

No. 870,890.

PATENTED NOV. 12, 1907.

J. KRUSE.

KEYLESS PADLOCK.

APPLICATION FILED OCT. 30, 1906.

2 SHEETS—SHEET 1.

FIG. 1.

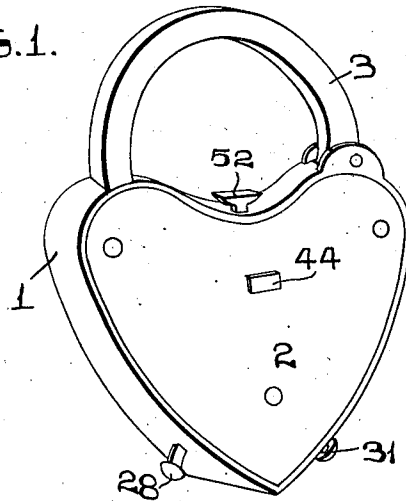
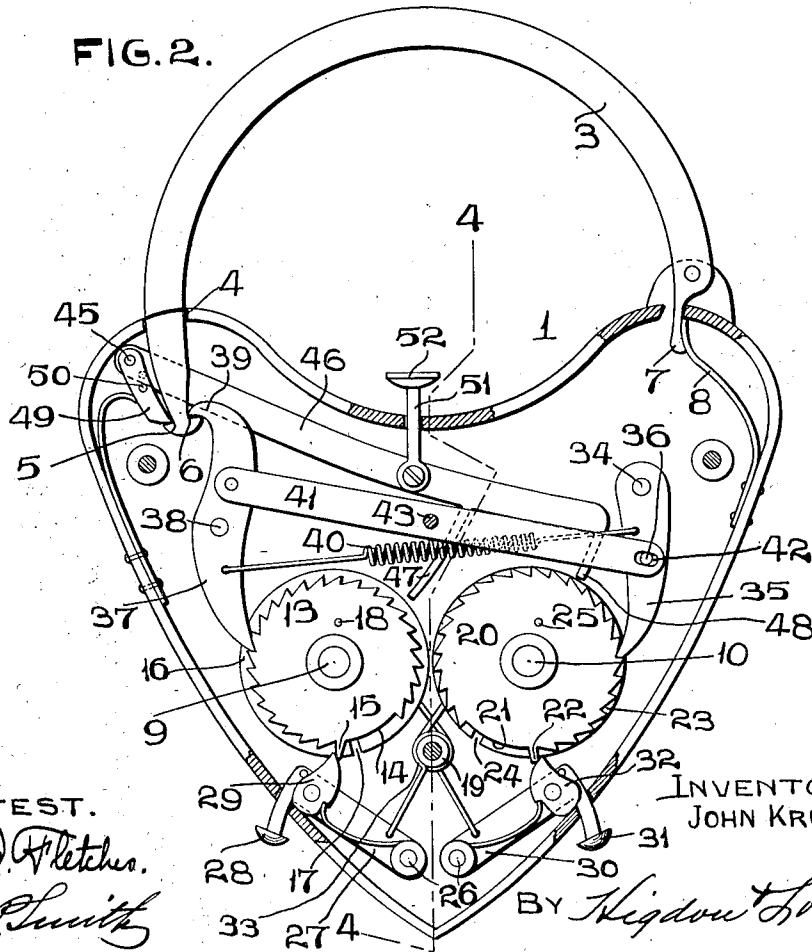


FIG. 2.



ATTEST.

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2 SHEETS—SHEET 2.

FIG. 3.

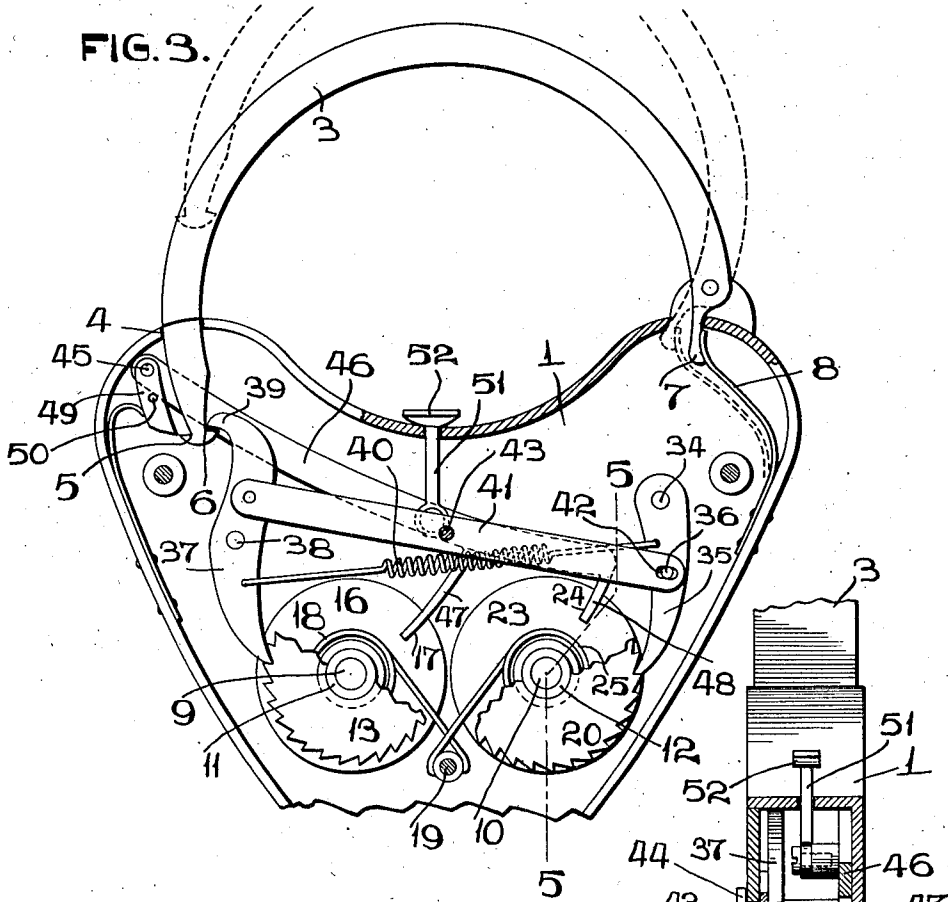


FIG. 5.

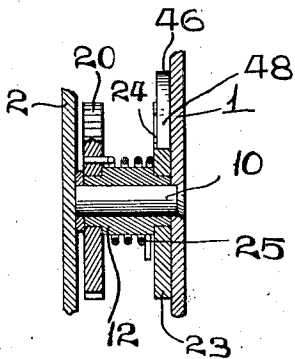
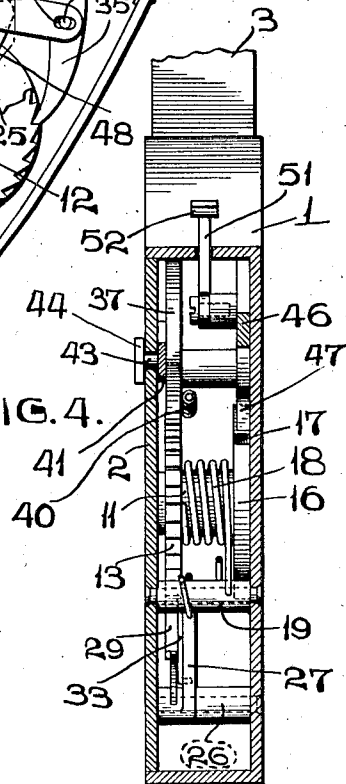


FIG. 4.



ATTEST.

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JOHN KRUSE, OF ST. LOUIS, MISSOURI.

KEYLESS PADLOCK.

No. 870,890.

Specification of Letters Patent.

Patented Nov. 12, 1907.

Application filed October 30, 1906. Serial No. 341,319.

To all whom it may concern:

Be it known that I, JOHN KRUSE, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Keyless Padlocks, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a keyless padlock, the object of my invention being to provide a simple, inexpensive locking mechanism which is particularly adapted for padlocks, and which may be applied for use as an ordinary lock by making slight alterations in the casing, which mechanism is so constructed as to be opened without a key, operated in the dark, readily shifted or changed to form different combinations to be carried out in opening a lock, and which cannot be readily opened by unauthorized persons.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view of a padlock of my improved construction; Fig. 2 is an enlarged elevation of the padlock with the front plate thereof removed, and showing the interior mechanism; Fig. 3 is a view similar to Fig. 2, and showing the releasing mechanism shifted into a position so as to allow the release of the shackle; Fig. 4 is a vertical section taken approximately on the line 4—4 of Fig. 2; Fig. 5 is a vertical section taken on the line 5—5 of Fig. 3.

Referring by numerals to the accompanying drawings, 1 designates the padlock housing which may be of any suitable shape, and provided with a front plate 2, which can be removed by cutting or releasing rivets, or similar fastening devices. Pivotally connected to the top of the housing 1, at one side thereof, is a shackle 3, preferably of inverted U-shape, and the end opposite the pivoted end being adapted to pass through an opening 4 formed in the top of the housing 1, and said end being provided with the oppositely arranged notches 5 and 6. The pivoted end of the shackle is provided with a lug 7, which extends through a suitable opening in the top of the housing, and against which bears the free end of a leaf spring 8 which is fixed to the housing, and the pressure of which throws the opposite end of the shackle upwardly when the latter is released. Fixed to the rear wall of the housing 1, and projecting forwardly therefrom, at a point slightly below the center of said housing, is a pair of pins 9 and 10, and arranged for rotation thereon are the sleeves 11 and 12. Fixed on the forward end of the sleeve 11 is a ratchet wheel 13, a short portion of the periphery thereof being plain, as designated by 14, and formed at one end of said plain portion is a lug 15.

16 designates a disk provided in its edge with a notch 17, and which is friction tight upon the rear end of the sleeve 11.

A coiled spring 18 is wound upon the sleeve 11, with one end seated in the ratchet wheel 13, the opposite end being fixed to a pin 19 which is seated in the housing 1 at a point between and immediately below the pins 9 and 10.

Mounted upon the forward end of the sleeve 12 is a ratchet wheel 20, provided on its periphery with a short plain flat space 21; and at the end thereof is formed a lug 22.

23 designates a disk provided in its edge with a notch 24, and which disk is friction tight upon the rear end of the sleeve 12.

A coiled spring 25 is wound upon the sleeve 12, with one end seated in the ratchet wheel 20, the opposite end being secured to the pin 19.

Fixed in the lower portion of the housing 1, below the pin 19, is a pair of pins 26, on one of which is pivotally arranged a bell crank lever 27, the opposite end of which extends outwardly through a suitable opening in the housing, and is provided with a push button 28. Pivotally arranged on the bell crank 27 is a spring actuated pawl 29, the point of which is adapted to engage the teeth of the ratchet wheel 13. A corresponding bell crank lever 30 is pivotally mounted on the opposite pin 26, and is provided at its outer end with a push button 31, and is also provided with a spring actuated pawl 32, the point of which engages the teeth of the ratchet wheel 20. The ends of a spring 33, which is arranged on the pin 19, engage the bell crank levers 27 and 30, and normally maintain the same at their lower limit of movement.

Pivotally mounted upon a pin 34, fixed in the housing 1, is a detent 35, the point of which engages the teeth of the ratchet wheel 20, and extending forwardly from the face of said detent is a pin 36.

37 designates a detent pivotally mounted upon a pin 38, the point of which detent engages the teeth of the ratchet wheel 13; and said detent extends upwardly from the pin 38, and is provided on its upper end with a lug 39. One end of a retractile coiled spring 40 is secured to the detent 37, the opposite end thereof being secured to the detent 35, which coiled spring normally maintains the points of the detents against the toothed peripheries of the ratchet wheels 13 and 20. A releasing bar 41 is pivotally attached to the detent 37 at a point above the pivot pin 38, the opposite end of said bar being provided with a slot 42, which receives the pin 36 on the detent 35. Projecting forwardly from the center of this bar 41 and through a slot in the front plate 2 is a pin 43, which is provided on its outer end with a button 44, which normally covers the slot through which said pin projects.

Pivotally arranged upon a pin 45, in the upper left

hand corner of the housing 1, is a lever 46, which extends above the disks 16 and 23, and which lever is provided with a pair of depending fingers 47 and 48, which are adapted to enter respectively the notches 17 and 24. Mounted on the pin 45 and depending therefrom is a spring pressed latching dog 49, the point of which is positioned directly opposite the lug 39, and which point is adapted to engage in the notch 5 formed in the outside of the shackle 3 when said shackle is closed. Seated in the dog 49 is a rearwardly projecting pin 50, which normally engages against the under side of the lever 46. Pivotaly secured to the center of the lever 46 is a vertically disposed rod 51, which extends through a suitably formed opening in the top of the housing 1, and said rod being provided with a button 52 on its upper end.

When a padlock of my improved construction is locked, the mechanism thereof is in the position seen in Fig. 2, with the dog 49 engaging the notch 5 to lock the shackle in the housing, and the points of the pawls 29 and 32 engaging against the lugs 15 and 22. The disks 16 and 23 have previously been rotated on the rear ends of the sleeves 11 and 12 so as to correspond to certain of the teeth on the ratchet wheels 13 and 20, this setting of the disks forming the combination by means of which the padlock is unlocked after the ratchet wheels and disks have been properly manipulated as hereinafter described.

Assuming that the combination number for the disk 16 is 11, and the combination number for the disk 23 is 15, said disks must be set on the sleeves 11 and 12 in such positions as that the notches 17 and 24 will be brought into positions beneath the fingers 47 and 48 when the ratchet wheel 13 has been rotated the distance of eleven teeth, and the ratchet wheel 20 has been rotated the distance of fifteen teeth. To unlock the padlock so set, the operator engages the push button 28 and presses the same inwardly eleven times, and in so doing successively engages eleven of the teeth on the ratchet wheel 13 with the pawl 29, and thus rotates the disk 16 so as to bring the notch 17 immediately beneath the finger 47. This partial rotation stores power in the coiled spring 18, but said disk 16 and the ratchet wheel 13 are prevented from reverse movement by engagement of the point of the detent 37 with the teeth of said ratchet wheel. The operator now engages the push button 31 and forces the same inwardly fifteen times, thus bringing the notch 24 directly opposite the finger 48, during which movement power is stored in the coiled spring 25 and the parts being prevented moving in a reverse direction by the engagement of the detent 35 with the teeth of the ratchet wheel. The operator now engages the button 52 and forces the same downwardly, which movement swings the lever 46 upon the pin 45 and causes the fingers 47 and 48 to enter the corresponding notches 17 and 24. This downward swing of the lever 46 presses upon the pin 50, and as a result the point of the locking dog 49 is moved out of the notch 5; and this end of the shackle now being free, swings upwardly owing to the pressure of the spring 8 on the lug 7 on the opposite end of said shackle. Thus the padlock is opened, and when the pressure of the finger on the button 52 is released, the lever 46 and dog 49 will swing upwardly to their normal positions owing to the pressure of the spring against the rear side

of said dog, and the fingers 47 and 48 are carried upward out of the notches 17 and 24. When the padlock is re-locked, the free end of the shackle is moved downwardly through the opening 4 until the dog 49 reengages in the notch 5, and this movement causes the lower end of the shackle to engage the lug 39 on the upper end of the detent 37; and in so doing, shifts said detent upon the pin 38, disengaging the lower end of said detent from the ratchet wheel 13 and simultaneously shifting the releasing bar 41 to the right, which movement releases the lower end of the detent 35 from the ratchet wheel 20, and both of the ratchet wheels are now free to rotate to their normal positions by the action of the coiled springs 18 and 25. Thus the closing of the shackle to lock the padlock releases the combination and causes all of the parts to reassume their normal positions.

When the free end of the shackle 3 moves upwardly in unlocking the padlock, the lug 39 will be engaged to rock the detent 37, but the combination will not be released owing to the fact that the fingers 47 and 48 are engaged in the notches 17 and 24; and the slot 42 provides for the slight lateral movement of the releasing bar 41 relative to the pin 36.

Should a person unfamiliar with the combination attempt to open the padlock by manipulating the bell cranks 27 and 30 to rotate the disks, the flat surfaces 14 and 21 on the disks 13 and 20 will, after said disks have been partially rotated, be brought opposite the points of the detents 37 and 35; and, as a result, no further rotation of the disks is possible owing to the non-engagement of the points of said detents on said plain surfaces.

If the ratchet wheels have been partially rotated during the time the padlock is locked, the combination can be instantly reset or thrown back to its normal position by engaging the button 44 and shifting the release bar 41 to the right, which movement disengages the points of the detents 37 and 35 from the ratchet wheels; and the same, together with the disks 16 and 23, will return to their normal positions.

It will be readily understood by persons familiar with the art how my improved mechanism can be adapted for locks other than padlocks by merely changing the shape of the housing, and providing a straight locking bolt in place of a shackle 3.

The combination in my improved padlock is changed, as desired, by shifting the disks 16 and 23 upon their corresponding sleeves 11 and 12, which movement changes the positions of the notches 17 and 24; and, as a result, the push buttons 28 and 31 must be manipulated a greater or less number of times corresponding to the notches 17 and 24, to bring said notches into positions where they will receive the fingers 47 and 48; and thus a readily adjustable combination mechanism is provided.

A padlock of my improved construction is simple and inexpensive, can be operated in the dark inasmuch as there are no exterior disks with numbers or letters to be noticed during the unlocking operation, and the combination can be easily and quickly changed.

I claim:—

1. A padlock, constructed with a housing, a shackle carried thereby, means arranged on the interior of the housing for engaging one end of the shackle, a plurality of spring controlled disks arranged for rotation on the

interior of the housing, in the edges of which are formed notches, means whereby said disks are rotated, a lever for releasing the shackle engaging means, fingers integral with said lever and adapted to pass into the notches in the disks, and means arranged on the interior of the housing and operated from the exterior thereof for releasing the disks to allow them to return to their normal positions after having been rotated; substantially as specified.

2. A padlock, constructed with a housing, a shackle carried thereby, means arranged on the interior of the housing for engaging one end of the shackle, a plurality of sleeves arranged for rotation in the housing, ratchet wheels arranged on said sleeves, coiled springs arranged on the sleeves for rotating the same in a certain direction, detents engaging the teeth of the ratchet wheels for holding them against the rotating action of the coiled springs, means operated from the exterior of the housing for engaging said ratchet wheels to rotate the sleeves, disks carried by the sleeves, in the peripheries of which disks are formed notches, and means arranged on the interior of the housing for actuating the shackle engaging means,

and a portion of which actuating means engages in the notches in the disks; substantially as specified.

3. A padlock, constructed with a housing, a shackle carried thereby, an adjustable combination mechanism arranged on the interior of the housing, means operated from the exterior of the housing for actuating said combination mechanism, pawls arranged on the interior of the housing for engaging portions of the combination mechanism, one of which pawls is provided with a hook at one end for engaging the shackle when closed, means operated from the exterior of the housing for releasing the shackle when the combination mechanism has been moved to the proper position, and means operated from the exterior of the housing for releasing the pawls after the shackle has been released.

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

JOHN KRUSE.

Witnesses:

M. P. SMITH,
E. L. WALLACE.