

March 26, 1929.

L. L. GASEY

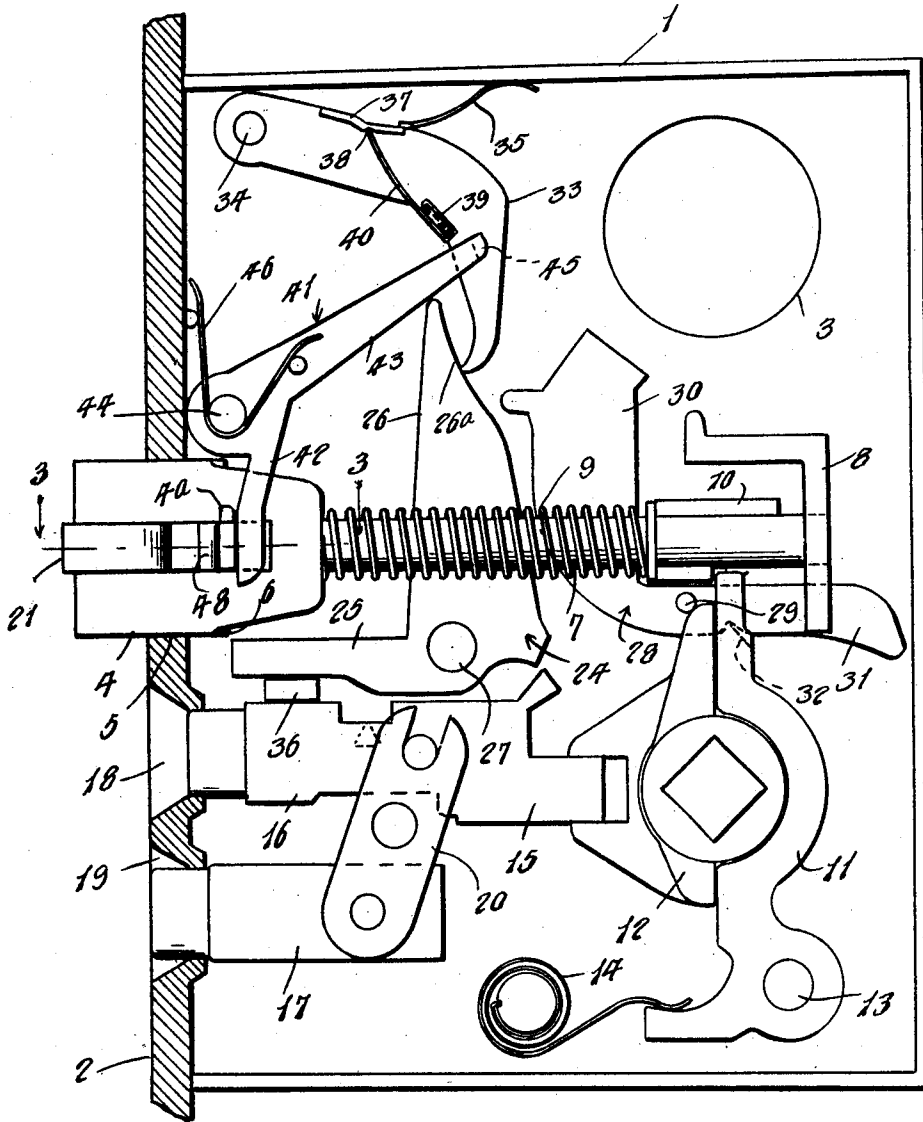
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DEAD LOCKING MECHANISM FOR DOOR LATCHES

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2 Sheets-Sheet 1

FIG. 1.



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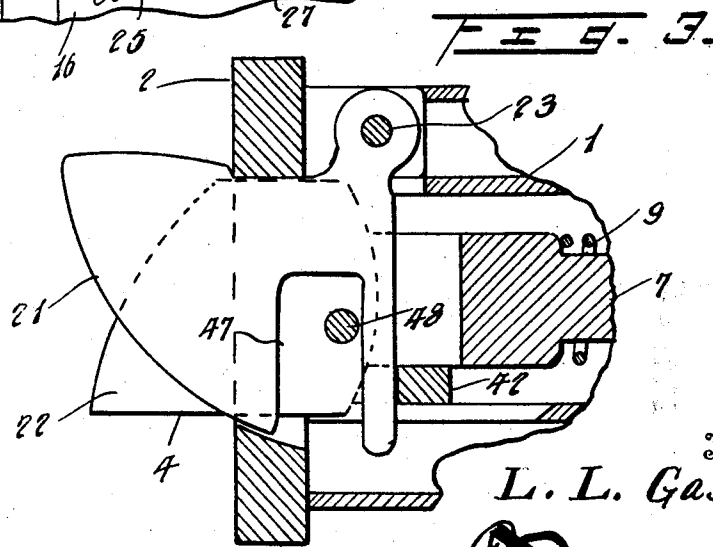
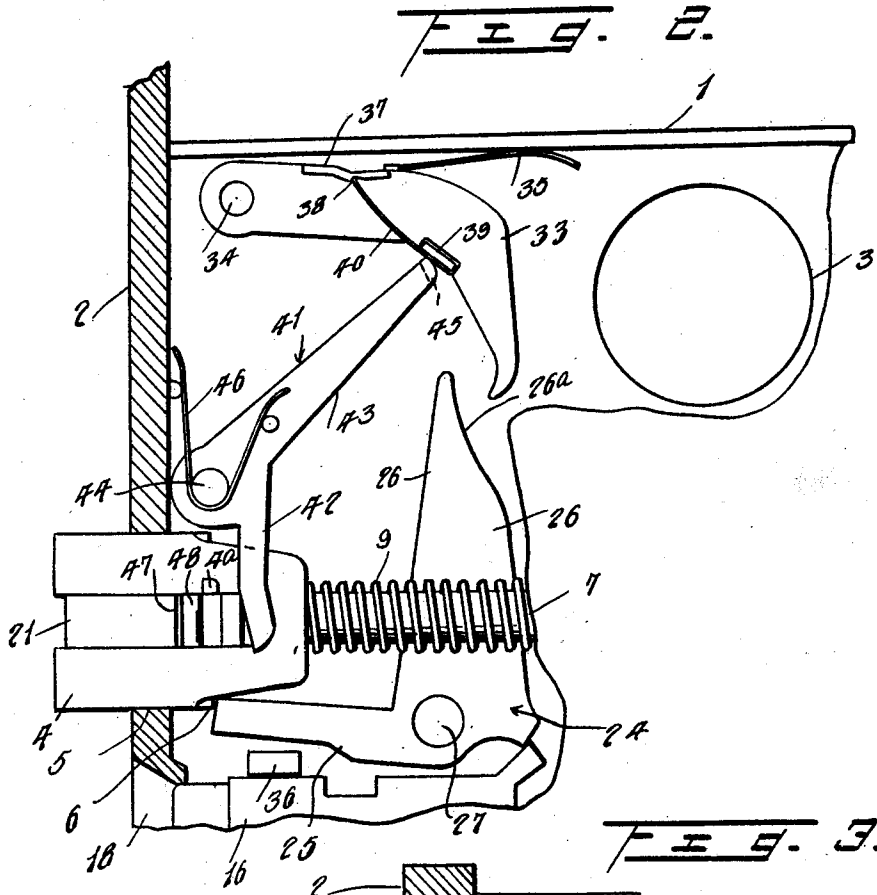
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DEAD LOCKING MECHANISM FOR DOOR LATCHES

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE.

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DEAD-LOCKING MECHANISM FOR DOOR LATCHES.

Application filed May 19, 1927. Serial No. 192,631.

This invention relates to door latches of that type in which the latch bolts are equipped with anti-friction members or levers adapted to be operated by the strike plates during the closing of the doors to effect the retraction of the latch bolts, and more particularly to dead locking or dogging mechanisms for devices of this kind.

The invention has for one of its objects to simplify and improve the general construction of dogging mechanisms and to provide one which shall have all the parts thereof hidden within the lock casing and which shall be adapted to be controlled by the anti-friction member or lever in a manner to effect the dead locking or dogging of the latch bolt when the door reaches its fully closed position.

With the foregoing and other objects in view, the nature of which will become apparent as the description proceeds, the invention consists of the novel construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, wherein:

Figure 1 is a view partly in elevation and partly in vertical section of a latch embodying my invention, the dogging mechanism being shown in inactive position,

Figure 2 is a similar view with the dogging mechanism in active position, and

Figure 3 is a detail sectional view taken on the horizontal plane indicated by the line 3-3 of Figure 1.

The invention is illustrated applied to a latch which embodies a casing 1 having a face plate 2 and provided in the upper right hand corner thereof with an opening 3 for the reception of a cylinder key lock mechanism. The bolt of the latch comprises a head piece 4 passing through an opening 5 in the face plate 2 and provided with a dogging shoulder 6, and a tail rod 7 connected to the head piece and provided at its inner end with a cross head 8. The latch bolt is normally held projected by a coil spring 9 which is mounted on the tail rod 7 between the head piece 4 and a bearing 10 provided for the tail rod and carried by a side of the casing 1. When the key mechanism is operated the retraction of the latch bolt is effected in the manner hereinafter set forth. The knob mechanism of the latch comprises a lever 11 and a split hub 12. The lever 11 is pivoted at its lower end on a stud 13 carried by a side of the casing 1. The upper end of the lever 11 is positioned outwardly of the cross head 8 and, when a knob is turned, engages the cross head to effect the retraction of the latch bolt. A spring 14 holds the lever 11 in normal position with its upper end outwardly of the cross head 8 and in contact with the bearing 10. One of the members of the split hub 12 is adapted to be locked so as to prevent the retraction of the latch bolt by one of the knobs, and the mechanism for accomplishing this comprises a bolt 15 which is adapted to be moved into and out of engagement with such hub member through the medium of plungers 16 and 17. The plungers 16 and 17 are accessible through openings 18 and 19 in the face plate 2. The plunger 16 is connected directly to the bolt 15, and the plunger 17 is connected thereto by a pivoted lever 20. The latch bolt is of the anti-friction type, and the anti-friction member or lever 21 thereof is positioned in a slot 22 which extends through the outer end and sides of the head piece 4. The lever 21 extends beyond the outer end and sides of the head piece 4, and is connected at one end by a pivot 23 to a side of the casing 1.

The dead locking or dogging mechanism of the latch comprises an angular dogging lever 24 which is mounted, at the point of connection of its arms 25 and 26 and below the latch bolt, upon a pivot 27 carried by a side of the casing 1. The arm 25 extends outwardly for engagement with the dogging shoulder 6 of the head piece 4 when the dogging lever 24 is in active position, and the arm 26 extends upwardly to a point above the tail rod 7. When the dogging lever 24, which is held in inactive position in the manner hereinafter set forth, is released a spring not shown functions to move it into and hold it in active position. A lever 28 which is mounted on a pivot 29 carried by a wall of the casing 1 and has an upwardly extending arm 30 and an inwardly extending arm 31, is arranged with its arm 30 positioned inwardly of the arm 26 of the dogging lever 24. The arm 30 of the lever 28 is adapted to be engaged by the roll back of the key mechanism, and the arm 31 of this lever is adapted to be engaged by a cam portion 32 on the knob lever 11. The operation of the lever 28 by either the key mechanism or knob mechanism effects the movement of the dogging lever 24 from its active into its in-

active position immediately prior to the retraction of the latch bolt, and after the key mechanism operates the lever 28 it contacts with the cross head 8 and retracts the latch bolt.

A spring pressed lever 33 which is of angular formation is mounted at one end upon a pivot 34 carried by a side of the casing 1. The pivot 34 is located outwardly of and above the dogging lever arm 26, and the lower free end of the lever 33 contacts with the concave inner side portion 26<sup>a</sup> of said arm when this lever is in inactive position. A spring 35 secured to the lever 33 and contacting with the top of the casing 1, urges the lever 33 downwardly and outwardly, and said lever when in active position urges the dogging lever 24 downwardly and inwardly, to hold the dogging lever in inactive position. These movements of the levers 24 and 33 are limited by a stop 36 carried by a side of the casing 1 and positioned below the dogging lever arm 25. The lever 33 is provided at its upper edge with a flange 37 which is provided in its under side with a notch 38. A lug 39 is secured to the lever 33 inwardly of and below the notch 38, and an arcuate leaf spring 40 is fixed at one end to the lug and has its free end removably positioned in the notch.

An angular lever 41 is mounted at the juncture of its arms 42 and 43 upon a pivot 44 which is carried by a side of the casing 1 and located outwardly of and in a plane situated between the pivots 27 and 34. The arm 42 extends downwardly and contacts with the inner sides of the anti-friction lever 21 and a lug 4<sup>a</sup> projecting from the head piece 4. The arm 43 extends upwardly and inwardly, and is provided with an angular end 45 which, when the lever 41 is in inactive position with respect to the lever 33, is situated below and inwardly of the lug 39. The lever 41 is constantly urged downwardly and outwardly by a spring 46. The anti-friction lever 21 is provided with a slot 47 through which passes a vertical pin 48 carried by the head piece 4. The slot 47 is wider than the diameter of the pin 48 so as to permit the anti-friction lever 21 to be moved inwardly for a slight distance with respect to the head piece 4.

When the head piece 4 and the anti-friction member 21 are out of engagement and contact with the strike plate, as would occur when the door is opened, the restraining lever 33 and its spring 35 hold the dogging lever 24 in inactive position, the spring 46 holds the releasing lever 41 in inactive position, and the releasing lever 41 and spring 46 hold the anti-friction lever 21 in fully projected position with respect to the head piece 4, all as shown in Figure 1. The dogging lever arm 25 is now out of contact with the

dogging shoulder 6, the angular end 45 of the releasing lever arm 43 is now positioned below and inwardly of the lug 39 and the spring 40, and the releasing lever arm 42 is now in contact with the inner side of the anti-friction lever 21 and lug 4<sup>a</sup>. When, as would occur when the door is being closed, the anti-friction lever 21 contacts with the strike plate it moves inwardly. During the first phase of its inward movement, the anti-friction lever 21 travels with respect to the head piece 4 and moves the releasing lever 41 in an upward and outward direction for a short distance. The anti-friction lever 21 is now in contact with the pin 48 and during the remainder of its inward travel moves the head piece 4 inwardly. During its inward travel the head piece 4 moves the releasing lever 41 through the remainder of its distance in this direction, and this movement of the releasing lever is effected through the medium of the lug 4<sup>a</sup> which is carried by the head piece and contacts with the outer side of the releasing lever arm 42. During this movement of the releasing lever 41, the angular end 45 thereof passes upwardly and outwardly beyond the spring 40, the free end of the spring moving downwardly out of the notch 38 to permit the angular end of the lever to pass by the spring. When the head piece 4 moves outwardly into the slot in the strike plate provided therefor, the lug 4<sup>a</sup> is carried out of contact with the releasing lever arm 42. This slot is not wide enough to permit the complete entrance thereof of the anti-friction lever 21, but is wide enough to permit the anti-friction lever to move outwardly for a short distance under the influence of the spring 46. The simultaneous downward and inward movement of the releasing lever 41 effects the elevation of the restraining lever 33 into inactive position, and the movement of the dogging lever 24 into inactive position. The restraining lever 33 is elevated into inactive position due to the fact that, during this movement of the releasing lever 41, the angular end 45 of said lever travels downwardly in contact with the outer side of the spring 40. When the releasing lever 41 comes to rest, the angular end 45 thereof is directly opposite the lug 39, with the result that the restraining lever 33 is positively held in inactive position. The parts occupy the positions shown in Figure 2, and will remain in these positions until the latch bolt is retracted by the key mechanism or the knob mechanism. With the parts in these positions, the latch bolt is held against retraction by an instrument inserted between the face plate 2 and strike plate.

During the operation of the knob mechanism or the key mechanism, the lever 28 is rocked in a direction to move its arm 30

downwardly and outwardly and this takes place immediately before and during the first phase of the inward movement of the latch bolt. This movement of the lever 28 moves the dogging lever 24 into inactive position before the knob or key operated mechanism contacts with the cross head of the latch bolt and holds the dogging lever in this position until the mechanism contacts with the cross head 8 and retracts the latch bolt sufficiently to carry its shoulder inwardly beyond the outer end of the dogging lever arm 25. When the door is opened far enough to carry the head piece 4 and anti-friction lever 21 out of contact with the strike plate, the spring 46 moves the anti-friction lever and the releasing lever 41 into their normal positions. This movement of the releasing lever 41 carries the angular end 45 thereof downwardly out of contact with the spring 40, freeing the restraining lever 33 for actuation by the spring 35. This actuation of the restraining lever 33 results in the movement of the dogging lever 24 into inactive position. When these levers come to rest, the spring 40 occupies a position which permits the angular end 45 of the releasing lever 41 to move upwardly and outwardly with respect thereto and thence downwardly and inwardly in contact with the outer side thereof, when the door is again closed with the resulting freeing of the dogging lever 24 for movement into active position.

It should be understood that the drawings are merely illustrative and do not pretend to give exact proportions. Furthermore, the said drawings are illustrative of a preferred construction, it being my expectation that various changes and modifications may be

made without departing from the spirit and scope of my invention.

What is claimed is:—

1. A latch including a latch bolt, an anti-friction member carried by the latch bolt and adapted to have an inward movement independently thereof for a limited distance, a lug carried by the latch bolt, a dogging lever for the latch bolt adapted when released to move into active position, a restraining lever contacting with the dogging lever; a spring fixed at one end to the restraining lever, a releasing lever having an arm contacting with the anti-friction member and lug and having an arm provided with an angular end occupying a position below and inwardly of the spring, and springs bearing on the restraining and releasing levers.

2. A latch including a latch bolt, a dogging lever for the latch bolt adapted when released to move into an active position, a restraining lever adapted when in active position to hold the dogging lever in inactive position, a member carried by the restraining lever, a releasing lever having an angular end adapted to occupy a position below and inwardly of said member when the restraining lever is in said position and retractible means carried by the latch bolt and adapted to operate the releasing lever during the retraction thereof and of the latch bolt to carry its angular end upwardly and thence downwardly with respect to said member so as to move and hold the restraining lever in inactive position.

In testimony whereof I affix my signature.

LEO LESTER GASEY.