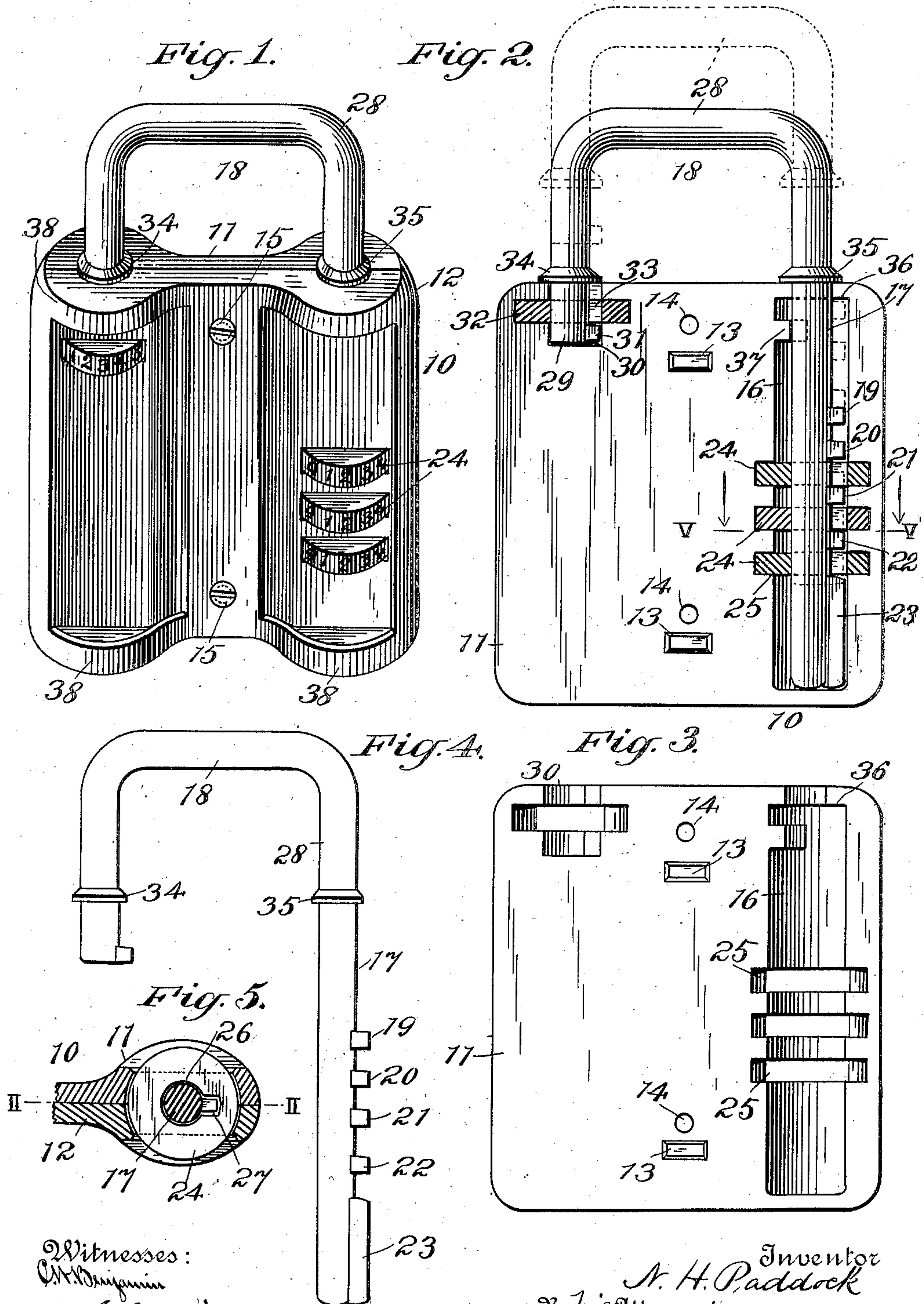


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N. H. PADDOCK.
COMBINATION LOCK.
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UNITED STATES PATENT OFFICE.

NICHOLAS HARDER PADDOCK, OF PORT CHESTER, NEW YORK.

COMBINATION-LOCK.

No. 859,614.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NICHOLAS HARDER PADDOCK, a citizen of the United States, and a resident of Port Chester, county of Westchester, State of New York, have invented certain new and useful Improvements in Combination-Locks, of which the following is a full, clear, and exact description.

This invention relates to locks which do not employ the ordinary key; and the main object of the invention is to provide simple and efficient means whereby a lock having a plurality of rotary tumblers are adapted to engage the shackle of the lock at both ends or shanks thereof, and which have characters that by a predetermined arrangement may be made to register in such a way that the locking shank or end of the shackle may be entirely released from the lock casing, which is simple in construction, and which has the casing so made that the combination tumblers will not be injured while in use.

A further object of the invention is to provide means whereby the combination after it has once been set to release the shanks of the shackle will not become disarranged when the shackle has its locking end or shank released from the casing, and to provide means whereby the shackle may be held in a raised or unlocked position.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a perspective view of one form of device embodying my invention. Fig. 2 is a vertical section, partly in elevation, taken on the line II—II of Fig. 5. Fig. 3 is a detail elevation of one-half of the lock casing. Fig. 4 is a detail elevation of the shackle; and Fig. 5 is a fragmentary transverse section taken on the line 5—5 of Fig. 2.

The casing 10 may be of the usual or of any preferred form. As shown the casing 10 is made in two parts 11 and 12, and one of these parts, as 11, may have tapering lugs or projections 13 which are adapted to fit in corresponding recesses in the other member to properly align said members when placed together, and said members or parts are provided with openings 14, by which the parts may be held together by screws or rivets 15. The casing is provided with an opening 16, one-half of which is in each part of the casing, and in said opening is adapted to fit the shank or leg 17 of the shackle 18. The leg 17 of the shackle is suitably guided in the casing, and is provided with a series of projections or lugs 19, 20, 21, 22, and 23. These lugs or projections are properly spaced apart and between the lugs 19, 20, 21, 22, and 23 are spaces in the last three of which a plurality of rotary tumblers 24 are adapted to fit. These rotary tumblers

are normally held in slots 25 in the casing, and each tumbler has an opening 26 through which passes the shank 17 of the shackle. Each tumbler has a slot 27 which is adapted to register with the lugs on the shackle so that when all of the slots 27 are brought into alinement with the lugs on the shackle the latter may be raised through the slots. These tumblers have the usual characters on the periphery thereof which are adapted by a predetermined arrangement thereof, to indicate when the slots 27 of the rotary tumblers are in alinement with the lugs of the shackle. The shackle 18 has a curved portion 28 and a short leg or shank 29 which is much shorter than the shank 17, the latter extending substantially the entire depth of the casing. The shank or locking end 29 of the shackle is adapted to fit into a recess or opening 30 in the casing and said shank is provided with a lug 31 projecting outward therefrom. Above this lug when the shackle is in the position shown in Fig. 1 is a rotary tumbler 32 which is similar to the tumblers 24, and has a slot 33, which is adapted to be brought into alinement with the lug 31. The rotary tumbler 32 also has characters on its periphery, and these characters agree with the characters on the rotary tumblers 24 so that by a predetermined arrangement of the characters on the various tumblers, the short end 29 of the shackle may be released from the lock by moving the shackle to the position shown on dotted lines in Fig. 2. The shackle 18 is provided with collars 34 and 35, one on each leg, which are adapted when the shackle is in its inner or locked position to entirely close the openings and form a support for the shackle on the casing.

For the purpose of sustaining the shackle in its outward or unlocked position to permit it to be rotated with the leg 17 as a pivot or axis, and to prevent the disarrangement of the tumblers 24 during the movement of the shackle, I place the lug 19 in such a position that it will engage and be limited in its unlocking movement by the shoulder 36 of the casing, and the lug or projection 23 is made of such length that it will engage all of the tumblers 24 when the shackle is in the position shown in dotted lines in Fig. 2. As will be seen, any movement of the shackle with the shank or leg 17 as an axis, after the short end 29 has been released from the casing will cause the tumblers 24 to rotate with the shackle so that they will not become disarranged when the short end 29 is moved away from the casing, and the shackle projections may be readily made to pass through the slots of the tumblers when it is desired to place the shackle in a locked position. The rotary movement of the shackle 18 when it is in its outward or unlocked position will cause the lugs 19 and 20 to span a projection 37 on the casing, to sustain the shackle in the unlocked position. This projection 37 extends partly around the opening 16, so that when the lug 19 becomes disengaged therefrom the longer

leg or shank 17 of the shackle may be forced into the opening, to cause the short leg or end 29 to enter the opening 30 of the casing. By shifting the position of the tumblers 24 and 32 the shackle will be securely locked within the casing 10.

The shackle as well as the tumblers may be differently constructed and arranged, and there may be any suitable number of the tumblers, and to protect the tumblers from injury while the lock is in use, I enlarge the upper and lower portion of the lock casing 10 as at 38. This enlarged portion or flange will extend outward beyond the periphery of the tumblers and will protect the same, and at the same time the tumblers are so arranged that they may be readily operated at any time by hand.

From the foregoing it will be readily seen that a simple and efficient combination lock is provided in which the shackle may be held at both of its ends or legs, and in which the shackle may have its locking end moved away from the casing and rotated while sustained by the casing without disarranging the tumblers.

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

1. In a lock, the combination with a casing having openings on opposite sides thereof, of a shackle provided with two legs which are adapted to enter said openings, said legs having locking means thereon, a plurality of tumblers adapted to rotate around one of the legs, and a single tumbler adapted to rotate around the other leg to lock the shackle to the casing or to permit the shackle to be elevated and released, and means engaging the casing for holding the shackle in a raised or unlocked position, and to adapt it to be rotated with one of the legs as an axis.

2. In a lock, the combination with a casing having openings on opposite sides thereof, one longer than the other, of a shackle provided with a long leg and a shorter leg which are adapted to enter said openings, a tumbler rotatably held in the casing and adapted to engage the short leg of the shackle to hold the same within the casing, a plurality of tumblers rotatably held in the openings in the casing through which the long leg of the shackle is adapted to pass, means by which the tumblers may hold the legs of the shackle within the casing or to permit the legs to be released therefrom, and means for holding the locking end or short leg of the shackle in a released position to permit it to be rotated with the longer leg as an axis without disarranging the tumblers of the longer leg.

3. In a lock, the combination with a casing having openings on opposite sides thereof and a recess near the top of one of said openings, of a shackle provided with two legs which are adapted to enter said openings, tumblers for locking the legs of the shackle to the casing or to permit the shackle to be elevated and released, a projection below the recess in the casing, and a lug or projection carried by one of the legs which is adapted to enter the recess when the shackle is in a released position to permit it to engage the casing and hold it in a released position, so that the shackle may be rotated with the leg carrying the lug as an axis.

4. In a lock, the combination with a casing having openings on opposite sides thereof, of a shackle provided with two legs of different lengths which are adapted to enter said openings, projections on the longer leg suitably spaced apart, a plurality of tumblers adapted to rotate in the spaces between the lugs of said leg to lock the shackle to the casing, and means including a single tumbler and a single projection for locking the shorter leg within the casing.

5. In a lock, the combination with a casing having openings on opposite sides thereof, of a shackle provided with two legs which are adapted to enter said openings, a tumbler rotatably held in the casing and adapted to engage one of the legs of the shackle to hold the same within the casing, a plurality of independent tumblers rotatably held in

openings in the casing through which the other leg of the shackle is adapted to pass, means by which the tumblers may hold the legs of the shackle within the casing or to permit the legs to be released therefrom, and a lug or projection on the shackle adapted to engage several of the tumblers at one time to prevent their disarrangement when the shackle is in an unlocked position.

6. A combination lock comprising a two-part casing having two openings therein one of which is much longer than the other, a tumbler rotatably held in one of the openings in the casing, a plurality of tumblers rotatably held in the other opening of the casing, each tumbler being provided with an opening therethrough and a slot, a shackle provided with a short leg or locking end to enter the small opening and to pass through the single tumbler, and a longer leg to enter the longer opening of the casing to pass through the openings of the plurality of tumblers, said legs having means whereby the tumblers may lock the shackle within the casing, a lug or projection carried by the longer leg of the shackle and adapted to engage the tumblers when the shackle is in an unlocked position whereby the said tumblers will not become disarranged, and a lug carried by the longer leg adapted to engage a part of the casing for holding the short leg in a released position.

7. A combination lock comprising a casing having two openings therein, a tumbler rotatably held in one of the openings in the casing, a plurality of tumblers rotatably held in the other opening of the casing, each tumbler being provided with an opening therethrough and with a slot, a shackle provided with a leg or locking end to enter the opening and to pass through the single tumbler, and a second leg passing through the openings of the plurality of tumblers, said legs having means whereby the tumblers may lock the shackle within the casing, means carried by one of the legs of the shackle and adapted to engage the tumblers when the hasp is in an unlocked position whereby the said tumblers will not become disarranged, and means for holding the shackle in an elevated or released position so as to permit it to be rotated with one of the legs as an axis.

8. A combination lock comprising a casing having two openings, a shackle having two legs which enter the openings in said casing one of said legs being provided with lugs projecting therefrom which are spaced apart, a plurality of tumblers rotatably held in the casing and normally movable in certain of the spaces between the lugs of the shackle one of said lugs being longer than the others and adapted to engage all of the tumblers to prevent their disarrangement when the shackle is in an unlocked position, and a single tumbler held in the casing and adapted to engage the other leg of the shackle.

9. A combination lock comprising a casing having two openings, a shackle having two legs adapted to enter the openings one of which is shorter than the other, a plurality of tumblers rotatably held in the casing and provided with openings through which the longer leg of the shackle is adapted to pass, means by which the tumblers may be made to hold the shackle in a locked position within the casing, a projection on the casing within the longer opening of the casing, and means carried by the longer leg of the shackle and adapted to engage the projection on the casing whereby said shackle may be held in an unlocked position.

10. A combination lock comprising a two part casing rigidly held together, a shackle having a leg entering an opening in the casing, tumblers rotatably held in the casing and adapted to lock the shackle therein or to permit it to be released from the tumblers, means for holding the shackle in an elevated or unlocked position, said casing having an enlarged part at the upper and lower portion thereof forming flanges thereon to protect the tumblers while in use.

This specification signed and witnessed this 11th day of March A. D. 1907.

NICHOLAS HARDER PADDOCK.

Witnesses:

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