J. Ires,

Knob Attachment.

No. 4,646. Patented July 20, 1846.

Fig. 4.

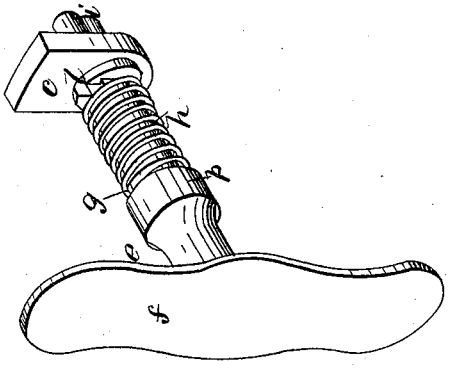


Fig. 5.

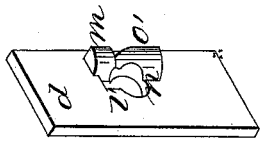


Fig. 3.

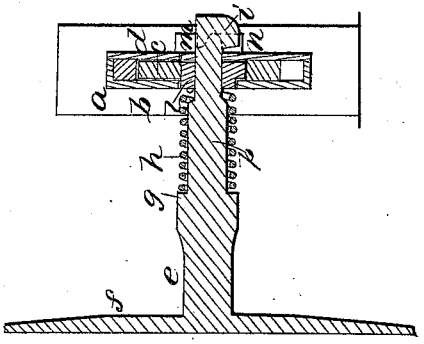


Fig. 2

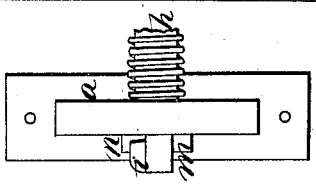
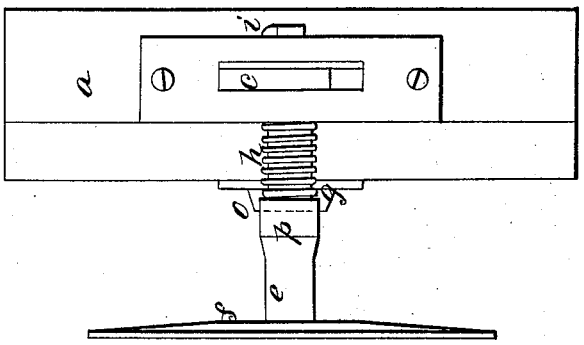


Fig. 1.



UNITED STATES PATENT OFFICE.

JAMES IVES, OF HAMDEN, CONNECTICUT.

LOCK FOR CARRIAGE-DOORS.

Specification of Letters Patent No. 4,646, dated July 20, 1846.

To all whom it may concern:

Be it known that I, JAMES IVES, of Hamden, in the county of New Haven and State of Connecticut, have invented new and useful Improvements in Locks for Securing Carriage and other Doors, &c., and that the following is a full, clear, and exact description of the principle or character thereof, which distinguishes it from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front view of the lock, the door frame being represented by red lines; Fig. 2 is an elevation of the back of the lock; Fig. 3, a vertical section passing through the spindle of the handle viewed from the back in a reversed position, and Fig. 4, a perspective view of the bolt and spindle without the lock case; Fig. 5, perspective of front plate in a reversed position.

The same letters indicate like parts in all the figures.

In the common carriage door lock the bolt, which when turned projects from the door plate into the hasp, has two journals, one turning in each plate, with the spring attached to the case and acting on the cam-like form of the back of the bolt to hold it when either turned in or out, the spindle passing through a square socket in the bolt. The lock case is made of two parts the front plate, and the end and two side plates in which the journals of the bolt turn the three latter being made of one piece of sheet metal bent and secured to the front plate, the spring being secured between the two side plates. The defects in this lock are the imperfect working of the spring on account of the limited room in the door frame the standard of which is always made very narrow. The liability of breaking or otherwise injuring the handle by transportation because it cannot be removed conveniently on account of being secured on the inside of the door and within the lining, and the difficulty of repairing the lock which can only be taken out after the spindle has been removed, and finally the difficulty of making the case of cast metal which would greatly reduce the cost of manufacturing locks. These defects are avoided by my improvements which consist, first, in casting the lock case in one piece with the exception of one of the side plates; second, in making the bolt with a journal on one face only; third, in securing the spindle of the handle in its place by making it with a projection on the inner end which, after passing through a groove in the bolt and a corresponding one in the back plate on that face of the bolt which has no journal, and then turning the spindle partly around, is retained by the lock plate; and fourth, making this last mentioned plate with cam-like projections and providing the spindle with a spiral spring the tension of which draws the projection on the inner end of the spindle toward the plate, and causes the spindle and bolt to turn around in either direction from the highest part (o') of the said cam-like projection on which the projection (i) slides.

In the accompanying drawings (a) represents the front lock plate, and (b) the side plate cast with it (and with flanches to form the back and ends of the case) and adapted to the reception of the journal of the bolt (c) made of the usual form, except the back end which is simply rounded to turn within the smallest space in the lock case the other face of the bolt being made perfectly flat, so that after the journal on the other face of it has been inserted the other side plate (d) of the case can be put on with one edge of it let into the front plate, and the whole secured together. The spindle (e), the handle (f) cast with or secured to it, is made with a shoulder (g) beyond which it is cylindrical to receive a spiral spring (h) which bears against the shoulder and the journals of the bolt; beyond this cylindrical part it is made square to fit the square socket in the bolt, and beyond this, cylindrical to turn in a round hole in the side plate (d), the diameter of this part being no greater than the square part that fits the bolt. Near the end it is provided with a projection (i) which when inserted passes through an enlargement (l) in the bolt and the plate (d), but which when burned around rests on the outer face of the plate, to prevent the spindle from being withdrawn. The outer face of this plate (d) is provided with two cam like projections (m, n) on which the projection (i) on the spindle acts when turned. The mortise in the front plate (a) is of equal length on either side of a plane passing through the axis of the spindle and at right angles to the face of the plate, and

when the spindle is to be inserted the bolt is turned down so that its inner edge shall be flush with the front plate, in which position the enlargement (*l*) of its socket coincides with the enlargement (*l'*) of the hole in the plate (*d*) the spindle is then inserted and turned which carries the projection (*i*) up the inclined plane of the cam (*m*), and then the spiral spring draws it into the recess between this cam and the other (*n*); in this position the bolt is turned out or locked, and by continuing to turn it the projection is carried up one inclination of the cam (*n*) and then down the other, at the end of which the bolt is turned in or opened. That face of the projection (*i*) is properly curved to slide freely over the cams (*m*) and (*n*), and that face of the one (*m*) which is toward the other is vertical to prevent the spindle from turning back further than is necessary to turn out the bolt; but when it is desired to withdraw the spindle it is simply necessary to push it in far enough to carry the projection (*i*) beyond the cam (*m*). By means of the spiral spring which draws the spindle in one direction and the cam (*n*) which draws it in the reverse direction under the tension of the spring the moment the projection (*i*) has passed over the highest part of the cam the spindle is turned by the tension of the spring either to close or open the bolt. The hole in the escutcheon (*o*) which is secured to the door is made to fit the largest part (*p*) of the spindle to guide it and permit it to slide freely endwise, instead of having a shoulder on the spindle to fit against the escutcheon as in the locks heretofore made.

From the foregoing it will be obvious that parts of my improvements may be employed separately without the others although to less advantage, as for instance, by making the bolt in the usual manner to act on a spring attached to the case, the cams and spiral spring may be dispensed with, and the advantages of removing the handle and spindle, and casting the case in one piece, except one plate, and making the bolt with only one journal, retained and in like manner the case may be made of separate parts in the usual manner without impairing the merits of the other improvements. Again, the bolt may be made with two journals each passing entirely through the lock plates, and the advantages arising from the use of the spiral spring on the spindle and the cams on one of the lock plates retained by so extending the cam (*n*) that when the bolt is turned in or out it shall cover in part the aperture in the bolt through which the projection (*i*) on the spindle passes, and thus prevent it from being withdrawn; but I am satisfied that the employment of all of them, will produce a better lock than could be formed by dispensing with any of them. It is obvious that if a crank is formed on the spindle it will answer equally well for a sliding bolt as it now does for a turning bolt.

What I claim as my invention and desire to secure by Letters Patent, is—

Making the spindle with a projection on the inner end that bears on the outer face of the lock plate when this is combined with a bolt made without a journal on one face or with a journal that does not pass entirely through the lock plate or is of less diameter than the projection on the spindle, as described and this I also claim in combination with the cam or cams on the face of the plate, whether one or two journals be used, substantially as herein described, whereby a spring acting on the bolt is entirely dispensed with, as described.

JAMES IVES.

Witnesses:
A. P. Brown,
Wm. H. Bishop.