

(No Model.)

J. ROCHE.
PADLOCK.

No. 534,669.

Patented Feb. 26, 1895.

Fig. 1

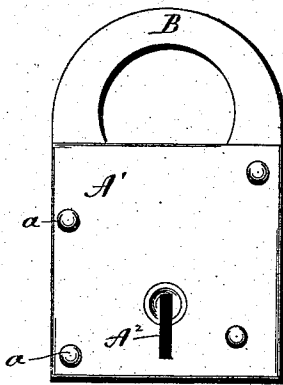


Fig. 2

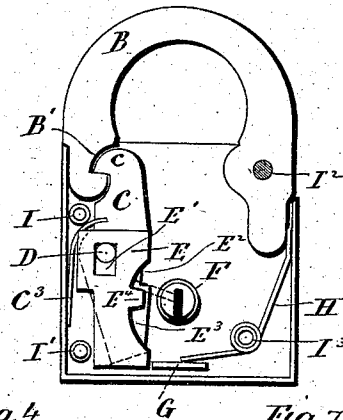


Fig. 3

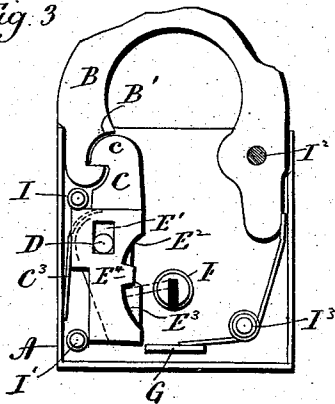


Fig. 4

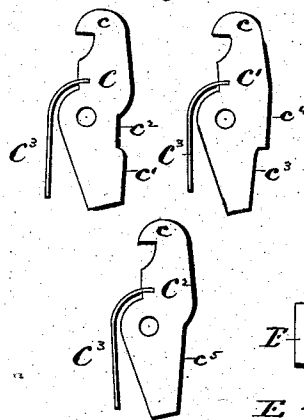


Fig. 5

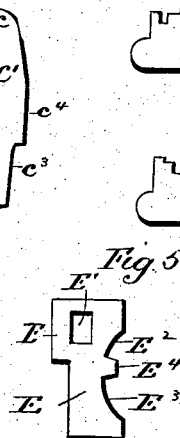
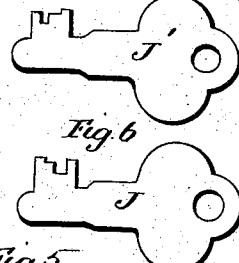


Fig. 6



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PADLOCK.

SPECIFICATION forming part of Letters Patent No. 534,669, dated February 26, 1895.

Application filed December 8, 1894. Serial No. 531,219. (No model.)

To all whom it may concern:

Be it known that I, JAMES ROCHE, of Terryville, in the county of Litchfield and State of Connecticut, have invented a new Improvement in Master-Key Locks; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in front elevation of one form which a padlock containing my invention may assume; Fig. 2, a view thereof with the cap or cover of the case removed showing the tumblers in their locked position, the master-key indicated by broken lines as arrested by the stop, to which position it arrives when the tumblers are thrown back; Fig. 3, a similar view showing the tumblers in their locked positions, and the special key indicated by broken lines in the position in which its movement is limited by the stop when the tumblers are thrown to the unlocked position; Fig. 4, a view of the three tumblers detached, and shown in a group; Fig. 5, a detached view of the sliding ward; Fig. 6, a similar view of the special key; Fig. 7, a corresponding view of the master-key.

My invention relates to an improvement in that class of locks known as "master-key" locks, which are locks constructed in series, and adapted to be individually operated by special keys, and collectively operated by a universal key, known as the "master-key," so that while the special key will not unlock any other lock of the series than its own, the master-key will unlock every lock in the series.

The object of my present invention is to produce at a low cost for manufacture, a durable and effective lock, constructed with particular reference to marked differentiation in the operating faces upon which the respective keys act.

With these ends in view, my invention consists in the combination, in a master-key lock, of tumblers, one or more of which is constructed with two distinct operating-faces respectively adapted to co-operate with different keys which are turned in opposite direc-

tions respectively, and a ward provided with a stop, against the opposite edges of which the respective keys are impinged and arrested.

My invention further consists in a master-key lock having certain details of construction and combinations of parts as will be hereinafter described, and pointed out in the claims.

My invention is particularly well adapted to be used in the construction of padlocks, and I have therefore chosen to disclose it in such an embodiment.

As herein shown, the padlock consists of a case A, a cap or cover A', constructed with a key-slot A², a shackle B, three pivotal hooked tumblers C, C' and C², a stud D, upon which the said tumblers are pivotally mounted, a sliding ward E, a key-hub F, the opposite ends of which are journaled in the case and cap or cover, a stump G, a shackle-spring H, and four pillars I, I', I² and I³, located within and secured to the case, and providing, as shown, for the permanent attachment of the cap thereto, for which purpose the ends of the pillars are reduced and headed down after the cap has been put in place, to form the rivet-heads *a*. Of the said pillars, the pillar I² provides a center for the shackle B to turn upon, while the pillar I³ forms a mounting for the shackle-spring H. Under this construction, the shackle will be thrown into its open position by means of the spring H, and retained in its locked position by the entrance into the notch B' formed upon the inner face of its free end, of the hooks *c*, formed at the outer ends of the tumblers, the outer edges of the hooks being beveled, so that when the shackle is closed, it will engage with the beveled portions of the hooks, and thus push the same out of the way against the tension of the tumbler-springs C³, one of which is secured to each tumbler, and which bear against the adjacent portions of the case, and the cover thereof.

The ward E, is constructed at its upper end with an elongated slot E', receiving the stud D, over which it slides within the limits of the length of the said slot, and upon the uppermost of the three tumblers, which in this case is the tumbler C, but obviously the ward may be placed under all of the tumblers or

between any two of them, if desired. The lower end of the ward is adapted in width to fit between the pillar I, and the stump G, which guide it and hold it against lateral displacement. The inner edge of the ward is cut away to form two key-sweeps E^2 and E^3 , which are separated from each other by an outwardly projecting stop E^4 , against the opposite faces of which the special key J, and the master or pass-key J' are brought to a stop.

It will be noted that while each of the tumblers C and C' has two entirely distinct operating faces, the tumbler C^2 has one long straight face, which, however, virtually forms two distinct operating faces, as will appear later on.

The face c' of the tumbler C is designed to be operated upon by the special key J, and never by the master-key J' , while the face c^2 of the same tumbler is designed to be operated upon by the master-key J' , and never by the special key J. Referring now to the tumbler C' , the face c^3 thereof is designed to be operated upon by the special key J, and never by the master-key J' , and the face c^4 thereof by the master-key J' and never by the special key J. It is to be observed that the faces c' and c^2 of the tumbler C, are formed without relation to each other, and the same is true of the faces c^3 and c^4 of the tumbler C' . Referring lastly to the tumbler C^2 , the lower portion of the face c^5 thereof is designed to be operated upon by the special key J, and never by the master-key J' , while the upper portion of the said face c^5 is designed to be operated upon by the master-key J' and never by the special key J, so that the upper and lower portions of the said face are virtually as distinct as though there was a shoulder between them. In further explanation of this, I may say that it is not designed that the bits of the special key J shall have any co-operation whatever with the faces c^2 and c^4 of the tumblers C and C' , nor with the upper portion of the face c^5 of the tumbler C^2 ; nor, on the other hand, that the bits of the key J' shall have any co-operation whatever with the faces c' and c^3 of the said tumblers C and C' , nor with the lower portion of the face c^5 of the tumbler C^2 , so that the said faces are made for exclusive coaction with their respective keys.

I may mention here that the number of tumblers in each lock, whether the lock be a padlock or not, may be varied as desired. One tumbler will answer the purposes of my invention, but the range of combination is increased if a number of tumblers are used.

It will be understood that in the operation of the lock by the special key J, the same is inserted into the slotted key-hub F, and turned from left to right, causing its bits to be engaged with the faces c' and c^3 of the tumblers C and C' , and the lower portion of the long straight face c^5 of the tumbler C and to be entered into the key-sweep E^3 of the ward E. The tumblers are now thrown into their unlocked positions and the shackle re-

leased, and the key engaged with the lower edge of the stop E^4 of the ward which it forces to slide upward and outward until the ward is stopped by the stud D, whereby the key is arrested by the stop of the ward, and must be turned back to secure its removal from the lock. On the other hand, when it is desired to open the lock by the master-key J' , the same is inserted into the slotted key-hub, and turned from right to left, whereupon its bits will be engaged with the faces c^2 and c^4 of the tumblers C and C' , and with the upper portion of the long face c^5 of the tumbler C^2 , and entered into the key-sweep E^2 of the ward E. The tumblers are now thrown into their unlocked positions and the shackle released and the key engaged with the upper edge of the stop E^4 of the said ward, which it compels to slide inward and downward until the ward itself is stopped by the stud D, whereby the key is arrested through the medium of the ward and stud. The key must then be turned back for its removal from the lock. It will thus be seen that the respective operating faces of the respective tumblers are not only distinct and independent in their formation, but also that they are engaged with and operated upon only by the particular keys with which they coact to throw the tumblers into their unlocked positions. It will be noted that the sliding movement of the ward substantially corresponds to the width of the stop, and that when the respective keys are arrested, as shown by Figs. 2 and 3, they lie in planes nearly horizontal, or in other words, in planes nearly at a right angle to the plane of the key-slot A^2 in the cap A' . Therefore, by providing for the sliding movement of the ward, the respective keys although turned in opposite directions, are permitted about the same range of movement or reach, and furthermore, the stop may be made wide enough to be substantial without curtailing the reach of the respective keys. The ward might be fixed in position, but in that case the reach of the keys would be curtailed by the distance represented by the width of the stop. If desired, moreover, the ward might be dispensed with altogether, and the stop located on one of the tumblers, as shown in my prior patent, No. 525,562, granted September 4, 1894; but it is advantageous to have the stop on the ward, for the reason that the location of the stop upon a tumbler would somewhat hamper the shaping of the independent operating faces thereof, and would also limit the reach of the keys over the operating faces of the tumblers, as a stop upon a tumbler would necessarily be a fixed stop, and partake of the objections incident to the use of a stop upon a fixed ward.

My prior patent, No. 525,562 shows and describes a tumbler having two distinct operating faces respectively adapted to co-operate with different keys, which are turned in opposite directions respectively, and I do not broadly claim such a construction; but,

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

1. In a master-key lock, the combination
5 with the other instrumentalities thereof, of
tumblers, one or more of which is constructed
with two distinct or virtually distinct operating
faces respectively adapted to co-operate
10 with different keys, which are turned in opposite
directions respectively, and a ward
provided with a stop against the opposite
edges of which the respective keys are im-
pinged and arrested, substantially as de-
scribed.

2. In a master-key lock, the combination
15 with the other instrumentalities thereof, of
tumblers, one or more of which is constructed
with two distinct or virtually distinct operating
faces respectively adapted to co-operate
20 with different keys, which are turned in opposite
directions respectively, and a sliding
ward having a stop against the opposite
edges of which the respective keys are im-
pinged and arrested, substantially as de-
scribed.

3. In a master-key padlock the combination
with a shackle of a spring for operating the
same in one direction, pivotal tumblers con-
30 structed with hooks at their outer ends for
engagement with the shackle, and one or

more of them being constructed with two distinct
or virtually distinct operating faces re-
spectively adapted to co-operate with differ-
ent keys, which are turned in opposite direc-
35 tions respectively, and a stop for limiting the
rotation of the keys in opposite directions,
substantially as described.

4. In a master-key padlock the combination
with a shackle of a spring for operating the
same in one direction, pivotal hooked tum-
40 blers adapted to engage with the free end of
the shackle, one or more of them being con-
structed with two distinct or virtually dis-
tinct operating faces, respectively adapted to
co-operate with different keys which are
45 turned in opposite directions respectively,
and a sliding ward bearing upon the outer
tumbler, and constructed with a stop against
the opposite edges of which the respective
keys are impinged and arrested, and which
50 is moved in one direction by the special key,
and in the opposite direction by the master-
key, substantially as described.

In testimony whereof I have signed this
specification in the presence of two subscrib- 55
ing witnesses.

JAMES ROCHE.

Witnesses:

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J. A. RUSSELL.