

(No Model.)

J. WHITTINGTON.
COMBINATION LOCK.

No. 463,128.

Patented Nov. 10, 1891.

Fig.1

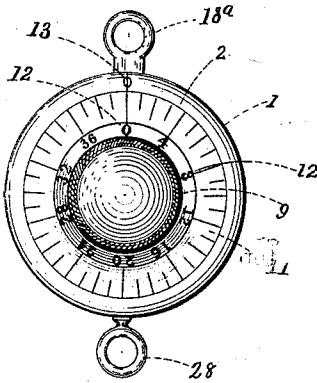


Fig.2

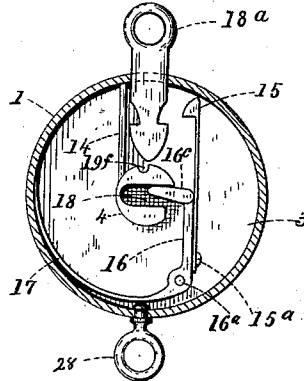


Fig.3.

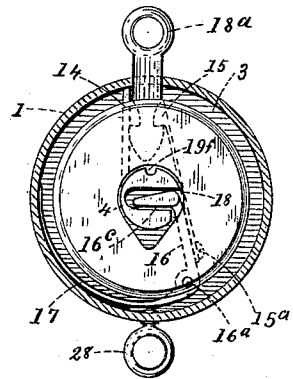


Fig.4.

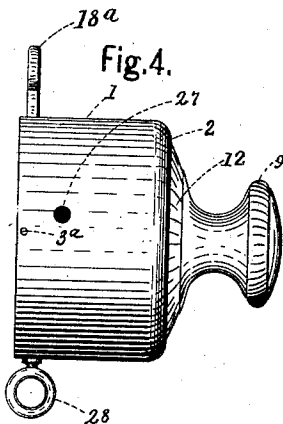


Fig.5.

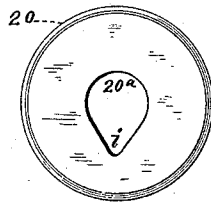


Fig.6.

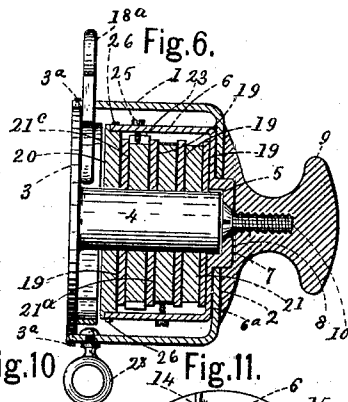


Fig.9.

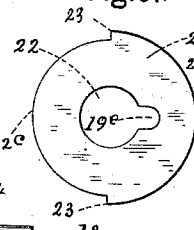


Fig.10.

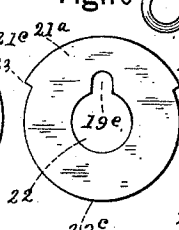


Fig.11.

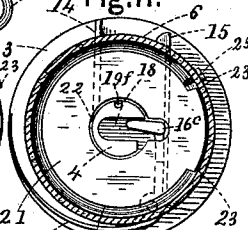


Fig.7.

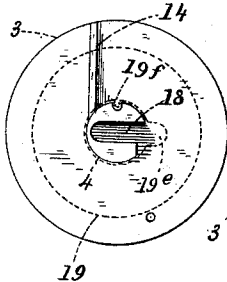


Fig.8.

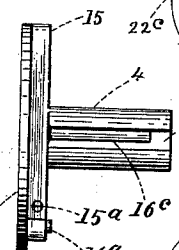


Fig.12.

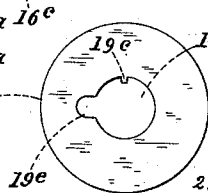


Fig.13.

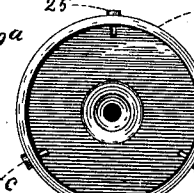
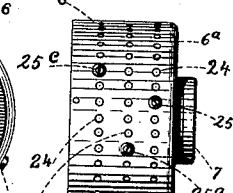


Fig.14.



Witnesses.

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UNITED STATES PATENT OFFICE.

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COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 463,128, dated November 10, 1891.

Application filed March 21, 1891. Serial No. 385,901. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WHITTINGTON, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Combination-Locks, of which the following is a specification.

My invention consists in certain improvements in combination-locks for bicycles, safes, or for other purposes where such a lock is adapted, whereby the lock is rendered very simple in its construction and positive in its action, and consequently not liable to get out of order, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a front or face view showing the dial. Fig. 2 is a sectional elevation showing the interior of the outside or rear plate inclosed therein, showing also its spring-locking mechanism open, so as to allow the lock to be opened. Fig. 3 is a similar elevation of the same, showing in addition the plate, by the aid of which the spring-locking mechanism is brought in position for locking, and also to free the combination-plates, so that the combination can be thrown out. Fig. 4 is a side elevation of the lock complete. Fig. 5 represents a detached face view of the plate for throwing the locking-catch into or allowing it to spring out of engagement with the locking-key. Fig. 6 is a central sectional elevation showing the several parts composing the combination in position. Fig. 7 is a face view of the outside rear plate separate from the other parts. Fig. 8 is a side elevation of the same, showing also a similar view of a portion of the spring-locking mechanism. Fig. 9 is a detached face view of the last combination-plate. Fig. 10 represents a similar view of the next combination-plate. Fig. 11 is a sectional elevation cutting through the inner movable case, and showing the outside plate (forming a portion of the outside case) at the bottom, also a portion of the spring-locking mechanism and the first combination-plate in position. Fig. 12 is a face view of one of the washers. Fig. 13 is an inside view of the inner movable case. Fig. 14 is a side elevation of the same.

In said drawings, 1 represents the outside

case. It consists of a hollow cylindrical portion 1, (see Figs. 1, 2, 4, and 6,) open at the bottom, and a top portion 2, having a central opening, through which the hub of the inner case passes. At the bottom of the outer case is an outside plate 3, secured thereto by screws 3^a (shown in Figs. 4 and 6) or by any suitable well-known means. On the outside plate 3 is a hub 4, projecting upward into a central recess 5 (see Fig. 6) in the inside of the inner case 6. The inner case 6 consists of the hollow cylindrical portion 6, the top portion 6^a, (see Figs. 6 and 14,) and the projecting or hub portion 7, which projects through the central opening in the top 2 of the outside case. (See Fig. 6.) It also projects into an opening 8 in the inner face of the knob 9, to which it is securely fastened by the screw 10, (see Fig. 6,) so that the outside case top 2 is interposed between the knob 9 and the top 6^a of the inside case.

From the above-described construction it will be seen that the inside case and knob are rigidly secured together, and that the top 2 of the case being interposed between them, and being nicely but not tightly fitted, the knob may be easily turned and the inside case with it in either direction. On the flanged portion 8 of the knob is a graduated dial-face 11, and a series of figures 12, arranged in a circle. (See Fig. 1.) At the top of the case 1, just above the dial, is a cipher 13, from which the combination is operated. This dial-face is constructed in the usual way, and any number of graduation marks and figures may be used either more or less than the number shown in the drawings. On the plate 3 is a small rib 14, extending from the hub 4 to the periphery, as shown, (see Figs. 2, 3, and 7, where this rib is shown,) and on the opposite side is a spring-catch 15. (Shown open in Fig. 2 as when the lock is unlocked and closed in Fig. 3.) This spring-catch 15 is riveted by a rivet 15^a to a releasing-arm 16, pivoted by a pin 16^a to the plate 3, so as to swing easily thereon. On the opposite or lower side of the pin 16^a is a curved spring 17, which rests and bears against the inside of the case 1, so that when the spring is free to act, its position will be substantially as shown in Fig. 2—that is, in an unlocked position. To the releasing-arm 16 is rigidly secured a bar 16^b, so that it acts

with it. This bar 16° rests lengthwise in the longitudinal side opening 18 in the hub 4, and in locking and unlocking the lock it moves sidewise in and partly out of the opening 18.

5 When wholly within the opening, the locking-catch 15 is closed, as in Fig. 3, and thereby holds the locking piece or key 18° securely in place.

The washers 19, which are interposed between each pair of the combination-plates 10 and are each provided with a central opening 19°, adapted to fit closely over the hub 4, and are each provided with a small inward projecting portion 19°, (see Fig. 12,) which, as the washer passes over the hub 4 passes 15 into a longitudinal groove 19° in said hub 4, substantially as shown by the dotted line washer 19 in Fig. 7, at 19°. From this construction it will be noticed that the washers 20 19 are all held stationary, so that they never turn on the hub 4, consequently the combination-plates are free to be acted on without interfering with each other. The washers are also provided with another opening 19°. (See 25 Fig. 12.) When these washers are put onto the hub 4, as before mentioned, all these openings 19° are directly opposite the opening 18, as shown in said Fig. 7, so that the bar 16° is free to move out at any time, when required, as far as the washers are concerned. 30

In Fig. 5, 20 represents the plate for throwing the bar 16° into and within the groove 18 in the hub 4, and consequently closing the locking-catch 15, so as to retain the bolt or 35 key 18° in place, as shown in Fig. 3, when the device is locked. In the center of the plate 20 is an opening 20°, adapting it to pass over and turn on the hub 4. About two-thirds of the opening 20° is made circular, so as to surround the hub enough to keep it in place and 40 turn easily on the hub 4. The rest of the opening tapers to the point *i*. (See Fig. 5.) From this construction it will appear that when this plate is in place on the hub 4 it will inclose the bar 16°, and when turned so that the point *i* on the opening 20° is opposite the opening 18 or over the opening 19° in the stationary washers 19, the arm 16° will be permitted to reach the limit of its outward movement. It will be further seen that the plate 50 may be easily turned, and its inclined sides will as it turns move the bar 16° wholly into the groove 18, as in Fig. 3, during one part of its revolution, and during another part allow it to spring out into the position shown in 55 Fig. 2.

The combination-plates 21, 21°, and 21° are each provided with openings 22 to allow them to be placed on the hub 4 and allow them to 60 turn easily thereon, and also with the side openings 19°, corresponding with the same opening in the washer 19, to allow the bar 16° to move into them when they are all brought exactly opposite to the said bar.

65 The peripheries of each of the combination-plates 21, 21°, and 21° are different. The plate 21 has a reduced portion 22° extending a little

over three-quarters around it to the projecting shoulders 23. (See Fig. 11.) The plate 21° has a reduced portion 22° extending about 70 two-thirds around it to the shoulders 23, (see Fig. 10,) and the reduced portion 22° on the plate 21° extends about one-half way around the plate to the shoulder 23. (See Fig. 9.) The largest portion of these combination-plates 75 are all of the required diameter to fit and turn easily in the inner case 6, in which they are located substantially as shown in Fig. 11, where one of these plates is shown in position. This inner case 6 is provided with as 80 many rows as there are combination-plates of small holes 24, in which is secured a removable pin or screw 25, 25°, and 25°, one for each combination-plate, and when secured in place, as shown in Figs. 6, 11, 13, and 14, project 85 down far enough to nearly reach the bottom of the reduced portion of the combination-plate, so it can be easily turned until stopped by the pin 25 (or 25° or 25°) by either of the shoulders 23 coming against it, substantially 90 as shown in Fig. 11. The number of holes in each row (see Fig. 14) correspond with the number of graduation-marks on the dial. The object of this is to provide a suitable means for changing the combination by removing 95 the screws 25, 25°, and 25° and placing them in different holes 24 on the case 6. It would be well to number each hole 24 to correspond with the numbers on the dial, so as to facilitate the changing of the combination when 100 desired.

In putting the lock together (see Fig. 6) the plate 20 is first put on the hub 4, then a stationary washer 19, and over it a combination-plate 21°, then a stationary washer 19, and 105 above it the combination-plate 21°, then another stationary washer 19, and above that another stationary washer 19. The case 6, which has been first secured to the knob 9 and case 110 1, as hereinbefore mentioned, by the screw 10 with the case 1, is put over the case 6, being secured by the pins 26 to the plate 20 (see Fig. 6) by means of a small screw-driver passed through a hole 27 through the case 1, 115 (see Fig. 4,) where the hole 27 is shown, the lower end of the case 6 dropping over a shoulder around the plate 20. The plate 3 is now secured to the case 1 by the pins or screws 3°, (shown in Fig. 6,) and the lock is ready for 120 use. At the opposite side of the case 1, in which the key 18° passes, is a ring 28. When used for a bicycle a chain or cord should be attached to the ring 28 and to the locking-key 18°.

125 From the above description it will be seen that the pins 25, 25°, and 25° can be set for any combination of figures that may be shown on the dial, and that by moving the dial by means of the knob 9 in one direction until 130 the first figure of the combination is reached, which operation will bring the plate 21, for instance, into the position shown in Fig. 11, then by turning the knob in the opposite di-

recession until the next number is reached, thereby bringing the next combination-plate in the same position as the plate 21, (shown in Fig. 11,) the knob 9 is then turned back in the opposite direction until the next combination figure is reached, which operation will bring the next combination-plate in the same position as that shown by plate 21 in Fig. 11, when the spring-catch 15 will spring out, as shown in said Fig. 11, and the lock may be opened.

The number of the combination-plates and washers may be either more or less than the number shown, and the shoulders 23 on the combination-plates may be at different distances apart from that shown in the drawings, without changing the nature of the invention.

In some cases the ring 28 may be dispensed with and the locking-key 18^a modified to suit the different purposes for which the lock is adapted.

I claim as my invention—

1. In a combination-lock, the combination of an inner and outer case, a knob carrying a dial and connected with the inner case so that both will turn together, a series of holes on the periphery of the inner case corresponding with the number of graduations on the dial, and removable pins adapted to be secured in any of said holes for changing the combination or operating the same by catching against the shoulders on the combination-plates and moving them, substantially as described.

2. In a combination-lock, the combination of an inner and outer case, the inner case being connected thereto by a knob carrying a graduated dial, so that the knob and the in-

ner case move together, a spring-catch connected with a locking-bar 16^a, carrying the locking-catch and movable within a side opening in a hub on the inside of the outer case, and a plate attached to an inner case carrying the combination mechanism, having an opening adapting it to turn on said hub and a pointed opening *i* for moving said locking-bar into said hub or allowing it to spring outward, substantially as described.

3. In a combination-lock, the combination, with an outside and inside case connected together by a knob carrying a dial, so that the knob and inner case move together, of an outside plate secured to the outside case, a hub on said plate having a longitudinal opening on one side, an arm connected with a bar movable sidewise in the opening in the hub pivoted to said plate and provided with a spring for keeping it outward, a plate 20, connected to the inner case adapted to turn on the hub 4 for operating the locking-bar and spring-catch, and an alternate series of stationary washers and movable combination-plates mounted on said hub, the stationary washers each having an opening to let the spring-bar pass outward through the opening in the hub to unlock the spring-catch, the combination-plates being also mounted on the hub and having shoulders 23 and similar openings to allow the locking-catch to be opened, and pins on the inner case for operating the combination-plates, substantially as described.

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Witnesses:

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