is released from rim a spring S projects bolt B^2 across bight A′ into opening b', engaging the same with staple V.

The bolt B^2 and the tongue D extend below the lower face of bolt-lever B B′ and rest on segmental ribs a^6 on the back plate of the case, whereby said lever is raised above the back plate. Beneath the bolt-lever plays a lever, through which the same is actuated against the tension of spring S. One end of stem F of the actuating-lever is pivoted on a stud f, adjacent to the base of rivet-pin a^4,

and on the other end is a head F′, having in its upper portion a curved slot f', engaged by a pin b^6 on the under side of arm B′. In the lower portion of said head F′ is a T-slot, the stem f^2 of which is on the side of the transverse part f^3 thereof opposite slot f'. This T-slot is engaged by a pin g on the under side of a tumbler G, as and for a purpose to be described.

It will be observed that the part f^3 of the T-slot is curved and that the stem f^2 is not radial to said curved part f^3, but is deflected, so as to allow said pin g to travel lengthwise thereof with the oscillating movement of the head F′ of the actuating-lever.

The tumbler G has a perforation g', through which it is engaged with a fulcrum-pin g^2, adjacent to the lower rivet-pin a^3. Pin g^2 projects above tumbler G and is embraced by the loop of a spring H, one arm, h, of which bears against rim a, and the other, h', against a stud g^3 on the outer face of tumbler G, whereby pin g of said tumbler is actuated to engage the inner end of part f^3 of the T-slot and the tumbler is held in the path of travel of the key.

L is a ward on the tumbler, constructed to be engaged by the bit K′ of the key K. The width of this ward is varied to adapt the tumbler to be actuated by different keys. This tumbler is actuated by the engagement of ward L with the bottom of the notch in the bit of the key.

In a modified construction of tumbler shown in Fig. 10 the tumbler is actuated by the engagement of the key-bit with the shoulder L′, the ward not being wide enough to reach the bottom of the notch in the key. The construction of these tumblers can be modified to any extent to adapt them to be actuated by keys of different construction. The stud L^2 on the closing-plate serves to prevent the use of a key having a bit longer than that required to open the lock or itself serves as a ward.

M is a slotted key-guide of the usual construction, having the ends respectively journaled in the front and back plates of the lock-case.

On the inner face of the closing-plate are ribs a^7, that bear on the lever B B′ and the parts connected therewith to assist in holding them in their proper positions. The stud N forms, with depressed wall a^8, a passage for lip e^2 of the latch, as the head of the same passes through opening b', while the boss N′ bears on the inner end of spring S to secure the same in position in socket b^5, as shown by broken lines 3, Fig. 2.

In operating, the parts being in the position shown in Figs. 1 and 5, the key turns the tumbler back until pin g registers with stem f^2 of the T-slot, simultaneously with which the bit of the key engages and raises head F′ of the actuating-lever, which, through pin b^6, elevates arm B′, drawing bolt B^2 back into the case and the head E of the latch into bight A′ until the hook e' on said head takes over the adjacent end of rim a, locking the bolt in its retracted position. As the head F′ is raised pin g travels down the stem of the T-slot. In inserting a staple into bight A′ it is done so as to engage said staple with lip e^2, whereby hook e' is disengaged from the end of rim a, when the tension of spring S projects bolt B^2 across bight A′ and restores the parts to the position previously occupied thereby. Should it be attempted to open the lock with a key having a bit of greater depth than that of the true key, the tumbler will be forced back until pin g passes stem f^2 of the T-slot before the bit engages the head F′, whereby said pin will engage the outer end of part f^3 of the T-slot and prevent any movement of the actuating-lever.

We do not confine ourselves 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 and scope of our invention. It is not necessary that the bolt and tongue operate contiguous to the edge wall of the case, though it is preferable, nor is it necessary that the bolt and tongue play through opposite openings in the sides of the bight; neither is it necessary that the actuating-lever and tumbler be arranged as shown, but it is thought that such arrangement is the best with the construction of the parts indicated.

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

1. The combination, in a padlock, of a case having a bight therein, a lever carrying a bolt adapted to be projected across the bight, a detent, a tongue connected with the lever, a latch pivoted in a groove in the tongue, a hook on the latch adapted to take over the detent, the engagement of the hook with the detent holding the bolt in a retracted position, a lip on the hook constructed to be engaged by a body entering the bight when the hook is engaged with the detent, whereby the hook is released from the detent, and means for automatically projecting the bolt across the bight when the hook is released from said detent, for the purpose specified.

2. The combination, in a padlock, of a case having a bight therein, a lever fulcrumed between its arms, a bolt on one of said arms constructed to be projected across the bight, a detent, a hook connected with the other lever-arm and adapted to take over the detent when the bolt is in a retracted position, a lip on the hook constructed to be engaged by a body entering the bight when the hook is engaged with the detent, whereby the hook is released from the detent, and means for automatically projecting the bolt across the bight when the hook is released from said detent, for the purpose specified.

3. The combination, in a padlock, of a case having a bight therein, a lever fulcrumed between its arms, a bolt on one of said arms, constructed to be projected across the bight, a

detent, a tongue on the other lever-arm, a latch pivoted in a groove in the tongue, a hook on the latch adapted to take over the detent when the bolt is in a retracted position, a lip on the hook constructed to be engaged by a body entering the bight when the hook is engaged with the detent, whereby the hook is released from the detent, and means for automatically projecting the bolt across the bight when the hook is released from said detent, for the purpose specified.

4. The combination, in a padlock, of an annular case having a bight therein, a lever fulcrumed between its arms, a segmental bolt on one of said arms playing adjacent to the rim of the case and constructed to be projected across the bight, a segmental tongue on the other lever-arm playing adjacent to the rim of the case on the side of the bight opposite the bolt, a latch pivoted in a groove in the tongue, a hook on the latch adapted to take over an end of the rim when the bolt is retracted, a lip on the hook constructed to be engaged by a body entering the bight when the hook is engaged with the end of the rim, whereby the hook is released from the end of the rim, and means for automatically projecting the bolt across the bight when the hook is released from said rim, for the purpose specified.

5. The combination, in a padlock, of an annular case having a bight therein, a lever fulcrumed between its arms below said bight, a segmental bolt on one of said arms playing adjacent to the rim of the case and constructed to be projected across the bight, a segmental tongue on the other lever-arm playing adjacent to the rim of the case on the side of the bight opposite the bolt, a latch pivoted in a groove in the tongue, a hook on the latch adapted to take over an end of the rim when the bolt is retracted, a lip on the hook constructed to be engaged by a body entering the bight when the hook is engaged with the end of the rim, whereby the hook is released from the end of the rim, and a coiled spring behind the bolt adjacent to the rim of the case, one end of said spring bearing against the heel of the bolt and the other end against a shoulder in the case, substantially as and for the purpose specified.

6. The combination, in a padlock, of a lever, a bolt on said lever, a lever through which the bolt-lever is actuated, a shifting connection between said levers, and a key adapted to impart motion to the actuating-lever, for the purpose specified.

7. The combination, in a padlock, of a lever, a bolt on said lever, a lever through which the bolt-lever is actuated, a pin on the bolt-lever engaging a curved slot in the actuating-lever, and a key adapted to impart motion to the actuating-lever, for the purpose specified.

8. The combination, in a padlock, of a lever, a bolt on said lever, a lever through which the bolt-lever is actuated, a shifting connection between said levers, and a tumbler securing the actuating-lever when the bolt is in a locking position, for the purpose specified.

9. The combination, in a padlock, of a lever, a bolt on said lever, a lever through which the bolt-lever is actuated, a shifting connection between said levers, a tumbler securing the actuating-lever when the bolt is in a locked position, and a shifting connection between the actuating-lever and the tumbler, for the purpose specified.

10. The combination, in a padlock, of a lever, a bolt on said lever, a lever through which the bolt-lever is actuated, a pin on the bolt-lever engaging a curved slot in the actuating-lever, a tumbler securing the actuating-lever when the bolt is in a locking position, and a shifting connection between the actuating-lever and the tumbler, for the purpose specified.

11. The combination, in a padlock, of a lever, a bolt on said lever, a lever through which the bolt-lever is actuated, a shifting connection between said levers, a tumbler, and a pin on the tumbler engaging a curved slot in the actuating-lever and securing said lever when the bolt is in a locking position, said pin shifting into a stem of said slot to permit movement of the actuating-lever, for the purpose specified.

12. The combination, in a padlock, of a lever, a bolt on said lever, a lever through which the bolt-lever is actuated, a shifting connection between said levers, the actuating-lever having a T-slot therein, a tumbler, and a pin on the tumbler engaging either end of the transverse part of said slot to secure the actuating-lever when the bolt is in a locking position, said pin shifting into the stem of said slot to permit movement of the actuating-lever, substantially as and for the purpose specified.

13. The combination in a padlock, of a lever, a bolt on said lever, a lever through which the bolt-lever is actuated, a pin on the bolt-lever engaging a curved slot in the actuating-lever, the actuating-lever having a T-slot therein, a tumbler, and a pin on the tumbler engaging either end of the transverse part of the T-slot to secure the actuating-lever when the bolt is in a locking position, said pin shifting into the stem of said slot to permit movement of the actuating-lever, substantially as and for the purpose specified.

14. The combination, in a padlock, of an actuating-lever having a slot therein, the parts of which slot form an angle, a tumbler, and a pin on the tumbler engaging the part of said slot formed lengthwise of the lever to hold said lever in a locked position, said pin shifting into the part of said slot transverse of the lever to permit movement thereof.

15. The combination, in a padlock, of an actuating-lever having a T-slot therein, a tumbler, a pin on the tumbler engaging either end of the transverse part of said slot to secure

the actuating-lever in a locked position, the pin shifting into the stem of said slot to permit movement of said lever, and a ward on the tumbler, substantially as and for the purpose specified.

16. The combination, in a padlock, of a case having a bight therein, a lever passing beneath the bight, a bolt on one arm of said lever constructed to be projected across the bight, a detent, a hook on the other arm of said lever and adapted to take over the detent when the bolt is in a retracted position, a lip on the hook and constructed to be engaged by a body entering the bight, whereby the hook is disengaged from the detent, means for automatically projecting the bolt across the bight when the hook is disengaged from the detent, a lever through which the bolt-lever is actuated, a shifting connection between the actuating-lever and the bolt-lever, and a tumbler adapted to secure the actuating-lever when the bolt is in a locking position, for the purpose specified.

17. The combination, in a padlock, of a case having a bight therein, a lever passing beneath the bight, a bolt on one arm of said lever constructed to be projected across the bight, a detent, a hook on the other arm of said lever and adapted to take over the detent when the bolt is in a retracted position, a lip on the hook and constructed to be engaged by a body entering the bight, whereby the hook is disengaged from the detent, means for automatically projecting the bolt across the bight when the hook is disengaged from the detent, a lever through which the bolt-lever is actuated, a shifting connection between the actuating-lever and the bolt-lever, the actuating-lever having a T-slot therein, a tumbler, a pin on the tumbler engaging the ends of the transverse part of said slot to secure the actuating-lever when the bolt is in a locking position, said pin shifting into the stem of said slot to permit movement of the actuating-lever, and a ward on the tumbler, substantially as and for the purpose specified.

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