

(Model.)

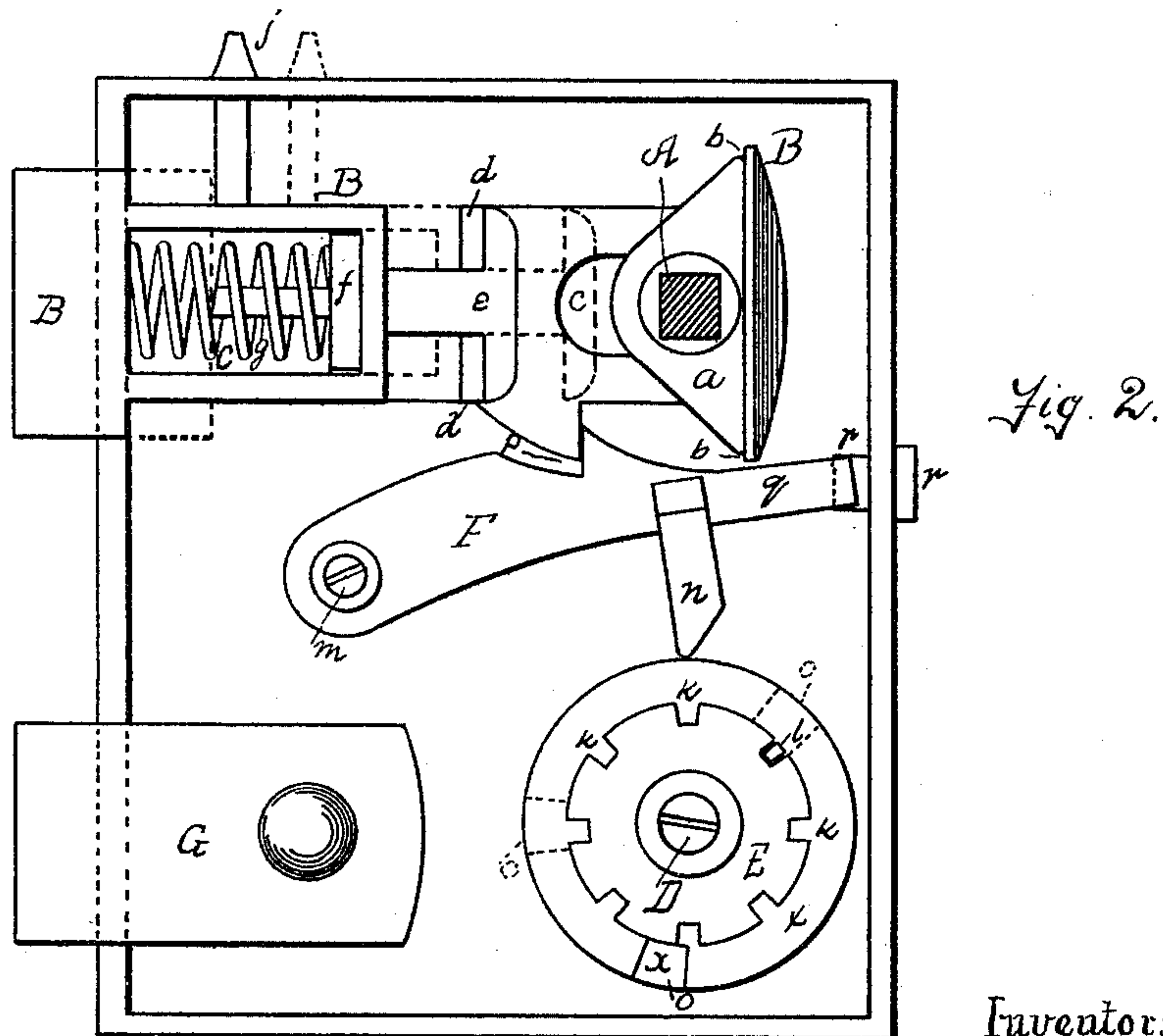
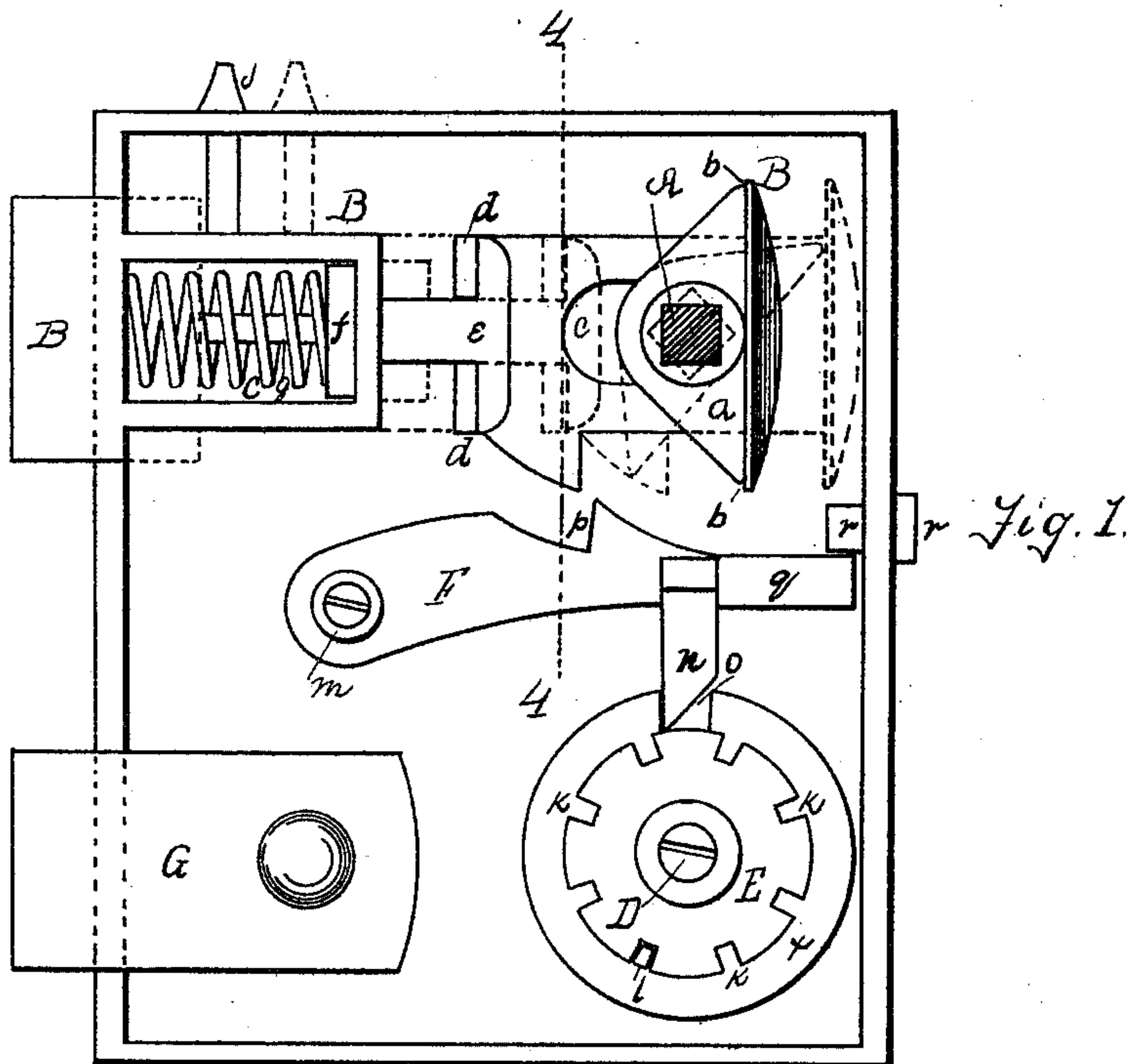
2 Sheets—Sheet 1.

O. S. BAKKE & O. HALGRIMSEN.

PERMUTATION LOCK.

No. 414,135.

Patented Oct. 29, 1889.



Witnesses.

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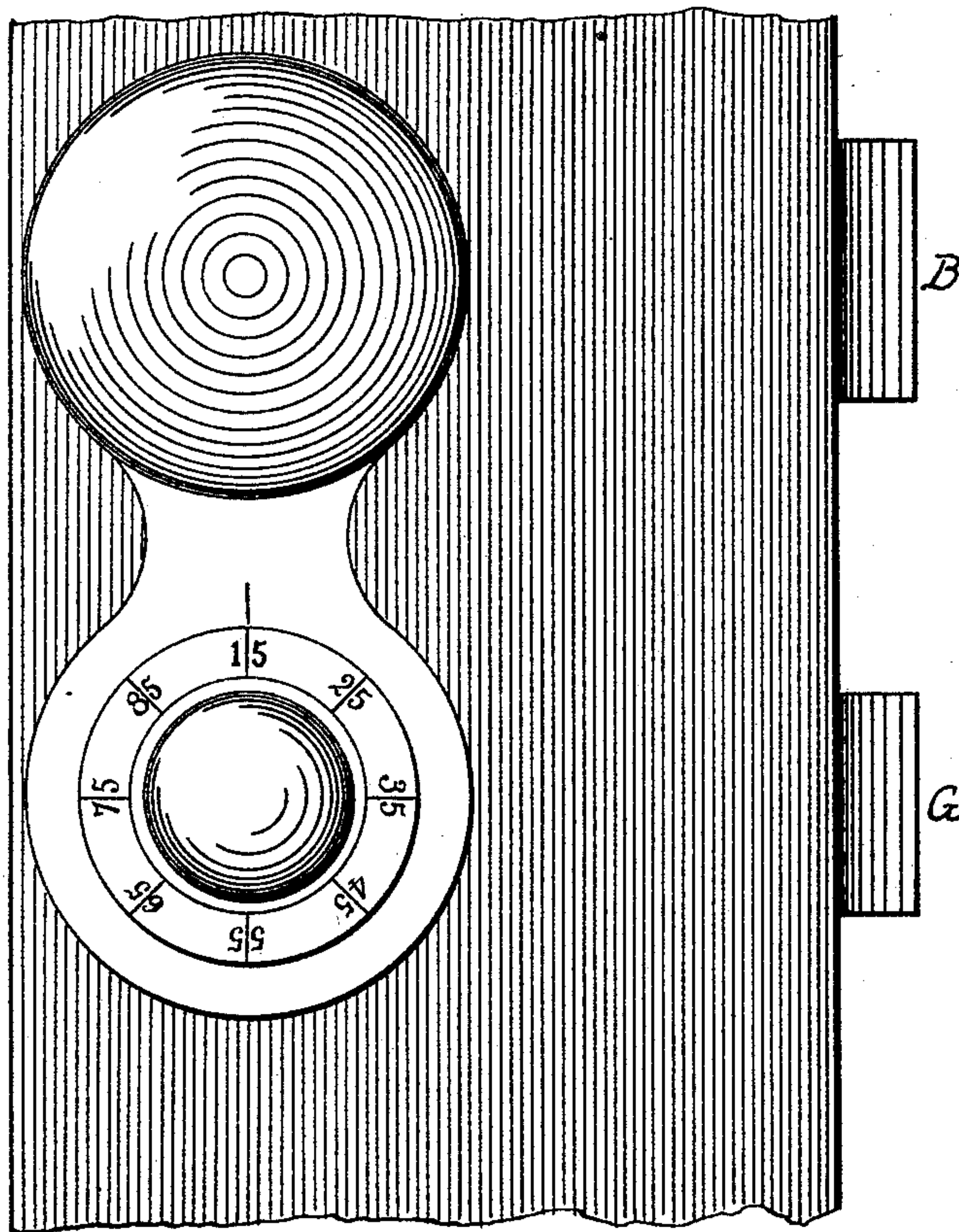


Fig. 5.

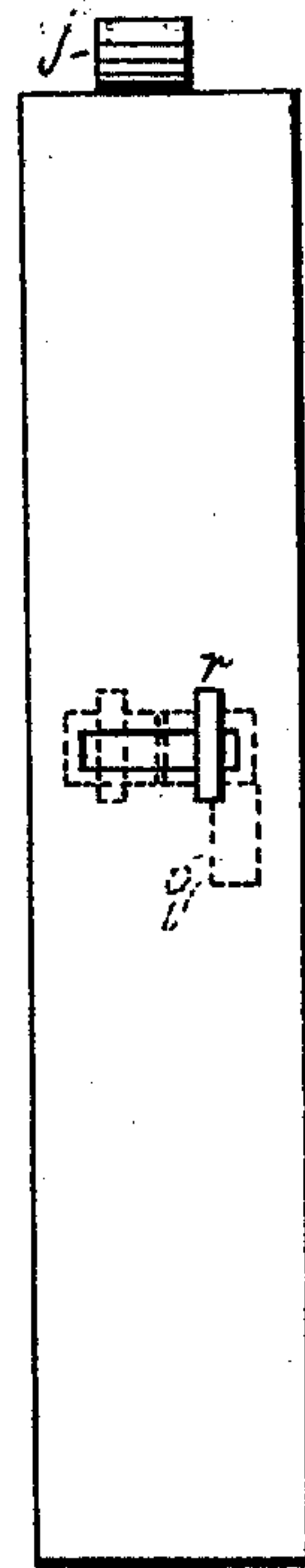
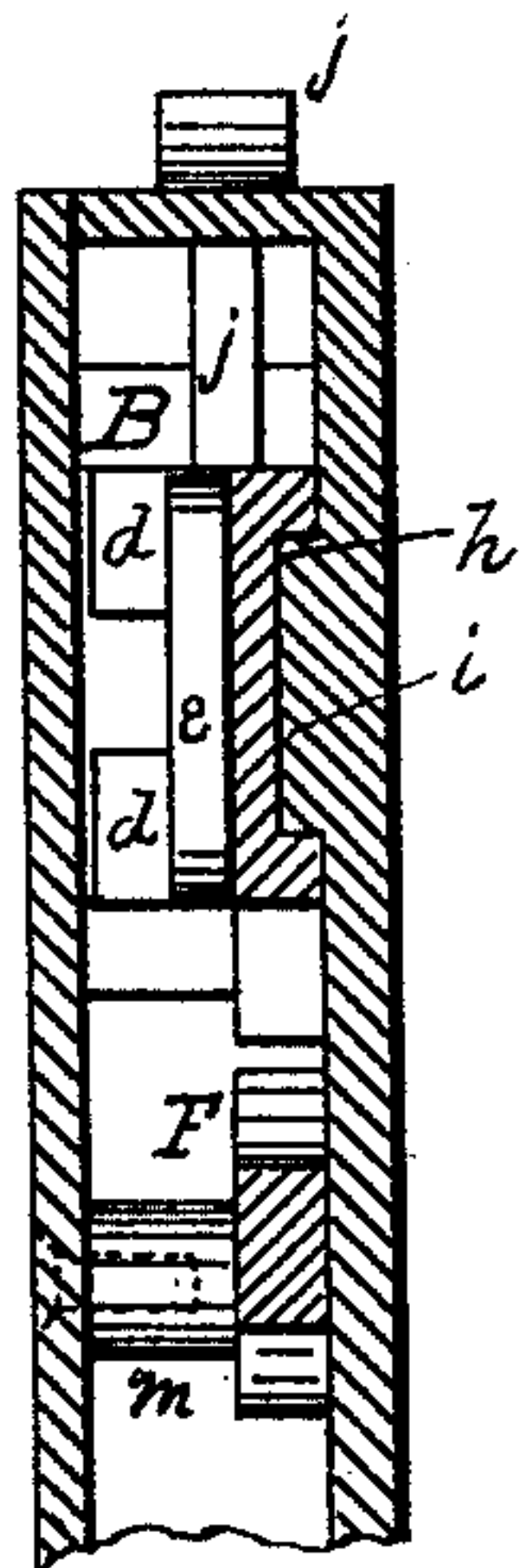


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

OLE S. BAKKE AND OLE HALGRIMSEN, OF NEW RICHLAND, MINNESOTA.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 414,135, dated October 29, 1889.

Application filed April 20, 1888. Serial No. 271,308. (Model.)

To all whom it may concern:

Be it known that we, OLE S. BAKKE and OLE HALGRIMSEN, citizens of the United States, residing at New Richland, in the county of Waseca and State of Minnesota, have invented certain new and useful Improvements in Permutation-Locks; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of locks known as "permutation-locks," and to that particular class of permutation-locks such as are used for doors and the like.

The invention consists in the construction and arrangement of the lock-bolt in order that it may be moved from the inside of the door without the necessity of turning the knob, in the construction of the latch-lever operated by the tumblers to lock and unlock the bolt, by means of which the bolt may be permanently disconnected from the tumblers, if desired, and in the several features of detail, as hereinafter set forth and described.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is an inside view of the lock, the cover-plate being removed, showing the parts in position as when unlocked; Fig. 2, a similar view showing the bolt locked; Fig. 3, an inner edge view of the lock, showing the manner in which the latch is locked. Fig. 4 is a vertical cross-section of the lock in a plane indicated by the line 4 4 in Fig. 1. Fig. 5 is an exterior view showing dial plate and knob and position of lock in door.

Like letters designate corresponding parts in all of the figures.

Upon the knob-spindle A is mounted a cam *a* of the usual form, which engages with a shoulder or projection formed at the inner end of the bolt B. The knob-spindle passes through an elongated slot *c* in the bolt, and the bolt slides by means of this slot upon the spindle when the knob is turned, so that the cam *a* presses upon the shoulder *b*.

The bolt B is made in two parts united near

the middle of the bolt in the following manner: Upon the outer end of the inner part of the bolt are formed two projecting lugs *d d*, and passing between these lugs, with its two arms resting behind them, is a T-shaped projection *e*, formed upon the inner end of the outer section of the bolt. An elongated slot is formed within the outer section of the bolt, and within this slot extends a lug or post *f*, secured to the back plate of the lock, and upon which this section of the lock is adapted to slide. A coiled spring C is mounted within the slot, being compressed between the post or lug *f* and the bolt at the outer end of the slot. The position of the lug *f* is such that it limits the outward movement of the bolt, while the inward movement of this section of the bolt is limited by a horizontally-extending pin *g*, attached to the lug *f*, and around which the spring C is coiled, the pin thus assisting also to hold the spring in place. The inner section of the bolt has a slot or groove *h* formed longitudinally on its inner face, and a lug *i* of similar form, and secured to the back of the lock-case and fitting within this groove, holds this part of the bolt in place, but allows a free sliding motion of the bolt thereon in an endwise direction when the cam *a* is turned by the turning of the knob-spindle. By this construction of the bolt it will be seen that in its movement by the cam upon the knob-spindle its operation is precisely the same as if the bolt were in one piece, the spring C retaining the arms of the T-shaped projection *e* closely against the lugs *d d*; but its divided form allows its outer section to be operated from the inside of the door independently of the knob-spindle A and cam *a* by means of a small knob *j*, attached to the top thereof and extending upwardly through the upper side of the case of the lock in the manner of the ordinary spring-catch.

Below the knob-spindle is a second spindle D, carrying a series of tumblers *x x* of ordinary construction mounted thereon upon sleeves, so that the spindle may turn freely therein without disturbing the tumblers. Upon the end of the spindle D, and turning therewith, is a circular plate E of sufficiently smaller diameter than the tumblers so as not to interfere with the operation of the catch

in the notches in the several tumblers. This plate has a series of notches *k k* formed in its periphery, corresponding in number and position to the numbers of the dial-plate of the tumbler-spindle, and a pin *l* is inserted in the outer tumbler in position to be engaged by one of the said notches, and thereby to carry the tumbler in unison with the spindle. By removing the plate *E* and turning it in either direction, so that the pin *l* is engaged by the next notch upon the plate, the numbers of the combination are changed one point in the same direction in which the plate *E* is turned without disturbing the position or arrangement of the tumblers, thus adding largely to the number of possible permutations with a small number of tumblers.

Between the bolt *B* and the tumblers carried by the spindle *D*, and pivotally mounted upon a post *m* upon the back of the case in such a manner as to drop of its own weight, is the latch *F*, having a downwardly-projecting catch *n* in position to engage with the notches *o o* upon the tumblers when they are brought into line by the proper movements of the tumbler-spindle *D*. Upon the upper edge of the latch *F* is formed a notch or depression *p*, adapted to engage with a downwardly-extending projection upon the inner section of the lock-bolt *B*, when the latch *F* is raised, by turning the tumbler-spindle to throw the notches *o o* of the several tumblers out of line, thus preventing the movement of the bolt by the turning of the knob on the spindle *A*.

To adapt the lock for use in the manner of an ordinary catch and to prevent the bolt from being locked by the turning of the tumbler-spindle, an arm *q* is formed upon the latch *F*, extending from the catch *n* to the side casing of the lock, and a movable stop *r* of any suitable form is mounted in the side of the case in such a manner as to allow it to be moved over the end of the arm when

the catch *n* is engaged by the notches *o o*, thus preventing the turning of the tumbler-spindle and the consequent raising of the latch *F* to lock the bolt *B*. The device is then in condition to be used as a simple catch, entirely independent of the tumblers.

A second sliding bolt *G* may be mounted in the case below the principal bolt, if desired.

We claim as our invention—

1. The combination of a knob-spindle and divided lock-bolt adapted to be operated thereby, the inner section of said lock-bolt embracing said knob-spindle and adapted to slide thereon by means of a slot *c* formed in said inner section, a rectangular longitudinal groove formed in the rear face of said inner section, adapted to slide upon a similarly-shaped lug formed upon the back of the lock-case, lugs *d d* on the outer end of said inner section, a T-shaped arm extending from the inner end of the outer section of the lock-bolt and adapted to be received between and behind said lugs, a latch-lever for locking said inner section of the lock-bolt, and a series of tumblers for operating said latch-lever, substantially as and for the purpose herein specified.

2. The combination, with a knob-spindle carrying cam *a* and divided lock-bolt adapted to be operated thereby, of a latch-lever adapted to engage with and lock the inner section of said divided lock-bolt, a series of tumblers for operating said latch-lever, an arm *q* on said latch-lever, and a movable stop *r*, for retaining said latch-lever when engaged by said tumblers, substantially as and for the purpose herein specified.

In testimony whereof we affix our signatures in presence of two witnesses.

OLE S. BAKKE.

OLE HALGRIMSEN.

Witnesses:

D. B. SPARKS,

P. A. HOLT.