(Model.)

F. KRUPP.

LOCK.

No. 400,858. Patented Apr. 2, 1889.

Fig. 1.

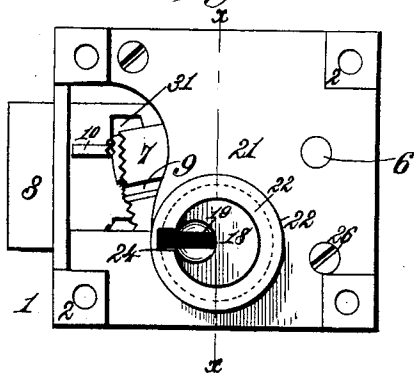


Fig. 2.

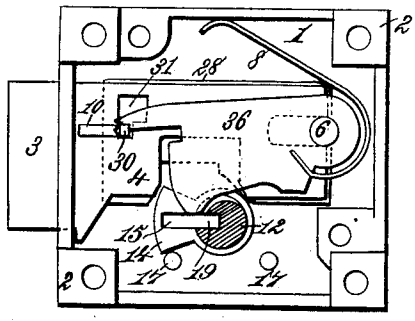


Fig. 3.

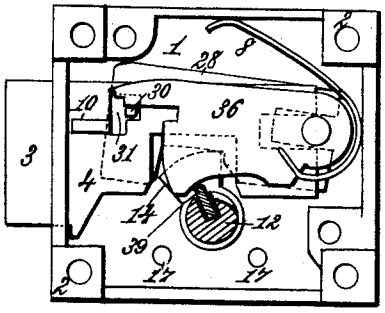


Fig. 4.

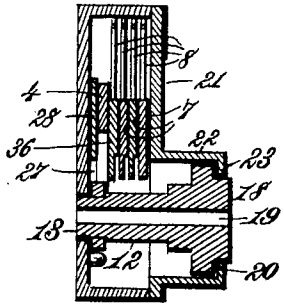


Fig. 5

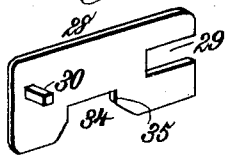


Fig. 6.

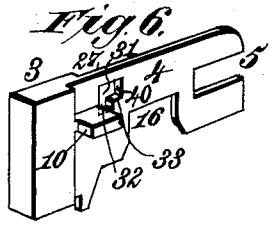


Fig. 7.

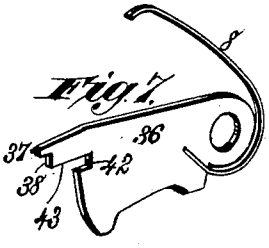


Fig. 8.

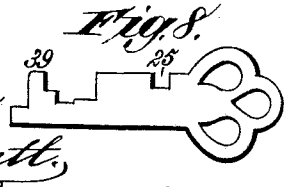
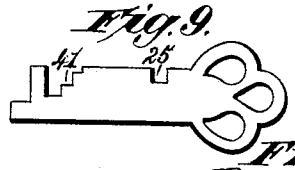


Fig. 9.



Witnesses.
Robt. Gratt.
J. A. Rutherford.

Inventor.
Frank Krupp.
By James L. Norris.
Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FRANK KRUPP, OF NEW ORLEANS, LOUISIANA.

LOCK.

SPECIFICATION forming part of Letters Patent No. 400,858, dated April 2, 1889.

Application filed September 22, 1888. Serial No. 286,107. (Model.)

To all whom it may concern:

Be it known that I, FRANK KRUPP, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful Improvements in Locks, of which the following is a specification.

My invention relates to that type of locks in which the retraction of the bolt is permitted by means of a series of slotted tumblers which are raised by the key and their slots aligned opposite a stud upon the bolt which moves back within said slots.

It is the purpose of my invention to combine with a lock of this class an independent tumbler actuated by an auxiliary key only, whereby one or more of the lock-tumblers may be lifted by the insertion of said key, and temporarily supported by a pin on the independent tumbler, after which the bolt may be operated by the insertion of the primary key.

It is my purpose also to so construct and combine the parts that the bolt shall not respond to the action of the auxiliary key or be disturbed thereby, but shall be instantly operated by the primary key after the application of the auxiliary key, the former key being incapable of removal from the lock until the bolt is again thrown forward, after which the lock is incapable of operation through the agency of the primary key until the auxiliary key is again inserted and used.

The invention consists in the several novel features of construction and new combinations of parts hereinafter fully set forth, and then specifically pointed out and defined in the claims.

In the accompanying drawings, Figure 1 is a front elevation of the lock. Fig. 2 is a face elevation, the face-plate and part of the tumblers being removed. Fig. 3 is a similar view, the parts being in a different position. Fig. 4 is a vertical transverse section in the plane X X, Fig. 1. Fig. 5 is a detail perspective of the latch-plate. Fig. 6 is a detail perspective of the lock-bolt. Fig. 7 is a detail perspective of the latch-tumbler. Figs. 8 and 9 are views of the auxiliary and primary keys, respectively.

In the said drawings, the reference-numeral 1 designates the lock-casing, which may be of any suitable form and dimensions. I prefer to make it of rectangular form, with a button, 2, at each angle to receive the attaching-screws.

The numeral 3 denotes the lock-bolt, provided with the bolt-plate 4, which extends from the bolt-opening nearly to the opposite side wall, and is provided at its rear end with a slot, 5, which, when the bolt is in place, receives a post, 6, projecting from the rear wall of the casing and serving as a support and guide for the bolt-plate. Upon this post also are pivotally mounted a series of tumblers, 7, each provided with a spring plate or wire, 8, by which the free ends of the tumblers are normally thrown downward. In the outer end of each tumbler is formed an open slot, 9, of such dimensions as to admit a stud or stump, 10, projecting from the outer face of the bolt-plate. The slots 9 are differently located upon the several tumblers in the ordinary manner, and are aligned by the action of the key which lifts the tumblers, brings the several slots into register, and retracts the bolt.

The numeral 12 denotes the lock-spindle, having a trunnion, 13, which lies in an opening in the rear wall of the lock-casing. Upon the foot of this spindle, within the casing, is mounted a cam, 14, provided with a slot, 15, which receives the end of the key. This cam turns under the action of the key within an opening, 16, in the lower edge of the bolt-plate, and retracts the bolt. The rotary movement of the spindle is limited by the lugs 17 on opposite sides of the opening which receives the trunnion 13. Upon the outer end of the spindle is mounted the cylindrical bearing or block 18, having a key-slot, 19, registering with the slot 15. This block is provided with an annular seat, 20, for the face-plate 21, which has a cylindrical shell, 22, provided with an inwardly-turned flange, 23, which rests upon the annular seat 20, and is provided with a notch, 24, to permit the insertion of a key. Both the auxiliary and the primary key are provided with a notch, 25, which receives the flange 23 as the key is turned, and which prevents the removal of

either key until it is turned back to the position in which it was first inserted. The face-plate is fastened upon the lock-casing by screws 26, or in any other suitable manner.

Upon the rearward side or face of the bolt-plate 4 is formed a recess or chamber, 27, within which lies an independent latch-plate, 28, having a slot, 29, at one end, which receives the post 6, upon which the latch-plate moves. Projecting from that face of said plate which is adjacent to the lock-plate or at or near the other end of the latch-plate is a short pin or stud, 30, projecting through an opening, 31, in the latch-plate and somewhat beyond the outer face of the latter. The opening 31 is formed with a notch or pocket, 32, lying just behind the stump 10, and of such size as to readily receive the stud 30, while just above the plane of the stump and in rear of the notch 32 is a shoulder, 33. In the lower edge of the latch-plate 28 is formed an opening or recess, 34, having a shoulder, 35, the construction being such that the recessed edge of the latch-plate lies below the edge of the opening 16 in the bolt-plate, and in such position that when the auxiliary key, presently to be described, is inserted and turned the cam 14 on the lock-spindle will lift the latch-plate 28, raising a pin 30 out of the pocket 31, and at the same time slightly retracting said latch-plate, so as to bring the pin or stud 30 over the shoulder 33, upon which it will then rest.

Upon the post 6, and lying against the outer face of the bolt-plate, is a latch-tumbler, 36, having a point or extremity, 37, which normally projects somewhat over the stump 10, on which it rests. Below and in rear of the point 37 is formed a shoulder, 38, which, when the bolt is shot, lies immediately behind the stud 30 on the latch-plate, said stud lying directly behind the stump 10 of the bolt-plate. When the parts are in this position, it is evident that the retraction of the bolt is impossible.

The auxiliary key is shown in Fig. 8. It is provided with a single projection, 39, which lies partly in the slot 15 of the cam 14, but projects outside of said slot a distance about equal to the thickness of the latch-tumbler 36. This projection engages with the lower edge of the said tumbler and lifts the point 37 off the stump 10, raising it high enough to permit the pin 31 on the latch-plate to rise and pass over the shoulder 33 of the bolt-plate. At the same moment that the key raises the tumbler 36 the cam 14 of the lock-spindle lifts the latch-plate 28 and draws it to the rear far enough to place the stud 30 upon the shoulder 33 of the bolt-plate. Further movement in this direction is prevented by a shoulder, 40, upon the bolt-plate 4, against which the stud 30 abuts as soon as it is fairly seated upon the shoulder 33, and all retraction of the bolt is rendered impossible by the ordinary tumblers, 7, which are not disturbed by the auxiliary key.

The primary key (shown in Fig. 9) is provided with the several chambers 4; required to lift the ordinary tumblers and bring their several slots into alignment opposite the stump. As this is done, the cam 14 on the spindle retracts the bolt, the stump passing into the slots of the tumblers in the usual way. As the bolt passes to its rearward limit of motion, the stud 30 on the latch-plate meets a second shoulder, 42, on the tumbler 36, by which it is pushed off the shoulder 33 and dropped into the notch or pocket 32. As the bolt is subsequently shot forward and locked, the edge 43 of the latch-tumbler 36 rides off the stud and the tumbler drops into its original position, its point resting upon the stump 10, with the stud 30 between its shoulder 38 and said stump. Thus in order to unlock the bolt the primary key must be removed and the auxiliary key again introduced and operated, since the tumbler 36 falls into position to lock the bolt against retraction before the other tumblers lifted by the primary key fall into position behind the stump on the bolt.

What I claim is—

1. In a tumbler-lock, the combination, with the lock-bolt having a recess and provided with an opening having a shoulder arranged above and in rear of a notch or pocket lying behind the stump on the bolt, of an independent latch-plate having a stud or pin lying in said notch and projecting beyond the outer face of the bolt, a latch-tumbler provided with a shoulder lying behind said pin or stud, and a lock-spindle having a cam slotted to receive the key, substantially as described.

2. In a tumbler-lock, the combination, with a series of ordinary tumblers, and with a lock-bolt having a stump, of an independent latch-plate lying in a recess behind the said bolt and provided with a pin or stud projecting through a shouldered opening in the bolt and normally lying behind the stump, a latch-tumbler adjacent to the bolt having a shoulder lying behind and a point resting upon said pin or stud, a lock-spindle having a cam which lifts and retracts the independent latch-plate, and a key which raises the latch-tumbler, substantially as described.

3. In a tumbler-lock, the combination, with a lock-bolt having a stump and guided and supported by a post, 6, on the case, of a series of ordinary slotted tumblers, 7, a latch-plate, 28, sliding upon said post and having a pin or stud, 30, projecting through a notch, 32, forming part of an opening, 31, in the bolt, said opening having shoulders 33 and 40, a latch-tumbler, 36, having a point, 37, and a shoulder, 38, lying behind the stud 30, a lock-spindle, 12, having a slotted cam, 14, limited in rotation by lugs 17 on the case,

and provided with a bearing, 18, lying in a shell, 22, having a notched flange, 23, an auxiliary key having a single projection, 39, lying partly in the slot in the cam 14, and a primary key having shoulders 41, acting on the ordinary tumblers and having a notch, 25, which receives the flange 23, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK KRUPP.

Witnesses:
W. B. MURPHY,
JAS. SIMEON.