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M. O'CONNOR.

LATCHING MECHANISM FOR EXCAVATOR DIPPERS.

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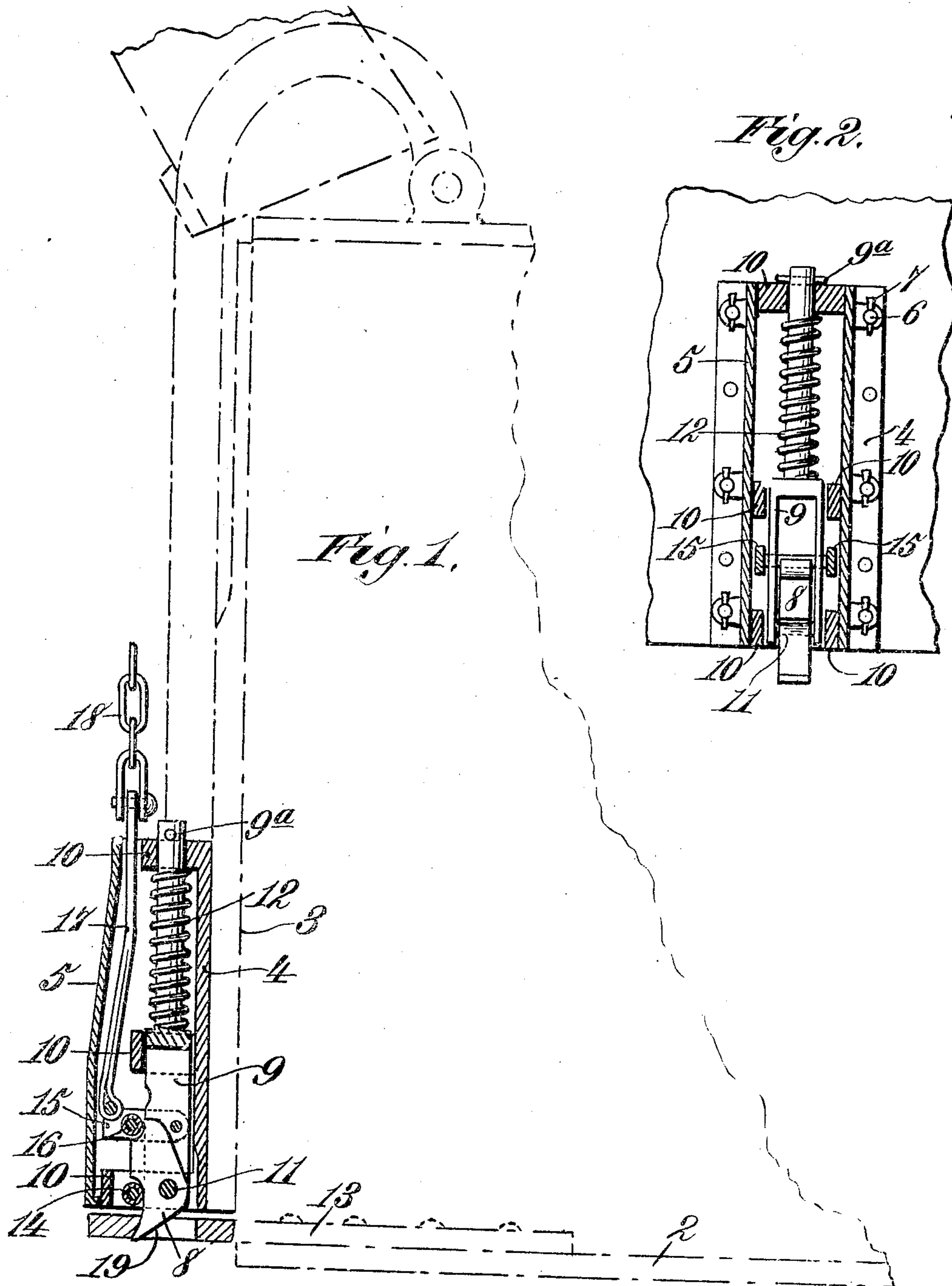
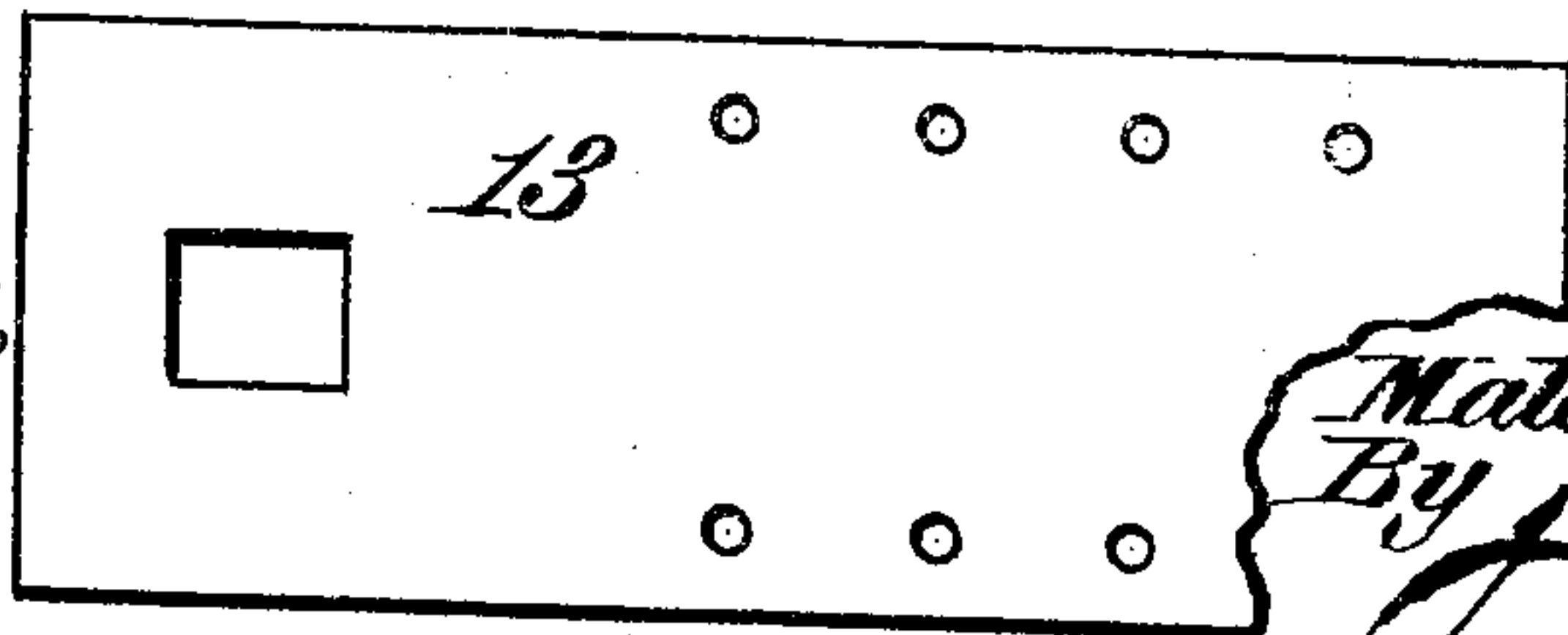


Fig. 3.  
Witnesses.  
Robert Smith.  
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# UNITED STATES PATENT OFFICE.

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## LATCHING MECHANISM FOR EXCAVATOR-DIPPERS.

No. 809,209.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed February 6, 1905. Serial No. 244,444.

*To all whom it may concern:*

Be it known that I, MALACHI O'CONNOR, a citizen of the United States, residing at Oswego, in the county of Oswego and State of New York, have invented new and useful Improvements in Latching Mechanism for Excavator-Dippers, of which the following is a specification.

This invention relates to latching mechanism for excavator-dippers, the object of the invention being to provide a simple device of this character which is easily operable to release the bottom or equivalent part of an excavator bucket or dipper, but which when in its effective relation securely holds said bottom closed.

I have adopted the title above given simply for convenience and for the further fact that the invention has been found of particular utility in conjunction with excavating apparatus; but it will be understood that I do not limit myself to the incorporation of the improvement in any particular device.

In the drawings accompanying and forming a part of this specification I illustrate in detail a simple and advantageous organization of parts involving my invention, which I will fully set forth in the following description; but I do not restrict myself to the disclosure thus made, for certain variations may be adopted within the scope of my claims.

In the drawings, Figure 1 is a longitudinal sectional elevation of latching mechanism involving my invention and represented as associated with an excavator-dipper, the latch being in its operative position. Fig. 2 is a sectional elevation of the parts shown in the preceding figure, the section being taken in a plane transverse to that of Fig. 1. Fig. 3 is a detail of the keeper or latch-plate.

As indicated hereinbefore, the latching mechanism is particularly adapted for use in connection with excavator-dippers, and in the drawings I show a portion of such dipper and designate it by 2. The dipper or bucket 2 is provided with the hinged bottom or flap 3. The dipper and bottom and the way in which they are connected form no specific part of the present invention, and I therefore deem it unnecessary to further describe such parts and the way they are connected.

The latching mechanism in the present case involves a base-plate, as 4, which may be made of any desirable material and may

be secured to the outer face of the bottom or flap 3 in any desirable way—for example, by riveting. What might be considered the outer edge of the said base-plate 4 is approximately coincident with the corresponding edge of the hingedly-mounted bottom or door 3. The base-plate 4, in connection with a cover, as 5, presents a convenient means for supporting the different moving parts of the mechanism except the keeper for the latch, which keeper will be hereinafter described.

Prior to attaching the base or back plate 4 to the bottom 3 I pass through suitably-located perforations in said plate several bolts, as 6, the heads of which are countersunk in the rear sides of the holes. From this it will be understood that the shanks of the bolts project beyond the front face of the base-plate when the latter is mounted in position. The shanks of the bolts are adapted to pass through perforations in lugs on the inner side of the cover or cap 5 and to receive holding-pins, as 7, adapted to pass through holes in said shanks. When the locking pins or keys 7 are in place, the cover 5 will be held in assembled relation with the base-plate 4. By removing these pins or keys 7 the cover can be removed to reach any of the parts normally housed by said cover. The cover 5 serves to exclude dirt and other objectionable matter from the moving parts of the latch mechanism and also to protect said moving parts from injury. Said cover also serves to hold the pins of the working parts in place and as a guide for a tripper hereinafter described.

The latch is designated by 8, and it will be hereinafter more particularly described. It might be stated, however, at this time that the latch is movably supported by a carrier, as 9. The carrier is represented as an endwise-moving member yieldably mounted and as movable in and guided by loops 10, extending from the back or base plate 4. The carrier or bar 9 is represented as having a bifurcated and enlarged head, between the branches of which the latch 8 is shown as pivoted, a pin 11 being represented for such purpose. Surrounding the shank or reduced portion of the latch carrier or bar 9 is shown a coiled spring 12, one end of which bears against the head of said carrier, while the other end thereof bears against what might be considered



the uppermost one of the three loops 10. The spring 12 serves to yieldably maintain the latch carrier or bar 9 in its advanced position.

The working end of the latch is of hook form and is adapted to enter a substantially rectangular hole in the keeper or latch-plate 13, that wall of the hole which is engaged by the hook being chamfered. When the latch engages the latch-plate or keeper 13 by entering the hole in said plate the bottom of the dipper or bucket will be held firmly closed and the latch cannot be accidentally knocked open by stones which roll into the bucket or dipper. The keeper or latch-plate 13 is united to the body of the bucket or dipper in any desirable way, one end thereof projecting beyond the open lower side of the bucket sufficiently to permit the hooked end of the latch to enter the hole in said keeper.

In Fig. 1 the latch and the carrier therefor are shown as occupying their advanced positions, being maintained in such relation by the spring 12. When in such position, what might be considered the lower end of the latch will rest against a stop, shown as an antifriction-roll 14, supported for rotation between the sides of the outermost loop 10. It will be understood that as the latch and its carrier are moved forward to their advanced positions the latch 8 strikes against the roll 14. Simultaneously a stop 9<sup>a</sup> on the carrier strikes against the rear loop 10. To positively maintain the latch in its working position, a detent, as 15, is provided, said detent being of bail or yoke form and being pivotally supported by the branches of the bifurcated portion of the latch-carrier 9. The effective portion of the detent is denoted by 16 and consists of an antifriction-roll supported for rotation between the arms of the bail-form detent. The tripper for the detent is designated by 17 and is shown as consisting of a bar suitably connected at one end with said detent and at the other end with a chain or equivalent connection 18. By pulling what would be considered upward on the chain the tripper or bar 17 will be moved in a corresponding direction, so as to operate the detent 15 in such a way as to carry the antifriction-roll 16 on the detent away from the tail of the latch to free the latter. The two rolls 14 and 16 are shown in Fig. 1 as fitted within recesses in what might be considered the outer edge of the latch, whereby the latter will be prevented from movement with respect to its carrier. It will be assumed that the bottom 3, to which the base-plate 4 is connected, is open and that the carrier 9 and latch 8 are in their advanced positions, what might be considered the outer portion of the latch resting upon the stop or roll 14 while the effective portion or roll 16 of the detent is against the tail of the latch. The stop or roll and detent combine, therefore, to prevent relative motion of the latch with

respect to its carrier. When the bottom closes, the beveled face 19 of the latch will ride against the keeper 13, thereby causing the retraction of the carrier and latch and the consequent compression of the spring 12. The latch as it is retracted travels against the roll 14. When the hooked end of the latch comes opposite the hole in the keeper or latch-plate 13, the compressed spring will rapidly shoot the carrier and latch forward, so as to cause said hooked end to enter the hole and fasten the bottom 3 shut.

The detent 15, as will be understood, is automatically operative, it being made gravitative for this purpose, so that it can swing by its own weight under the tail of the latch. To release the door, the tripper 17 will be drawn upward by a pull upon the chain 18, so as to swing the detent in a direction to carry the effective portion or roll 16 thereon away from the tail of the latch. The instant that the latch is thus freed the bottom by its own weight and that of any matter that may be supported upon it will be opened. The latch as the bucket opens swinging about its center and being fulcrumed against the roll 14, the carrier 9 will be pushed backward, compressing the spring. When the bottom is opened, the detent 15 will be released by the operator, so that it can promptly assume its effective position. As the latch returns to its normal position it will strike the roll 16 and swing the detent about its center, so that the effective portion 16 of the detent can enter the recess in the tail of the latch to again hold the latter.

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

1. The combination of a latch, a yieldably-mounted carrier for said latch, a detent for maintaining the latch in its operative position, and means independent of the detent for limiting the motion of the latch.

2. The combination of a latch, a carrier for the latch, a spring for acting against the carrier to normally hold it in an advanced position, a detent for maintaining the latch in its operative position, and means independent of the detent, for limiting the motion of the latch.

3. The combination of a latch, a yieldably-mounted carrier for the latch, and a detent for the latch, supported by the carrier.

4. The combination of a latch, a yieldably-mounted carrier having a bifurcated portion, said latch being movably supported by the bifurcated portion, and a detent for the latch, also supported by said bifurcated portion.

5. The combination of a latch, a yieldably-mounted carrier for the latch, the latch being pivotally supported by the carrier, and a detent for the latch, also pivotally supported by the carrier.

6. The combination of a latch, a yieldably-



mounted carrier for the latch, loops for guiding the carrier, a stop carried by one of the loops and serving to limit the motion of the latch with respect to its carrier, and a detent  
5 for the latch, supported by the carrier.

7. The combination of a latch having a hooked working end, a yieldably-mounted carrier for the latch, means for limiting the motion of the latch on its carrier, when the  
10 latch is in its operative position, and a movable detent for the carrier.

8. The combination of a perforated back plate, bolts countersunk in the perforations and extending through the back plate, a  
15 cover perforated to receive the bolts, the shanks of the latter being perforated, pins passing through the perforations of said shanks to hold the cover removably in place, a latch, a yieldably-mounted carrier for the  
20 latch, in said cover, and a detent housed by the cover, for said latch.

9. The combination of a latch, a yieldably-mounted carrier for the latch, a detent for the latch, and means for protecting the said parts from dust.

10. The combination of a latch, a yieldably-mounted carrier for the latch, having a bifurcated portion, a fixed device to limit the motion of the latch, a bail-form detent having an antifriction-roll constituting the effective portion of the detent and serving to  
25 engage the latch, said detent being supported by the carrier, and means for operating the detent.

In testimony whereof I have hereunto set  
35 my hand in presence of two subscribing witnesses.

MALACHI O'CONNOR.

Witnesses:

W. H. B. PENNELL,  
E. H. VAUGHN.