

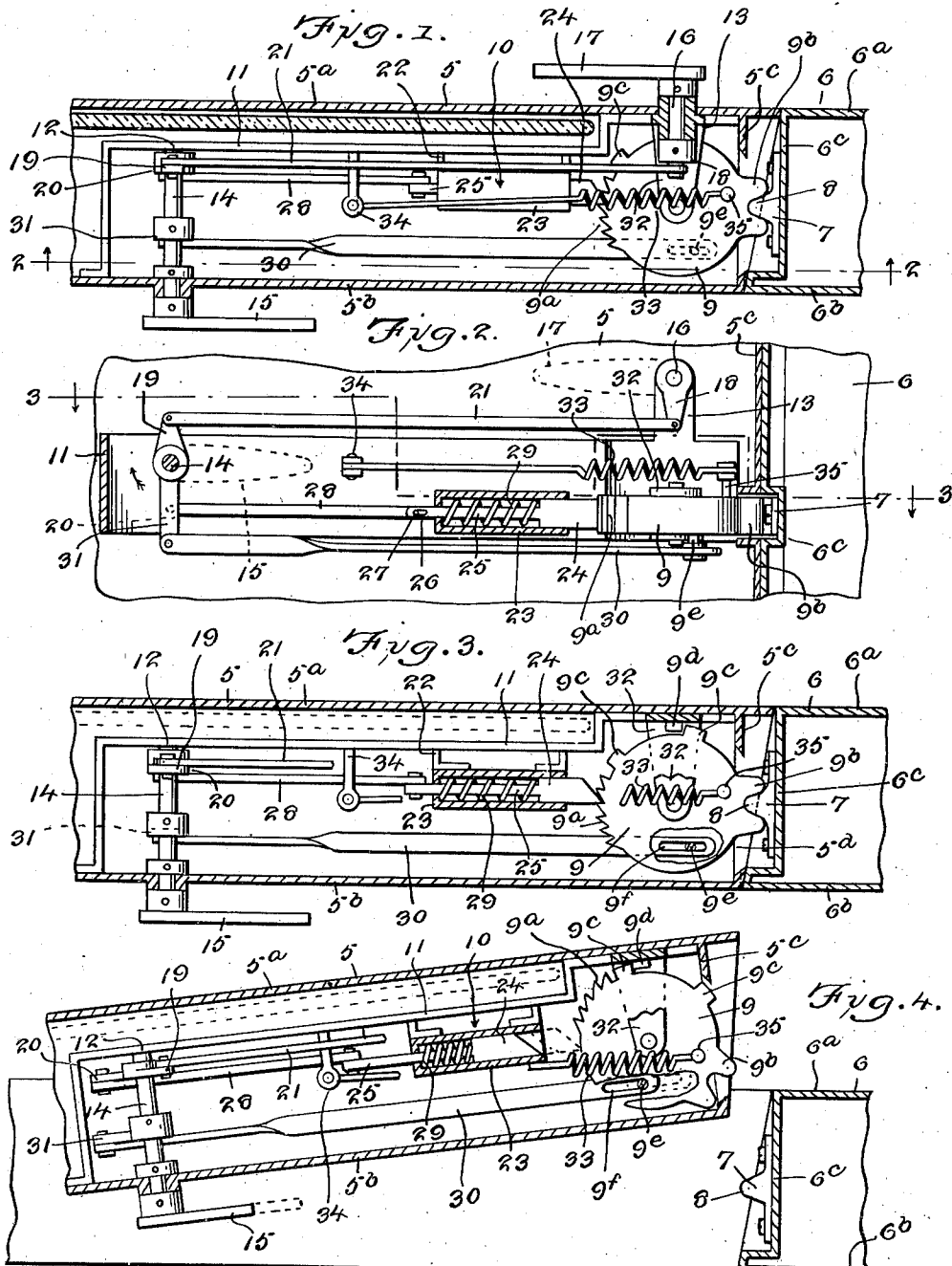
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LATCH MECHANISM

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LATCH MECHANISM

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4 Claims. (Cl. 292—198)

My invention relates to latch mechanisms and more particularly adapted to that class for use in connection with motor vehicle doors and the like.

One of the principal objects of my invention is to provide a door latch equipped with means whereby the same may be operated from both sides of a door structure together with means for automatically insuring proper closing of the door structure and for reliably maintaining the same in closed position relative to a frame structure.

Another object of my invention is to provide a latch mechanism of the above described character which is simple in construction, durable in use, efficient in operation and economical in manufacture.

Other objects and advantages will be apparent from the following description, appended claims and annexed drawing.

Referring to the drawing wherein like reference characters designate like parts throughout the several views:

Figure 1 is a horizontal sectional view illustrating my invention, the parts being illustrated in latched or closed position.

Figure 2 is a section view taken on the line 2—2 of Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a view similar to Figure 1 illustrating the door structure and parts of the latch mechanism in open position.

In practicing my invention I utilize door and frame structures 5 and 6 respectively, the same being of a typical construction employed in motor vehicle bodies and the like. The door structure comprises outer and inner side walls 5a and 5b respectively connected together by an end wall 5c and the frame structure is provided with outer and inner side walls 6a and 6b respectively connected together at one end by a wall 6c. The wall 6c is spaced from the wall 5c of the door structure to form a chamber therebetween in which is accommodated a keeper 7 secured to the wall 6b by suitable screws or the like. The keeper 7 is fashioned with a tooth shaped member 8 for engagement with a rotatable head or latch 9 forming part of a latch mechanism 10 mounted within the door structure between the walls 5a and 5b as hereinafter set forth.

The latch mechanism 10 comprises a bracket 11 secured to the inner face of the outer wall 5a and fashioned with a pair of bearings 12 and 13. The bearing 12 accommodates one end of a trans-

versely extending operating shaft 14 having the opposite end journaled in the inner wall 5b and equipped with an operating handle 15 on the outside of said wall. Journaled within the bearing 13 is an auxiliary shaft 16 equipped on the outer end thereof with an operating handle 17 and on the inner end thereof with a depending arm 18.

The operating shaft 14 is fashioned with a rocker having upper and lower rocker arms 19 and 20 respectively, the upper arm 19 being pivotally connected to the depending arm 18 by means of a link 21 whereby independent actuation of either of the handles 15 or 17 serves to rock or rotate the operating shaft 14. The bracket 11 is provided with a pair of arms 22 to which is secured a casing 23 having slidably mounted therein a dog 24 for engagement with ratchet teeth 9a formed on the periphery of the head 9. The dog 24 is fashioned with a rearwardly extending arm 25 fashioned with a slot 26 for receiving a pin 27 carried on one end of a link 28, the opposite end of said link being pivotally connected to the lower rocker arm 20. A coil spring 29 surrounds said rearwardly extending arm 25 within the casing and serves to coact with the casing in urging the dog towards the teeth 9a of the head. The slot 26 serves to permit movement of the dog within the casing by the action of the teeth 9a without transmitting movement to the rocker arm 20 through the medium of the link 28.

The head 9 is fashioned on the outer periphery thereof with a pair of spaced keeper engaging members or teeth 9b which coact with the member 8 of the keeper to maintain the door structure in latched position therewith and upon movement of the head in one direction serves to move the door structure towards open position and upon movement of the head in the opposite direction serves to move the door structure to closed position.

The outer periphery of the head is also fashioned with a pair of spaced stop members 9c coacting with a similar member 9d carried on the bracket 11 to limit the rotation of the head to open and closed positions. The lower face of the head has mounted thereon a pin 9e operable in a slot 9f fashioned in one end of a connecting arm 30. The opposite end of said arm 30 is pivotally connected to the lower end of a rocker arm 31 fixed to the operating shaft 14. The slot 9f is so arranged relative to the pin 9e and of a sufficient length whereby clockwise rotation of the operating shaft 14 serves to

rotate the head 9 in clockwise direction after the dog 24 has been disengaged from the teeth 9a. Reverse movement of the operating shaft 14 serves to move the arm 30 and slot 9f relative to the head 9 without transmitting movement to the head while in open position. This construction and arrangement of the parts permits of actuation of the handles to effect rotation of the shaft 14 for moving the door structure to open position and return of the handles to normal position after the door structure has been moved to open position without rotating the head to closed position, the arm 30 being illustrated in full lines in Figure 4 as in the initial opening position and in dotted lines as in the release position while the door structure is in open position. A pair of arms 32 carried by the bracket 11 embraces the head and provides means for pivoting the head within the door structure adjacent the wall 5c which is apertured as at 5d to permit the teeth 9b of the head to extend therethrough.

A spring device comprising a spring 33 having one end connected by an arm 34 to the bracket 11 and the opposite end eccentrically connected to the upper face of the head by means of a pin 35 transverse the axis of the head when the same is rotated to open and closed positions thereby accelerating rotation of the head to the respective positions. The accelerated rotation of the head to closed position when the members 9b engage the member 8 of the keeper serves to forcibly and positively effect a closing of the door structure relative to the frame structure and likewise rotation of the head in an opposite direction effects a quick opening of the door structure.

From the foregoing it will be apparent that my latch mechanism provides a simple and reliable means whereby doors or the like may be maintained in latched condition to a frame and which permits a closing of the door without actuation of the handles.

What I claim is:

1. In combination with a frame structure and an associated door structure, latch mechanism for said door structure and a keeper for said frame structure, said latch mechanism comprising an operating shaft traversing said door structure and equipped with an operating handle on one side of said door structure, an auxiliary shaft on the opposite side of said door structure and equipped with an operating handle, linkage connecting said shafts together whereby independent movement of either of said handles serves to rotate said operating shaft, a head rotatably mounted within said door structure and fashioned with ratchet teeth and with keeper engaging members extending through said structure adjacent said keeper for engagement with the latter, a spring actuated dog slidably mounted in said door structure for engagement with said ratchet teeth whereby to maintain said head latched to said keeper, a link connecting said dog to said operating shaft whereby rotation of the latter serves to disengage said dog from said teeth to permit subsequent rotation of said head relative to said keeper, an arm connected to said operating shaft and said head for rotating said head and moving said members out of engagement with said keeper whereby said door structure is moved towards open position relative to said frame structure, and a spring device connected to said head for maintaining said members in position for engagement

with said keeper when said door structure is in open position and for accelerating the movement of said head to forcibly and positively seat said door structure within said frame structure when said members engage said keeper during movement of said door structure to closed position.

2. In combination with a frame structure and an associated door structure, latch mechanism for said door structure and a keeper for said frame structure, said latch mechanism comprising an operating shaft traversing said door structure and equipped with an operating handle on one side of said door structure, an auxiliary shaft on the opposite side of said door structure and equipped with an operating handle, linkage connecting said shafts together whereby independent movement of either of said handles serves to rotate said operating shaft, a head rotatably mounted within said door structure and fashioned with ratchet teeth and with keeper engaging members extending through said structure adjacent said keeper for engagement with the latter, a spring actuated dog slidably mounted in said door structure for engagement with said ratchet teeth whereby to maintain said head latched to said keeper, a link connecting said dog to said operating shaft whereby rotation of the latter serves to disengage said dog from said teeth to permit subsequent rotation of said head relative to said keeper, an arm connected to said operating shaft and said head for rotating said head and moving said members out of engagement with said keeper whereby said door structure is moved towards open position relative to said frame structure, and a spring device connected to said head for maintaining said members in position for engagement with said keeper when said door structure is in open position and for accelerating the movement of said head to forcibly and positively seat said door structure within said frame structure when said members engage said keeper during movement of said door structure to closed position, said arm fashioned with a slot for effecting sliding connection with a pin carried by said head whereby to permit said dog to actuate said handles to normal position in advance of the movement of said head to closed position without transmitting movement between said operating shaft and said head.

3. In combination with a frame structure and an associated door structure, latch mechanism for said door structure and a keeper for said frame structure, said latch mechanism comprising an operating shaft traversing said door structure and equipped with an operating handle on one side of said door structure, an auxiliary shaft on the opposite side of said door structure and equipped with an operating handle, linkage connecting said shafts together whereby independent movement of either of said handles serves to rotate said operating shaft, a head rotatably mounted within said door structure and fashioned with ratchet teeth and with keeper engaging members extending through said structure adjacent said keeper for engagement with the latter, a spring actuated dog slidably mounted in said door structure for engagement with said ratchet teeth whereby to maintain said head latched to said keeper, a link having an end provided with a pin and connecting said dog to said operating shaft whereby rotation of the latter serves to disengage said dog from said teeth to permit subsequent rotation of said head relative to said keeper, an arm connected to said

operating shaft and said head for rotating said head and moving said members out of engagement with said keeper whereby said door structure is moved towards open position relative to said frame structure, and a spring device connected to said head for maintaining said members in position for engagement with said keeper when said door structure is in open position and for accelerating the movement of said head to forcibly and positively seat said door structure within said frame structure when said members engage said keeper during movement of said door structure to closed position, said dog having a slotted end receiving said pin of said link and effecting a sliding connection with said link to permit said dog to ride over said teeth without transmitting movement between said dog and operating shaft.

4. In combination with a frame structure and an associated door structure, latch mechanism for said door structure and a keeper for said frame structure, said latch mechanism comprising an operating shaft traversing said door structure and equipped with an operating handle on one side of said door structure, an auxiliary shaft on the opposite side of said door structure and equipped with an operating handle, linkage connecting said shafts together whereby independent movement of either of said handles serves to rotate said operating shaft, a head rotatably mounted within said door structure and fashioned with ratchet teeth and with keeper engaging members extending through said structure adjacent said keeper for engagement with

the latter, a spring actuated dog slidably mounted in said door structure for engagement with said ratchet teeth whereby to maintain said head latched to said keeper, a link having an end provided with a pin and connecting said dog to said operating shaft whereby rotation of the latter serves to disengage said dog from said teeth to permit subsequent rotation of said head relative to said keeper, an arm connected to said operating shaft and said head for rotating said head and moving said members out of engagement with said keeper whereby said door structure is moved towards open position relative to said frame structure, and a spring device connected to said head for maintaining said members in position for engagement with said keeper when said door structure is in open position and for accelerating the movement of said head to forcibly and positively seat said door structure within said frame structure when said members engage said keeper during movement of said door structure to closed position, said arm fashioned with a slot for effecting sliding connection with a pin carried by said head whereby to permit said dog to actuate said handles to normal position in advance of the movement of said head to closed position without transmitting movement between said operating shaft and said head, said dog having a slotted end receiving said pin of said link and effecting a sliding connection with said link to permit said dog to ride over said teeth without transmitting movement between said dog and operating shaft.

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