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J. R. SMITH

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DOOR LATCH MECHANISM

Filed Nov. 14, 1927

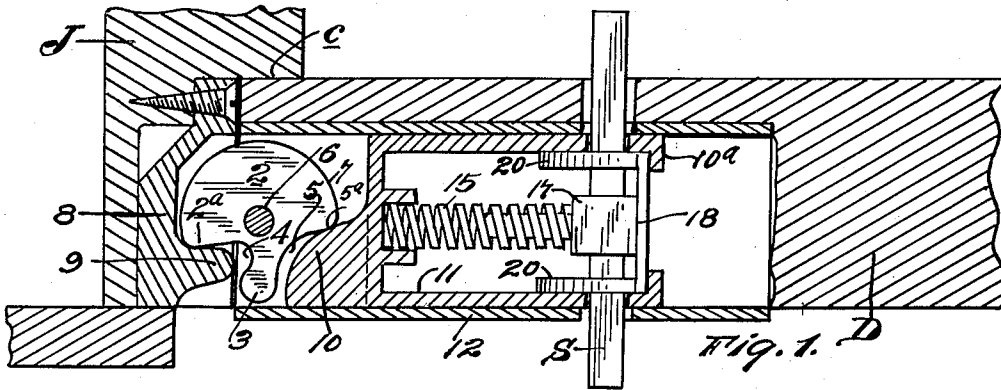
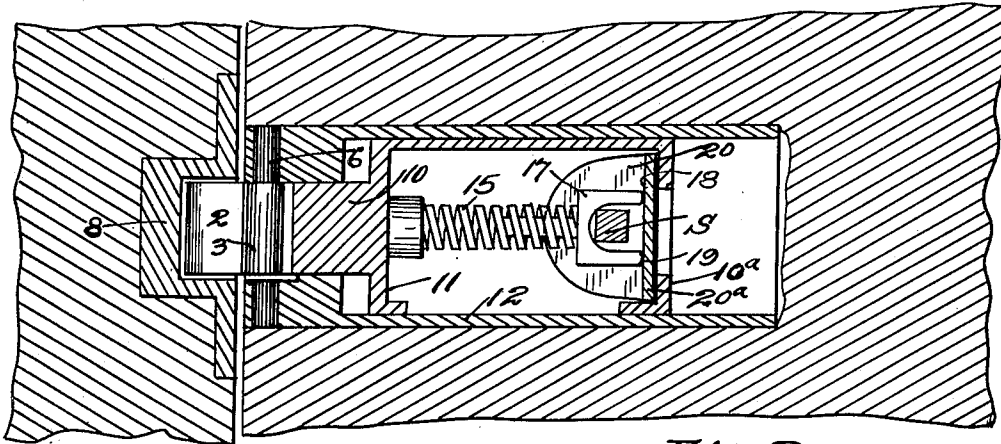


Fig. 2.

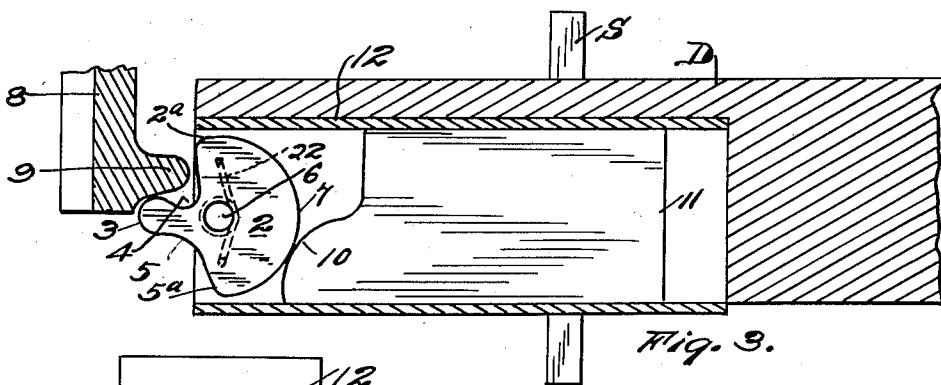
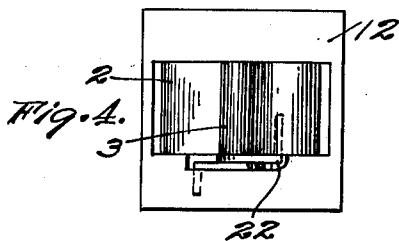


Fig. 3.



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DOOR-LATCH MECHANISM.

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This invention relates to latch mechanisms of the closure fastening class and somewhat of the nature of the device shown in my application S. N. 164,814, filed Jan. 31, 1927.

5 In that device a tumbler or latching member is retracted by a controlling handle.

An object of my present invention is to provide a relatively free tumbler latch which, while partially controlled by a handle means, acts independently thereof when the closure carrying it is opened or closed. A further purpose is to provide means for constantly exerting a jamming effect on the latch member while this is closed so as to eliminate rattling of parts.

15 A further object is to provide an extremely simple, low cost and rugged latch mechanism, and to provide a mechanism of few parts and involving a minimum of degree of costly machine work.

20 There are other objects, advantages and features of construction and combination as will be made manifest in the ensuing specification of the herewith illustrative embodiment; it being understood that modifications, variations and adaptations may be resorted to within the spirit, scope and principle of the invention as it is more directly claimed hereinafter.

30 Figure 1 is a horizontal longitudinal section showing the projected latch in effective position.

Figure 2 is a vertical section, in the same position of the parts.

35 Figure 3 is a horizontal section showing the latch in the door releasing position.

Figure 4 is a vertical section to show latch restraining means.

40 The present mechanism includes an effective latch member more or less in the form of a mutilated disc body 2 having a tooth-like lug 3 at one side of which is a tooth pocket 4 and at the other side of which is an obtuse-angle recess 5. The body 2 has a trunnion or pivot pin 6 as to which the tooth lug 3 is about radial. The body 2 presents a cylindrical face 7 to the nose 10 of a sliding box 11 which is operative in a casing 12 shown mortised into a door D whose swinging edge shuts against a stop jamb J in which is sunk a keeper 8 having a tooth-like striking lip 9, and which is positioned to lie in the path of the latch lug 3 when this is in the ready position, Fig. 3 in which the door is standing released.

When the door is pushed closed the lug 3 impinges against the fixed tooth 9 and its reaction turns the latch body 2 to the position shown in Fig. 1. When this position is assumed the box nose 10 is automatically thrust into the recess 5 of the body 2 by the expansive action of a spring 15 which seats against one end wall of the box 11 and at its opposite end bearing against a yoke 17 whose shank lies in the spring. The yoke straddles a cross-stem or shaft S projecting through the door, to receive handles, and engages shoulders 18—19 forming a rigid part of a retractor including side cams 20 turnable with the stem S. The cams have flat faces 20^a opposite the shoulders 18—19 and these act against box lugs 10^a.

The spring 15 has the main function of pressing the box nose 10 toward or against the inner or round face 7 of the latch body 2 when the body 2 is turned inward in the near end of casing 12. When the keeper tooth 9 causes rotation of the latch body 2 as the door closes the body recess 5 swings in front of the nose 10 and the spring 15 instantly forces the nose into the recess and in so doing the nose impinges a cam face 5^a of the body 2 and as the door sets on its jamb seat the tooth 9 becomes a buttress for the corner 2^a of the body 2.

When the door is closed (Fig. 1) the action of the spring is to press the nose 10 at point 5^a against the body 2 which acts as a lever on point 2^b and jamps the door corner to its seat c.

90 The latched door cannot be opened until the retractor pulls the nose 10 back clear of the body 2. As the door is opened by hand (or otherwise) the tooth 9 causes the bodily moving latch body 2 to turn on its pivot 3 to the position of Fig. 2. When the stem S is freed from hand pressure the spring forces the nose against the face 7 of the latch body, where it will rest until the door is closed and thereby the body again turned until the nose wedges into the recess 5. This wedging action is accelerated by the spring 15. When the door is closed and latched, the spring still has a jamming action which kills all rattle and eliminates slack joints.

105 It is desirable to lightly hold the latch body 2 in a ready position, Fig. 2, so that if the nose 10 is held back clear then the tooth-lug 3 will stand out from the edge of the door. This is automatically accomplished by a light 110

spring 22 coiled on the pivot 6 and having one end connected to the body 2 and the other end held in the box wall.

The invention claimed is:

5 1. A latch mechanism including a striker having a tooth part, and a rotary latch member having a tooth pocket to mesh with said part, and wedge means for blocking rotary action of the said member and jamming the
10 parts in closed position while the tooth part is in said pocket.

2. A latch mechanism including a striker having a tooth part, and a rotary latch member having a tooth pocket to receive said part, and wedging means for blocking rotary action of the said member while in mesh with
15 said part; said means being retractive independently of the said member to release it.

3. A latch mechanism including a striker
20 having a tooth part, a rotary latch member having a tooth pocket for said part, and means for blocking rotary action of the said member while meshing with said part and exerting a turning effect in said member in
25 closed position and being retractive independently thereof; said member being rotative by said tooth part when the former shifts bodily to and from mesh with the tooth.

4. A latch mechanism including a striker
30 having a tooth part, a rotary latch member having a recess for said part, means for blocking reverse rotary action of said member while meshing with and at the same time urging it against said part, and means for
35 lightly, yieldably holding said member in a ready position when free of said blocking means.

5. A latch mechanism including a striker
40 having a tooth part, a rotary latch member having a recess for said part, means for turning said member into abutment against said part and for blocking a reverse rotation there-

from, a retractor for withdrawing said means from said member, and spring means for bringing said member to a normal, ready position when and while it is disengaged from the blocking means. 45

6. A latch mechanism including a striker having a tooth part and a latch socket, a rotary latch member having a body part to swing into the socket and having a tooth lug flanked by a recess on either side; said tooth operative to rotate said member upon engagement with said lug, and means for blocking reverse rotation of said member while it is
55 in effective position in the striker socket and including a spring constantly urging the blocking means with a wedging action on the latch.

7. A latch mechanism including a striker
60 having a tooth part and a latch socket, a rotary latch member having a body part to swing into the socket and having a tooth lug flanked by a recess on either side; said tooth operative to rotate said member upon engagement with said lug, and means for blocking reverse rotation of said member while it is in effective position in the striker socket and exerting a rotative jamming action of the member and killing lost motion. 70

8. A latch mechanism including a striker having a tooth part and a latch part socket, a rotary latch member having a body part to swing into the socket and having a substantially radial tooth lug engageable with said
75 tooth part to turn said body into the socket, means for blocking a reverse rotation of the member and having a constant turning and wedging pressure thereon when in blocking position, and a retractor for disengaging said
80 means from the latch member to permit it to be reversed by said tooth part.

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