J. J. PORTUGUEZ.

LOCKS AND KEYS.

No. 178,669. Patented June 13, 1876.

Fig. 1

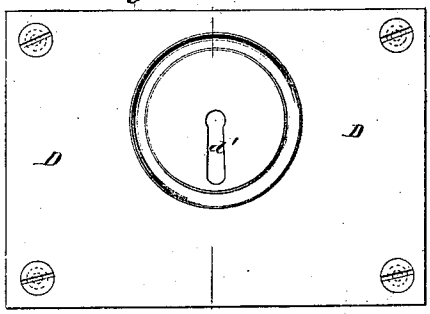


Fig. 2

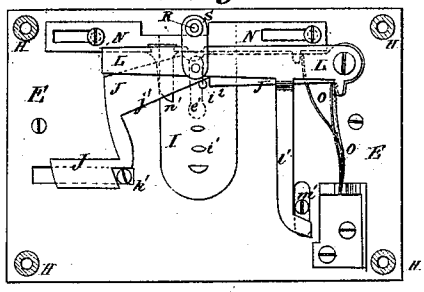


Fig. 3

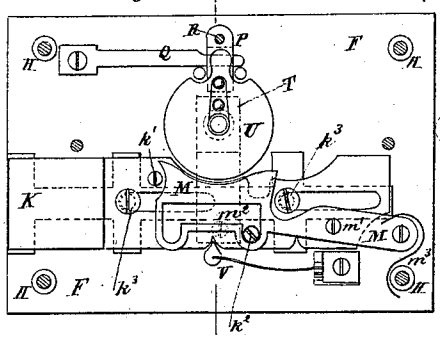


Fig. 4

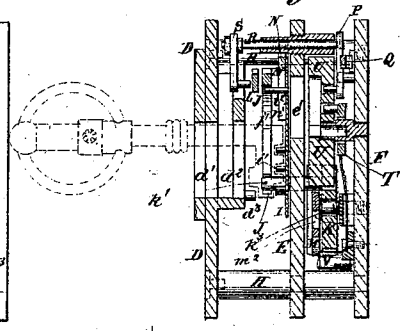


Fig. 5

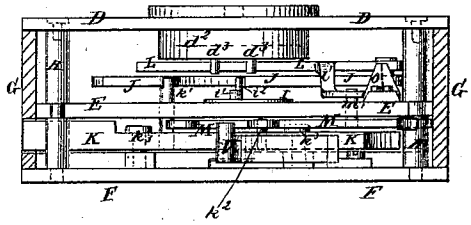


Fig. 6

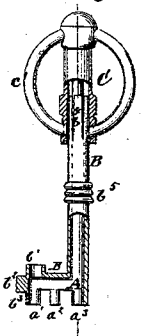


Fig. 7

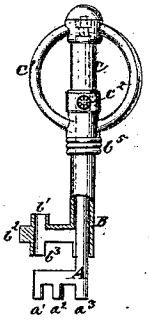


Fig. 8

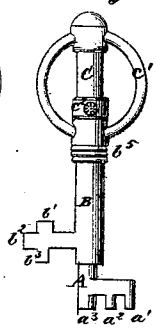
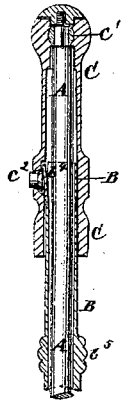


Fig. 9



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UNITED STATES PATENT OFFICE.

JOHN J. PORTUGUEZ, OF NEW YORK, N. Y.

IMPROVEMENT IN LOCKS AND KEYS.

Specification forming part of Letters Patent No. **178,669**, dated June 13, 1876; application filed March 21, 1876.

To all whom it may concern:

Be it known that I, JOHN JOSEPH PORTUGUEZ, of the city, county, and State of New York, have invented a new and useful Improvement in Locks and Keys, of which the following is a specification:

Figure 1 is a face view of my improved lock. Fig. 2 is a view of the same with the face-plate removed. Fig 3 is a view of the same with the intermediate plate removed. Fig. 4 is a cross section of the same, taken through the line *x x*, Figs. 1 and 3. Fig. 5 is an edge view of the same, the case being shown in section. Fig. 6 is side view of the key, parts being broken away to show the construction. Fig. 7 is a view of the key, showing the bits in another position. Fig. 8 is a view of the key, showing the bits in a third position. Fig. 9 is a longitudinal section of the key, taken through the line *y y*, Fig. 6.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved lock for safes, doors, and other places where two parts are to be secured together, and which shall be so constructed that it cannot be opened by any other instrument than the key made expressly for it.

The invention consists in the combination of the pivoted bar provided with an incline and a notch, the pivoted bar provided with an arm, and the sliding bar provided with a plate having guards and a locking-pin attached to it, and their springs, with the intermediate plate of the case for locking the pins attached to the bolt and its locking-bar, and for covering the key-hole through said plate, and in the key formed of the two parts sliding upon and shutting into each other and the third part, constructed and arranged to operate in connection with each other, as hereinafter fully described.

I will describe the mechanism of the lock in connection with the movements of the key by which it is operated, and which I will first describe.

The key is made in three parts, A B C. The inner part A is made with two guards, a^1 a^2, and the lower end a^3 of its stem projects in line with said guards a^1 a^2 to serve as a pivot to the key. The part B has three guards, b^1 b^2 b^3, the guards b^1 b^3 being upon the upper and lower sides of its outer part in line with each other, and at the same distance from the axis of the key as the guard a^1 of the part A. The guard b^2 is upon the end of the part B. The upper guard b^1 is made hollow to receive a pin, as hereinafter described, and the lower side of the part B is grooved to receive the part A, as shown in Fig. 6. The stem of the part A is made long, and passes through the hollow stem of the part B, which is made shorter, through the hollow stem of the part C, and its upper end is rigidly attached to the upper end of the said part C, so that the said parts A C cannot turn upon each other. To the part C is attached the handle c^1, which may be made in the form of a ring, or in any other convenient form. The cavity of the part C is made larger than the stem of the part A, so that the hollow stem of the part B may be slippped up into the part C, withdrawing the guards of the part B from the guards of the part A, and allowing the parts A C to be turned, while the part B is held still. The upper part of the stem of the part B has two slits formed in it, forming a tongue, b^4, which is sprung outward a little, so as to enter a recess in the inner surface of the part C, and thus prevent the part B from slipping up upon the part A accidentally. This tongue is pushed in to allow the part B to be pushed up by a small pin, c^2, passing in through the part C, as shown in Fig. 9. The stem of the part B has a collar or bead, b^5, formed upon it for convenience in moving it up and down, and to limit its upward movement.

The case of the lock consists of the face-plate D, the intermediate plate E, the back-plate F, and the band G, which parts are bound together by four bolts, H. In the face-plate D is formed the key-hole d^1. The part of the plate D through which the key-hole d^1 is formed has a circular plate or cap, d^2, attached to it to give the stem of the key a longer bearing to keep it in position while being operated, without having its lower end steadied by a pivot. To the lower side of the plate d^2, at the opposite sides of the forward end of the key-hole, are attached two pins, d^3, which pass through the angle between the guards b^1 b^2 of the key, and serve to prevent a key of any

other shape from being inserted in the key-hole d^1 and turned. As the key passes through the key-hole d^1 it rests upon a plate, I, which is provided with guards i^1, between which the guards of the key fit. The key is then turned a half-revolution to the right. As the key comes into position the guard b^2 strikes the incline j' of the angular pivoted arm J, and pushes said arm back, withdrawing it from the pin k^1 attached to the bolt K, and which passes through a slot in the intermediate plate E, and from the pin i^2 attached to the plate I. The guard b^1 strikes the pivoted arm L and pushes it back, withdrawing its arm l' from the pin m^1 attached to the pivoted bar M, and which passes through a slot in the intermediate plate E. The guard b^3 strikes the projection n' formed upon or attached to the arm N and pushes it back. The arm N is slotted longitudinally, and slides upon two pins or screws, and carries with it the plate I. The arms J L N are held forward by the three springs O, attached to a block secured to the plate E. As the key completes its half-revolution it is pressed downward, which forces the inner part A through the key-hole e', formed in the intermediate plate E. As the part A of the key descends it enters a hole in the eccentric U, and the guard a^1 strikes a pin attached to a plate, P, which rests upon and is held up by a spring, Q, attached to the back-plate F. To the plate P is also attached a rod, R, which passes up through a hole or socket formed in or attached to the intermediate plate E. To the upper end of the rod R is attached a plate, S, which has a short pin attached to its inner end to enter the hole in the guard b^1 of the part B of the key, and hold said part so that it will not be turned by turning the part A. The guard a^2 strikes a pin attached to a spring, T, and pushes it out of a hole in the eccentric U, and thus unlocks the said eccentric. The parts A C of the key are then turned through an entire revolution, turning the eccentric U. As the eccentric U turns its toe strikes the bar M, and pushes it back, releasing the pin k^2 attached to the bolt K. As the bar M moves back it pushes the spring-catch V out of its notch in the bolt K. The toe of the eccentric U then strikes the bolt K, and pushes it forward into place, the pin k^2 passing along a slot, m^2, in the bar M. As the bolt K comes into place the spring-catch V drops into another notch in the bolt K, and the bar M is forced forward by its spring m^3 bringing the pin k^2 into another notch in said bar. The bolt K and bar M are farther locked in place by the pins k^1 m^1, the arms J L l', and the intermediate plate E, through slots in which the said pins k^1 m^1 pass. The bolt K has two longitudinal slots formed in it to receive the screws k^3 to compel the said bolt to always move in a straight line, and which are screwed into the back-plate F, or into the bar or blocks attached to said plate, and upon which the said bolt K slides.

The key is removed by drawing it upward, which raises the part A through the key-hole in the intermediate plate E, and into the part B, and then turning the key a half-revolution to the left.

The lock is unlocked by turning the key a half-revolution to the right, pushing the part A through the intermediate plate E, and turning it a full revolution to the left. The key may then be removed in the manner hereinbefore described.

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

1. The combination of the pivoted bar J, provided with an incline and a notch, the pivoted bar L, provided with an arm, l', and the sliding bar N, provided with a plate, I, having guards i^1, and a locking-pin, i^2, attached to it, and their springs O, with the intermediate plate E for locking the pins k^1 m^1 attached to the bolt K and the bar M, and for covering the key-hole through said plate, substantially as herein shown and described.

2. The key, formed of the two parts A B sliding upon and shutting into each other, and the third part C, constructed and arranged to operate in connection with each other, substantially as herein shown and described.

JOHN J. PORTUGUEZ.

Witnesses:
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T. B. MOSHER.