

G. S. SNELL.
Lock.

No. 206,633.

Patented July 30, 1878.

Fig. 1.

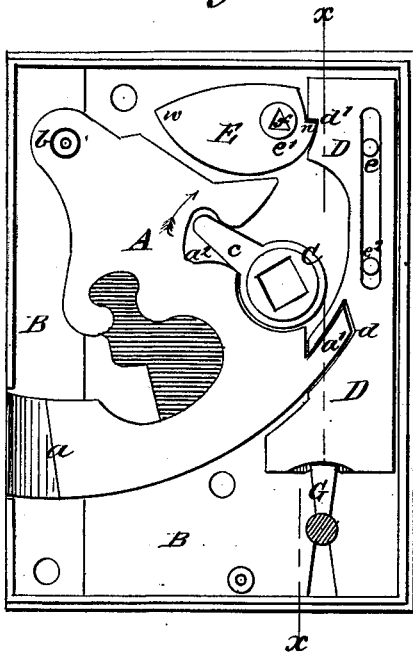


Fig. 2.

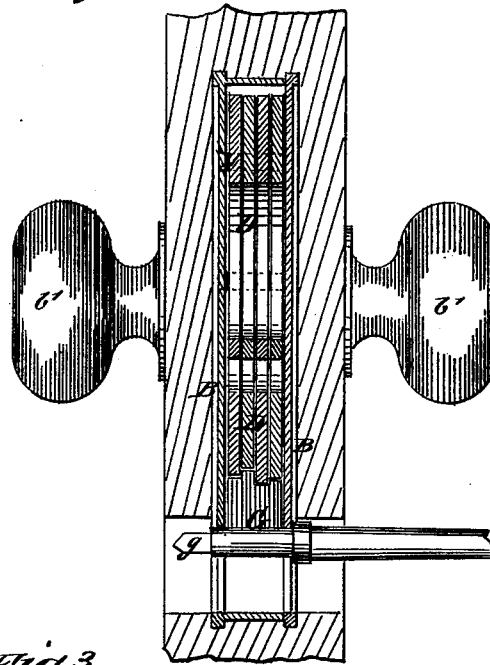
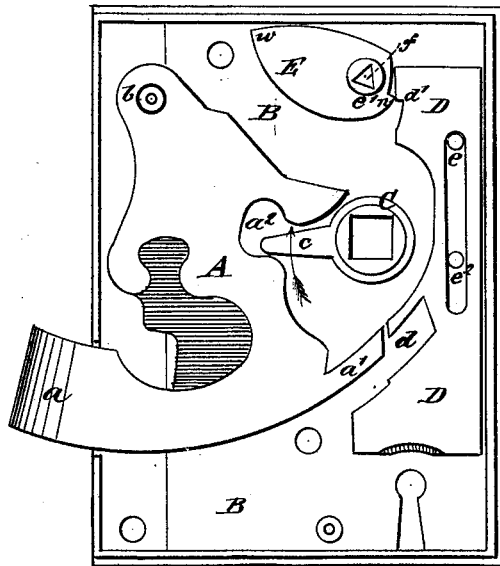


Fig. 3.



WITNESSES:
Francis McOrdy,
Alex. F. Roberts

INVENTOR:
G. S. Snell
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE S. SNELL, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. **206,633**, dated July 30, 1878; application filed June 1, 1878.

To all whom it may concern:

Be it known that I, GEORGE STOTHART SNELL, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and Improved Gravitating-Lock, of which the following is a specification:

The object of my invention is to furnish a simple and reliable door and safe lock in which no springs are used, but the bolt, tumblers, and necessary catches are actuated by the force of their own gravity.

The invention consists in the construction and combination of the various parts, as will be hereinafter described and claimed.

In the accompanying drawing, Figure 1 represents a plan view of the interior of a lock constructed according to my invention and in the unlocked position. Fig. 2 is a longitudinal vertical section of the same, taken on the line *x x* of Fig. 1. Fig. 3 is a plan view of the same in the position locked.

Similar letters of reference indicate corresponding parts.

A is the bolt, being a metallic segment, pivoted to the casing or lock-plate B by the pin *b* forward of its own center of gravity, in such a manner that, when not held back by turning the knob *b'*, its inner or rear end will preponderate, causing the front end, (or bolt proper,) *a*, to protrude through the casing B in the position of being locked, as in Fig. 3.

The tail end *a'* is formed with concentric-circle curves, drawn from the pin *b* as a center, and projects from the body of the segmental bolt A, as shown in the drawings.

C is the usual hub, fitted upon the square spindle of the knob *b'*, and provided with the toe or cam *c*, entering a U-shaped or V-shaped or similar opening, *a''*, in the back of the bolt A, for oscillating the latter upon its pivot between the two positions locked and unlocked.

D is one or more of a series of tumblers of similar shape, but unequal length, making it necessary to use a key, G, having notches at the proper width and distances apart, of the exact depth to correspond with the differences in length between the tumblers D, in order to enable them to be raised uniformly and simultaneously, with their similar edges flush or coinciding.

Each tumbler D has a deep notch, *d*, cor-

responding in size with the tail *a'* of the bolt A, which enters the said notch when the front end, *a*, is withdrawn to unlock. The depth of the notch *d* should correspond with the distance at which the bolt proper, *a*, protrudes from the case B in locking.

In the front edge, at the upper end, of each tumbler is a small notch, *d'*. The tumblers are placed side to side, covering each other, with their similar edges flush, and are kept in the same relative position, not only when being raised by the proper key for unlocking, but also when allowed to drop for locking, in which latter case they are stopped in the proper position by and suspended upon a pin, *e*, secured to the casing B.

The tumblers D are guided to slide vertically in a rectilinear motion by and between the pin *e* and the edge of the casing B, or by a slot upon the two pins *e e'*, as shown in the drawing.

E is a catch-block, cast with hubs *e'* on opposite sides upon it, by which hubs it is pivoted in holes in the casing B, in front of the notches *d'*, and is provided with a tooth or catch, *n*, arranged to enter the said notches *d'* (when they are brought opposite to the said catch *n*) by being raised by the preponderance of the weighted end *w* of the block E acting on the side of the fulcrum *e'* opposite to the catch *n*. The block E has a thickness equal to the thicknesses of all the tumblers D together, and is capable of sustaining their combined weight elevated upon the catch *n*.

When the tumblers D are raised by turning the key G against their lower edges, the catch *n* enters the notch or row of notches *d'*, and the weighted end *w* of the block E keeps the tumblers suspended in such a position that the deep notch *d*, or row of notches, comes in line with the tail *a'* of the bolt A, and in position to be entered by the latter, thus allowing the bolt A to be oscillated on the pivot *b* by the toe *c*, to withdraw the bolt proper, *a*, by turning the ordinary knob *b'* in the direction of the arrow. On releasing the hold of the knob the front end, *a*, is again projected by the weight of the bolt A.

To secure the bolt in the said or locked position, the extreme three-cornered or otherwise shaped end *g* of the key G is inserted

into the correspondingly-shaped hole or socket *f* in either of the hubs *c*¹, and the key turned sufficiently to bring the catch *n* out of the row of notches *d*¹ and allow the tumblers *D* to drop by their own weight until they stop and rest upon the pin *e*. In this position the lower notch, *d*, will be below the bolt-tail *a*¹, and the latter brought in contact with the solid front edge of the row of tumblers, as in Fig. 2, thus preventing the bolt from being withdrawn to unlock until all the tumblers are equally and simultaneously raised by the exact proper key.

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

1. The weighted pivoted block *E*, provided with the pivoted key-hole *f* and the catch, *n*,

in combination with the sliding tumbler or tumblers *D*, having the notch or notches *d*¹, and with the key *G*, substantially as and for the purpose set forth.

2. A lock formed of the combination of the casing *B*, the swinging bolt *A* *a*, having the tail projection *a*¹ and the opening *a*², the sliding tumblers *D*, provided with the notches *d*¹, and the pivoted catch-block *E*, all arranged to operate in combination with the spindle-cam *C* *c*¹ and by the force of gravity, substantially as and for the purpose set forth.

GEO. S. SNELL.

Witnesses:

EDWD. L. SNELL.

S. J. E. RAWLING.