

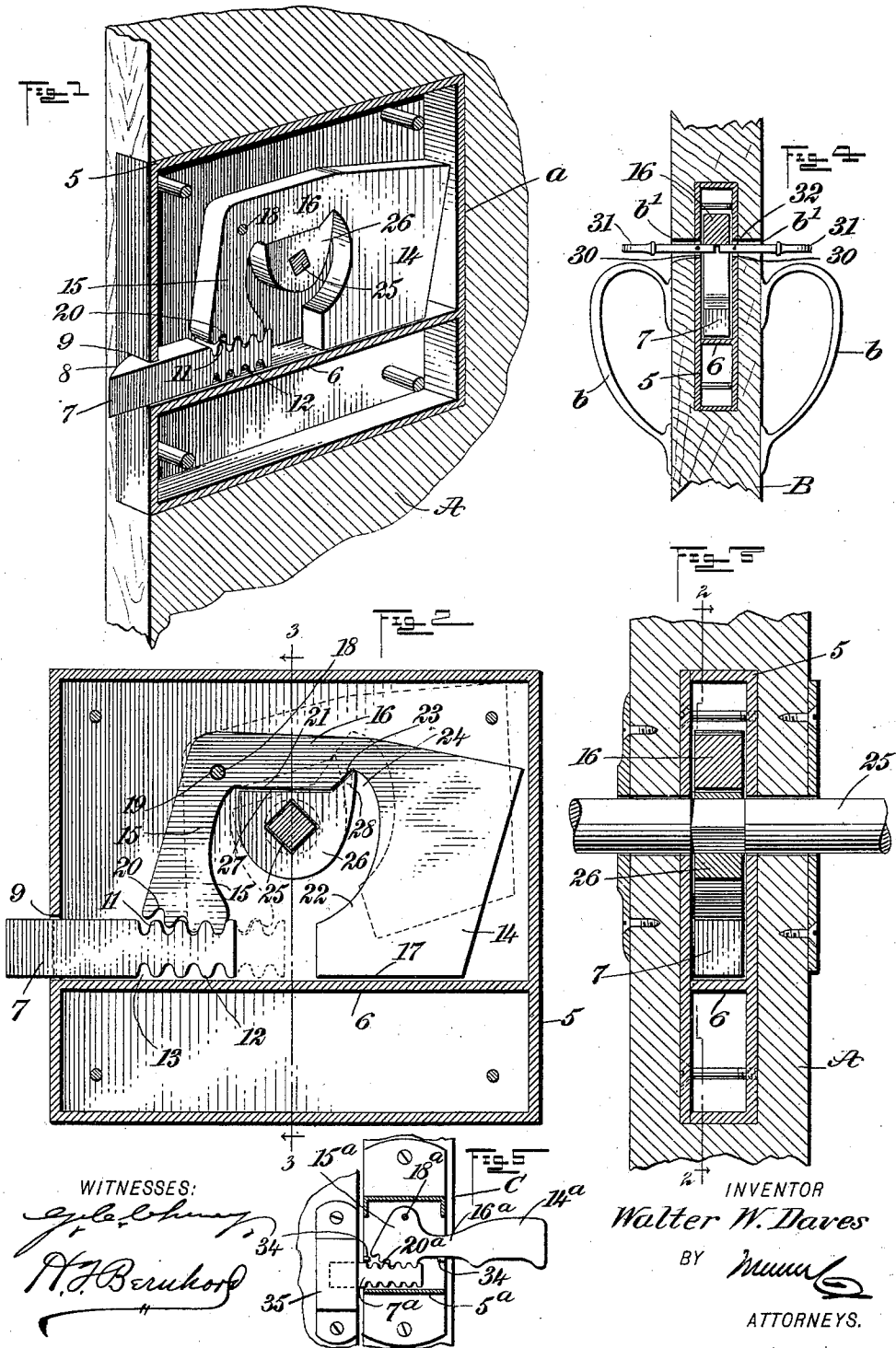
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W. W. DAVES.
LATCH.

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NO MODEL.



UNITED STATES PATENT OFFICE.

WALTER WEAKS DAVES, OF CARTERSVILLE, GEORGIA.

LATCH.

SPECIFICATION forming part of Letters Patent No. 745,042, dated November 24, 1903.

Application filed December 20, 1902. Serial No. 135,994. (No model.)

To all whom it may concern:

Be it known that I, WALTER WEAKS DAVES, a citizen of the United States, and a resident of Cartersville, in the county of Bartow and State of Georgia, have invented a new and useful Improvement in Latches, of which the following is a full, clear, and exact description.

My invention relates to improvements in latches adapted for use either as a door-latch or a gate-latch.

The improved latch is designed more particularly as an improvement on that class of devices wherein the bolt is projected by the action of gravity devices. In this invention I have provided a simple and cheap construction which insures an easy motion to the bolt without the use of springs, allows the bolt to be retracted by turning the knob-spindle in either direction, and allows the use of thumb-plates in connection with a combined lever and weight in lieu of the knob-spindle.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view, partly broken away and in section, showing my invention embodied in a door-latch and applied to a part of an ordinary door. Fig. 2 is a vertical longitudinal section through the latch removed from the door and showing the parts in their normal positions, the plane of the section being indicated by the dotted line 2 2 of Fig. 3 looking in the direction of the arrows. Fig. 3 is a section at right angles to Fig. 2 and in the plane of the dotted line 3 3. Fig. 4 is a transverse section, on a reduced scale, of the latch having pivoted thumb-pieces to actuate the bolt; and Fig. 5 is a detail sectional view, on a small scale, of the invention embodied as a gate-latch.

I will first proceed to describe the construction shown by Figs. 1, 2, and 3 of the drawings, wherein A indicates a part of a door having a mortise a, adapted to receive the casing 5 of my improved latch. This casing may be of any suitable construction, shape, and

dimensions, and it is provided with a horizontal seat, flange, or ledge 6, on which is adapted to rest the bolt 7. This bolt is provided with a beveled nose 8, and it is arranged to slide in the casing and to be partly projected through a slot 9, the latter being provided in the exposed front edge of the casing. The bolt is limited to rectilinear movement in a horizontal plane by the casing and the ledge or flange 6, and said bolt is preferably constructed in a way to cooperate with a gravity element of the latch and to be reversed in its position within the casing, so as to enable the latch as an entirety to be used on right or left hand doors.

The bolt 7 slides endwise through the casing and on the flange or ledge 6, and the inner concealed part of this bolt is formed with a series of teeth 11 12, which are separated by intervening grooves or spaces 13. Each row of teeth 11 or 12 constitutes a rack adapted for engagement with a member of a bolt-actuator, and said bolt may be reversed side for side to make its beveled nose 8 face in one direction or the other, which reversal of the bolt brings either of the series of teeth 11 or 12 into position for engagement with said member of the combined weight and lever.

The bolt-actuator is shown more clearly by Figs. 1 and 2 of the drawings, said element being cast in a single piece of metal for simplicity and strength of construction. This element comprises a weight 14 and the arms 15 16. The weight 14 is joined at its upper end by the arm 16 to the upper end of the arm 15, and said weight is preferably formed with a flat lower edge 17, which is adapted to rest on the ledge or flange 6 in the normal position of the parts, wherein the bolt 7 is projected, as shown by Fig. 2. One side of the casing 5 is provided with a pivotal stud 18, which is cast in one piece with the casing, and the arm 15 is provided near its upper end with a perforation 19, adapted to receive the pivotal stud 18, the latter serving as the fulcrum of the weighted bolt-actuator. The arm 15 normally stands in an upright position, and at its lower end said arm is fashioned to provide a toothed segment 20, the latter being concentric with the axis afforded by the pivotal stud 18. The toothed segmental end of the arm 15 has intermeshing engagement

with one or the other of the racks 11 12 of the bolt, so as to operatively and positively connect said bolt and the counterweighted lever. The arm 16 extends in a direction at right angles from the upper portion of the arm, so as to form practically therewith a bell-crank, and this arm 16 is in one piece with the weight 14, the latter serving to normally move the lever to a position wherein the toothed segment and the rack cooperate to project the beveled nose of the bolt beyond the casing and into engagement with a suitable keeper.

The arm 16 has a straight lower edge 21, and the inner or front edge of the weight 14 is curved, as at 22, this curved edge of the weight intersecting an inclined edge 23 of the arm 16 in a way to produce an upwardly-extending notch or recess 24 between the straight edge 21 of the arm 16 and the curved edge 22 of the weight.

25 designates a knob-spindle which passes transversely through the door and the casing, said spindle being disposed below the shank or neck 16 and between the opposing edges of the lever 15 and the weight 14. This spindle is equipped at a point within the latch with an actuating-plate 26. (See Fig. 3.) This plate is fast with the spindle to turn therewith in either direction, and said plate is provided with a straight top edge 27 and with a spur 28. Said plate is arranged on the spindle for its straight edge 27 to engage with the straight edge 21 of the bolt-actuator, while the spur 28 is arranged to fit into the notch 24 in a way for an inclined edge of the spur to engage with the inclined edge 23 of the arm 16, forming a part of said bolt-actuator.

It will be observed that the knob-spindle may be turned in either direction to make the actuating-plate 26 raise the weight and move the bolt-actuator on its fulcrum 18 for the purpose of retracting the bolt 7. The upper left-hand corner of the plate 26 (shown by Fig. 2) is adapted to engage with the arm 16 at a point considerably closer to the pivot 18 than the engagement of the spur 28 with the recessed edge of the arm 16, and thus the force or pressure required to lift the weight when the spindle is turned to the right is greater than the force required to lift the weight when the spindle is turned to the left, because the spur 28 at the right-hand corner of the plate 26 is located farther from the pivot 18 than the other corner of the plate. The spur 28, however, at the upper right-hand corner of the plate 26 tends largely to equalize the force required to lift the weight when the knob-spindle is turned in either direction, and the location of this spur with relation to the arm 16 is such as to reduce the weight necessary to reverse the knobs and to move the bolt to its projected position.

The peculiar form of the bolt-actuator makes it applicable to all kinds of latches for use on doors, closets, and gates, it only being necessary to modify the casing 5 within

the province of a skilled constructor. An essentially advantageous feature of my invention is the construction of the arm 15 in connection with the weight, and this gravity element operates in a way to give an exceedingly easy motion to the bolt, especially in closing the door. This is due to the fact that the toothed segmental end of the lever moves through a very small part of a relatively large circle, so that a very slight pressure on the beveled face of the bolt lifts the weight and throws the bolt back the distance of the toothed segment from the fulcrum 18, giving to it increased leverage in lifting the weight. In this respect my improved latch is superior to ordinary "easy spring-latches."

In the construction shown by Fig. 4 I dispense with the notched spindle and the actuating-plate 26; but the casing, the bolt, and the bolt-actuator are essentially the same as in the construction disclosed by Figs. 1 to 3, inclusive. The style of latch shown by Fig. 4 is adapted for use on a door B, which is equipped with handles *b* on its opposite sides. This door is provided with slots or openings *b'*, which register with suitable slots 30, provided in opposite sides of the casing 5, and in these aligned slots are disposed the operating-plates 31. Said plates are pivoted, as at 32, in the sides of the casing 5, and the inner ends of said plates are extended into the casing, so as to lie below the neck or shank 16 of the combined weight and lever. Either of the plates 31 may be depressed in a way to lift the shank 16 and the weight 14, thereby turning the lever 15 and retracting the bolt.

A further modification of the latch is represented by Fig. 5 of the drawings, wherein the casing 5^a is modified somewhat to enable the weighted member of the combined lever and weight to extend beyond said casing, this particular type of the latch being especially adapted for use on gates. A portion of the gate is indicated at C, and to it is fastened the casing 5^a in any suitable way. The arm 15^a is modified somewhat; but it is hung on a stud 18^a, which is integral with the casing and is provided with a toothed segmental end 20^a, adapted for engagement with either of the toothed edges of a reversible bolt 7^a. The weight 14^a projects through an open side of the casing, so as to serve as a handle in the manipulation of the latch, and said weight and the arm 15^a (shown by Fig. 5) are joined by a reduced arm or neck 16^a. The casing is provided with stops 34 in its opposite sides, on one of which stops is adapted to rest the shank 16^a of the combined weight and lever. The bolt 7^a is normally projected by the lever and the weight, and the free end of said bolt engages with a keeper 35, secured to a gate-post.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a latch the combination with a casing, a bolt a knob-spindle, and a weighted pivoted

bolt-actuator operatively connected with the bolt and extending across the knob-spindle, of an actuating-plate fast with the knob-spindle and provided with a flat active face and with a spur which projects beyond said active face, said spur engaging with the bolt-actuator at a point farther removed from the pivot thereof than the engagement between any other portion of the flat face of said plate with said actuator.

2. A latch having a casing, a bolt slidable in said casing and provided with a rack, a bolt-actuator hung in said casing and provided with an arm having a notch in its lower edge, one edge of said notch being inclined to the lower edge of the arm, a knob-spindle, and an actuating-plate provided with a flat face and with a spur which extends beyond said flat face and fits in the notch, said face of the plate engaging with the under side of the bolt-actuator arm, and the spur engaging

with the notched edge of said arm at a point above the face of the plate.

3. A latch having a casing, a bolt provided with a rack, a bolt-actuator hung in the casing and provided with two arms and a weight, a knob-spindle, and an actuating-plate attached to said knob-spindle in a position for engagement with one arm of the bolt-actuator, said actuating-plate having a spur arranged to engage with one arm of said bolt-actuator at a point removed farther from the fulcrum of the lever than the point of engagement between the other corner of the plate and the shank.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER WEAKS DAVES.

Witnesses:

G. W. WALDRUP,
JAS. W. KNIGHT.