

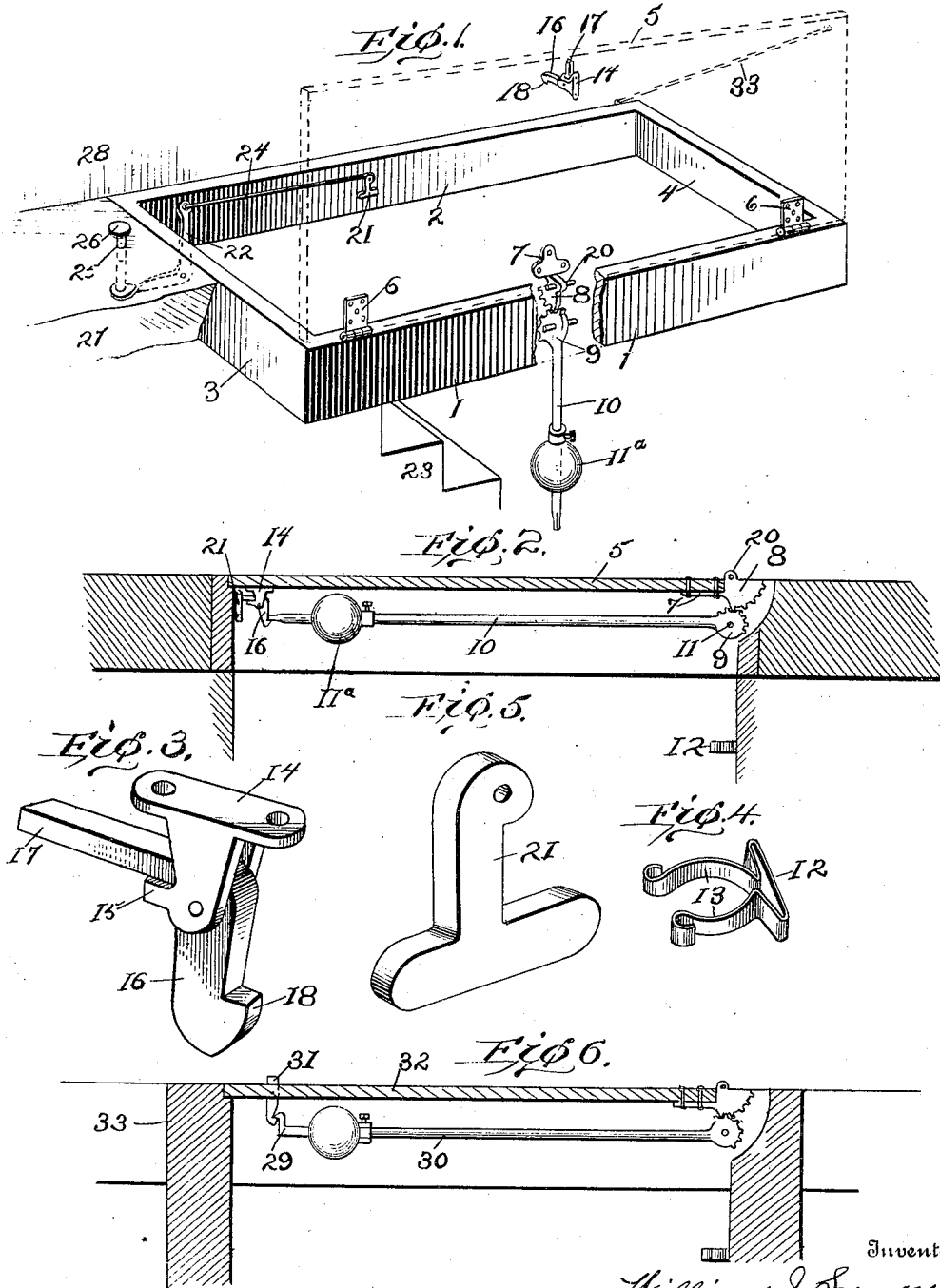
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W. J. SYMONS.
MEANS FOR OPERATING CELLAR OR TRAP DOORS.

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NO MODEL.



Witnesses
M. Fowler Jr
L. E. Money

Inventor
William J. Symons
By *C. J. Galt*
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM J. SYMONS, OF OSKALOOSA, IOWA.

MEANS FOR OPERATING CELLAR OR TRAP DOORS.

SPECIFICATION forming part of Letters Patent No. 768,869, dated August 30, 1904.

Application filed November 3, 1903. Serial No. 179,723. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. SYMONS, a citizen of the United States, residing at Oskaloosa, in the county of Mahaska and State of Iowa, have invented certain new and useful Improvements in Means for Operating Cellar or Trap Doors, of which the following is a specification.

This invention relates to means for operating cellar, vault, and trap doors, and pertains especially to an automatic device for opening and closing such doors and holding them open or closed, as desired.

The object of the invention is to provide a cellar or like door with a segmental toothed hinge arranged to mesh with a like segment of a weighted lever and to provide a trigger mechanism to hold and release the door and the said lever.

A further object of the invention is to provide a peculiar bracket to hold a door open and novel means carried by the door and operated by a peculiar trigger device to hold the door closed and to release the latter and permit it to swing open.

With these objects in view the invention consists in the novel construction and arrangements of parts, and especially in a segmental toothed hinge operated by a like lever-segment, a pawl carried by the door, and a trigger mechanism to operate the pawl.

In the accompanying drawings, forming part of this application, Figure 1 is a perspective view of a hatchway or cellar-door, partly broken away, showing the application of the invention. Fig. 2 is a cross-section. Fig. 3 is a perspective view of the pawl and hanger. Fig. 4 is a perspective view of the lever-bracket. Fig. 5 is a perspective view of the dog. Fig. 6 is a cross-section of a modification.

The same numeral references denote the same parts throughout the several views of the drawings.

The invention being especially applicable to hatchways or cellar-doors the latter is for purposes of illustration employed to exemplify the same; and it consists of a frame or casing comprising sides 1 and 2 and ends 3 and 4, the door 5 having ordinary end

hinges 6, connecting it with the frame side 1, and a special center hinge 7, having a toothed segment 8 and pintles 20. This segment meshes with a tooth-segment 9 on a lever 10, pivoted at 11, and the free end of the lever is provided with a weight 11^a, adjustable thereon according to the weight of the door which it has to overcome to open the door. A bracket 12 is placed in suitable position having spring-arms 13 to catch the lever and hold the door in raised or open position, so that the door may not be accidentally closed. A hanger 14 is secured upon the under side of the door, near the free edge thereof, and has a stop-lug 15. A pawl 16 is pivoted in the hanger and has an arm 17 and a catch-lug 18, which holds the lever 10 to keep the door in closed position, and the arm 17 of the pawl engages the lug 15 to limit the downward movement of the arm 17.

The trigger mechanism consists of a dog 21 of sufficient weight to counterbalance the parts connected to it, said dog being pivoted to the frame side 2 and having a lateral projection over which the arm 19 rests when the end of the lever 10 is caught by the lug 18 in closing the door, a bell-crank lever 22, pivoted to the said frame side near the frame end 3, from which steps 23 descend, a cord, strap, or chain 24, connecting the dog and the lever 22, and a pin 25 projecting from the lever 22 and having a head 26 extending above the floor 27 near the wall 28, so as not to interfere with the passage to and from the door or over it, said pin adapted to be operated by foot-pressure to operate the lever 22, which swings the dog and makes the said dog projection strike and raise the arm 17, thereby disengaging the lug 18 and lever 10 and permitting the latter to drop and open the door.

Referring to the modification shown in Fig. 7, the segments are the same as those just described, and in lieu of the pawl-and-trigger mechanism and for cheapness and simplicity I form a catch 29 on the lever 30 and operate a latch 31 through the door 32 near its edge and the wall 33 to catch and release the lever 30.

It is obvious that the pin 25 being depressed the lever 22 and chain 24 will pull the dog 21

against the pawl-arm 17, throw the latter upwardly, and make the lug 18 drop away from the lever 10, whereupon the latter will be moved by the weight 11^a to open the door, and the lever 10 being caught by the bracket 12 will hold the door in open or raised position.

A guard chain or rope 33 may be secured to the door at the frame end 4 of the hatch or door way.

10 With the exception of the pin-head 26 all mechanism is inclosed when the door is closed, and the latter may be opened from the inside by simply pulling the chain 24.

15 It will be observed that the door must be acted upon with sufficient force to release the lever 10 from its bracket 12 in order to close the door. Hence accidental contact with the door will not close it. It will be observed, further, that the location of the pin 25 at the corner of the hatch or door way close to the wall removes the pin from the passage-way to and from or over the door, so that the pin may not be accidentally stepped upon.

25 While I have shown the location of the several parts relative to the door and doorway as being preferable or advantageous, yet the location and arrangement of any or all of such parts may be changed as occasion may demand or in accordance with various conditions found in the practical application of the invention.

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

35 1. The combination with a hatchway and its door, of a hinge fixed to the door and having a toothed segment formed thereon, a lever having a like segment meshing with the hinge-segment, and means connecting the said lever with the free edge of the door to lock the latter.

2. The combination, with a hatchway and its door, of a hinge having a toothed segment, a weighted lever having a like segment and a pawl carried by the free edge of the door to catch the said lever and lock the door.

3. The combination, with the hinge-segment, the weighted lever having a segment to open and close a door, and the pawl-carried by the free edge of the door, of the trigger mechanism for operating the pawl.

4. The combination, with the hinge-segment, the weighted lever having a segment, the pawl having a lug to catch said lever, and the trigger mechanism comprising a dog engaged by the pawl, a bell-crank lever connected to the dog, and a push-pin to operate the bell-crank lever.

5. The combination, with a hatchway, and the trigger mechanism in the hatchway, of the door, a pawl carried by the door to engage a dog of said mechanism, a segmental toothed hinge, and a weighted lever having a toothed segment and working in the path of the pawl so that the latter will catch it.

6. The combination with a hatchway, and the trigger mechanism in the hatchway, of the door, a pawl carried by the door to engage a dog of said mechanism, a segmental toothed hinge, a weighted lever having a toothed segment and working in the path of the pawl so that the latter will catch it, and a spring-bracket to hold the lever in retracted position.

In witness whereof I hereunto set my hand in the presence of two witnesses.

WILLIAM J. SYMONS.

Witnesses:

IRVING C. JOHNSON,
CARL JOHNSON.