

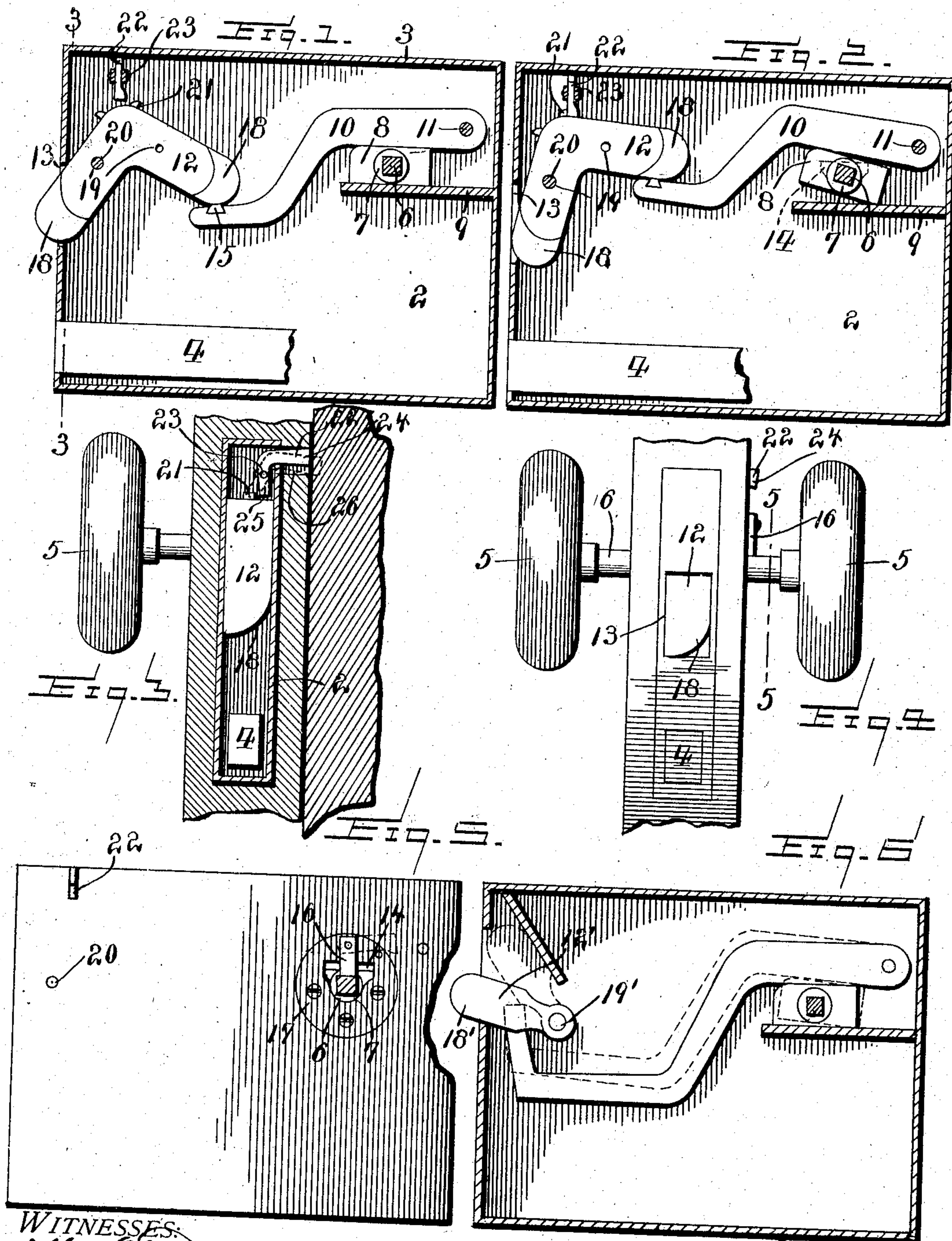
No. 791,317.

PATENTED MAY 30, 1905.

L. C. CAMPBELL.

LATCH.

APPLICATION FILED JUNE 18, 1904.



WITNESSES:

*W. F. Raye.*  
*G. H. Craven.*

INVENTOR

*Lewis C. Campbell*

BY

*J. S. Barker*

*his Attorney*



# UNITED STATES PATENT OFFICE.

LEWIS C. CAMPBELL, OF CARTHAGE, MISSOURI, ASSIGNOR OF TWO-SIXTHS TO ALFRED O. PITCHER AND ONE-SIXTH TO OTTO A. GEESEKA, OF MOUNT PLEASANT, IOWA.

## LATCH.

SPECIFICATION forming part of Letters Patent No. 791,317, dated May 30, 1905.

Application filed June 18, 1904. Serial No. 213,103.

*To all whom it may concern:*

Be it known that I, LEWIS C. CAMPBELL, a citizen of the United States, residing at Carthage, in the county of Jasper and State of Missouri, have invented new and useful Improvements in and Relating to Door-Latches, of which the following is a specification.

It is almost the universal custom to operate door-latches by means of knobs that are grasped and turned by the person desiring to open the door. The restoring of the parts that are thus turned to normal positions is usually accomplished in one of two ways, either by means of springs, and this is the more common expedient, or by means of weighted or ponderous parts mounted within the latch-casing. There are certain objections incident to each of these styles of door-latch. The spring-operated latch is delicate, the springs being liable to become broken or misplaced, and so rendering the latch inoperative. The gravity-operated latch, while of more simple construction, is undesirably heavy by reason of the necessary employment of weights or ponderous parts for effecting not only the restoring of the latch to its normal position, but also the turning back of the knobs and connected parts to their normal positions.

It is the object of my invention to produce a simple gravity-latch comprising the usual turning-knobs in which the employment of ponderous parts for restoring the latch mechanism to normal position is entirely unnecessary—that is to say, by the use of my invention I produce a gravity-latch in which the parts employed need be no heavier than corresponding parts of an ordinary spring-operated latch.

My invention is illustrated in the accompanying drawings, though I do not wish to be understood as limiting the same in its useful applications to the embodiments thereof delineated in such drawings.

Figure 1 is a side elevation of a door-latch embodying my invention, one of the side walls of the casing being removed. Fig. 2 is a view similar to Fig. 1, except that parts are shown

in a different position. Fig. 3 is a vertical sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is an edge view of a portion of a door to which my invention is applied in the form of a mortise combined latch and lock. Fig. 5 is a vertical section taken on the line 5 5 of Fig. 4. Fig. 6 is an elevation representing a different embodiment of my invention.

The parts of my latch are mounted in a casing having the side walls 2 and the surrounding flange 3. In the lower part of the casing may be arranged a lock 4, of any usual or preferred construction; but as it forms no part of my invention it is not illustrated in detail. The door-knobs 5 are mounted upon a stem or spindle 6 and are free to turn in the casing to operate the latch. This spindle passes through a hub or sleeve 7, that is mounted in the casing and is provided with a cam-shaped part 8, the lower face of which is flat and rests upon a shelf or flange 9, projecting inward from one of the side walls of the casing, being preferably cast integral therewith.

The upper face of the cam 8 is flat throughout a portion of its length, and upon it rests the latch-operating lever 10, that is pivoted at 11 and has its free end arranged to engage with the latch-piece 12. If desired, a piece of rubber or noise-deadening material 15 may be inserted in the end of the lever where it comes into engagement with the latch to prevent the unpleasant clicking sound that would otherwise be produced when these metal parts come together. The weight of the lever 10 maintains it in constant engagement with the upper portion of the cam 8. It is entirely free from the latch-piece 12, though in position to engage the inner end thereof when lifted by the cam, as indicated in Fig. 2. The latch-piece is supported upon a fulcrum-pin 20 in such manner that its inner end overbalances its other end and tends to throw the latter outward through the opening 13 in the flange 3 of the casing and into position to engage with the keeper of the latch, from which it is withdrawn when the lever 10 is lifted into engagement with its inner end.



In the form of my invention illustrated in Figs. 1, 2, and 3 the latch-piece 12 is double-ended and reversible. It is substantially L-shaped and has its two ends 18 beveled and is provided with two apertures 19, one relatively near each beveled end portion, which apertures are adapted to fit the fulcrum-pin 20, upon which the latch is hung. In Fig. 1 the latch-piece is represented as being arranged for a left-hand door. If it should be desired to apply the latch to a right-hand door, it is only necessary to remove the latch-piece from its supporting-pin, reverse or turn it over, and pass the pin 20 through the other hole 19 from the one with which it is represented as being engaged with, Fig. 1. This reversal of the latch-piece does not change its operative relations to the lever 10.

In Fig. 6 I have illustrated a different form of latch-piece, which while being reversible is not double-ended. The latch herein shown is designated 12' and is provided with but one beveled end 18' and a single aperture 19'. To reverse the latch, it is only necessary to remove it from its pin, turn it over, and replace it.

14 14 designate the openings in the side walls of the casing, in which the ends of the hub 7 rest. These are larger than the ends of the hub, expanding upward to allow for movements of the hub when the knobs are turned, as will presently be described.

It will be apparent from an examination of Figs. 1 and 2 that whenever the spindle 6 on which the knobs are mounted is turned, no matter which way it be, the cam-piece 8 will rock upon one of its lower corners or angular edges as a fulcrum, with a result that the lever 10 will be raised and the latch withdrawn from its keeper or into the casing. At the same time both the knobs, their connecting-spindle, and the hub 7 will be bodily lifted, the enlarged apertures 14 permitting this. If now the hand that turned the knob be removed, the weight of the knobs, spindle, and hub will restore these parts to place by gravity—that is, to a position with the cam 8 lying flat upon the shelf 9—and at the same time the spindle and knobs will be turned back to their normal positions of rest. Following these movements the lever 10 and latch 12 will be restored to normal positions each by its own weight. It will thus be seen that I have produced a gravity-latch in which the parts are operated by a turning of the knobs in the usual way and wherein I utilize the gravity of the turned parts (knobs, &c.) to turn them back to normal positions, thus rendering it entirely unnecessary to employ springs or ponderous bodies distinct from the turning parts and disposed within the latch-casing for producing these returning movements, all of which operations I accomplish by means of parts of

a size and weight no greater than those of corresponding parts in spring-operated latches of ordinary construction. I thus secure the advantage of both gravity-operated and spring-operated latches, the lightness of parts incident to the spring-latch, and the simplicity of construction of the gravity-latch, all these advantages being secured in a latch operated by turning movements of the ordinary knobs.

16 designates a pivoted lock or dog that constitutes the night-latch to prevent the manipulation of the latch-piece 12 by means of the door-knobs. It may be pivoted to any suitable stationary support and is arranged to engage with the spindle 6. In Fig. 5 it is shown pivoted to the escutcheon 17, secured to the face of the door and surrounding the spindle. In case a rim-lock were employed, it would be pivoted directly to some part of the casing thereof.

A frequent cause of injury to door-latches is the violent contact of the latch-piece with the keeper when the door is slammed, and one of the purposes of my invention is to prevent such injury to the latch. I combine with the latch-piece means for normally holding the same retracted or within the casing, permitting it to be released to engage the keeper only when the door is closed and the latch-piece stands opposite to the opening into the keeper. As represented in the drawings, the latch-piece 12 or 12' is provided with a projection or spur 21.

22 designates a latch-lever pivoted at 23 to some portion of the casing. It is of angular shape, having an outer end 24 weighted and arranged to extend out beyond the edge of the door to which the latch is applied, so as to engage with the rabbet 30 of the jamb of the door-casing as the door is closed, such engagement operating to tilt the lever and force the end 24 back into the recess 26, in which it is situated. The other inner end 25 of the lever is arranged adjacent to the projection 21 of the latch-piece and so as to be moved out of or into engagement therewith. When the lever is in normal position—that is, with its outer end 24 extending beyond the face of the door—the inner end 25 is situated in the path of this projection, whereas when the lever is moved inward, as by engagement with the door-jamb, it stands out of or to one side of the path of the projection. In Figs. 2 and 4 the positions normally occupied by the parts when the door is opened are represented, the latch being held retracted by the lever 22, while Figs. 1 and 3 indicate the positions of the parts when the door is closed and latched, the lever 22 being forced back into the recess 26 and its end 25 to one side of the spur 21. If now it be desired to open the door, the first movements will be to turn the knob, lift the lever 10, and withdraw the latch-piece from



the keeper into the casing. While the parts are held in these positions the door will be swung on its hinges, and as soon as its free edge leaves the door-jamb the weighted outer end 24 of the lever falls forward and its inner end moves behind the projection 21, where it rests. When the hand is removed from the knob, the parts, with the exception of the latch, return by gravity to their normal positions. The latch-piece, however, is held retracted by the lever 22 until the end 24 of the latter is moved inward, which ordinarily will not take place until the door is closed. By this arrangement it will be seen that if the door should be violently slammed the latch-piece will be saved from the severe shock that it would be otherwise subjected to. On the other hand, the latch would be released the moment the door is closed, and being free will immediately enter the keeper and hold the door closed.

It will be observed by reference to the drawings that the latch-piece is double-ended and of substantially right-angular shape and that the opposite ends are both beveled on the same side, as indicated at 18, and that it is provided with two pivot-apertures 19, such apertures being eccentric and one in each arm of the latch-piece. This makes the latch-piece reversible, as by changing its support from one pivot-aperture 19 to the other the latch may be adapted for either a right-hand or a left-hand door. By providing the latch-piece with two projections 21 the catch-lever 22 may be used in connection therewith whichever way the latch-piece is turned. By supporting the catch 22 so that it moves in vertical planes transverse to the vertical planes in which the latch-piece moves I am enabled to make the parts of exceedingly simple construction and to arrange them in the most compact manner.

The form of latch-piece illustrated in Figs. 1, 2, and 3—that is, one of substantially right-angle-lever construction—is particularly adapted for use in a gravity-latch, because it is very quick in its response to the action of gravity and because also the force required to move the free latching end into the casing by the engagement of its bevel surface with the edge of the keeper is very slight. These advantageous results are due to the angular relations of the arms to each other and to the supporting of the latch-piece in such manner that its outer latching end depends from the pivot 20 and has a pendulum-like movement as it moves into and out from the casing of the latch.

I have illustrated and described the cam-piece 8 as being of a construction to perform two functions, one being to cause the lifting of the spindle 6 and its associated parts whenever it is turned and the other to cause the movements of the lever 10. It is evident, how-

ever, that these two functions may be performed by separate parts, the integral construction of the cam-piece being one of convenience and not of necessity. Indeed, the cam-piece may be considered either as an integral structure or as two functional elements in close proximity, one element bearing upon the stationary support 9 and serving to lift the spindle and then restore it to normal position, while the other element serves to transmit the movements of the spindle to the lever 10.

Having described my invention, what I claim is—

1. A door-latch comprising a turning door-knob, a movable latch-piece and connections between the turning knob and the latch-piece, whereby the turning of the knob moves the latch, and means for lifting the knob when it is turned and restoring it to normal position by its own gravity when it is released, substantially as set forth.

2. In a door-latch, the combination of a knob free to be turned in either direction, a latch-piece, connections between the knob and the latch-piece for moving the latter whenever the knob is turned in either direction, and means for lifting the knob when it is turned and restoring it to normal position by its own gravity when it is released, substantially as set forth.

3. In a door-latch, the combination of a door-knob mounted upon a turning spindle, a latch-piece, connections between the spindle and the latch-piece for operating the latter when the spindle is turned, and a cam-shaped piece connected with the spindle bearing upon a support and arranged to lift the knob and spindle when they are turned and restore them to normal positions by gravity when they are released, substantially as set forth.

4. In a door-latch, the combination of a turning spindle and knobs mounted thereupon, a cam-shaped piece mounted upon the spindle and turning therewith, a stationary support upon which the cam rests, whereby when the spindle is turned it is bodily lifted, a latch-piece, and a lever resting upon the said cam-piece and arranged to be moved thereby and in turn to move the latch-piece, substantially as set forth.

5. In a door-latch, the combination of a reversible pivoted latch-piece having its opposite ends beveled both on the same side, and formed with two eccentrically-disposed pivot-holes, a fixed pivot-pin on which the latch-piece is hung in one or the other of two positions accordingly as it passes through one or the other of the said holes, a turning knob and spindle, connections between the spindle and the latch-piece for operating the latter when the former is turned, a catch-piece for holding the latch, and two projections carried by

the latch-piece disposed with relation to the pivot-holes, substantially as shown, whereby when the latch-piece is supported in one position (the pivot passing through one hole) one of the projections is in position to be engaged by the catch-piece when the latch is withdrawn, and when supported in the other position (the pivot passing through the other hole) the other

projection is in position to be engaged by the catch-piece when the latch is withdrawn, substantially as set forth. 10

LEWIS C. CAMPBELL.

Witnesses:

J. S. BARKER,  
GEO. B. PITTS.