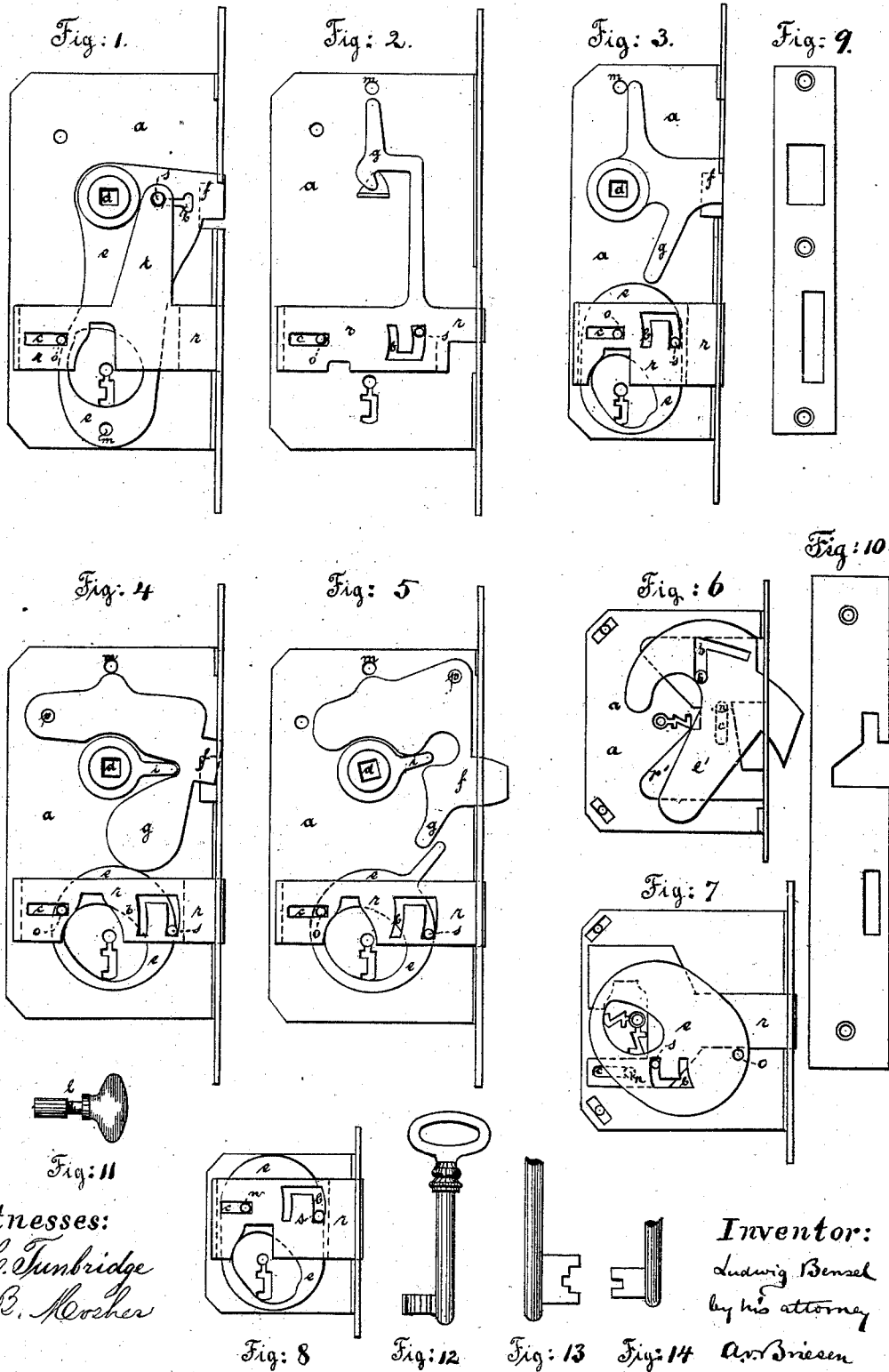


L. BENSEL.  
Lock.

No. 216,502.

Patented June 17, 1879.



# UNITED STATES PATENT OFFICE.

LUDWIG BENSEL, OF ISERLOHN, PRUSSIA, GERMANY.

## IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. **216,502**, dated June 17, 1879; application filed March 14, 1879.

*To all whom it may concern:*

Be it known that I, LUDWIG BENSEL, of Iserlohn, Prussia, in the Empire of Germany, have invented a new and Improved Lock for Doors, Drawers, &c., of which the following is a specification.

Figures 1, 2, 3, 4, 5, 6, 7, and 8 are face views of locks containing my invention in several modifications. Fig. 9 is an end view of the lock illustrated in Fig. 5; Fig. 10, an end view of the lock illustrated in Fig. 4. Fig. 11 is a detail side view of the pin for locking the latch; Figs. 12, 13, and 14, views of keys that may be used in the locks.

Similar letters of reference indicate corresponding parts in all the figures.

The object of this invention is to produce a lock for doors, drawers, desks, piano-fortes, and the like, in which lock no spring shall be employed, but which shall, nevertheless, be positive in its action, and difficult to pick or open except in the prescribed manner.

The invention consists in the new arrangement, and also in the new combination, of parts hereinafter more fully described.

In the accompanying drawings, with particular reference to Fig. 4, the letter *r* represents the sliding bolt, placed into an appropriate lock-case, *a*, within which it is to be moved by a suitable key, such as shown in Fig. 13. The bolt *r* has a straight slot, *c*, and a U-shaped slot, *b*. An immovable pin, *o*, extends through the slot *c*. By the pin *o* is pivoted within the lock-case a tumbler-plate, *e*, which carries a pin, *s*, that extends through the slot *b*. The plate *e* is in front of the key-hole, and is cut out so that the key may enter it, and may swing it on its pivot *o* before the bolt can be moved.

*f* is the latch, being a plate that is pivoted at *p* within the lock-case, and capable of being vibrated by turning a suitable handle, *d*, from which a tongue, *i*, may extend into a recess of the plate *f*, for moving it, as in Figs. 4 and 5, or which may directly connect with the plate *f*, as in Fig. 3. A toe-piece, *g*, extends from the plate *f* and bears upon the plate *e*, to assist the operation of the latter by the weight of the plate *f*.

The operation is as follows: When the bolt *r* is to be locked the key is inserted and turned.

Its first action will be to turn the plate *e* on its pivot, and to thereby carry the pin *s* into the horizontal part of the slot *b*. The bolt is now free to be moved by the key, which enters a recess in the bolt for this purpose. As soon as the bolt is shot out and the key withdrawn, the pin *s* drops, by the weight of the plate *e* and upper plate, *f g*, into the inner upright wing of the slot *b*, and thereby locks the bolt, which cannot be drawn back again until the key has again swung the plate *e* and carried the pin *s* into line with the horizontal part of the slot *b*.

The latch can be freely worked by its handle *d*, whether the bolt *r* be opened or closed; but by inserting a pin, *l*, directly over or against the latch through a hole, *m*, of the lock-case, the latch is locked down, and thereby, also, the plate *e*, so that neither latch nor bolt can be moved until the pin *l* be first withdrawn.

The invention as described is fully shown in Figs. 3, 4, and 5, which differ simply in showing modified forms of plate *f g* and plate *e*. In all these cases the operation is exactly alike.

In Fig. 1 is shown a modification, which consists in rigidly uniting the latch *f* to the plate *e*, so that the pin *d* will be the pivot of *e*; otherwise the operation is alike, the slot *b* being, in the plate *e*, H-shaped, to permit the free use of the latch.

In Fig. 2 is shown another modification, in which the plates *e* and *f* are entirely dispensed with, the bolt *r* having the slots *c* and *b*, as in Fig. 4, and vibrating on the pin *o* until it can slide on both pins *o* and *s*. An arm, *g*, projecting from the bolt rests on the latch-pin, and by its means the bolt can be freely used as a latch whenever desired.

In Figs. 6, 7, and 8 are shown the bolt *r* and plate *e*, substantially as in Fig. 4, but without the latch mechanism, these kinds of locks being intended for desks, pianos, drawers, &c.

The modification shown in Fig. 7 employs a separate guide-pin, *n*, in the slot *c* of the lever, and a separate pivot, *o*, for the plate *e*, because the slot *b* is in the plate *e* instead of in the plate *r*.

The modification shown in Fig. 6 uses a sliding plate, *r'*, and a vibrating bolt, *e'*, which respectively operate like the bolt *r* and plate

*e*, hereinabove described. One of the upright arms of the slot *b* may be dispensed with in this modification.

I claim—

1. The combination of the pivoted plate *e*, cut out for admitting the key, and provided with the locking-pin *s*, working in slot *b*, with the sliding plate or bolt *r*, having slots *c* and *b*, and a pivot-pin for the plate *e*, substantially as herein shown and described.

2. The combination of the pivoted cut-out plate *e*, having pin *s* and slotted bolt *r*, with the latch *f*, having pendant *g*, in contact with plate *e*, substantially as herein shown and described.

3. The combination of the locking-pin *l* with the latch *f*, pivoted plate *e*, and slide-bolt *r*, so that the latch and the bolt may be locked by means of the pin *l*, substantially as herein shown and described.

4. The bolt *r*, having straight slot *c* and U-shaped slot *b*, in combination with the pin *o* and the pivoted plate *e*, having pin *s*, substantially as herein shown and described.

This specification signed by me this the 13th day of December, 1878.

LUDWIG BENSEL.

Witnesses:

CARL HERTERBERG,  
CARL MÜLLER.