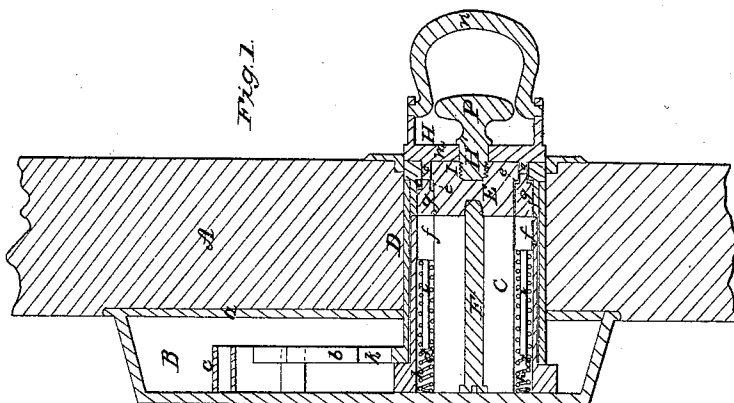
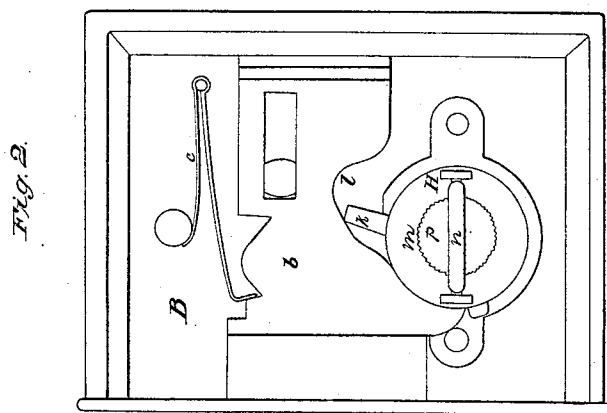
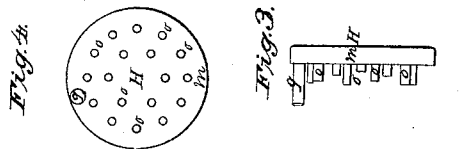


C. F. Toll,

Lock.

N^o 52,226.

Patented Jan. 23, 1866.



Witnesses:

Frederick Curtis
G. W. Washburn

Inventor:

Charles F. Toll.
by his attorney.
R. W. Ledy

UNITED STATES PATENT OFFICE.

CHAS. F. TOLL, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. 52,226, dated January 23, 1866.

To all whom it may concern:

Be it known that I, CHARLES F. TOLL, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Locks for Doors; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 denotes a transverse section of one of my improved locks and its key as applied to a door. Fig. 2 is a view of it without its key and with the cap-plate of the box of the lock removed.

In the said drawings, A denotes the door; B, the case of the lock; *a*, the cover or cap-plate of such case; *b*, the bolt, and *c* the latching-spring of the bolt.

C is a cylinder, fastened to and projecting from the bottom of the lock-case, and being arranged concentrically within a tube, D, which projects from another cylinder, E, one end of which is placed against the outer end of the stationary cylinder C. There is a series of cylindrical chambers, *d d*, made through the cylinder C from end to end of it, each of them being parallel to the axis of the cylinder. A corresponding series of chambers, *e e*, is formed within the rotary cylinder E. In each of the chambers *d d* there is a plunger or piston, *f*, which co-operates with a similar plunger or piston, *g*, arranged in the corresponding chamber *e e* of the cylinder E. In each chamber *d* there is a helical spring, *h*, which rests against the bottom of the case B, and also against the piston *f* of such chamber. Besides this spring there is a pin, *i*, placed within the spring and having a length somewhat less than that of the cylinder C, diminished by the length of the piston *f* of the chamber *d*. This pin, while it will allow the piston *g* to be forced a short distance into the chamber *d*, constitutes a stop for its farther entrance into the chamber and prevents the spring *h* from being too closely contracted. The two cylinders C and E are connected by a screw-pin, F, which passes upward through the cylinder C and screws against and into the cylinder E, the same being so as to allow the latter cylinder to be revolved while still in connection with the cylinder C.

A cam or projection, *k*, extends from the cylinder D and into the bolt-recess *l*, and serves, while the said cylinder is being revolved, to

throw or move the bolt in either direction, whether to lock or unlock the said bolt.

In connection with the cylinder E and its pistons I employ a peculiar key, H, and a means of applying and fastening such key to the cylinder. The key consists not only of a circular disk or plate of metal, *m*, provided with a handle, *n*, but of a series of pins, *o o*, of different lengths, projecting from such plate and arranged so as to enter the open ends or mouths of the several chambers *e e* of the cylinder E, while the key-plate *m* may be in the act of being forced toward the outer end of the cylinder E. The lengths of the several pins *o o* are to be such as to cause the junctions or planes of contact of all the pistons *eg* of the two series of pistons to be in the junction or plane of contact of the two cylinders C E when the plate *m* is crowded close against the cylinder E. Thus it will be seen that when the key is in place close up to the cylinder E such cylinder, for the purpose of operating the bolt, can be revolved by power applied to the handle of the key; but when the key is not so in place each of the several pistons, *f*, will be more or less pushed into one of the chambers, *e*, of the cylinder E, and thus will prevent the said cylinder from being revolved.

For connecting the key to the cylinder E, as well as for disconnecting the two, I employ not only a female screw, I, made in the cylinder F, but a male screw, H', whose shank goes through the plate, is provided with a milled head, P, and is so connected with the plate as to be capable of being revolved while in such connection with it. The screw extends beyond the lower face of the plate, and is to screw into the cylinder E or the female-screw I thereof.

In order to enable a person to always determine the proper position of the key for its bits or projections to enter the mouths of the chambers *e e* such key may have projecting from it one or more pins or bits, *q*, larger in length and diameter than either of the others, the said pin or pins being to enter a corresponding hole or corresponding holes made in the cylinder E.

Fig. 3 is a side view, and Fig. 4 a bottom view, of the key as separate from the lock, the said auxiliary or position pin being exhibited in such figure.

The difficulty of picking a lock so made will

be apparent to persons skilled in the manufacture and use of locks. Furthermore, owing to the construction of the lock, gunpowder or explosive material cannot be introduced into it by any key-hole. When the key is applied to the lock the bolt can readily be opened by the key, but on removal of the key from the lock the cylinder E and its tube D remain fixed in position and prevent the bolt from being moved.

In the above-described lock I claim as of my invention the following:

1. The combination of the stopping-pin *i*

with the spring *h* and the pistons *f g*, when applied to the two cylinders C E, arranged in manner and to operate together, as described.

2. The combination of the connection-screws H' I, or their equivalent, with the key H, and the cylinders E C D, and the pistons *f g*, and spring or springs *h*, the whole being made and applied together, substantially as specified.

C. F. TOLL.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.