

G. J. DICKSON.
Locking-Latch.

Patented Aug. 17, 1875.

No. 166,856

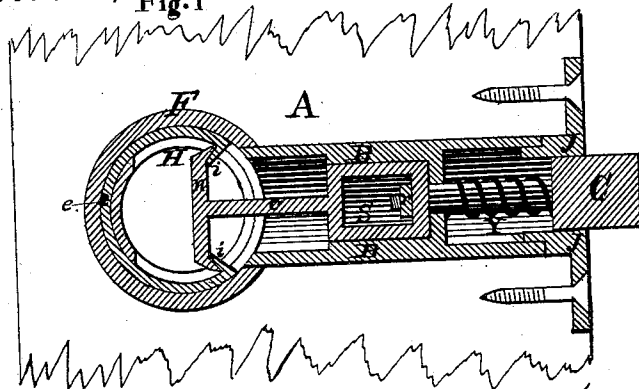


Fig. 5

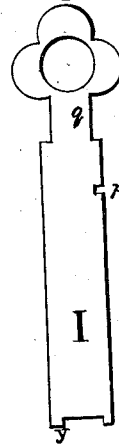


Fig. 2

Fig. 4

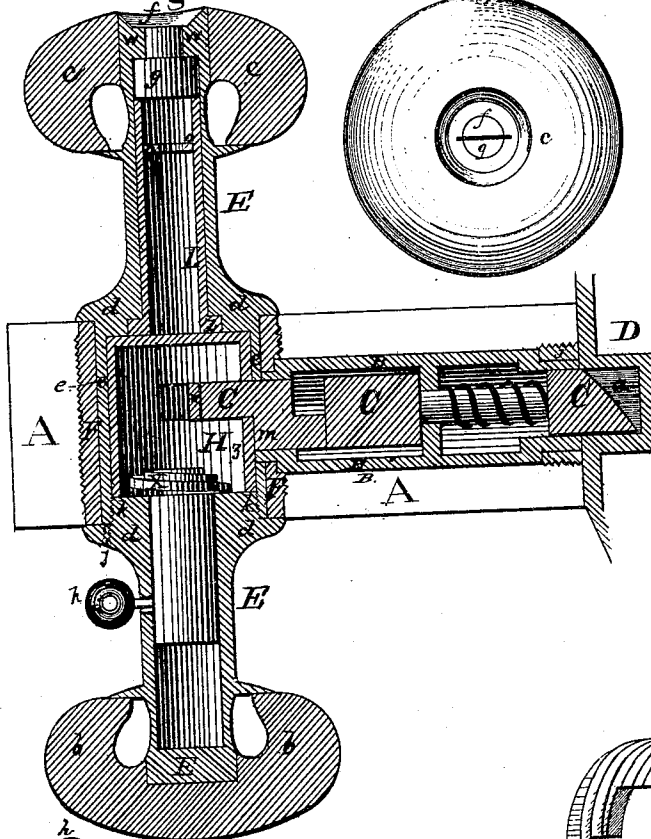


Fig. 7

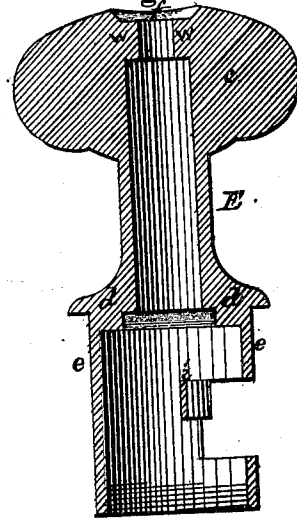


Fig. 6

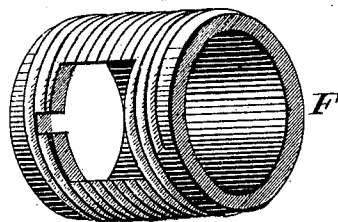
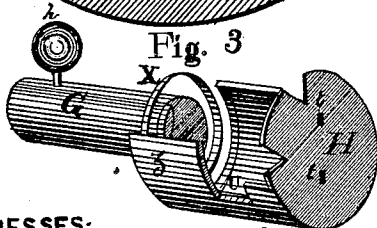


Fig. 3



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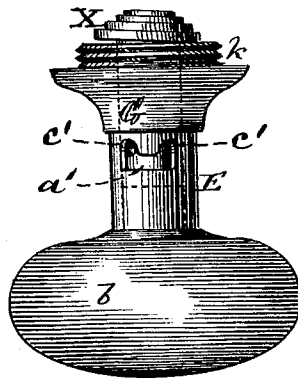
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Fig. 8.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN LOCKING-LATCHES.

Specification forming part of Letters Patent No. **166,856**, dated August 17, 1875; application filed April 2, 1875.

To all whom it may concern:

Be it known that I, GILBERT J. DICKSON, of the city and county of Albany, in the State of New York, have invented certain new and useful Improvements in Locks; and I do hereby declare that the following is full, clear, and exact description of the same, reference being had to the accompanying drawing which forms part of this specification.

This invention more particularly relates to locks in which the knob-spindle is made hollow, and in which, when a tumbler designed to be operated by a key is used, said key is inserted through the end of the knob-spindle; and the invention consists in a novel combination of parts, whereby the bolt is operated in a direct manner from the interior of the spindle; also in a combination of a hollow tumbler with said parts, and in various other details of construction or combination of parts, including a novel arrangement of night-catch devices and means of securing the lock to its place in the door; also a convenient mode of inserting the key guard or guards, substantially as hereinafter described.

Figure 1 is a vertical longitudinal section of a lock having my invention applied in part. Fig. 2 is a horizontal section of the improved lock; Fig. 3, a perspective view of the tumbler of the lock detached, with night-catch attachment; Fig. 4, a face view of the front knob; Fig. 5, a side view of a key used for operating the tumbler of the lock; Fig. 6, a perspective view of a cylindrical box or tube used to secure the spindle portion of the lock of the door; Fig. 7, a longitudinal section of the one end of the spindle with knob, rose, cylindrical swell, and inwardly-projecting spurs formed in one piece. Fig. 8 is a longitudinal view of the inner end of the spindle, with attached knob and with the night-catch knob or thumb-piece removed, for the purpose of showing the slot through and within which said thumb-piece works.

A is a door to which the lock is applied. B is the case, tube, or shell of the lock, in which is the sliding bolt C and its attachment, and which is fitted to its place by boring a hole for its reception in the edge of the door, and is held in position by a face-plate, which might be an ordinary one, as represented in

Fig. 1, but which it is preferred to make in the form of a cylindrical screw box or tube, arranged to screw into the wood around a reduced or shouldered end or end piece of the case or shell B. This screw-box J is shown in Fig. 2, and surrounds that portion of the case B which forms a guide for the nose of the bolt that enters a socket or notch, *a*, in the door-jamb D when the door is closed. By thus substituting a screw box or tube J, Fig. 2, for a face-plate of oblong form, no separate screws are required to hold it in place, and the mortise for its reception is more readily made in the edge of the door—that is, by simply boring a hole for the entry of its screw-thread.

E is the knob-spindle, which is of hollow cylindrical construction, and made in two lengths joined together at *k k* by screwing the one into the other, and secured by a small set-screw, *j*, as shown in Fig. 2. The one section or length of this spindle carries the knob or handle *c*, which may be made in one piece with it; also the rose *d* and a cylindrical swell or bulb, *e*, provided with inward projections or spurs *i*. Formed centrally in one end of the knob *c*, in axial line with said spindle, is a cylindrical hole, *f*, with longitudinal grooves on each side of it. Inside such portion of the spindle is placed, when a tumbler is used in the lock, the rotating key hub or cylinder *g*, having a narrow slot or key-hole lengthwise through it corresponding to the longitudinal grooves on each side of the hole *f*. (See Figs. 2 and 4.)

The bolt C is made in two parts, and joined together by a screw-nut, *r*, as shown in Fig. 1, and is pressed outwardly in a longitudinal direction by a spring, Y, one end of said spring resting against a partition in the case or shell B, and the other end thereof on the head of the bolt. Said bolt C has its one longitudinal section or portion formed where the two divisions or lengths are joined together with a box, S, for the purpose of allowing the other longitudinal section or portion of the bolt to slide back when closing the door without disturbing the locked parts when the tumbler is in a locked position. This is provided for by the screw-nut *r* moving back within the box S, which serves as a guide to the bolt, and ad-

mits of the forward or nose end of the bolt being turned to face right or left; likewise of its being lengthened or shortened when necessary to provide for expansion or contraction of the door by simply removing the screw-box or plate J and screwing the foremost part of the bolt outward or inward, as the case may require.

Formed upon the rearmost end of the bolt C is a cross or double hook, *n*, which passes inside the swell or bulb *e* through an opening in the latter for that purpose. The inward projections or spurs *i* on the inside of this swell *e* correspond with the double hook or cross *n* on the bolt C, the rear side of such inward projections or spurs being immediately in front of the forward side of the hooks or cross *n* of the bolt C, so that when the spindle E is turned either way the spurs *i* will press back upon the cross or hooks *n* of the bolt C, and thus draw the bolt away from the notch or socket *a* in the door-jamb D, and so permit of the door being opened.

Placed inside of the cylindrical swell or bulb *e* of the spindle E is a hollow cylindrical shell, H, which serves the purpose of or forms a tumbler. This tumbler is open on one side to allow the hooked end of the bolt C to pass through it when fitting the lock to the door. It has, formed transversely in its open side, a deep notch or groove, U, which is in line with the hooked end of the bolt C and the inward projections or spurs *i* of the spindle-swell *e*, so that when the tumbler H is turned into an unlocked position, as shown in Fig. 1, the rear end of the bolt C will slide in the groove or notch U as the bolt is drawn back from its socket *a* till the rear or hooked end of the bolt comes against the back part of the tumbler H, and when said tumbler is turned at right angles to such position the projecting part of the shell of the cylindrical tumbler H, at *z* in Fig. 3, is brought behind the shouldered end of the bolt C, as shown in Fig. 2, and effectually prevents the bolt from moving back, and consequently keeps it in a locked position. Formed in one end of this tumbler H are one or more grooves or holes, *t*, by means of which the key I, a simple form of which is shown in Fig. 5, is enabled to turn the tumbler into the position first described, the said key being thrust inward through the key-hole shown in Fig. 4, until the teeth Y on its extremity catch into the holes or grooves *t* in the end of the tumbler H, when, by giving the key a quarter of a turn in one direction or the other, as required, the tumbler H is turned from one position to the other so as either to prevent the bolt C from moving back from the socket *a* when the door is locked, or to release the said bolt and allow it to slide when desired to use it as an ordinary latch.

To prevent the tumbler H from being turned around by any instrument other than its proper key, one or more guards are interposed between the key-hole and the tumbler H. Thus

firmly placed or arranged within the hollow spindle E is a sleeve or cylinder, L, which may be longitudinally divided or formed of half shells, and which has a square head on one end which is fitted into a square recess in the hollow spindle E, as at *z* in Fig. 2, to keep it from turning with the key. This sleeve or cylinder L carries the partitions or guards *o*, that is, one or more, corresponding to the notch or notches *p* in the flat iron or steel key I. This independent sleeve or cylinder carrying the guards is readily fitted to its place, and dispenses with cutting transverse slots in the spindle to introduce the guards.

At the mouth of the hole *f*, and within the hollow spindle, is placed the rotating cylinder *g* having a key-hole lengthwise through it, corresponding to the grooves on either side of said hole *f*, and which goes entirely through the knob. The said key is entered through the key-hole until its neck *q* comes even with the narrow part of the hollow spindle E at *w*, and the teeth *y*, on the end of the key, enter the grooves or holes in the end of the tumbler H, when the key and tumbler are turned a quarter round, or thereabout, the guard or guards *o* passing in the notch or notches *p* of the key.

To properly retain the tumbler H in either position, in a lock having no night-catch attachment, a flat spring may be arranged longitudinally inside such hollow tumbler, and be secured at one end to said tumbler, and have upon its opposite and free end a short outwardly-projecting pin, which passes through a small hole in the tumbler and fits into small holes or recesses formed in the inner surface of the spindle-swell *e*, at a distance apart equal to one-fourth of the circumference thereof, so that the said pin will fit into the one or other of the said holes or recesses, according to the position of said tumbler, the inner side or edge of the holes being sloping to allow the pin to be sprung out therefrom when the tumbler is turned by the key I. In this case both ends of the hollow cylindrical spindle E may be made alike, with key-holes and other provisions for locking or unlocking from both sides. The key to each lock is designed to be different, each lock having different guards, and inasmuch as the greater portion of each, or either end of the spindle, is available for guards, the variations that can be made, both as regards the number and disposition of the guards, are very numerous.

The night-catch attachment (see Figs. 2, 3, and 8) is applied to the end of the hollow cylindrical tumbler H by a coil-spring, X, one end of which is secured to the tumbler, and the other end to a cylinder attachment, G, which is placed within the hollow spindle E, as shown in Fig. 2. Fastened in a radial or lateral manner to the cylinder or attachment G, that is in transverse relation to the spindle E, is a knob or thumb-piece *h*, which is free to move crosswise along a slot, *a'*, formed transversely through the hollow spindle E,

and is drawn into a notch, *c'*, at either end of the said slot by the action of the spring *X* to hold it in position, either locked or otherwise.

When the night-catch is in the locked position and the door closed, the latter can only be opened from the outside by the key *I* through the tumbler *H*, said tumbler being turned back from behind the rear or shouldered end of the sliding bolt *C*, at *m*, Fig. 2, and so allowing the bolt to be withdrawn from the socket *a* in the door-jamb, and permitting the door to open. As soon as the key is withdrawn from the tumbler *H*, the spring *X* will throw the tumbler *H* into the locked position, as it was before the key was inserted.

This forms a simple and strong night-catch attachment, which, by shifting the knob or thumb-piece *h* to the right or to the left, is put into a locked or unlocked position, as desired, leaving the bolt free to be operated as a latch when said attachment is not in locked position, and when such attachment is locked the same only being accessible from the exterior by the insertion of the key through the knob-spindle.

By the connection of the knob or thumb-piece *h* with the night-catch attachment, or mechanism through and for operation around or in transverse relation to the hollow knob-spindle, no opening is required in the lock-case for the operation of said thumb-piece, and the latter is protected and under cover, as it were of the door or lock knob.

Arranged transversely through the door is the cylindrical screw-box or tube *F*, having an opening in one side of it for the reception of the rear end of the case, tube, or shell *B* of the lock. Into this box or tube *F* is fitted the swell or bulb *e* of the spindle *E*, and held in position in connection with the bolt *C* by the tube or box *F* and the case or shell *B*, both of which are fastened by the screw box or tube *J* in Fig. 2.

By this combination and construction the lock is applied to the door by simply boring two holes in the door—that is, one transversely through it, and the other at right angles thereto in the edge of the door and intersecting the first-described hole, thus saving the labor and time of mortising and otherwise cutting the door as usual in locks generally, and for the fitting of the escutcheon, roses, and other parts.

I claim—

1. The cross or double-hooked end *n* of the sliding bolt *C*, within a bulb or swell, *e*, on the hollow spindle *E*, in combination with the inward projections or spurs *i* attached to said swell, substantially as specified.

2. The hollow tumbler *H*, in combination with the bulb or swell *e* on the hollow spindle *E* within which the tumbler is arranged, the inward projections or spurs *i* attached to said swell, and the cross or double-hooked end *n* of the sliding bolt *C*, essentially as described.

3. The combination of the hollow spindle *E*, made in two parts and joined together at *k*, the knobs *c b*, the roses *d d*, and the bulb or swell *e* of the hollow spindle, provided with inward projections or spurs *i i*, substantially as specified.

4. The knob or thumb-piece *h* connected with the night-catch attachment or mechanism through the hollow spindle *E*, in transverse relation to the latter, for operation substantially as specified.

5. The arrangement of the hollow cylindrical tumbler *H* within the swell *e* of the hollow spindle *E*, in combination with the night-catch attachment *G* and the shouldered end of the sliding bolt *C*, substantially as and for the purpose specified.

6. The combination, with the sliding bolt *C*, the inward projections or spurs *i* on the swell *e*, and the hollow cylindrical tumbler *H*, of the box *S* on the sliding bolt, and the connecting-nut *r*, essentially as and for the purposes herein set forth.

7. The screw-box *J*, in combination with the case or shell *B* and sliding latch *C*, substantially as specified.

8. The combination of the screw-boxes or tubes *F* and *J*, with the hollow spindle *E* and sliding bolt *C* for securing the lock, essentially as described.

9. The sleeve or cylinder *L*, arranged within the hollow spindle *E*, and provided with one or more guards, *o*, in combination with the rotating key, hub, or cylinder *g* and the hollow tumbler *H*, substantially as and for the purposes specified.

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