No. 616,751. Patented Dec. 27, 1898.

J. R. VEDDER & J. J. TRESSEL.

LOCK.

(No Model.) (Application filed Oct. 19, 1897.)

Fig 1

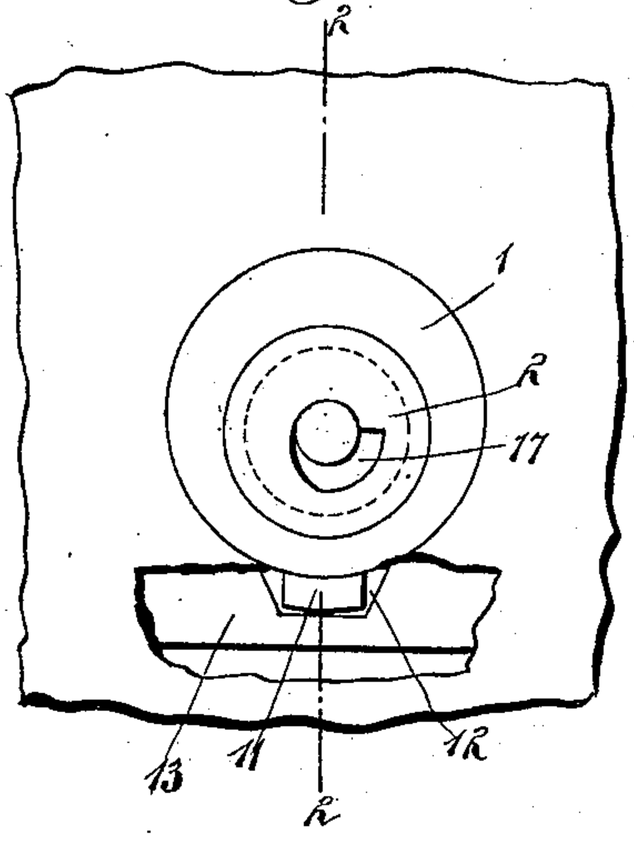


Fig 2.

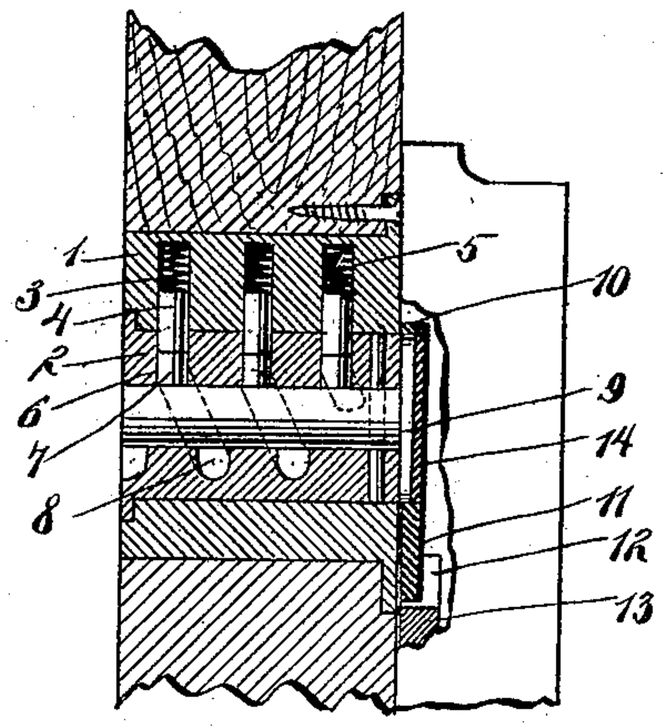


Fig 4

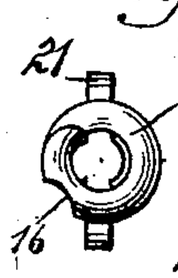


Fig 3.

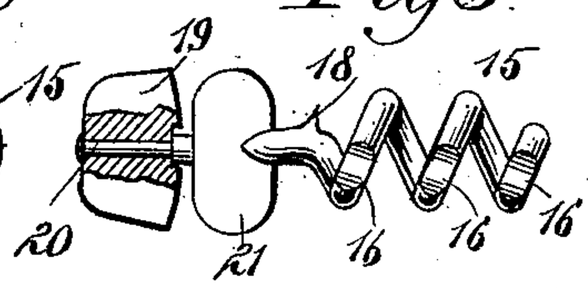


Fig. 5

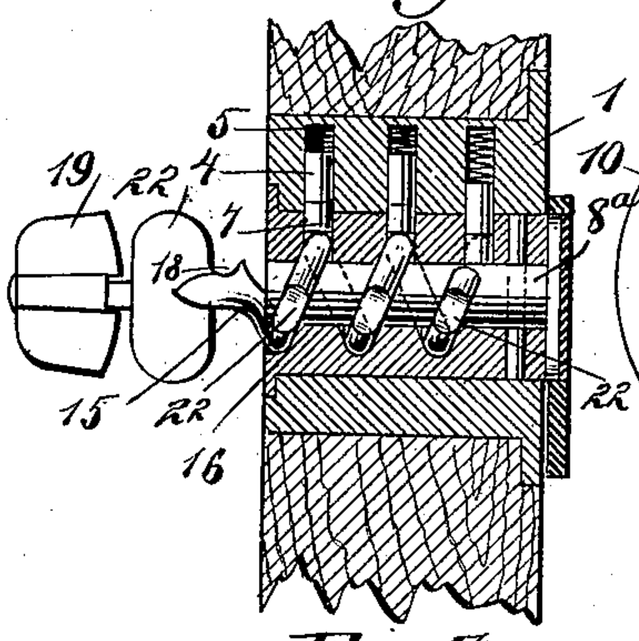


Fig. 6.

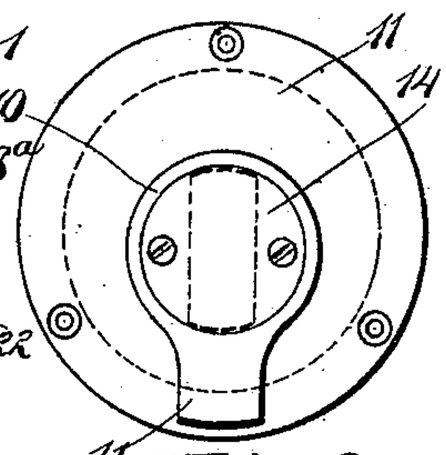


Fig. 9

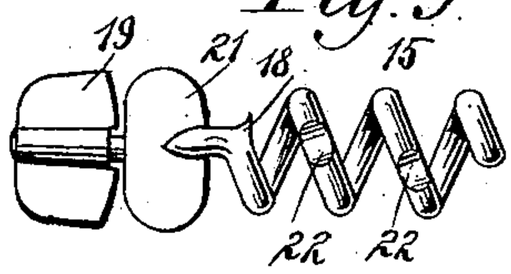


Fig 8

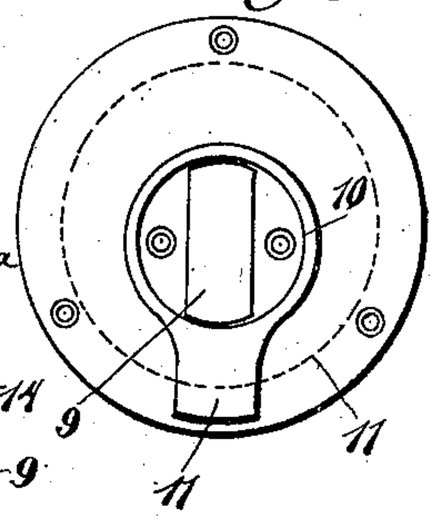


Fig. 10.

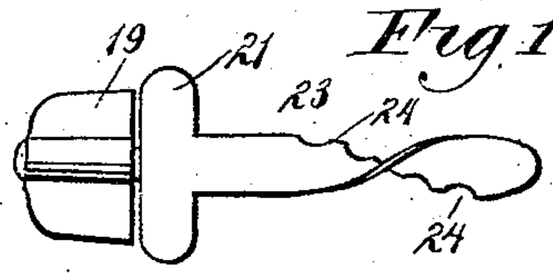


Fig 7

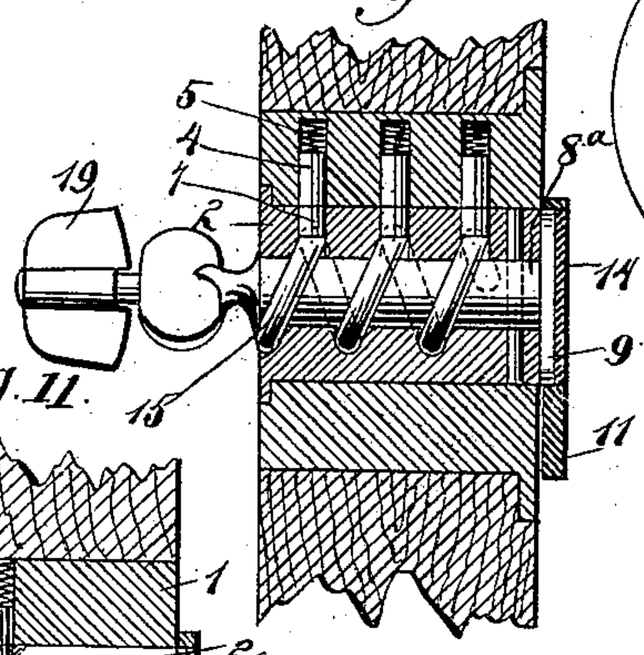
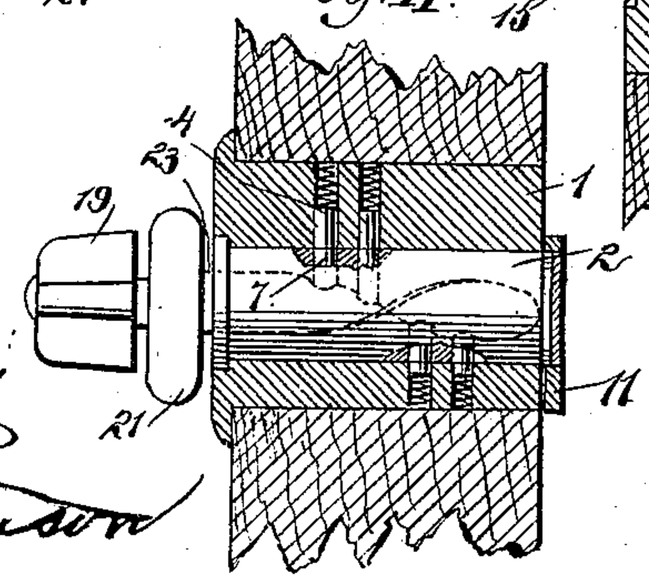


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOSEPH R. VEDDER AND JOSEPH J. TRESSEL, OF CINCINNATI, OHIO.

LOCK.

SPECIFICATION forming part of Letters Patent No. 616,751, dated December 27, 1898.

Application filed October 19, 1897. Serial No. 655,743. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH R. VEDDER and JOSEPH J. TRESSEL, of Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Locks, of which the following is a full, clear, and exact description.

This invention relates to improvements in locks of the cylinder type; and the object is to provide a lock of this character which it will be practically impossible to pick or open with any instrument other than the key designed for it.

The invention consists in the construction and novel arrangement of parts, as will be hereinafter fully specified, and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front end view of a lock, showing a lock-casing embodying our invention, with a portion of a door or other device in which it is inserted broken away to show other parts. Fig. 2 is a section through the line 2 2, showing the lock in its locking position. Fig. 3 is a side view of a key employed. Fig. 4 is an end view thereof. Fig. 5 is a section similar to the section shown in Fig. 2, but showing the key as partly inserted. Fig. 6 is an inner end view thereof. Fig. 7 is a section similar to the section shown in Fig. 2 and showing the key as wholly inserted and the parts in position to operate the lock. Fig. 8 is an inner end view thereof similar to Fig. 6, but having a certain part removed. Fig. 9 shows a key similar to the key shown in Fig. 3, but having its depressions differently arranged. Fig. 10 shows a slightly-modified form of key, and Fig. 11 is a section showing a lock designed to be employed with the key shown in Fig. 10.

Referring to the drawings, 1 designates a cylinder designed to be secured in an opening formed in a door or similar device, and within this cylinder a block 2 is mounted to rotate. The cylinder 1 has a series of radial perforations 3, in which tumblers 4 are designed to move. These tumblers 4 are held normally in their locking position by means of springs 5 engaging at one end with the tumblers and at the other end with the end walls of the perforations 3.

The block 2 has a series of perforations 6, corresponding in number to the perforations 3 and designed when in locking position to be in line with said perforations 3. In the perforations 6 short tumblers 7 are mounted to move longitudinally. These tumblers 7 are of a length somewhat shorter than the length of the perforations in which they operate, so that when the lock is in its locked position the tumblers 4 will engage their ends in said perforations 6, as indicated in Fig. 2.

The block 2 has a vermicular or spirally-disposed keyhole or passage 8 extended longitudinally through it and around a solid core 8^a. This keyhole or passage in certain of its parts will register with the perforations 6. On the inner end of the block 2 is a lug 9, here shown as having its opposite sides parallel, and this lug is designed to extend through a correspondingly-shaped opening in a plate 10, having a finger 11, designed to engage in a notch 12, formed in a locking-bolt 13, designed to engage with the keeper in the usual manner. The plate 10 is countersunk or has a depression in its outer face, and in this depression a plate 14 is inserted, and the said plate 14 and the plate 10 are held in position on the block 2 by means of screws, as indicated in Fig. 6.

The key 15 to be used with the lock just described is shown in Fig. 3, in which it is disclosed as vermicular or spirally wound to correspond to the keyhole or passage. The several turns of this key 15 are each provided on one side with a depression 16, and as the several tumblers of the lock are in a straight line the said depressions must also be in a straight line.

In operation the end of the key is inserted in the outer opening 17 of the keyhole or passage, and then the key is to be moved inward with a twisting motion. The several tumblers during the inward movement of the key will first be operated to move the short tumblers upward, or to a position to engage in the perforations 3. This of course will force the tumblers 4 longitudinally against the resistance of the springs 5. After the key shall have been fully inserted, however, which may be ascertained by a stop 18 coming in contact

with the end of the block 2, the several depressions 16 will be in line with the tumblers 7, so that said tumblers will fall into said depressions. The depressions are of sufficient depth to allow the tumblers 7 to fall to a position to bring their outer ends flush with the outer circumference of the block 2, and the tublers 4 will move until their inner ends are flush with the interior circumference of the cylinder 1. Then by a further rotation of the key in the same direction required to insert it the block 2 will be rotated and cause the finger 11 by engaging with a side wall of the bolt 13 to move said bolt out of the keeper.

To facilitate the drawing out of the key, we provide it with a swivel-head 19, mounted on a stem 20, extended from a fixed head 21. By taking hold of this swivel-head with the fingers the key will be drawn outward and of course rotate in an opposite direction to that in which it rotated while being inserted. Any usual means may be employed for turning the block 2 back to its original or normal position with the several tumblers in a line—such, for instance, as by means of the spring for the bolt 13.

In Fig. 9 the key has its depressions 22 arranged out of line, and of course with this key the several series of tumblers will be arranged out of line in the lock. This is shown merely to indicate that an almost indefinite number of combinations or different key-and-tumbler arrangements may be made.

In Fig. 10 we have shown the key 23 as formed of flat metal turned spirally or vermicular and provided on one edge with depressions 24, corresponding with the depressions 16 or 22, or, in other words, designed for the same purpose. With this key the keyhole or passage in the lock must necessarily be of corresponding shape, and such a lock is shown in Fig. 11. In this form of key the head 21 forms a stop having the same function as the stop 18 before described.

In each example of our improvements it is obvious that the tumblers may only be reached by an indirect way, so that it will be practically impossible to insert an instrument other than the key to release the lock.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A lock, comprising a block mounted to rotate in a cylinder, the said block having a twisted keyway, and a key having a twisted body portion, a fixed head and a swivel-head, substantially as specified.

2. A lock-key having a twisted body portion, a swivel-head, and a stop at the outer end of the body portion, substantially as specified.

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