

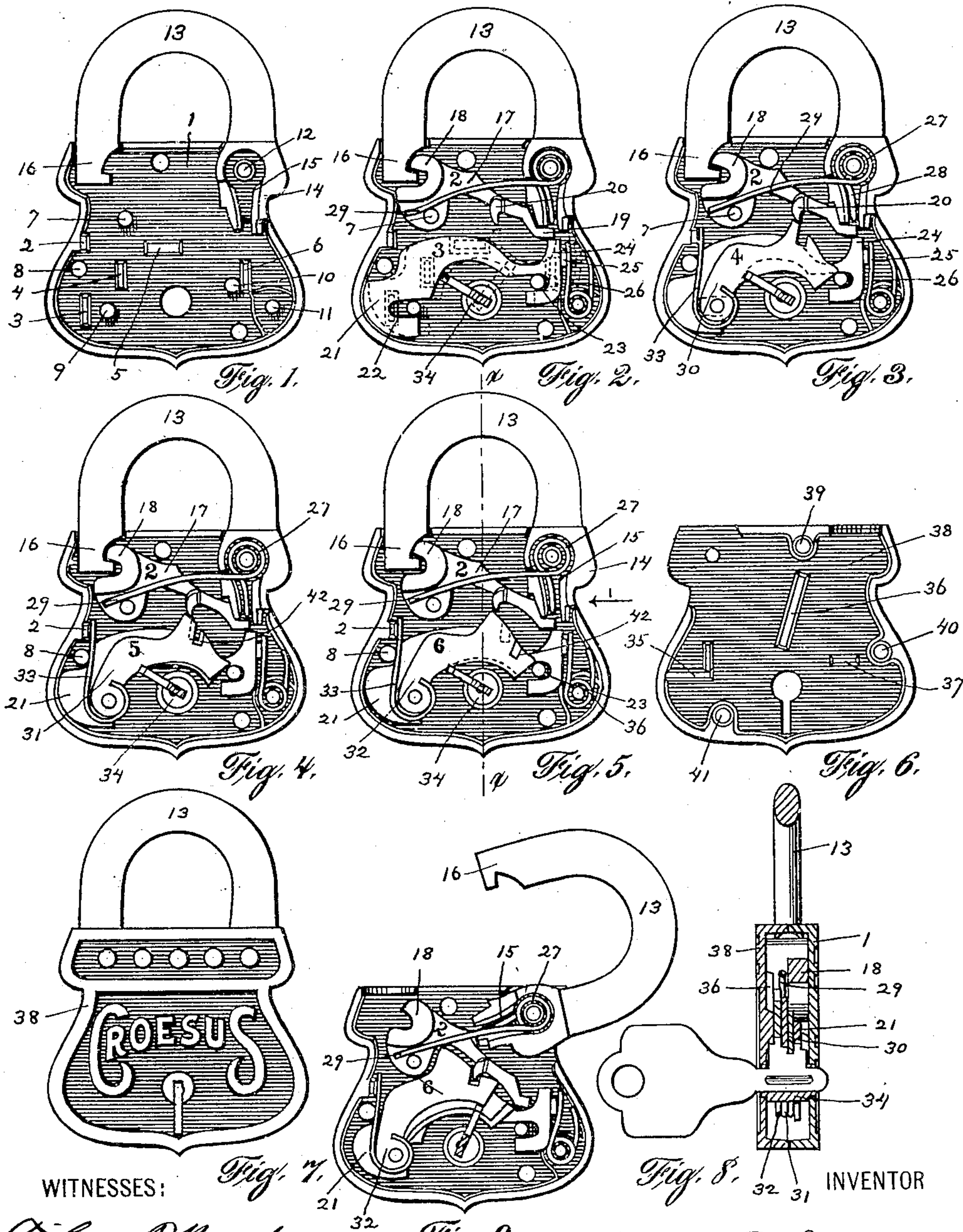
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S. R. FRAIM.

PADLOCK.

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WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## PADLOCK.

No. 882,192.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed November 27, 1907. Serial No. 404,169.

*To all whom it may concern:*

Be it known that I, SAMUEL R. FRAIM, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Padlocks, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to padlocks, and has for its object to produce a durable, strong and positive lock, that cannot be picked or opened except by the key provided, and which by the construction and arrangement of the locking mechanism, is locked in four separate and distinct places at one and the same time, and in which any one of said four will securely hold the shackle in a locked position without the aid of the remaining three.

With these objects in view I herewith describe and claim my invention as follows, but it is understood that I do not confine myself to the exact design as illustrated in the accompanying drawings as slight changes may be made in the construction without departing from the spirit of the invention.

In the drawings:—Figure 1, indicates the case with the shackle in a locked position, and the cover and locking mechanism removed. Fig. 2, is a view of the same with the main and supplementary locking levers and actuating springs in place. Fig. 3, shows the addition of the first key tumbler and spring, with key in place. Fig. 4, shows the addition of the second key tumbler and spring. Fig. 5, shows the addition of the third key tumbler and spring. Fig. 6, shows the case cover. Fig. 7, indicates the exterior of the lock. Fig. 8, is a vertical section on the line *x x* of Fig. 5, in the direction of the arrow 1, showing the key in engagement with the lever and tumblers. Fig. 9, shows the lock with the cover removed, and indicates the position of the working parts when the shackle is in an open position.

1, indicates the lock case provided with the guide bosses 3, 4, 5, and 6, the tumbler spring stop 2, and the studs 7, 8, 9, 10, 11, and 12, and the shackle 13, in position pivoted upon the stud 12, said shackle being formed with the extension or heel 14, projecting downward from its pivoted point, and being provided with the recess 15, in the side thereof and surrounding the pivot, while upon the

other or free end of said shackle is formed the usual beveled and hooked catch-nose 16.

Pivoted upon the stud 7, is the main locking arm or the combined dog and detent 17, upon the front side of which is formed the downwardly pointed dog 20; said main locking lever being pivoted in such a manner that it freely swings upon the stud 7, and its arm is pressed down by the action of the spring 27, when released by the mechanism hereinafter described.

Resting upon the guide bosses 3, 4, 5, and 6, is the supplementary lever 21, formed with the parallel horizontal slots 22, and 23, in its two lower projections, embracing and guided by the studs 9, and 10, and also having the upper bearing point 24; and the lug 25, extending at right angles therefrom, and engaged by a two pronged coiled spring 26, mounted upon the stud 11, with one prong bearing against said lug 25, and the other against the case side, thus exerting a constant tendency to force said lever 21, towards the left, which brings its bearing point 24, under and into contact with the lower surface of the extending arm 19.

Supporting the stud 12, and retained within the recess 15, of the shackle 13, is placed the coiled spring 27, with its short arms 28, engaging the side of the recess 15, and its long arm 29, bearing against the stud 7, thus exerting a constant tendency to force the lower end of the shackle toward the left and into an open position, and the main lever downward by the action of said spring and the sliding contact of the shackle heel and the notched lever ends.

The key tumblers 30, 31, and 32, are pivoted upon the stud 9, and are forced in a normal downward position by the springs 33, bearing against the stud 2, of the case: said key tumblers are formed with a curved lower edge and an upwardly curved upper edge being an arc of a circle, said periphery containing inwardly extending slots at varying points on their upper edge as described for the reception of the dog 2, when the key bit has raised them into such a position that said slots register with each other.

The cylindrical key-hub 34, is of the usual design and is formed with ends of reduced diameter extending through the case and containing a longitudinal slot for the reception of the key.



The guide bosses 36, and 37, on the inner surface of the cover plate 38, are designed to further facilitate the guiding of the working parts and keep them in their proper places, and the boss 35, to retain the spring 36, in place.

It will also be noted that the stud 12, extends through the case cover, and the studs 39, 40, and 41, on the inner surface of the case-cover extend through the back of the case and are all used as rivets for retaining the sides of the case in a secure manner.

The operation of the device as a whole is as follows: When the lock is in a locked position the main locking lever 17, is in a raised position with its lug 18, in engagement with the hooked nose 16, of the shackle 13; and its arm 19, in contact with the lower end of the shackle extension or heel 14, where it is held by the bearing point 24, of the supplementary lever 21, which is held in its forward position by the spring 26, while the key tumblers being in their downward position, their upper points are in contact with the point of the dog 20, thus locking the device at the four points of contact. To release the shackle the key is inserted and turned toward the right, thus by its stepped bit raising the key tumblers the proper height until their slots register with each other and are brought into a position opposite the dog 20, while a further turn of the key brings the last notch of its bit into engagement with the curved lower edge of the supplementary lever and forces it toward the right which allows the point 19, of the main lever to drop, the dog 20, entering the slots in the key tumblers and the lug 18, releasing the hook-nose 16, and allowing the shackle to fly up, actuated by the spring 27; while upon closing the shackle the hook 16, strikes the lower part of the lug 18, depressing it and raising the arm 19, bringing the dog out of engagement with the key tumblers and allowing said key tumblers to drop, which as soon as said arm has passed the contact point 24, allow the supplementary lever to fly to the left, actuated by the spring 26, and thus complete the locking operation in which the key is not used.

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

1. In a padlock of the class described, in combination, the shackle pivoted within the sides of the case, said shackle formed with a recessed heel extending downward from its pivot point, consisting of a body portion, a recess formed in said heel open on the side and end thereof, a main spring having its coil and one arm contained within said recessed heel, and its other arm extending inwardly and bearing against a stud within said case, and means for retaining said shackle in a locked position.

2. In a padlock of the class described,

formed of a back-case and cover, a shackle pivoted between the sides thereof, and formed with a hooked nose and a recessed heel extension, a two armed spring bearing against the inner side of said recess and a stud within said case, a main locking lever pivoted within said case, and formed with a lug adapted to engage the hooked nose of said shackle, a notched arm extending rearwardly upon said lever and adapted to engage the end of the shackle heel, and means for retaining said lever in engagement with the nose and heel of said shackle, for the purpose set forth.

3. In a padlock of the class described, formed of a case and cover, a shackle pivoted within said case, and formed with a recessed heel, a spring for actuating said shackle, a main lever pivoted within said case, and formed with lug ends adapted to engage the ends of said shackle, a supplementary lever containing parallel slots slidably embracing studs within said case, said supplementary lever partly curved upon its lower edge and having an upwardly extending bearing point and a lug formed upon one end thereof, said bearing point adapted, when in a normal position, to engage the lower surface of the notched arm of the main lever, and means for retaining said supplementary lever in a normal position, for the purpose set forth.

4. In a padlock of the class described, a main locking lever formed with a lug upon the forward end and a notched extension upon the rear end thereof, and pivoted at its forward end within the lock case, a supplementary lever slidably mounted within said case, and having an upwardly extending bearing point, in engagement with said main lever when said supplementary lever is in a normal position, a coiled spring mounted within said case and having one of its arms bearing against the lug of said supplementary lever and the other against the inner side of said case, for the purpose set forth.

5. In a padlock of the class described, comprising a case and cover, in combination, a shackle having a hooked nose and a heel extension pivoted within said case, a recess formed in the side and end of said heel, a two armed spring, one arm bearing within said recess and the other arm within said case, a main locking lever pivoted within said case, and formed with a lug to engage the hooked nose of said shackle and a notched extension to engage the heel of said shackle, a dog formed upon said locking lever and adapted to engage registering slots in the key tumblers; a supplementary lever slidably mounted within said case, and formed with a bearing point adapted to engage the end of said notched main locking lever, and a lug formed upon said supplementary lever at right angles to its surface, a coil spring mounted within said case and engaged



ing said case side and said lug of the supplementary lever, key tumblers pivoted within said case and formed with an upper point adapted to engage the point of the main lever dog, and having a curved upper edge extending from said point to the end of said tumblers and pierced by an inwardly extending slot, and having a curved lower edge

adapted to be engaged by the steps of the key bit, all for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL R. FRAIM.

Witnesses:

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