O. C. DAVIS.

DOOR LATCH.

APPLICATION FILED MAR. 17, 1916.

1,210,911. Patented Jan. 2, 1917.

Fig. 1.

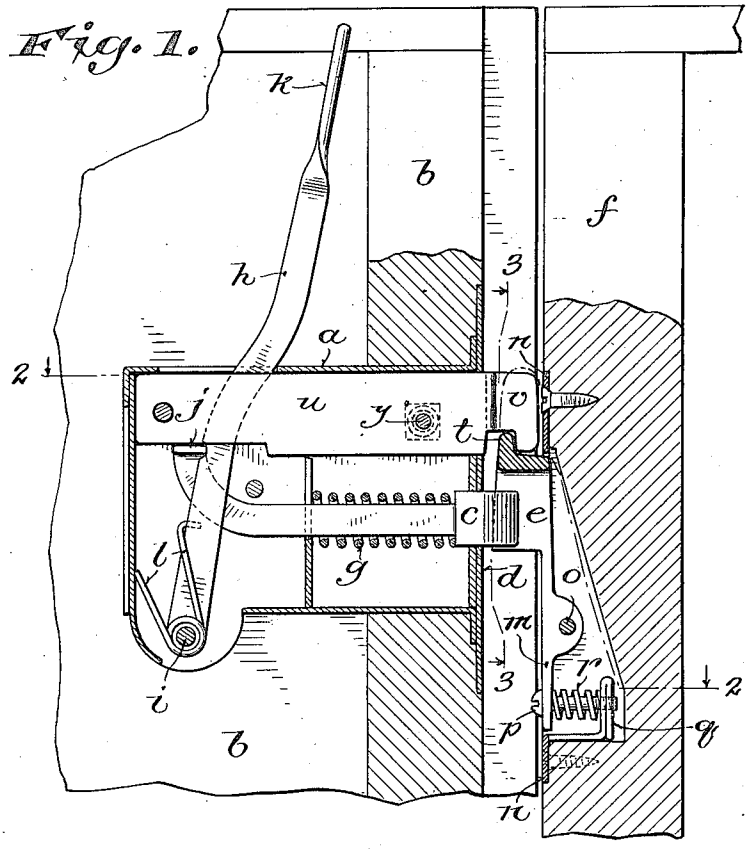


Fig. 3.

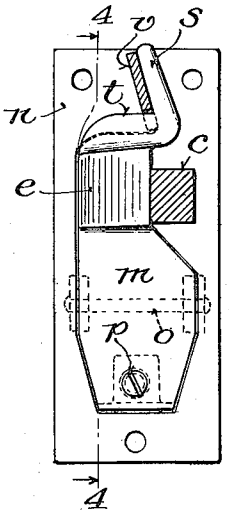


Fig. 2.

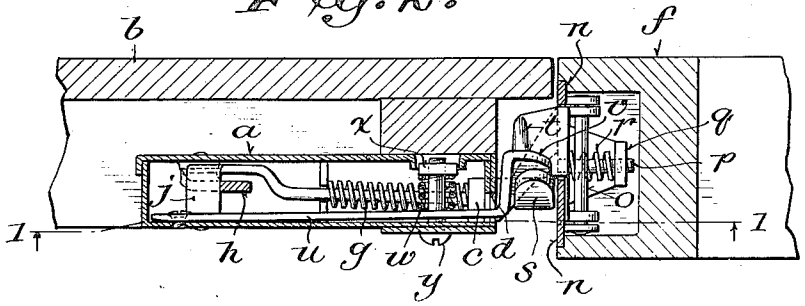
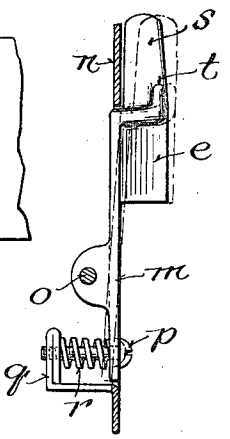


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DOOR-LATCH.

1,210,911. Specification of Letters Patent. Patented Jan. 2, 1917.

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To all whom it may concern:

Be it known that I, ORIN C. DAVIS, a citizen of the United States, residing at Manistee, in the county of Manistee and State of Michigan, have invented certain new and useful Improvements in Door-Latches, of which the following is a specification, reference being had to the accompanying drawing forming a part thereof.

This invention relates more particularly to spring latches for doors for automobiles and other vehicles.

The main objects of the invention are to provide a latch of simple construction which can be readily applied to the doors and frames of vehicles such as automobiles and which will be effective and reliable in operation; to prevent the disengagement of the latch by the spreading of the door opening; to take up play and prevent rattling when the door to which the latch is applied is closed; to prevent vertical displacement of the door relative to the frame when the door is closed; to provide for the adjustment of the striker to maintain proper engagement of the latch therewith, and compensate for variation in the space between the door and door jamb due to spreading of the door opening or any other cause; to support the door when closed from the frame adjacent to the latch independently of the hinges; and generally to improve the construction and operation of latches of this class.

It consists in the construction, arrangement and combination of parts as hereinafter particularly described and pointed out in the claims.

In the accompanying drawing like characters designate the same parts in the several figures.

Figure 1 is a vertical longitudinal section on the line 1—1, Fig. 2, of a latch embodying the invention as applied to a door and door frame of an automobile or the like; Fig. 2 is a horizontal longitudinal section on the broken line 2—2, Fig. 2; Fig. 3 is a vertical section on the line 3—3, Fig. 1, showing the striker and striker plate in elevation; and Fig. 4 is a vertical section on the line 4—4, Fig. 3, showing the striker in elevation as viewed from the left relative to Fig. 3.

The latch comprises a case *a*, which may be mortised in or attached to the door *b* in the usual or any suitable manner, as shown in Figs. 1 and 2. A latch bolt *c*, fitted and guided in the case, has a beveled end projecting through an opening in the face plate *d* of the case and adapted to coöperate with the beveled striker *e*, attached to the jamb *f* of the door frame to lock and hold the door closed. A spring *g*, bearing at one end against a shoulder on the bolt next to its enlarged beveled end and at the other end against an abutment in the case, tends to thrust the bolt out of the case and permits it to yield inwardly and pass into locking engagement with the striker *e* when the door is closed, in accordance with the usual operation of spring latches of this class.

A retracting lever *h*, fulcrumed on a pin *i* in the lower part of the case and extending upwardly therefrom through a slot in the top of the case, engages with the upwardly bent and laterally offset end *j* of the inner end of the shank of the bolt *c*, and is formed or provided at its upper end with a handle *k* for manually withdrawing the bolt from engagement with the striker *e*. A spring *l* normally holds the lever *h* in the position in which it is shown in Fig. 1, against the outer end of the slot in the case *a*, and prevents displacement and rattling thereof, the inward movement of the latch bolt when it passes into engagement with the striker in closing the door, having no effect on said lever, which is held by the spring *l* against the front end of the slot in the case through which is passes.

The several parts of the latch thus far mentioned, with the exception of the striker, may be of the usual or any suitable construction, no novelty therefor *per se*, being claimed.

The striker *e* has a downward extension *m*, loosely fitting into an opening in a plate *n*, approximately flush therewith and pivotally connected with said plate by a cross pin *o*. Below the pivot pin *o* the extension *m* is adjustably connected by a screw *p* with an arm *q* on the back of the plate *n*, a spring *r* being interposed between said arm and extension to permit the striker to yield inwardly toward the door, as indicated by dotted lines in Fig. 4. The head of the screw *p*, which passes loosely through the extension *m*, serves as a stop to limit the movement of the striker *e* toward the plate *n*, and according to the adjustment of the screw determines the extent to which the striker projects from the plate *n* into the doorway, for a purpose to be hereinafter explained.

The striker is formed with an upwardly

extending and outwardly inclined or overhanging abutment *s*, and with a rib *t*, extending outwardly from the abutment substantially parallel with the plate *n*. An outwardly yielding plate or member *u*, connected at its inner end with the latch case *a*, projects through an opening in the face plate *d*, and is bent outwardly substantially parallel with said plate and then away from said plate, as shown in Fig. 2, into an outwardly and upwardly inclined notched or hooked ear or projection *v*, which is adapted to first engage with the rib *t* on the striker, as shown in Fig. 1, and then with the abutment *s*, as shown in Fig. 3, when the door is closed. A spring *w*, interposed between the plate or member *u* and a nut *x* on a screw *y*, which passes loosely through the inner wall of the latch case and the plate or member *u*, yieldingly presses said plate or member toward the inner wall of the latch case and holds the ear or projection *v* in engagement with the abutment *s*, as shown in Figs. 2 and 3, when the door is closed. The nut *x* is guided, as shown in Fig. 2, in a squared recess or opening in the outer wall of the latch case, to prevent it from turning when the screw *y* is turned to adjust the tension of the spring *w*. The rib *t* is preferably tapered, beveled or inclined toward its outer end away from the plate *n*, so as to freely enter the notch in the lower side of the ear or projection *v* when the door is closed, and to draw and hold the striker *e* slightly inward toward the door against the tension of the spring *r*, as said ear or projection is brought into engagement with the abutment *s*. The door jamb or post *f* is mortised or recessed to receive the striker *e* and the plate *n* with its arm *q*, as shown in Figs. 1 and 2.

In the operation of the latch, when the door is closed and the bolt *c* by the engagement of its beveled face with the beveled face of the striker *e*, is thrust inward against the tension of the spring *g*, the hooked or notched ear or projection *v* engaging with the rib *t*, as shown in Fig. 1, draws the striker *e* toward the door and prevents accidental disengagement of the bolt from the striker by the separation of the door *b* from the jamb or post *f*, or by the spreading of the doorway due to the sagging, springing or warping of the body of the vehicle, or to any other cause. Just before the bolt *c* clears the beveled face of the striker *e* and is thrust by the spring *g* outward behind and into engagement with the back or inner face of the striker, as shown in Figs. 1 and 3, the ear or projection *v* engaging with the abutment *s*, as shown in Figs. 2 and 3, arrests the inward movement of the plate or member *u* with the door, compressing the spring *w*, which when the door is completely closed, holds said ear or projection yieldingly against said abutment, thereby taking up all lost motion or play between the bolt *c* and striker *e*, and preventing the latch from rattling. The rubber or spring bumpers ordinarily employed in connection with latches of this class, are thus dispensed with. The outward inclination or overhang of the abutment *s* with which the ear or projection *v* is held in engagement by the spring *w*, prevents displacement of the door vertically relative to the door frame or jamb *f*, and the engagement of said ear or projection with the rib *t* or top of the striker *e*, supports the adjacent side of the door when it is closed, thereby relieving the door hinges from a part of the weight of the door and from undue strain. The striker *e* with the abutment *s* and rib *t* are adjusted to properly coöperate with the bolt *c* and the ear or projection *v*, and compensate for any variation in the width of the door opening or space between the door jamb *f* and adjacent side of the door due to the sagging, warping or springing of the vehicle body or to any other cause, by turning the stop screw *p* in or out of the arm *q* more or less as may be required. The tension of the spring *w* is adjusted by turning the screw *y* in or out of the nut *x* more or less, to produce and maintain proper engagement of the ear or projection *t* with the abutment *s*, and to prevent rattling and wear of the engaging parts of the latch.

Various modifications in the details of construction and arrangement of parts of the latch may be made without departure from the principle and scope of the invention as defined in the following claims.

I claim:

1. In a door latch the combination of a striker applicable to the door jamb, a latch case applicable to the door and provided with a spring actuated latch bolt adapted to coöperate with the striker, and a hooked member projecting from the latch case and adapted by engagement with the striker when the door is closed to hold the striker in operative relation to the latch bolt.

2. In a door latch the combination of a striker applicable to the door jamb, yieldable toward the door and formed with an abutment transverse to the door jamb, and a rib extending outwardly from the abutment, a latch case applicable to the door and provided with a spring actuated bolt adapted to coöperate with the striker, and an outwardly yielding hooked member projecting from the latch case substantially parallel with the latch bolt and adapted by engagement with said abutment and with said rib to take up play between the latch bolt and keeper and to hold the striker in operative relation to the latch bolt when the door is closed.

3. In a door latch the combination of a

striker applicable to the door jamb and having a vertically inclined abutment extending inwardly from the jamb, a latch case applicable to the door and provided with a latch bolt adapted to coöperate with the striker, and an outwardly yielding member projecting from the latch case substantially parallel with the latch bolt and having a vertically inclined face adapted by engagement with said abutment to take up play between the bolt and striker and to prevent the vertical displacement of the door when it is closed.

4. In a door latch the combination with the latch bolt, of a plate applicable to the door jamb and provided with a striker pivotally connected therewith, a screw adjustably connecting the striker with the plate and limiting its outward movement relative thereto, and a spring tending to force the striker inwardly and permitting it to yield outwardly relative to the door jamb.

5. In a door latch the combination with a spring actuated bolt and a hooked member associated therewith, of a jamb plate and a striker yieldingly connected with said plate and having a projection coöperating with the hooked member to hold the striker in engagement with the latch bolt when the door is closed.

6. In a door latch the combination with a latch bolt of an outwardly yielding hooked member associated therewith, a jamb plate, and a striker yieldingly connected with said plate and provided with a projection and an abutment coöperating with said hooked member to hold the striker in engagement with the latch bolt and to take up play between them.

In witness whereof I hereto affix my signature in presence of two witnesses.

ORIN C. DAVIS.

Witnesses:
F. H. Stone,
James L. Sibben.