

May 4, 1954

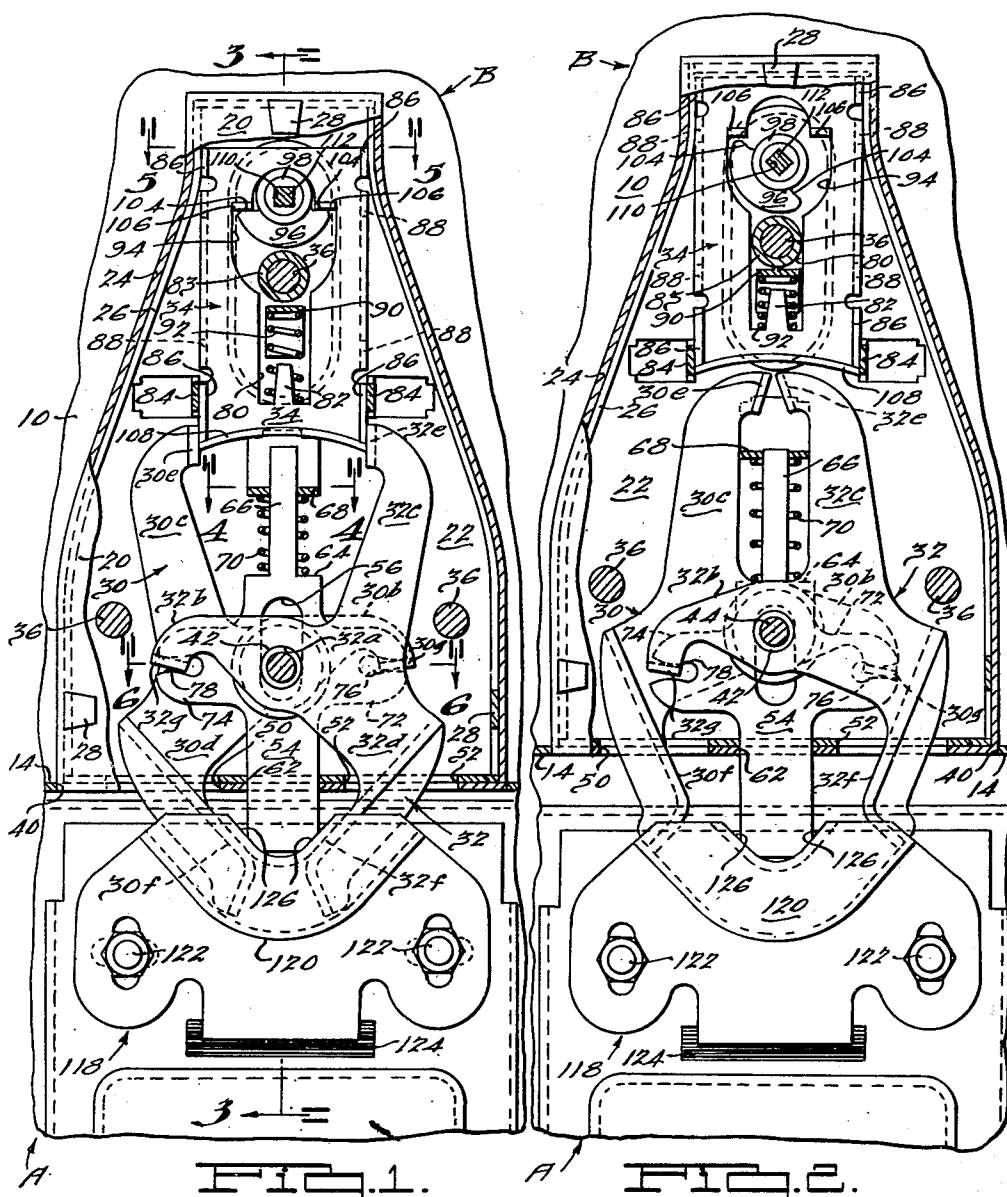
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2,677,262

DECK LID LOCK

Filed May 6, 1950

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

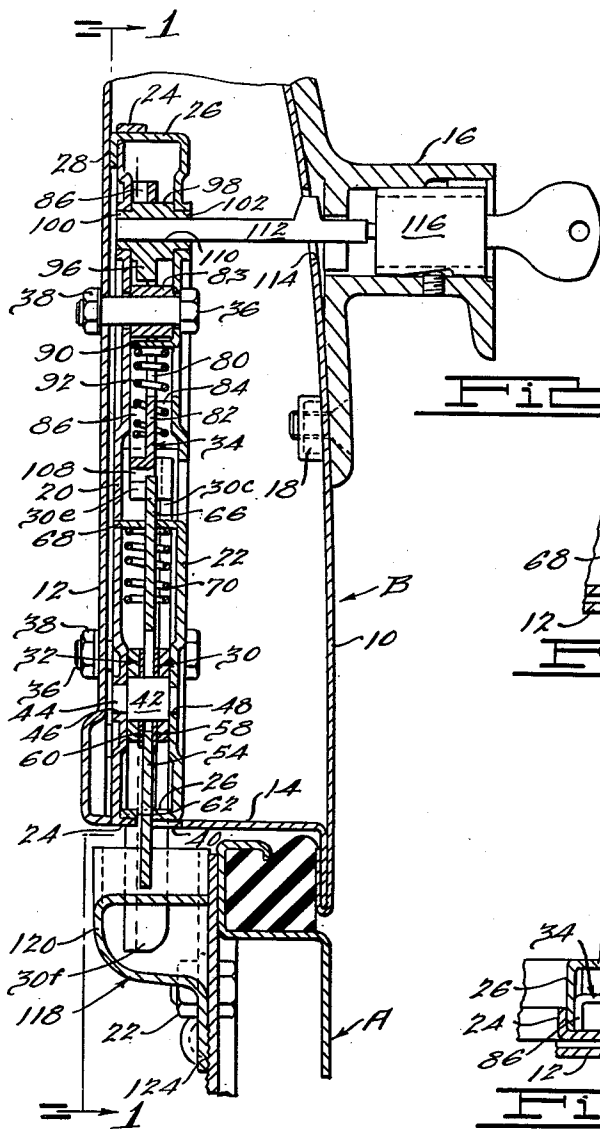


FIG. 3.

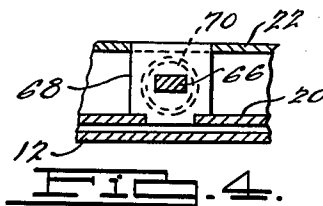


FIG. 4.

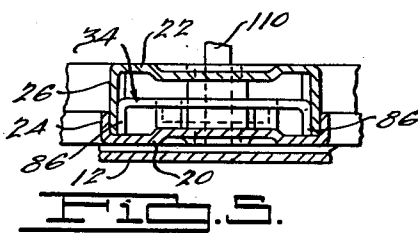


FIG. 5.

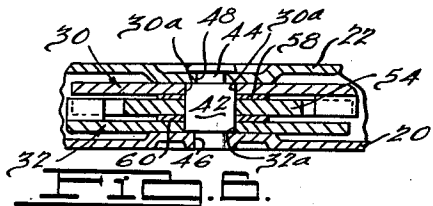


FIG. 6.

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2,677,262

DECK LID LOCK

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Application May 6, 1950, Serial No. 160,485

10 Claims. (Cl. 70-142)

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This invention relates to an improved self-latching lock of the type which is particularly but not exclusively adapted for use in latching an automobile rear deck lid in the closed position. This application is a continuation-in-part of applicant's copending application filed March 4, 1950, Serial No. 147,593.

An object of the invention is to provide an improved latch mechanism for a swinging closure, such as the rear deck lid of an automobile body, wherein a pair of latch members on the closure are positively shifted into latching engagement with a fixed keeper on the body by the action of a shiftable striker member which engages the keeper as the closure is swung to its closed position, the latch members being held in latching positions by means of a spring urged detent or dogging device which automatically moves into dogging position with respect to the latch members when the latter reach their latching positions.

A further object of the invention is to provide an improved latch mechanism of the foregoing construction wherein key controlled means, including a cylinder lock, is rotatable in either direction from a locked position to shift and hold the detent or dogging device out of dogging position, thereby permitting disengagement of the latch members from the keeper, the construction being such that when the key controlled means is rotated to the locked position by turning the key in the cylinder lock, the detent or dogging device is released so as to permit the same to move into dogging position upon swinging the closure to its closed position.

Another object of the invention is to provide an improved latch mechanism for a swinging lid or closure comprising a pair of latch members pivotally mounted on the lid or closure to swing oppositely to each other about a common axis and having latching portions swingable into latching engagement with a keeper structure at opposite sides thereof, this latching operation of the latch members being accomplished by means of a striker or pusher member slidably mounted on the lid and interposed between the latch members and connected thereto in such manner that when the striker or pusher member engages the keeper structure upon closing the lid, the latching portions of the latch members will be swung toward each other by the striker or pusher member into holding positions with respect to the keeper structure. The latch members are preferably provided with arm portions adapted to be swung apart when the latch members are engaged with the keeper structure, said latch members being positively held in latching positions by

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means of a detent or dogging device shiftable by the action of spring means into dogging position with respect to the arm portions of the latch members and adapted to be shifted out of dogging position by a key controlled locking device.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

Details of a preferred embodiment of the present invention are illustrated by way of example in the drawings wherein:

Fig. 1 is a fragmentary vertical transverse section through the latch housing, taken in the direction of the arrows substantially along the broken line 1-1 of Fig. 3, showing the latching mechanism as employed to latch an automobile rear deck lid to the vehicle body.

Fig. 2 is a view similar to Fig. 1, showing the latching mechanism in unlatched position.

Fig. 3 is a vertical longitudinal section taken in the direction of the arrows substantially along the line 3-3 of Fig. 1.

Fig. 4 is a horizontal section taken in the direction of the arrows substantially along the line 4-4 of Fig. 1.

Fig. 5 is a horizontal section along the top edge of the detent or dogging device, taken in the direction of the arrows substantially along the line 5-5 of Fig. 1.

Fig. 6 is a horizontal section through the latch members and latch pusher or striker device, taken in the direction of the arrows substantially along the line 6-6 of Fig. 1.

It is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring to the drawings, a fragmentary rear portion of an automobile body, indicated generally by the letter A, is shown having a rear deck lid B hinged at its upper end to the body A in accordance with conventional practice. In the present instance the lid B is formed from suitably spaced and reinforced outer and inner sheet metal panels 10 and 12 respectively, Fig. 3, the panel 12 having a bottom rearward extending flange 14 secured to the lower portion of the panel 10. Raising and lowering of the lid B is facili-

tated by means of a handle member 16 secured at 18 to the panel 10.

The latch structure embodying the present invention includes a housing comprising in the present instance front and rear sheet metal case plates 20 and 22 spaced apart and formed to house the latch mechanism therebetween. The case plate 20 is provided with marginal flanges 24 overlapping marginal flanges 26 on the plate 22, the parts being held against separation by a plurality of tabs 28 on the flanges 26 projecting through slots in the edges of the plate 20 and bent snugly against the outer surface thereof. The housing 20, 22 comprises an enlarged lower portion to receive a pair of latching members, indicated generally at 30 and 32, and a reduced upper extension to receive a vertically movable key controlled detent or dogging member 34. The housing is suitably fastened in a vertical position to the central portion of the panel 12 by a plurality of bolts 36 extending through the plates 20, 22 and panel 12 and secured by a corresponding plurality of nuts 38. The bottom of the housing lies substantially flush with the flange 14 and projects into an opening 40 in the latter.

In the present instance, the latch members 30 and 32 comprise identical three-armed members pivotally mounted on a common bushing 42 in reversed relation with respect to each other so as to swing transversely of the vehicle body A between latching and unlatching positions, Figs. 1 and 2 respectively, the member 32 being spaced axially forward from the member 30, Fig. 3. The bushing 42 is supported on a horizontal rivet 44 extending coaxially therethrough and through holes 46 and 48 in the case plates 20 and 22 respectively.

The latch members 30 and 32 are provided with pivot holes 30a and 32a respectively through which the bushing 42 extends and are also provided with lateral striker or pusher operated arms 30b and 32b extending in crossed relation, upwardly extending detent engaging arms 30c and 32c, and downwardly extending keeper engaging arms 30d and 32d.

The detent engaging arms 30c and 32c extend generally upward from opposite sides of the pivot axis and curve inward toward each other at their upper ends, terminating in detent engaging flanges 30e and 32e which extend forward and rearward respectively from their associated arms so as to oppose each other in the latching position, Fig. 1.

The striker engaging arms 30d and 32d extend generally downward from the arms 30c and 32c respectively and terminate in forward and rearward extending jaws 30f and 32f respectively on opposite sides of the pivot axis. The latter also extend angularly downward toward each other through laterally spaced openings 50 and 52 respectively within the lapping flanges 24, 26 at the bottom of the latch housing so as to engage the under sides of a V-shaped keeper therebetween. The arms 30b and 32b extend generally horizontally across the pivot axis and terminate respectively in forward and rearward extending pusher or striker engaging flanges 30g and 32g.

As shown in Figs. 3 and 6, the latch members 30, 32 are spaced axially by a vertically slidable latch operating striker or pusher 54 provided with a vertical movement limiting slot 56 and slidably mounted on the bushing 42 extending through the slot 56. Also located on the bushing 42 and spacing the striker or pusher 54 from the adjacent members 30 and 32 respectively are a pair

of washers 58 and 60. Below the bushing 42, the body of the striker 54 extends downward as a generally rectangular tongue through an opening 62 in the bottom portions of the lapping flanges 24, 26 and terminates in chamfered lower corner portions. Above the slot 56, the body of the striker or pusher 54 is formed with spring retaining shoulders 64 and a reduced vertical guide extension 66. This guide extension passes upward through an opening within a fixed horizontal guide 68, which is lanced forwardly from the body of the case plate 22, Fig. 3, and anchored in the case plate 20, see Fig. 4. Coiled around the guide extension 66 and interposed under compression between the underside of the fixed guide 68 and the shoulders 64 is a spring 70 normally urging the latch pusher or striker 54 downwardly relative to the housing to an unlatching position. Integral with the pusher member 54 are a pair of horizontal lateral arms 72 and 74 extending in opposite directions and having laterally opening notches 76 and 78 respectively into which project the forward and rearward extending latch member flanges 30g and 32g respectively. Accordingly pivotal movement of the latch members 30, 32 to and from their latching positions is effected in unison with upward and downward sliding movement respectively of the latch pusher or striker 54.

The disposition and dimensions of the latch members 30, 32 and latch pusher 54 are determined so that when the latter is moved downward by the spring 70 to the limit permitted by the upper extremity of the slot 56, the horizontal arms 30b, 32b will be swung downward about the axis of the bushing 42 to the unlatching position, Fig. 2, by virtue of the flanges 30g, 32g engaged within the notches 76, 78 of the arms 72, 74 respectively. In this position the flanges 30e, 32e will be swung together and the jaws 30f, 32f will be swung upward and away from each other. Upon upward movement of the pusher 54, the arms 30b, 32b will be swung in a reverse direction to the latching position of Fig. 1, pivoting the jaws 30f, 32f downward and toward each other and the flanges 30e, 32e away from each other. Thus in the latching position of the members 30, 32, the flanges 30e, 32e are spaced sufficiently to receive the lower portion of the vertically sliding detent or dogging member 34 which is dimensioned at its lower end to fit snugly between the spaced flanges 30e, 32e and to hold the same positively in their spaced latching positions.

The body of the detent or dogging member 34 extends upward within the housing 20, 22 and is provided with a vertical slot 80 and a spring retainer 82 projecting vertically from the lower edge of the slot 80. One of the bolts 36 and a coaxial sleeve spacer 83 thereon are adapted to ride in the slot 80 upon vertical sliding movement of the detent 34. Lateral movement of the lower end of the member 34 is prevented by a pair of horizontal guides 84 lanced forwardly from the body of the case plate 22 adjacent opposite sides of the member 34, Figs. 1 and 2, to guide the same in vertical sliding movement. The member 34 is also held against forward and rearward movement by lateral flanges 86 bent forward from both its upper and lower edges, so as to ride vertically along the plate 20, and lateral flanges 88 bent rearward from both its upper and lower edges intermediate the flanges 86, so as to ride along the plate 22.

Lanced inwardly from the body of the case plate 22 is a fixed horizontal guide and spring

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retainer 90 spaced above the spring retainer 32 and adapted to extend through the slot 80 in guiding relation. A vertical coil spring 92 around the retainer 32 and under compression against the retainer 90 exerts a continuous force urging the detent member 34 downward to its dogging position.

Above the position of the spring retainer and guide 90 when the detent member 34 is at its lowermost position, the slot 80 enlarges laterally at 94 so as to receive freely therein a swinging cam or approximately half-round eccentric 96 and its generally cylindrical integral support 98. The latter terminates in reduced ends 100 and 102 journaled within pivot openings in the case plates 20 and 22 respectively for pivoting about a horizontal longitudinal axis. The body of the cam or eccentric 96 depends from its support 98 when the member 34 is in the dogging position and extends laterally in opposite directions at its upper edges slightly below the pivot axis to provide paired horizontal shoulders 104, Fig. 1.

Lanced forwardly from the body of the detent member 34 so as to overlie the cam shoulders 104 are a corresponding pair of combined stops and cam followers 106 which ride on the shoulders 104 and thus raise or lower the detent 34 in accordance with rotation of the cam 96. By this construction, rotation of the cam 96 in either direction approximately 45° from the horizontal will cause one or the other of the shoulders 104 to engage one of the followers 106 and correspondingly raise and retract the detent member 34 from between the flanges 30e, 32e, Fig. 2, the limit of upward movement of the member 34 being determined by abutment between the latter and the upper inner surface of the housing flange 26. Upon return rotation of the cam shoulders 104 to the horizontal position, the member 34 will be released for downward movement under the influence of the spring 92. If the latch members 30, 32 are in the unlatched position, Fig. 2, with the detent engaging flanges 30e, 32e together to prevent insertion of the detent member 34 therebetween, the latter will rest under the pressure of its spring on the upper edges of the flanges 30e, 32e. The lower edge of the detent 34 is provided with a forwardly extending transversely curved flange 108 concentric about the axis of the bushing 42 to permit pivotal movement of the latch members 30, 32 freely to and from the latching position without raising the detent 34 against the tension of the spring 92. When the detent engaging flanges 30e, 32e are spaced as shown in Fig. 1, the detent 34 will be forced downwardly between these flanges by the spring 92 into dogging position with respect to the latch members 30, 32.

In order to achieve key controlled operation of the detent member 34, the cylindrical cam support 98 is provided with an axially extending bore 110 of square section within which is splined the forward end of a square section shank 112. The latter passes rearwardly through a hole 114 provided therefor in the rear deck panel 10 and is operatively connected with the rotatable cylinder of a key operated lock 116 which may be of usual construction located conventionally within the handle 16.

It is apparent from the foregoing that the height of the latch housing and the length of the detent member 34 will be determined so that the axis of the cylindrical cam support 98 will be substantially coaxial with the rotatable cylinder of the lock 116. By virtue of this con-

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struction, the latching mechanism including the members 30, 32 and striker 54 may be readily controlled by a key operated lock located at a considerable distance above the latch mechanism. Thus the handle 16 may be located at any desired level above the lower portion of the rear deck lid B so as to be conveniently gripped by the operator in opening and closing the lid. Upon insertion of the proper key in the lock 116, the shaft 110 and cam 96 are suitably rotated as desired in either direction to the unlocked position of Fig. 2, whereat the detent 34 is withdrawn from between the flanges 30e, 32e, or to the locking position of Fig. 1 whereat the cam shoulders 104 are horizontal.

The latch mechanism is provided with a keeper structure, indicated generally by the numeral 118, suitably formed as for example from sheet metal by stamping operations to provide a rearward opening channel portion 120 of generally V-shape in front elevation, Figs. 1 and 2. The keeper 118 is located directly below the pusher or striker 54 when the deck lid B is in the closed position and is rigidly secured to the body A by means of bolts 122 and interengaged serrate portions 124 of the keeper 118 and body A. The side walls of the V-shaped channel portion 120 of the keeper provide paired downwardly converging keeper portions 126, each parallel to one of each of the chamfered lower edges of the pusher or striker 54 and also parallel to one of the jaws 30f, 32f when the latter are in the latching position. Thus the keeper portions 126 are adapted to be engaged by the chamfered edges of the striker 54 from above and the latch jaws 30f, 32f from below when the striker 54 and jaws 30f, 32f are moved into latching positions as shown in Fig. 1.

From the foregoing it will be seen that upon closing the deck lid B, the lower chamfered edges of the striker 54, which is normally held downward by the spring 70, as shown in Fig. 2, will first engage the keeper portions 126, whereupon the jaws 30f, 32f will be swung to the latching position underlying the striker portions 126. In the same movement, the detent engaging flanges 30e, 32e will be separated to receive the detent 34 therebetween. If the cam shoulders 104 are in the horizontal position, Figs. 1 and 3, the detent 34 will be forced downward by the spring 92 into dogging position between the flanges 30e, 32e as above described. Thereafter the lid B cannot be opened until the key operated lock 116 is turned and the cam 96 rotated in one direction or the other from its position shown in Fig. 1 sufficiently to elevate and withdraw the detent 34 from between the flanges 30e, 32e. When this occurs the striker 54 will be projected downward against the keeper portion 126 relative to the latch housing by the spring 70 and will raise the lid B to the position of Fig. 2, simultaneously swinging the jaws 30f, 32f upward and outward from latching engagement with the undersides of the striker portions 126.

As shown in Fig. 1, the keeper structure 118 is adjustably secured to the body A by virtue of elongated bolt holes for the bolts 122, so that the structure 118 may be readily located accurately in position to be clamped between the jaws 30f, 32f and opposed chamfered lower ends of the striker 54 when these members are in the latched position. Likewise the sidewall thickness of the keeper portions 126 is determined to assure a tight clamping engagement, thereby positively avoiding undesirable rattling or move-

ment between the interlocking elements when the automobile is driven over rough roads.

I claim:

1. A latch mechanism for a swinging closure, comprising a support mounted on the closure, a pair of latch members pivotally mounted on the support and having spaced keeper engaging portions swingable toward and from each other, a striker member slidably mounted on the support and projecting into position to engage a fixed structure and to be shifted thereby relative to the support when the closure is swung to its closed position, connections between said striker member and latch members effective to swing said keeper engaging portions toward each other into latching engagement with a keeper when said striker member is shifted relative to the support by engagement with said structure, said latch members having detent engaging portions movable away from each other when said keeper engaging portions are swung toward each other, a spring urged slide on the support having detent means movable between said detent engaging portions for holding the latch members in latching positions, pivotal cam means mounted on the support and having slide engaging portions on opposite sides of its pivot axis, the slide engaging portion on one side of the pivot axis being engageable with the slide to move said detent means out of position between said detent engaging portions upon pivoting of the cam means in one direction and the slide engaging portion on the other side of the pivot axis being similarly engageable with the slide upon pivoting of the cam means in the other direction, and key controlled means for pivoting the cam means.

2. A latch mechanism for a swinging closure, comprising a support mounted on the closure, a pair of latch members pivotally mounted on the support and having spaced keeper engaging portions swingable toward each other into latching engagement with a keeper when the closure is in closed position and being swingable away from each other out of said latching engagement, a striker member mounted on the support for sliding to and from a projecting position and being engageable thereat with a fixed structure to be shifted thereby from said position relative to the support when the closure is swung to its closed position, connections between said striker member and latch members effective to swing said keeper engaging portions toward or from each other upon shifting of said striker member respectively relative to the support from or to the projecting position, said latch members having detent engaging portions movable away from each other when said keeper engaging portions are swung toward each other, a detent member slidable on the support to and from a detent position between said detent engaging portions for holding said latch members in latching positions, spring means yieldingly urging the detent member to the detent position, pivotal cam means having bearing portions journaled on the support and having paired radial extensions engageable with the detent member at spaced locations on opposite sides of the pivot axis to slide the detent member from the detent position upon pivoting of the cam means in either direction about said axis, a shaft having one end splined coaxially to said cam for pivoting therewith, a rotatable key operated cylinder mounted on said closure, the other end of said shaft being connected with said cylinder to rotate therewith.

3. A latch mechanism for a swinging closure, comprising a support adapted to be mounted on said closure, a striker shiftably mounted on the support and engageable with one side of a keeper to be shifted in one direction thereby relative to the support when the closure is swung to closed position, spring means yieldingly urging shifting movement of the striker oppositely to said one direction, a latch device having an arm terminating in a jaw and being pivoted on the support to swing the jaw to and from a position of latching engagement with another side of the keeper in opposition to the striker, said device having a detent engaging arm extending generally oppositely from said first arm and also having a radial striker engaging arm intermediate said first two arms, means connecting said striker and striker engaging arm to swing said jaw into said latching engagement with the keeper upon relative shifting of the striker in said one direction, a detent member slidably mounted on the support for moving to and from a detent position in the path of swinging movement of the detent engaging arm to hold said latch device in latching position, spring means yieldingly urging the detent member to the detent position, and pivotal cam means having bearing portions journaled on the support and having detent engaging portions on opposite sides of its pivot axis, the detent engaging portion on one side of the pivot axis being engageable with the detent member to move the same from the detent position upon pivoting of the cam means in one direction, and the detent engaging portion on the other side of the pivot axis being similarly engageable with the detent member upon pivoting of the cam means in the other direction, a shaft coaxial with said cam means and having one end splined to said cam means for pivoting the latter, a rotatable key operated device mounted on said closure, the other end of the shaft being connected with said device to be rotated thereby.

4. A latch mechanism for a swinging closure, comprising a support adapted to be mounted on said closure, a pair of latch members pivotally mounted on said support to swing about a common axis and having spaced latch portions co-operable with a keeper device, a striker member shiftably mounted on said support and adapted to be shifted in one direction relative to the support by engagement with said keeper device when said closure is swung to closed position, spring means yieldingly urging shifting of said striker member oppositely to said one direction, means for connecting said striker member to said latch members to cause said striker member when shifted relative to the support by engagement with the keeper device to swing said latch portions into latching engagement with said keeper device, and spring urged dogging means mounted on said support for holding said latch members in latching positions.

5. A latch mechanism for a swinging closure, comprising a support mounted on the closure, a pair of latch members pivotally mounted on the support and having spaced keeper engaging portions swingable toward each other into latching engagement with a keeper when the closure is in closed position and being swingable away from each other out of said latching engagement, a striker member mounted on the support for sliding to and from a projecting position and being engageable thereat with a fixed structure to be shifted thereby from said position relative to the support when the closure is swung to its closed

position, connections between said striker member and latch members effective to swing said keeper engaging portions toward or from each other upon shifting of said striker member respectively relative to the support from or to the projecting position, said latch members having detent engaging portions movable away from each other when said keeper engaging portions are swung toward each other, and detent means on the support movable into position between and in abutting relation to said detent engaging portions for holding said latch members in latching positions.

6. A latch mechanism for a swinging closure, comprising a support mounted on the closure, a pair of latch members pivotally mounted on the support and having spaced keeper engaging portions swingable toward and from each other, a striker member mounted on the support for sliding to and from a projecting position and being engageable at said position with a fixed structure to be shifted thereby from said position relative to the support when the closure is swung to its closed position, connections between said striker member and latch members effective to swing said keeper engaging portions toward or from each other upon shifting of said striker member respectively relative to the support from or to said projecting position, said latch members having detent engaging portions movable away from each other when said keeper engaging portions are swung toward each other, and a spring urged slide on the support having detent means movable into position between and in abutting relation to said detent engaging portions for holding the latch members in latching positions.

7. A latch mechanism for a swinging closure, comprising a support mounted on the closure, a pair of latch members pivotally mounted on the support and having spaced keeper engaging portions swingable toward and from each other, a striker member mounted on the support for sliding to and from a projecting position and being engageable at said position with a fixed structure to be shifted thereby from said position relative to the support when the closure is swung to its closed position, connections between said striker member and latch members effective to swing said keeper engaging portions toward or from each other upon shifting of said striker member respectively relative to the support from or to said projecting position, said latch members having detent engaging portions movable away from each other when said keeper engaging portions are swung toward each other, a spring urged slide on the support having detent means movable into position between and in abutting relation to said detent engaging portions for holding the latch members in latching positions, rotatable cam means for shifting said slide in one direction to move said detent means out of position between said detent engaging portions.

8. A latch mechanism for a swinging closure, comprising supporting means adapted to be mounted on the closure, a pair of latch members pivotally mounted on the supporting means and having spaced keeper engaging portions cooperable with a keeper, a striker member shiftably mounted on said supporting means and adapted to be shifted relatively thereto by engagement with said keeper when said closure is swung to closed position, spring means yieldingly opposing shifting of said striker member when the latter is engaged by the keeper upon swinging of the closure to closed position, interengaged portions

of said striker member and latch members for swinging the latter into engagement with said keeper when said striker member is shifted relatively to said supporting means by engagement with said keeper, and dogging means mounted on said supporting means for holding said latch members in latching positions.

9. A latch mechanism for a swinging closure, comprising supporting means adapted to be mounted on said closure, a pair of latch members pivoted on said supporting means to swing about a common pivot axis, each latch member having a jaw portion and a striker engaging portion spaced by said pivot axis, each jaw portion being on the opposite side of the pivot axis from the jaw portion of the other latch member and being cooperable with a keeper, a striker member shiftably mounted on said supporting means and adapted to be shifted in one direction relatively to said supporting means by engagement with said keeper when said closure is swung to closed position, spring means yieldingly urging shifting of said striker member oppositely to said one direction, means connecting said striker member with said striker engaging portions to swing said latch members into engagement with said keeper when said striker member is shifted relatively to said supporting means by engagement with said keeper, and dogging means shiftably mounted on said supporting means for shifting into the paths of movement of said latch members from their latching positions.

10. A latch mechanism for a swinging closure, comprising supporting means adapted to be mounted on said closure, a pair of latch members pivoted on said supporting means to swing about a common pivot axis, each latch member having a jaw portion and a striker engaging portion spaced by said pivot axis, each jaw portion being on the opposite side of the pivot axis from the jaw portion of the other latch member and being cooperable with a keeper, a striker member shiftably mounted on said supporting means and adapted to be shifted relatively to said supporting means by engagement with said keeper when said closure is swung to closed position, means connecting said striker member with said striker engaging portions to swing said latch members into engagement with said keeper when said striker member is shifted relatively to said supporting means by engagement with said keeper, and dogging means shiftably mounted on said supporting means for shifting into the paths of movement of said latch members from their latching positions.

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