

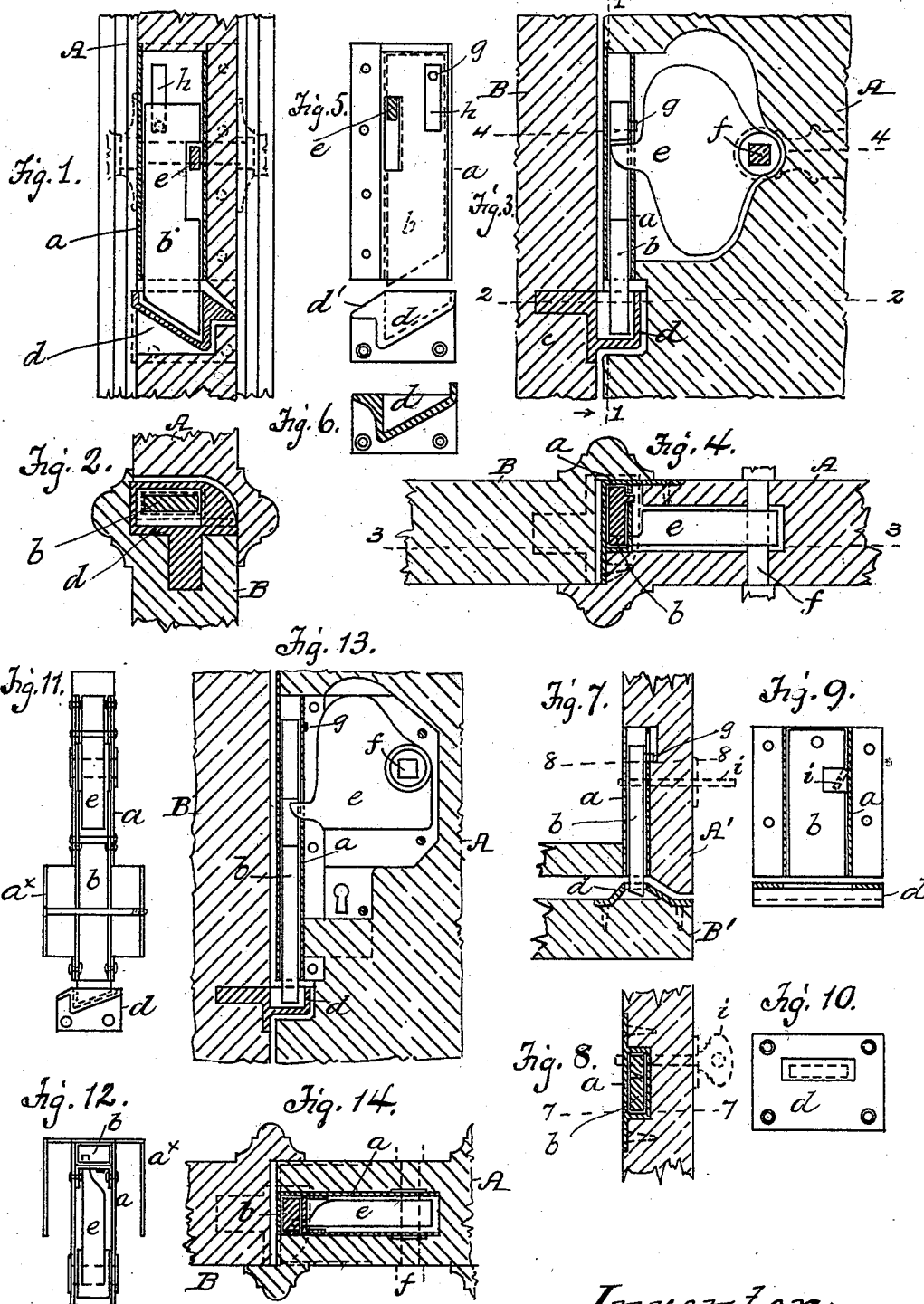
(No Model.)

N. G. SÖRENSEN.

GRAVITY LATCH.

No. 419,374.

Patented Jan. 14, 1890.



Witnesses:

*J. B. Bolton*  
*J. B. Caplinger*

Inventor:

*Niels G. Sørensen*  
By *Henry Conrad*  
Attorney.

# UNITED STATES PATENT OFFICE.

NIELS GEORG SÖRENSEN, OF STOCKHOLM, SWEDEN.

## GRAVITY-LATCH.

SPECIFICATION forming part of Letters Patent No. 419,374, dated January 14, 1890.

Application filed February 15, 1889. Serial No. 299,967. (No model.)

### *To all whom it may concern:*

Be it known that I, NIELS GEORG SÖRENSEN, a subject of the King of Sweden, and a resident of Stockholm, Sweden, have invented certain Improvements in Gravity Latches or Fastenings, of which the following is a specification.

My invention relates to that class of latches, locks, or fastenings wherein the bolt is actuated by gravity; and the object of my invention is to provide a simple device of this kind adapted for doors, drawers, &c.

My invention will be fully described hereinafter, and its novel features carefully defined in the claims.

In the accompanying drawings, which serve to illustrate my invention, Figures 1 to 6 show my invention embodied in a latch for doors. Fig. 1 is a vertical section through the door and the latch-casing, taken substantially in the plane indicated by line 1 1 in Fig. 3. Fig. 2 is a horizontal section along line 2 2 in Fig. 3. Fig. 3 is a vertical sectional elevation on line 3 3 in Fig. 4. Fig. 4 is a horizontal section substantially along line 4 4 in Fig. 3. Fig. 5 represents the inner faces of the latch-case and bolt-socket in elevation, as seen from the right in Figs. 3 and 4. Fig. 6 illustrates a slightly-modified form of the bolt-socket which receives the latch-bolt. Figs. 7 to 10 illustrate the application of my invention to a drawer latch or lock to be actuated by a key. Fig. 7 is a vertical section on line 7 7 in Fig. 8. Fig. 8 is a horizontal section along line 8 8 in Fig. 7. Fig. 9 is a sectional front elevation of the latch-case and socket, the bolt being in elevation. Fig. 10 is a plan of the bolt-socket or socket-plate detached. Figs. 11, 12, 13, and 14 illustrate the application of my invention to a mortise-latch for doors, Fig. 11 being an edge view of the latch and socket detached; Fig. 12, a plan of the same; Fig. 13, a sectional elevation similar to Fig. 3, and Fig. 14 a horizontal section similar to Fig. 4.

Referring primarily to the first six figures, let A represent a portion of a door of any kind, and B the door-jamb, or if there are double doors the other door. Mounted in a recess in the face of the door A at its edge is the casing *a* of the latch. This casing will usually be of metal, of tubular form, and be

provided with a flange to receive screws for securing it to the door. The casing will stand, by preference, with its axis vertical, as shown. Within the casing *a* is the latch-bolt *b*, which is free to play up and down in said casing. The lower end of the bolt, when it is permitted to fall by its own weight, passes out at the bottom of the casing and engages, if the door is closed, a bolt-socket *d*, secured to the adjacent jamb B. For a door-latch I prefer to bevel the lower end of the bolt, like that of an ordinary latch-bolt, and to provide the socket *d* with a beveled or inclined lip *d'*, so that when the door is pushed shut the bolt will automatically wipe over said lip and drop into the socket. The bolt is set with the bevel on its end at right angles to the plane of the door, so that the beveled surface on the bolt may be applied properly to the socket when the door is closed. The bolt descends by gravity; but it is raised by a lever-arm *e* set in a recess in the door back of the casing *a*. This lever-arm is secured to a knob-spindle *f* in the door, which may be square and of the kind commonly found in knob-latches. The free end of the lever-arm *e* engages a recess in or takes under some part of the latch-bolt, as clearly seen in Fig. 3, whereby when the knob-spindle is rotated in the proper direction the lever-arm is caused to lift the bolt free from the socket *d*. In order that the lever-arm *e* may be compelled to descend by its own weight when the knob is released, I prefer to make it wide, as seen in Fig. 3, so as to give it weight. It will be made of metal by preference. The spindle *f* may be provided with knobs on its ends, or with handles, as desired. Both of these are well-known devices for operating latch-spindles.

The movement of the latch *b* in its casing may be limited by any suitable stop device. I usually employ a pin *g* on the bolt, which engages a slot *h* in the casing.

Fig. 6 is a sectional view of a bolt-socket which has no lip *d'*.

In Figs. 7 to 10 I have shown my latch applied to a drawer. A' is the drawer-front or a part thereof, and B' is the rail below it. The casing *a* and bolt *b* are substantially the same as those before described, and the socket *d* is not or need not be different from that before described. In this case, however, the bolt is

lifted by a removable key *i*. This key may be what is known as a "flat key," which is adapted to be passed through a slit in a rotatively-mounted boss set in the drawer-front; or it may be an ordinary key adapted to be passed through a key-hole in the drawer-front and to enter a bearing in the plate of the latch-casing.

The latch illustrated in Figs. 1 to 6 is adapted to be set in a recess formed in the face of the door at its free edge; but my invention may as well be embodied in a mortise-latch. This embodiment may be illustrated in Figs. 11 to 14, and it differs from that already described only in minor details of construction. For example, the sides or side plates of the casing *a* (in Figs. 11 to 14) extend back or inward enough to embrace the lever-arm *e*, and said casing has a bent front plate *a*<sup>x</sup>, the cheeks of which embrace the door and extend back beyond the key-hole, so as to provide a base on which the key-hole wicket may be mounted.

The lever-arm *e* and spindle *f* (seen in Figs. 3 and 4) form the lifter for the bolt, and the key *i* (seen in Figs. 7 and 8) also forms a lifter for the same purpose. These are of course interchangeable lifting devices, and it will be obvious that the former may be used on a drawer-latch and the latter on a door-latch. By arranging the bolt in an upright position, as shown—that is, with its longitudinal axis vertical, or nearly so—it de-

scends by its own weight and no extraneous weights or springs are required to shoot it. This arrangement enables me to attain the minimum of simplicity and economy in the construction.

I am aware that gravity bolts and latches are not new, and I make no claim to this feature broadly. My object is to combine with a vertically-arranged gravity-bolt and a horizontally-rotating knob-spindle an operating-arm fixed to said spindle and directly engaging said bolt, whereby the utmost simplicity and compactness are attained.

Having thus described my invention, I claim—

In a gravity-latch, the combination, with the casing *a*, of the vertically-arranged latch-bolt *b*, mounted loosely in said casing and having a beveled lower end, a bolt-socket *d*, arranged to receive the beveled end of the bolt, the horizontally-arranged knob-spindle *f*, rotatively mounted in the latch-casing, and the arm *e* on said spindle, the free end of said arm taking under some part of said bolt, whereby rotation of said spindle serves to lift the bolt from its socket.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

NIELS GEORG SÖRENSEN.

Witnesses:

NERE A. ELFWING,  
ERNST SVANQVIST.