Nov. 10, 1953 E. D. DALL 2,658,778

DECK LATCH

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Fig. 1

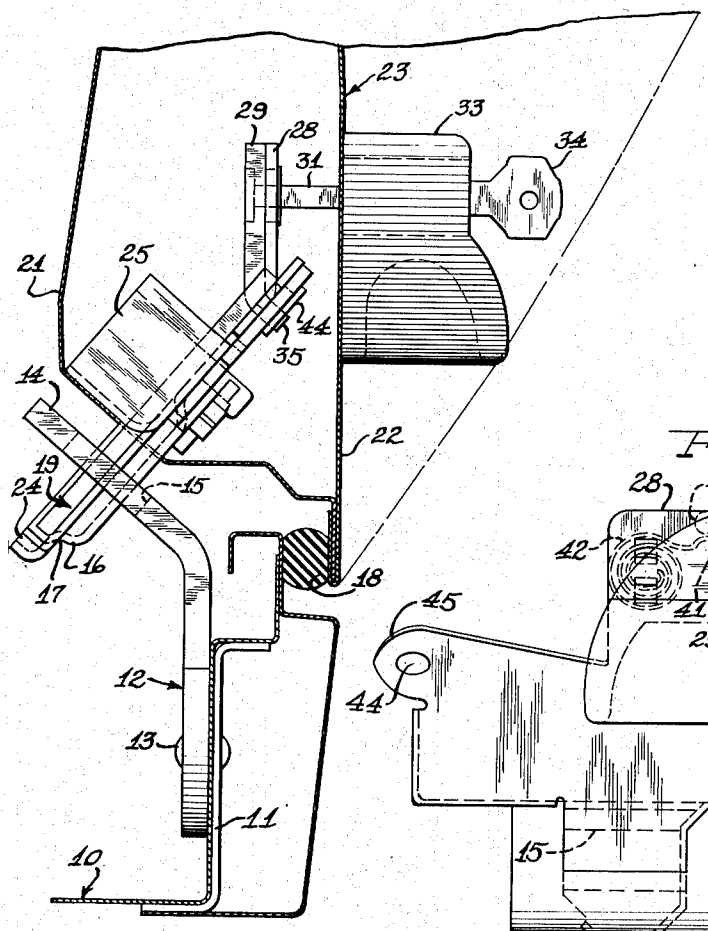
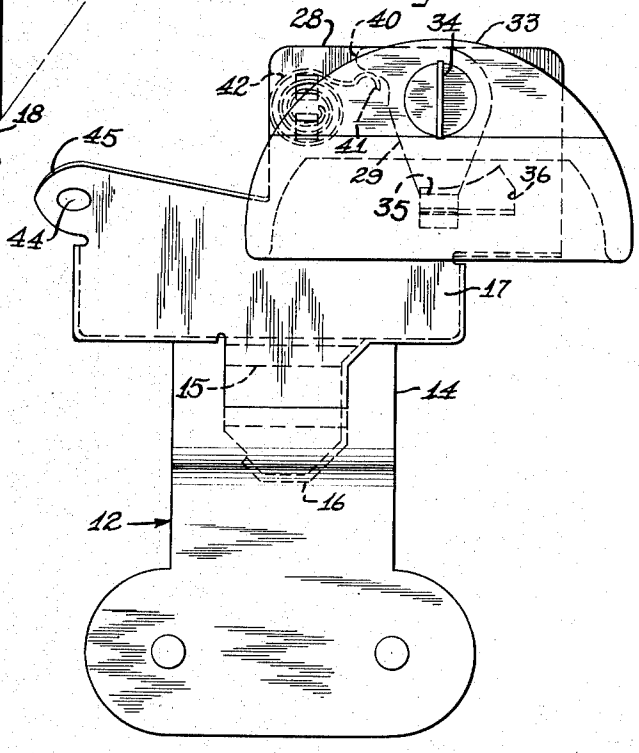


Fig. 2



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Fig. 3

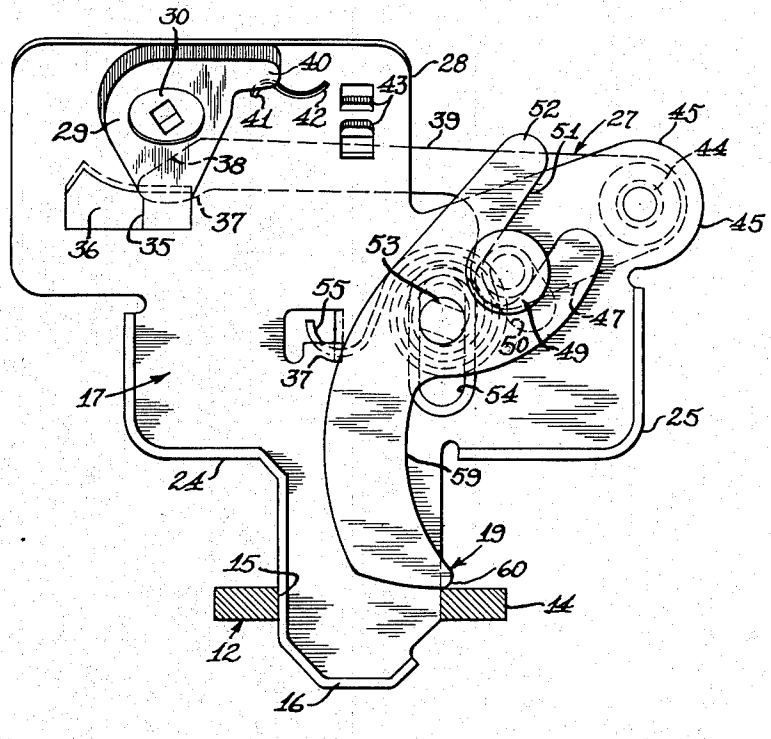
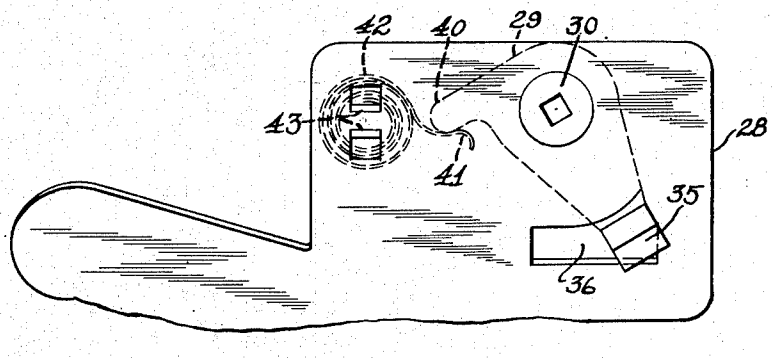


Fig. 6



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Fig. 4

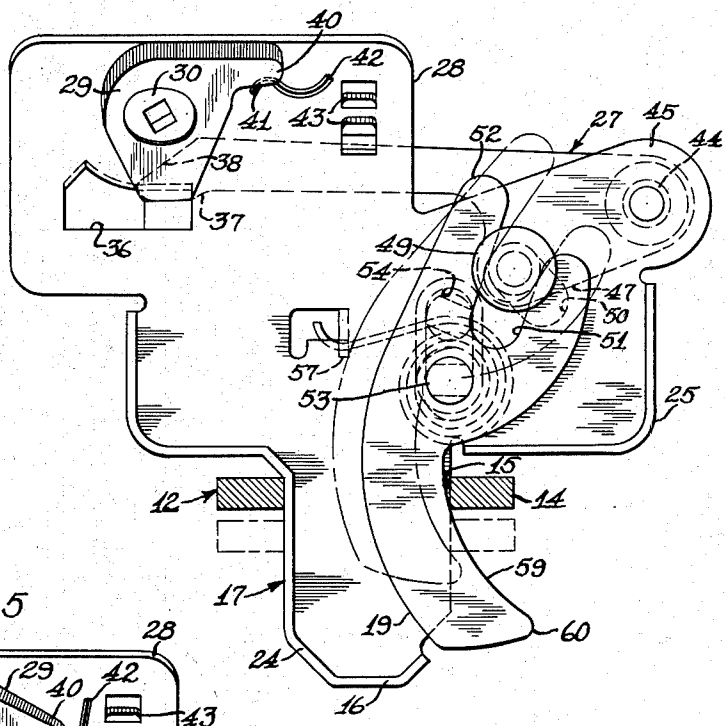
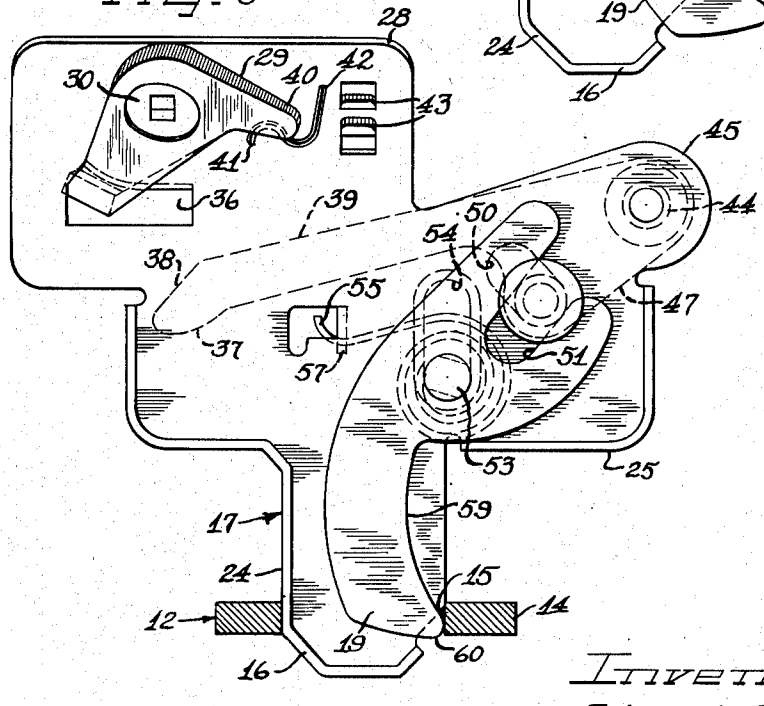


Fig. 5



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UNITED STATES PATENT OFFICE

2,658,778

DECK LATCH

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12 Claims. (Cl. 292—63)

1

This invention relates to improvements in latching mechanisms and more particularly relates to a simplified and improved form of latching mechanism for use in locking a deck door of a rear deck or luggage compartment of an automobile.

A principal object of my invention is to provide a novel form of deck latch of a sliding bolt type arranged with a view toward utmost simplicity in construction and convenience in installation and operation.

A further object of my invention is to provide a novel and improved form of deck latch including a main latching lever mounted for pivotal and sliding movement, together with a dogging or latch retaining means holding the latch when in a latched position against unlatching movement but permitting further movement thereof in a latching direction, and assuring that the rear deck will always be locked when the latching lever is in latching engagement with the striker, regardless of whether the deck door is fully closed.

A further object of my invention is to provide a latch mechanism including a latching lever together with dogging means for dogging said lever in a latching position, and automatically shifting the said latching lever into a further latched position upon subsequent relative movement of the deck door toward the deck.

A further and more detailed object of my invention is to provide a novel and efficient form of latching mechanism wherein the latching lever is slidable and pivotally movable in a plane generally parallel to the plane of swing of the door, and wherein latching movement thereof is controlled by a key lever parallel to the surface of the door.

These and other objects of my invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a partial fragmentary longitudinal sectional view taken through the rear deck and door of an automobile, showing one form in which the latching mechanism of my invention may be embodied;

Figure 2 is an end view of the latching mechanism looking toward the outer end thereof;

Figure 3 is a view in front elevation of the latching mechanism looking in a plane generally parallel to the plane of door swinging movement and showing the latch mechanism in door closing position;

Figure 4 is a view in front elevation looking in the same plane as Figure 3 and showing the latch mechanism in a door latching position;

Figure 5 is a front elevational view looking in the same plane as Figures 3 and 4 and showing the latch mechanism in door opening position; and

Figure 6 is an enlarged fragmentary front view of a portion of the latch mechanism, and showing certain details of the key lever.

In the embodiment of my invention illustrated in the drawings, reference character 10 in Figure 1 indicates generally a rear deck of an automobile having an upright deck pillar 11, to which is secured a striker or keeper 12 as by rivets 13—13. The keeper 12 is herein shown as extending upwardly from the deck pillar 11 and as having an upper inwardly extending inclined portion 14, extending in the plane generally perpendicular to the path of door closing movement. The inclined portion 14 has a rectangular aperture 15 for receiving and guiding a downwardly projecting nose 16 of a latch plate 17. The aperture 15 is also engaged by a latching lever 19 during door latching movement. The latching lever 19 is pivotally and slidably mounted on the latch plate 17, as will hereinafter more clearly appear as this specification proceeds.

The latch plate 17 is herein shown as being mounted within and extending through a lock housing 21 secured to and extending inwardly from a rear plate 22 of a door 23. The door 23 is hinged at its upper end to the car body (not shown) and moves in a generally vertical direction about the axis of its hinges during door opening and closing movement.

The latch plate 17 may be stamped from a single sheet of steel, and the lower margins thereof have inwardly extending flanged portions 24 and 25, extending therealong and affording a means to secure the latch plate to the lock housing 21 of the door 23. The flanged portion 24 is herein shown as extending downwardly along and around the front end of the nose 16 to provide a reinforcement therefor and guide means guiding said nose into engagement with the aperture portion 15 of the keeper 12 and holding said nose from lateral and longitudinal movement with respect to said keeper. The space between the adjacent ends of the flanges 24 and 25 forms a notch along which the latching lever 19 may move, in a path controlled by a dogging lever 27, pivotally mounted on the opposite side of said latch plate from said latching lever. The latch plate 17 and nose 16 extend at an angle generally perpendicular to the plane of the inclined por-

tion 14 of the keeper 12 and generally parallel to the path of door movement and have a generally upright portion 28 extending in a plane generally parallel to the outer surface of the deck door 23 and having a key lever 29 pivotally mounted thereon.

The key lever 29 is suitably mounted on a rotatable member 30 pivotally mounted in the upright portion 28. A squared operating rod 31 is provided to pivot said member 30 and the key lever 29 and extends within a lock casing 33 for the locking mechanism. The squared rod 31 may be turned through the locking mechanism by a key 34.

The key lever 29 has a depending and angularly outwardly extending end portion 35 which extends through an elongated slot 36 in the plate 17, to the outer side of said latch plate. The slot 36 is herein shown as being formed in the inclined portion of the latch plate 17 and as having an arcuate upper margin conforming to the path of travel of the end portion 35. The end portion 35 extends through the slot 36 in a direction generally perpendicular to the plane of said latch plate and forms a latching or dogging support for an engaging end 37 of a lever arm 39 of the dogging lever 27, and serves to hold said dogging lever in a dogging position when the key is removed from the lock and the door is locked, and during door-closing movement.

The key lever 29 also has an upper arm 40 extending therefrom and adapted to be engaged by the free end 41 of a torsion spring 42, herein shown as being mounted on two nibs 43—43, shown as being stamped to extend inwardly from the upright portion 28 of the lock plate 17. The torsion spring 42 biases the key lever 29 in a counterclockwise direction into a dogging position against the right-hand side of the slot 36.

The dogging lever 27 is shown as being pivotally mounted on a pivot pin 44, which may be riveted or otherwise secured to a lateral extension 45 of the latch plate 17 in a well-known manner. The pin 44 may be a headed pin, to retain the dogging lever 27 thereon and to pivotally mount said dogging lever on the outer side of the latch plate 17, for movement in a plane generally parallel to the path of door movement. The dogging lever 27 has a dogging arm 47 extending angularly inwardly and downwardly from the pin 44. A headed pin 49 is secured to said dogging arm at its inner end and slidably engages an arcuate slot 50 in the latch plate 17 the marginal arcs of which are coaxial with the axis of the pivot pin 44. The head of the pin 49 is spaced inwardly from the inner side of the latch plate 17 and extends along the outer side of the latching lever 19 while an intermediate portion of said pin slidably engages and upwardly opening slot 51 formed by a bifurcated upper end portion 52 of said latching lever. The pin 49 serves to control pivotal and sliding movement of the latching member 19 during door-closing movement and holds said latching member from movement in an unlatching direction after the door has been latched. The lever arm 47 and pin 49 also take up on the latching lever 19 after the door is closed, upon further movement of the door toward a closed position, and upon attempts to open the door when locked.

The dogging lever 27 also has an upper inclined camming surface 38 on the end of its lever arm 39, which is engageable with the underside of the engaging end 35 of the key lever 29, upon opening of the door, to cam said key lever against the spring 42, into position to engage the engaging end 37, and hold said dogging lever in a dogging position.

The latching lever 19 is pivoted intermediate its ends on a pin 53, secured thereto, as by riveting, and extending outwardly therefrom through a slot 54, herein shown as extending along the latch plate 17 in the direction of door-closing movement. On the outer end of the pin 53 is mounted a torsion spring 55, which may be suitably secured at its inner end to a slotted portion thereof (not shown). The free or outer end of the torsion spring 55 engages a downwardly hooked nib 57, herein shown as being pressed outwardly from the latch plate 17. The torsion spring 55 thus urges the latching lever 19 to move in a counter-clockwise direction and also urges the pin 53 to move toward the lower end of the slot 54, and maintain a concave arcuate strike surface 59 of the latching lever 19 into engagement with an edge of the aperture 15 of the keeper 12 when the latching mechanism is in a door latching position with respect to said keeper.

The latching lever 19 terminates at its lower end into a nose 60 which comes into engagement with the outer or upper edge of the inclined portion 14 of the keeper 12 during door closing movement, causing the latching lever to move upwardly along the slot 54 against the spring 55, and at the same time to pivot about the pin 53 in a clockwise direction under control of the pin 49 on the dogging lever 27, until the nose 60 of said latching lever has cleared the margin of the slot 15. At this time said latching lever will pass through said slot and the arcuate latching or strike surface 59 thereof will come into sliding engagement with the inner or lower edge of the aperture 15 and hold the deck door from opening movement, as long as the dogging lever is in the dogging position shown in Figure 3.

It should here be understood that the torsion spring 55 has been compressed by upward movement along the slot 54 and urges the strike surface 59 of the latching lever 19 into engagement with the lower margin of the slot 15 as long as the dogging lever 27 is in a dogging position. The spring 55 reacting against the pin 49 thus acts as a take-up to maintain said latching lever into engagement with said slot and lock the door regardless of how tightly the door may be closed, as long as the nose 60 has passed through the slot 15 and the strike surface 59 has come into engagement with the inner or lower edge of said slot. This contact is maintained as door-closing movement is continued and when the door is closed tight as shown by solid lines in Fig. 4, the latching lever 19 will remain in engagement with the lower surface of the aperture 15 until the door is opened by the key, to release the dogging lever 27 from the key lever 29.

If the door is not tight, the latching lever 19 will move downwardly and the pin 53 will move toward the lower end of the slot 54 until said latching lever is in the position shown by solid lines in Fig. 4. Thus, looseness in the door is continually taken up by the latching lever 19, up to within a predetermined distance, compressing the rubber door bumper or packing to an extent determined by the amount of take-up provided. This amount of take-up can be varied by increasing or decreasing the length of the slot 54. Also if the door is locked and it is attempted to pull it in an opening direction, the reaction between the pin 49 and said lever will be in a direc-

tion to force the strike surface 59 into tighter engagement with the keeper 14.

In order to release the latching lever 19 for opening of the deck door, the key 34 is turned in a direction to turn the squared spindle 31 and key lever 29 in a clockwise direction to release the engaging end 37 of the lever arm 39 of the dogging lever 27 from the key lever 29, as shown in Figure 5. Upon release of said lever, the dogging lever 27 and pin 49 will be free to pivot in a counter-clockwise direction, and the pin 53 will be free to move to the lower end of the slot 50. The latching lever 19 is then free to pivot in a clockwise direction against the torsion spring 55 and allow the door to be opened. As the door is opened, engagement of the arcuate strike surface 59 with the lower edge of the aperture 15 of the keeper 14 will rotate the latching lever 19 in a clockwise direction against the spring 55 as shown in Fig. 5 until the engaging end 60 of said latching lever is free from the keeper. At this time the spring 55 will pivot the latching lever 19 in a counterclockwise direction to the latching position shown in Fig. 3. This will cam the dogging lever 27 in a clockwise direction.

When the hand is removed from the key 34 and the latching lever 19 is released from the slot 15, upward movement of the dogging lever 27 effected by camming movement of the latching lever 19 in a counterclockwise direction, will bring the inclined camming surface 38 on the upper end of the arm 39 into engagement with the under surface of the engaging end 35 of the key lever 29, and pivot said key lever against the spring 42 until the engaging end 35 passes beyond the adjacent end of said key lever. At this time said lever will be released and the spring 42 will move the engaging end 35 of said lever into supporting engagement with the end 37 of the arm 39 of the dogging lever 27 holding said dogging lever in a dogging position.

It will be understood that modifications and variations may be effected in this invention without departing from the scope of the novel concepts thereof.

I claim as my invention:

1. In a deck latch for association with a keeper and a cooperating deck door, a latching assembly including a latch plate disposed in a plane generally parallel to the path of swing of the door, a key lever pivoted thereon and extending in a plane generally parallel to the outer surface of the door, a dogging lever pivoted on said latch plate and releasably supported by said key lever in a dogging position, and a latching lever pivotally mounted on said latch plate intermediate its ends for slidable movement in the plane of said plate and in the directions of door movement and having a strike surface at one of its ends and a latching surface extending therefrom, said dogging lever having sliding engagement with said latching lever on the opposite side of the pivotal axis of said latching lever from said strike surface and guiding movement of said latching lever into a latching position and holding said dogging lever in a latching position during door closing movement and when the door is closed.

2. In a deck latch for association with a deck door and keeper, a latching assembly including a latch plate extending in a plane generally parallel to the path of swing of the door, a key lever pivotally mounted on one side of said latch plate and having an engaging end portion extending to the opposite side of said latch plate for movement with respect thereto, a latching lever mounted on the same side of said plate as said key lever for pivotal movement in the plane of said plate, about an axis disposed intermediate its ends and for slidable movement along said axis, said latching lever having an arcuate strike surface extending along one side thereof and in one direction from its pivotal axis, for cooperation with a keeper and having an opposite slotted end portion, spring means urging said latching lever into position to engage a keeper, a dogging lever pivoted on the opposite side of said latch plate from said latching lever, a pin on said dogging lever having slidable engagement with said slotted portion of said latching lever and controlling movement thereof, said dogging lever having a projecting arm having a lower surface supportingly engaged by said engaging end of said key lever and having an opposite camming surface having camming engagement with said key lever, and said strike surface of said latching lever moving along the keeper upon door opening movement camming said latching lever to move said arm of said dogging lever past said engaging end of said key lever, and spring means operatively connected with said key lever and moving said key lever into position for said engaging end to supportingly engage said arm of said key lever.

3. In a deck latch for association with a keeper on a deck and a cooperating deck door, a latching assembly including a latch plate extending in a plane generally parallel to the path of the swing of the door, a latch lever extending along said latch plate and pivotally mounted thereon intermediate its ends for slidable movement along said latch plate in the directions of door opening and closing movements, said latching lever having an engaging nose at one end thereof, and a concave strike surface extending towards its pivotal axis for slidable engagement with the keeper, a spring urging said strike surface in engagement with the keeper when the door is closed, a dogging lever pivotally mounted on said latch plate, and having slidable engagement with the opposite end of said latching lever from said nose and controlling the path of movement of said latching lever when moving into a latching position, and holding said latching lever from movement in an unlatching direction when said dogging lever is in a dogging position and said latching lever is in a latching position with respect to the keeper, and a key lever releasably supporting said dogging lever in a dogging position.

4. In a deck latch for association with a keeper on a deck and a cooperating deck door, a latching assembly including a latch plate extending in a direction generally parallel to the path of swing of the door, a latching lever, a pivot pin guided in said latch plate for rectilinear movement in the directions of door movement and pivotally mounting said latching lever on said latch plate for movement about an axis disposed intermediate its ends, said latching lever having an engaging end projecting from the pivotal axis thereof toward the keeper and having a concave strike surface extending upwardly from said engaging end for latching engagement with the keeper, a torsion spring operatively connected with said pin and urging said latching lever and arcuate strike surface into engagement with the keeper, a dogging lever pivoted on said latch plate and extending along the opposite side thereof from said latching member,

said latch plate having a slotted portion, a pin on said dogging lever extending through said slotted portion and having slidable engagement with the opposite end of said latching lever from said strike surface, and a key lever pivotally mounted on the same side of said latch plate as said latching lever and having a supporting end portion extending through said latch plate and having releasable supporting engagement with said dogging lever, releasably holding said dogging lever in a dogging position.

5. In a deck latch for association with a keeper and a cooperating door, a latching assembly including a latch plate extending in a direction generally parallel to the swing of the door and having an upper angular extending portion extending in a direction generally parallel to the outer surface of the door, a key lever pivotally mounted on said angularly extending portion of said latch plate, a dogging lever pivotally mounted on said portion of said latch plate extending parallel to door swinging movement, said dogging lever being pivotally mounted on said latch plate at a point spaced from said key lever and having a projecting arm having a lower surface supportingly engaged by said key lever and an opposite camming surface, having camming engagement with said key lever and camming said key lever into position to supportingly engage said dogging lever upon door opening movement, a latching lever extending in the direction of door closing movement, a slidable and pivotal mounting for said latching lever on said latch plate, said latching lever having a nose portion engageable with the keeper and an arcuate strike surface extending upwardly therefrom having latching engagement with the keeper upon closing of the door, and also having an upper slotted portion having slidable engagement with said dogging lever, and moving said dogging lever into a dogging position upon door opening movement when released from said key lever, and said camming surface of said dogging lever pivoting said key lever into position to supportingly engage said dogging lever upon movement of said dogging lever to a dogging position.

6. In a deck latch for association with a keeper and a cooperating deck door, a latching assembly including a latch plate disposed in a plane generally parallel to the path of swing of the door and having a slotted guide extending therealong in the direction of door movement, a pivot pin guided for movement along said slot, a latching lever mounted on said pin intermediate its ends, a torsion spring secured to said pin at one of its ends and to said latch plate at its opposite end and biasing said pin and latching lever along said guide in a direction toward the keeper into position to engage the keeper, a dogging lever pivoted on the opposite side of said latch plate from said latching lever, a pin on said dogging lever extending through said latch plate and having slidable engagement with said latching lever and guiding said latching lever into a projected latching position, said latching lever moving said dogging lever toward a dogging position during door opening movement by slidable engagement of said pin therewith, a key lever pivoted on said latch plate and having releasable supporting engagement with said dogging lever, spring means biasing said key lever into position to engage said dogging lever, and said dogging lever having a camming face moving said key lever into position to supportingly engage said dogging lever upon pivotal movement of said dogging lever, effected by movement of said latching lever in a release direction upon door opening movement.

7. In a deck latch for association with a keeper and a cooperating deck door, a latching assembly including a key lever, a pivoted dogging lever releasably engaged by said key lever and held thereby in a dogging position, a latching lever mounted intermediate its ends for slidable and pivotal movement in the general plane of door closing movement and having a strike surface at one of its ends and a latch surface extending therefrom for latching engagement with the keeper, said dogging lever having slidable engagement with said latching lever and guiding movement of said latching lever into a projected latching position during door closing movement and maintaining said latching lever in engagement with the keeper when the door is closed.

8. In a deck latch for association with a keeper and a cooperating deck door, a latching assembly including a latch plate extending in a plane generally parallel to the path of swing of the door, a key lever pivoted thereon and extending in a direction generally parallel to the outer surface of the door, a dogging lever pivoted on said latch plate, said key lever having means thereon engageable with said dogging lever for holding said dogging lever in a dogging position, a latching lever mounted on said latch plate intermediate its ends for retractable movement upon striking the keeper and for pivotal extensible movement along the keeper into a projected position in the general direction of door movement upon continued movement of the door toward the keeper, said dogging lever having a guiding portion having slidable engagement with said latching lever on the opposite side of the pivotal axis thereof from the keeper and guiding slidable movement of said latching lever from a retracted to a projected latching position into engagement with the keeper, and a torsion spring operatively connected with said latching lever and biasing said latching lever for pivotal movement into engagement with the keeper and for rectilinear movement in a direction to take up on the latch upon engagement of the latching surface thereof with the keeper.

9. In a latch for association with a door and a cooperating keeper, a latching assembly including a latch plate extending in a plane generally parallel to the path of movement of the door, a key lever pivoted on said latch plate, a dogging lever pivoted on said latch plate, a latching lever mounted on said latch plate for pivotal movement in the plane of said plate about an axis disposed intermediate its ends, and for slidable movement along said plate in the direction of door movement, said dogging lever having a portion having slidable engagement with said latching lever and slidably guiding said latching lever into a retracted position upon initial engagement with the keeper and into a projected latching position into engagement with the keeper, and said dogging lever having an arm projecting from the pivot thereof and having a lower surface releasably engaged by said key lever and holding said dogging lever in a dogging position and having an opposite camming surface having camming engagement with said key lever, and movement of said latching lever along the keeper during door opening movement pivoting said dogging lever into position to cam said key lever by engagement of said camming surface therewith into position to come into supporting

engagement with said arm of said dogging lever.

10. In a latch for association with a door and a cooperating keeper, a latching assembly including a latch plate extending generally parallel to the path of swing of the door, a key lever pivotally mounted on said latch plate and extending generally parallel to the outer surface of the door, a dogging lever pivotally mounted on said latch plate, said key lever having an engaging end portion pivotally movable to engage and hold said dogging lever in a dogging position, a latching lever, a pin guided for slidable movement along said latch plate and pivotally mounting said latching lever on said latch plate for pivotal movement about an axis movable in the direction of door closing movement, and said dogging lever having sliding engagement with said latching lever at a point spaced from said pin and guiding said latching lever from a retracted to a projected position upon door closing movement, and positively holding said latching lever from moving in a release direction after the door is closed and until release of said dogging lever by said key lever.

11. In a latch for association with a keeper and a cooperating door, a latching assembly including a latch plate extending in a direction generally parallel to the path of swing of the door, a key lever pivotally mounted on said latch plate and extending generally parallel to the outer surface of the door, a dogging lever pivotally mounted on said latch plate, said key lever being selectively operable by a key to hold said dogging lever in a stationary dogging position, a latching lever, a slot extending along said latch plate in the general direction of door movement, a pivot pin extending from said latching lever and mounted in said slot for slidable movement therealong, a torsion spring connected with said pin at one end and engaging said latch plate at its free end and biasing said pin and latching lever along said slot in a direction toward the keeper, said latching lever having a slotted upper end portion having slidable engagement with said dogging lever and having a depending nose retracting said latching lever upon striking engagement with a keeper upon door closing movement, and also having a recessed strike surface extending from said nose and projected by said spring into latching engagement with the keeper upon further door closing movement, and said latching lever camming said dogging lever to a dogging position by the reaction of said latching lever against the keeper upon the release of said dogging lever to accommodate opening of the door and upon door opening movement.

12. In a latch for association with a keeper and a cooperating door, a latching assembly including a latch plate extending in a direction generally parallel to the path of swing of the door and having a key lever pivotally mounted thereon, a dogging lever pivotally mounted on said latch plate at a point spaced remote from said key lever, said key lever having an engaging end movable into engagement with said dogging lever for selectively holding said dogging lever in a dogging position, a slidable and pivotal mounting for said latching lever on said latch plate, mounting said latching lever on said latch plate for rotational movement and for movement along said latch plate into latching engagement with the keeper, said dogging lever having means thereon having slidable engagement with the opposite end of said latching lever from the keeper and guiding said latching lever for movement into a retracted position upon engagement thereof with the keeper upon initial door closing movement and for movement into a projected latching position into latching engagement with the keeper upon further door closing movement, and spring means connected with said latch plate and latching lever and biasing said latching lever in a keeper engaging direction.

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