

(Model.)

2 Sheets—Sheet 1.

L. SCOFIELD.
LATCH.

No. 423,493.

Patented Mar. 18, 1890.

Fig. 1

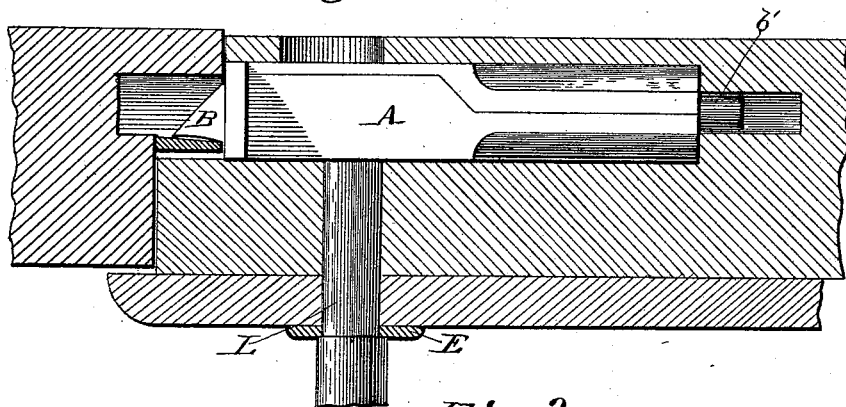


Fig. 2

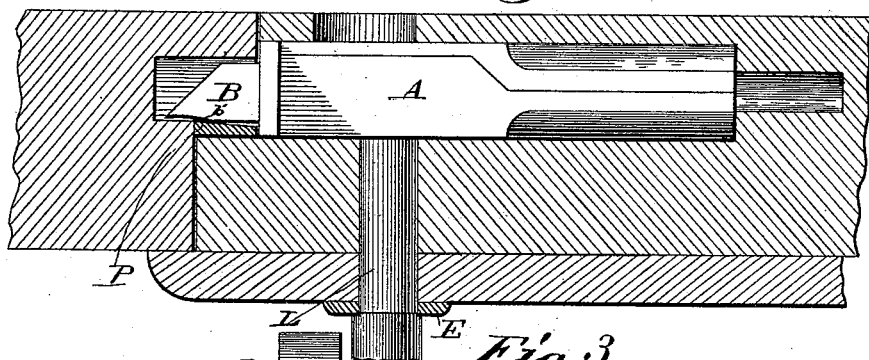
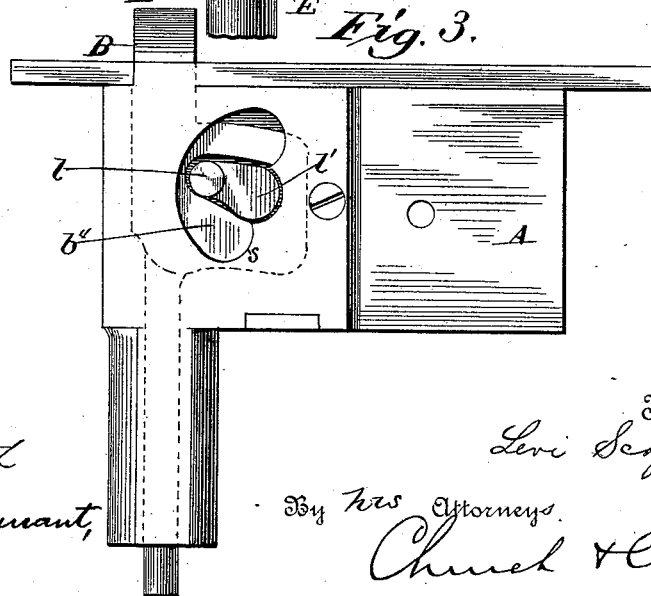


Fig. 3.



Witnesses

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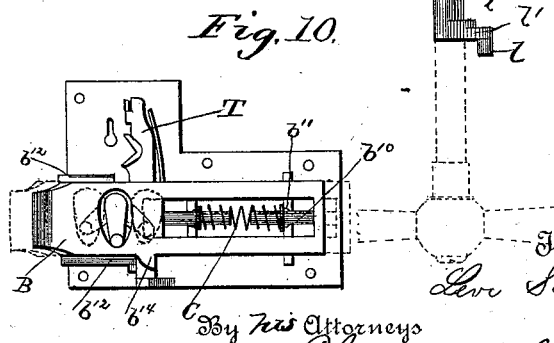
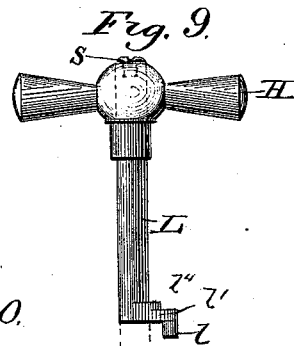
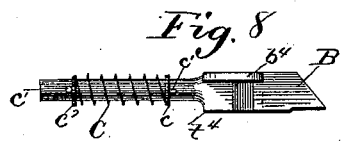
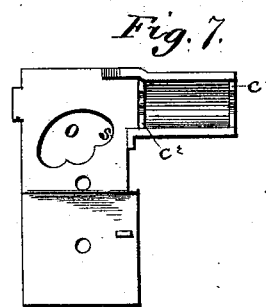
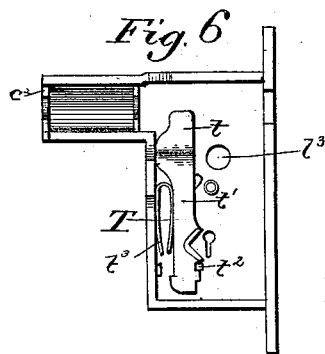
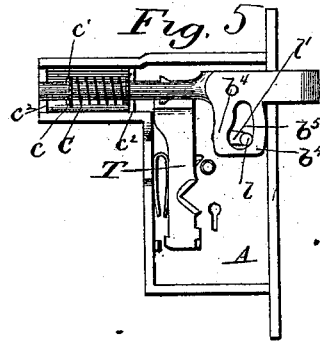
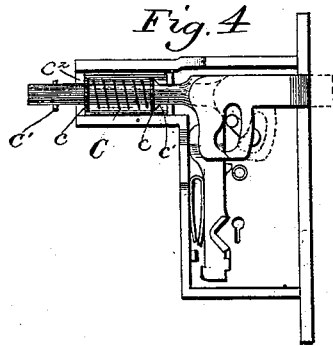
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LATCH.

SPECIFICATION forming part of Letters Patent No. 423,493, dated March 18, 1890.

Application filed August 3, 1889. Serial No. 319,640. (Model.)

To all whom it may concern:

Be it known that I, LEVI SCOFIELD, of Grand Haven, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Locks; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements upon or applicable to that class of door-fastenings wherein a reciprocating bolt is held normally projected from the casing by a yielding pressure device—such as a spring—which permits the bolt to be retracted by contact with a strike-plate or its equivalent and projects it after passing said plate; and my said invention consists, primarily, in the employment of a reciprocating bolt or catch with a yielding pressure device—such as a spring or springs—so arranged and applied as to hold said bolt normally in a position intermediate of the extremes of its movement in opposite directions, and with its end projected beyond the case to co-operate with the strike-plate in the usual manner, said yielding pressure device operating, as the bolt is reciprocated in either direction, to return it to the normal position, an actuating device operating upon the bolt to project and retract the latter, a locking device engaging the bolt, and an incline upon the bolt co-operating with the strike-plate to draw the door close when the bolt is projected, all as hereinafter fully described, and the novel features pointed out in the claims.

In the accompanying drawings, representing the preferred embodiment of my said invention, Figure 1 represents in section a portion of a door and frame with the door closed and held by the bolt in normal position. Fig. 2 is a similar view showing the bolt projected to draw the door toward the frame. Fig. 3 is a plan view of one face of the lock. Fig. 4 is a plan view of the locking mechanism, the side plate being removed to show the interior with the bolt retracted. Fig. 5 is a similar view, the bolt being shown projected beyond the normal position. Fig. 6 is a side elevation of the case with bolt re-

moved. Fig. 7 is a side elevation of the detachable plate. Fig. 8 is an edge view of the bolt and spring detached from the case. Fig. 9 is a side elevation of the actuating-spindle. Fig. 10 illustrates a modification, the invention being shown applied to a face instead of a mortise lock.

Similar letters of reference in the several figures indicate the same parts.

The lock case or frame A may be of any desired or approved form or construction adapted to receive the several working parts and retain them in proper relation to each other.

The bolt or latch B is supported within the frame, so as to permit free longitudinal motion therein, and its outer end *b'* is beveled on one side, that facing the door-frame, to co-operate with the strike-plate or the edge of the door-frame, and thereby retract the bolt. In locks of this kind as ordinarily constructed a spring is applied to the bolt in a manner to hold it projected to the extreme limit of its outward movement, which position is represented in Fig. 1.

Now, according to my present invention, the bolt is permitted a further outward movement beyond the position indicated in Fig. 1, which latter represents the bolt in what is herein termed its "normal" position—one intermediate the two extremes of its movement and corresponding functionally and structurally to the extreme outer position of the bolts in ordinary locks of this kind. The bolt is maintained in this normal position and when moved in either direction is returned to said position by the application of a spring or springs suitably arranged to engage the bolt and be compressed thereby when said bolt is either retracted or projected.

A simple form and application of such a yielding pressure device, and one serving well to illustrate the principle, is shown at C in Figs. 4, 5, 8, and 10.

The rear portion of the bolt B is reduced somewhat, and upon it is placed the coiled spring C, together with washers or heads *c* at each end of the spring, the whole being maintained in position upon the bolt by shoulders or pins *c'*.

When the bolt is placed in position within

the case, the spring and the washers, if the latter are employed, are received between two shoulders or abutments c^2 , with the end b' of the bolt projecting beyond the case and in normal position. As will readily be understood, if the bolt is retracted the rear end of the spring will bear against the shoulder c^2 at that end, and the opposite end of the spring will engage the pin or shoulder upon the bolt, and thus the spring will be compressed and by its expansion will force the bolt outward to the normal position. If, on the contrary, the bolt be projected beyond the normal position, the front end of the spring will bear upon the shoulder c^2 and the rear end be engaged by the shoulder or pin on the bolt. By this arrangement one spring is made to perform the offices of two springs, the one interposed between the bolt and shoulder on the case for returning the bolt in one direction and the other interposed in like manner between a shoulder and the bolt, but pressing in the opposite direction—a construction which would be illustrated by attaching the central portion of the spring C to the bolt instead of allowing it free motion thereon.

The arrangement first described is simpler and cheaper, and hence is preferred; but any construction of yielding pressure device is regarded as the equivalent of the one shown if it operates in like manner to return the bolt in either direction to the normal position indicated.

It will be observed that the bolt is adapted to perform all the usual functions of a bolt of this kind—that is to say, it may be retracted to pass the strike-plate and when released will be forced outward by the spring—and it is only when it is desired to close the door more tightly against the frame or jamb or to lock the door in closed position that the provision for the further outward motion of the bolt becomes of value.

Experience has shown that in closing the doors of refrigerators and other closed receptacles it is exceedingly difficult, if not impractical, to produce close contact all around and form a tight joint when employing the ordinary spring-operated bolt or latch. Unless a certain amount of play is allowed for the bolt its action cannot be depended upon, as a slight warping or swelling of the wood will prevent the bolt from entering behind the strike-plate or into the mortise. Moreover, if fitted so as to hold close the spring will not throw the bolt unless very considerable pressure is brought against the door to close it.

Now one object of my present invention is to provide a lock which, when applied to the door of a refrigerator or other receptacle, can be relied upon to engage the strike-plate or its equivalent and so hold the door closed, making a reasonably-close joint, and by a further slight manipulation can be made to draw the door tightly against the jamb or frame. To this end the bolt B is provided

with a shoulder b' in rear of the portion engaging the strike-plate when the bolt is in normal position, or, what is regarded as an equivalent construction, the inner or rear face of the strike-plate P, or its equivalent, is furnished with a shoulder or inclined surface p , so that by projecting the bolt B outward beyond its normal position it will by the wedging action against the strike-plate draw the door toward the frame or jamb, as indicated in Fig. 2.

The means for effecting the necessary movements of the bolt are extremely simple, cheap, and effective.

The bolt B is formed or provided with two shoulders b^4 , (preferably formed by making an opening b^5 through the bolt,) between which is received a lug l on an arm l' , attached to a spindle L. The lug l and arm l' are preferably formed integral with spindle L, which latter takes a bearing in an opening l^3 in the case and is provided with a projection or shoulder l^4 , engaging the case and maintaining the lug l in operative relation with the walls or shoulders b^4 on the bolt, the latter being recessed or cut away on the under side to accommodate the movements of the arm l' . When the spindle is rotated in one direction, the lug l engaging the shoulder b^4 on one side, retracts the bolt, and when the spindle is rotated in the opposite direction to engage the other shoulder the bolt is projected beyond the normal position, and the shoulder on the bolt or inclined face of the strike-plate, or both together, will operate to draw the door tight against the frame.

In applying the lock, if of the mortise type shown in Figs. 1 and 2, a mortise is cut in the door and a hole bored for the insertion of the spindle. The hole is enlarged somewhat on one side of the mortise, and after the lock has been inserted the spindle is passed from the inner side of the door through the lock, the enlarged opening permitting the arm l' on the spindle to be drawn into the lock, a suitable opening O being formed in the side of the case to permit the arm to be drawn through the hole in the bolt until the collar is brought into contact with the opposite or outer side of the case.

Upon the projecting end of the spindle is fitted a knob or handle H, the end of the spindle being provided with an angular shoulder or head and the knob with a corresponding socket, so that when a screw S is applied to the end of the spindle it will draw the knob or handle down until the end of the socket bears against an escutcheon E on the face of the door. The spindle is thus held from longitudinal motion by the shoulder l^4 on one side and the socket of the knob or handle on the other, and by loosening or tightening the screw S the spindle can readily be adjusted to the thickness of the door.

If, as in the illustration, the lock is specially designed and adapted for use upon refrigerator-doors, but one knob or handle is required;

but when two knobs—one on each side—are desired, as when the lock is to be employed on ordinary doors, the spindle is prolonged or extended, as shown in dotted lines, Fig. 9, and a second knob or handle is adjusted upon the end with its socket bearing against an escutcheon covering the opening through which the arm on the spindle was inserted.

Provision is made for holding and retaining the bolt B when projected to draw the door close against the jamb by so proportioning and arranging the lug *l* and shoulder *b*⁴ that when the spindle is turned to project the bolt the lug will be carried in line with or slightly below the axis of the spindle, and to prevent this action taking place when the spindle is turned in the opposite direction a shoulder *s* is formed upon the case to engage the lug *l* or arm *l'* and arrest the motion of the spindle before the lug is brought in line with the axis of the spindle.

When it is desired to add a key-lock, it can readily be accomplished by arranging within the case any desired form of locking mechanism T, provided with a suitable shoulder or dog *t* for engaging the bolt B, or a shoulder thereon, to prevent said bolt being retracted until released by the use of a key. To illustrate this feature of the invention, I have shown a locking mechanism of the simplest type, comprising a tumbler or bolt *t'*, held in engagement with a lug *t*² by a spring *t*³, and adapted to be reciprocated by a key. When in locked position, the bolt or tumbler *t'* is moved behind a shoulder *t*⁴ on the bolt B and prevents the retraction of the latter; but when said bolt or tumbler is retracted the bolt B is free to move.

It is obvious that any desired form or construction of locking mechanism may be employed which contains or actuates a dog for engaging a shoulder on the bolt B to restrain or limit the movement of the latter.

The improvements herein described may be applied as well to a face as to a mortise lock, and in illustrating a slight modification in the details of construction, Fig. 10, I have shown them as applied to a face-lock. In this example the bolt B is made somewhat wider, and instead of being reduced to receive the spring it is provided with two supporting-pins *b*¹⁰, furnished with shoulders *b*¹¹. The spring C is mounted upon the pins *b*¹⁰ and takes its bearings at the ends upon the shoulders *b*¹¹, suitable washers or equivalent means being provided to sustain the ends of the spring.

The case is furnished with two bearings or shoulders *b*¹², between which the spring is received, so that as the bolt is retracted the spring will engage one bearing, and when projected will engage the opposite bearing. The locking bolt or tumbler in this case is shown as adapted to engage a lug *b*¹⁴ on the bolt B when it is desired to hold the latter projected.

If desired, a second knob or handle can be applied to this style of lock by extending the

spindle and providing a bearing for the spindle on the inner side, as by extending the spindle through a hole in the case.

Having thus described my invention, what I claim as new is—

1. In combination with a reciprocating bolt such as described and yielding devices for holding it in normal position and permitting it to be retracted and projected, a spindle provided with a lug on one side of its axis engaging shoulders on the bolt to reciprocate the latter, the said lug and shoulders being so arranged that when the spindle is rotated to project the bolt the lug will be carried in line with or below the axis of the spindle to hold the bolt projected against the pressure of the yielding devices, as and for the purpose set forth.

2. In combination with the bolt mounted to reciprocate in the case and held in normal position with its end projected beyond the case by yielding devices which permit the bolt to be projected or retracted, a spindle supported in a bearing in the case and provided with an arm bearing a lug, the latter being received between shoulders on the bolt and a shoulder on the case engaged by said spindle to limit its rotation in the direction to retract the bolt and prevent said lug from being drawn in line with the axis of the spindle, and thus prevent the bolt from being projected by the action of the yielding devices, substantially as described.

3. In a lock such as described, the combination of the case, the reciprocating bolt mounted therein, the spindle carrying a lug for engaging shoulders on the bolt, said spindle extending through a bearing in one side of the case and provided with a shoulder or collar, and a knob or handle provided with a socket to receive the end of the spindle, and a screw-connection for moving said socket longitudinally of the spindle into engagement with the outer face of the door or an escutcheon applied thereto, substantially as described.

4. The combination, with a bolt reciprocating longitudinally in bearings and provided with yielding pressure devices supporting the bolt in normal position with its end projected to engage a strike-plate, of an actuating device—such as a spindle—provided with an arm movable between and engaging shoulders on the bolt, substantially as described, whereby upon turning said spindle in one direction it will project the bolt and when turned in the opposite will retract it, both movements being positive and in opposition to the action of the yielding pressure device.

5. In combination with the reciprocating bolt having the inclined outer face and the spring engaging said bolt to hold it with its end normally projected, the spindle provided with an actuating-arm movable between shoulders on the bolt to project or retract the latter in opposition to the pressure of the spring, substantially as described.

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6. In a lock such as described, and in combination with the recessed bolt mounted to reciprocate in the case, the latter having an opening on one side and a bearing on the other, a spindle provided with a radial arm
5 for engaging the wall of the recess in the bolt to reciprocate the latter, said spindle being inserted through the open side of the case and engaging the bearing on the opposite side
10 and held in position by a socket applied to the end of the spindle outside the door, substantially as described.

7. In a lock such as described, the combination of the reciprocating bolt, a pressure de-

vice—such as the spring—operating upon the bolt to hold it normally projected, a spindle
15 provided with an arm engaging shoulders on the bolt and operating thereon when moved in opposite directions to project and retract the bolt in opposition to the pressure device,
20 and a lock for engaging the bolt when projected by the action of the spindle to prevent the return of the bolt, substantially as described.

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Witnesses:

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