Jan. 3, 1956 H. KRAUSE ET AL 2,729,487

HOOD LATCH

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Fig. 1

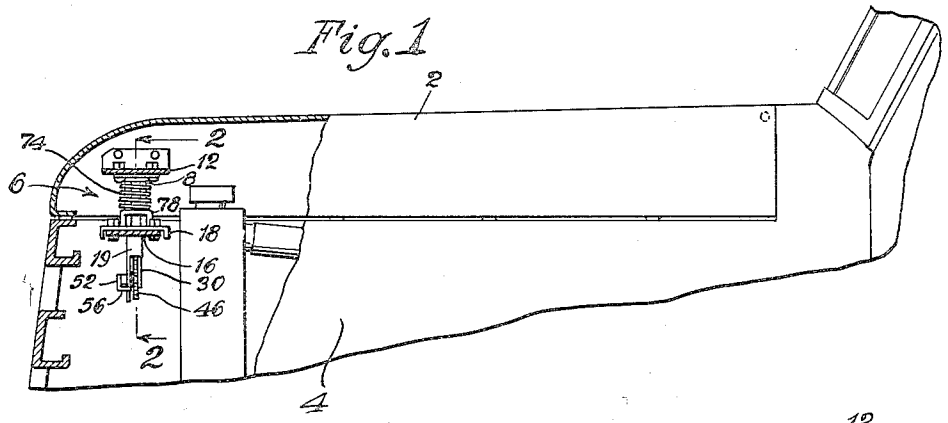
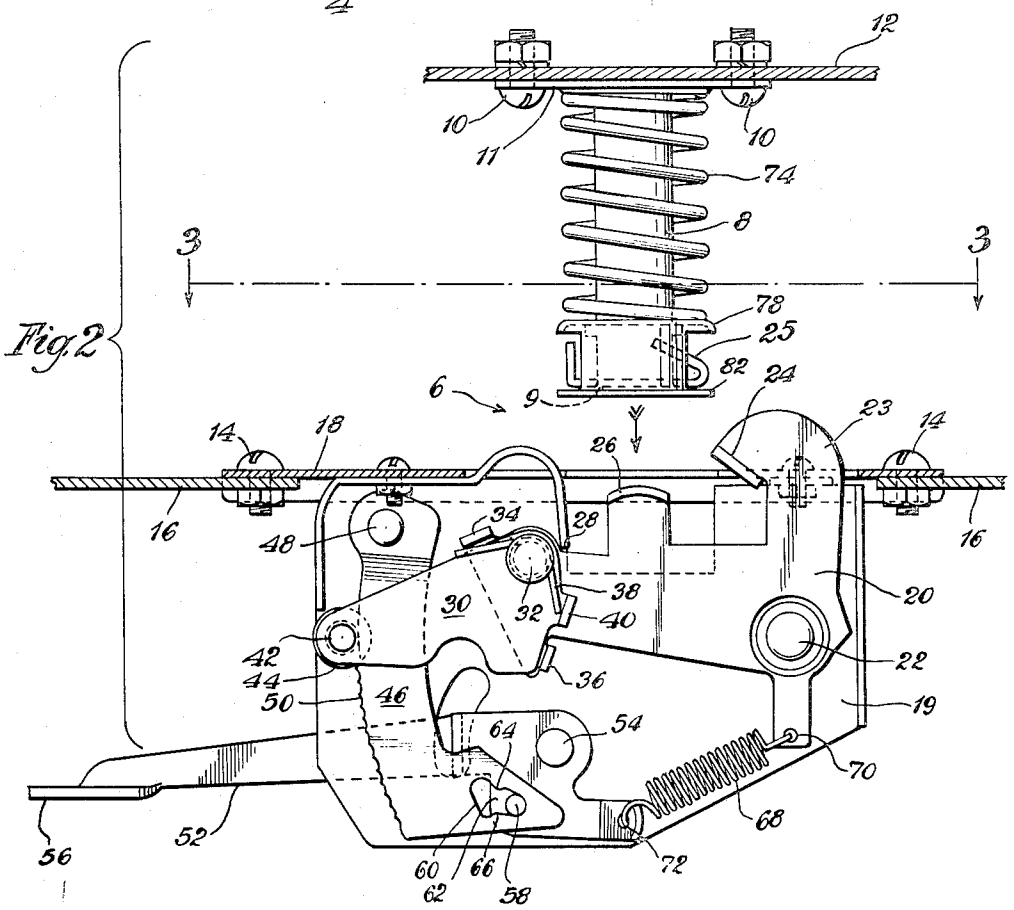


Fig. 2



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Fig. 3

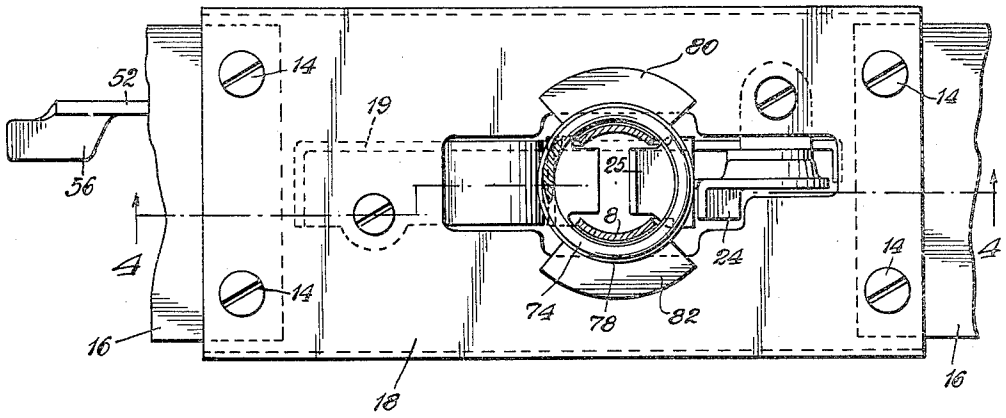
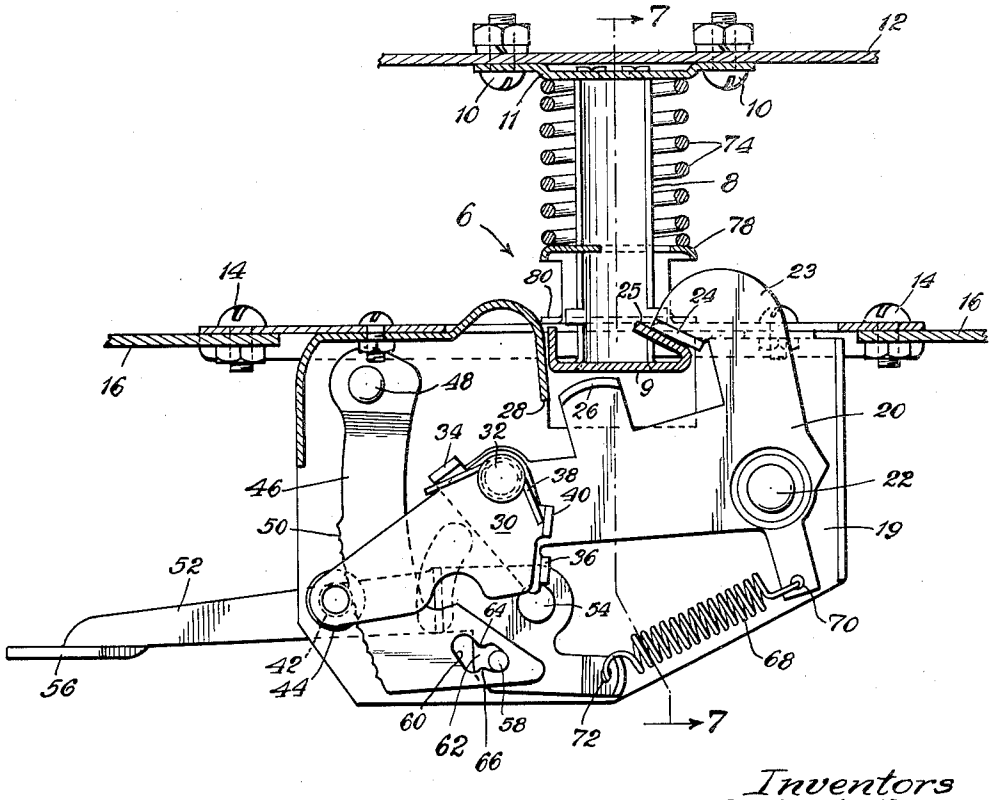


Fig. 4



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Fig. 7

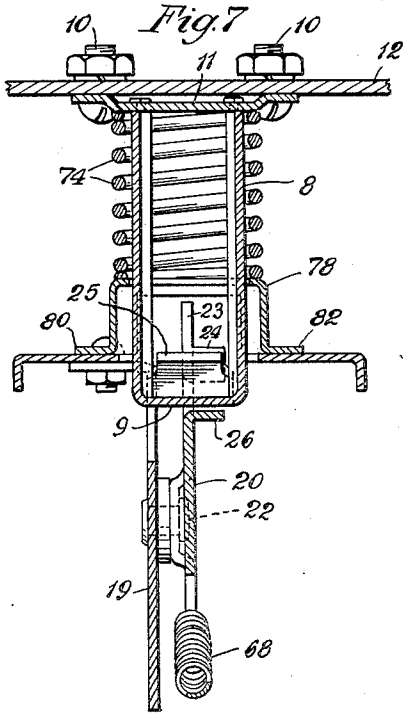


Fig. 8

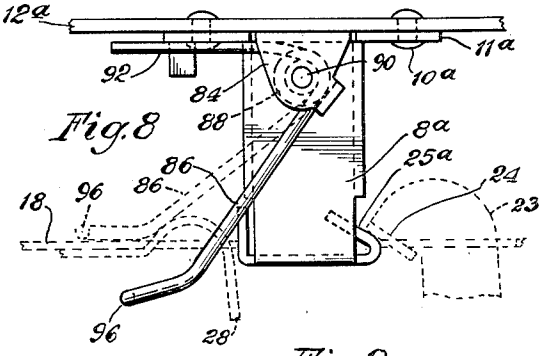


Fig. 9

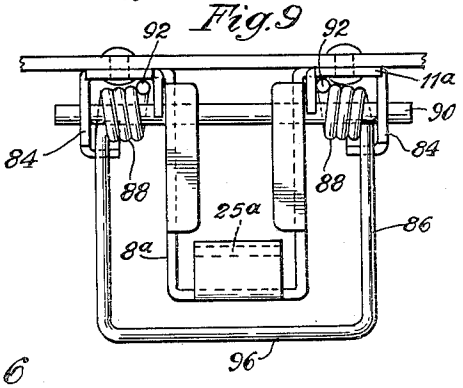


Fig. 6

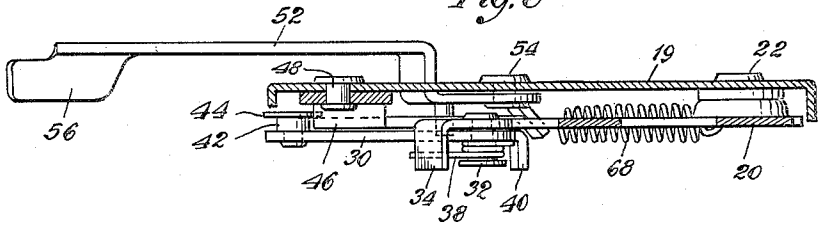
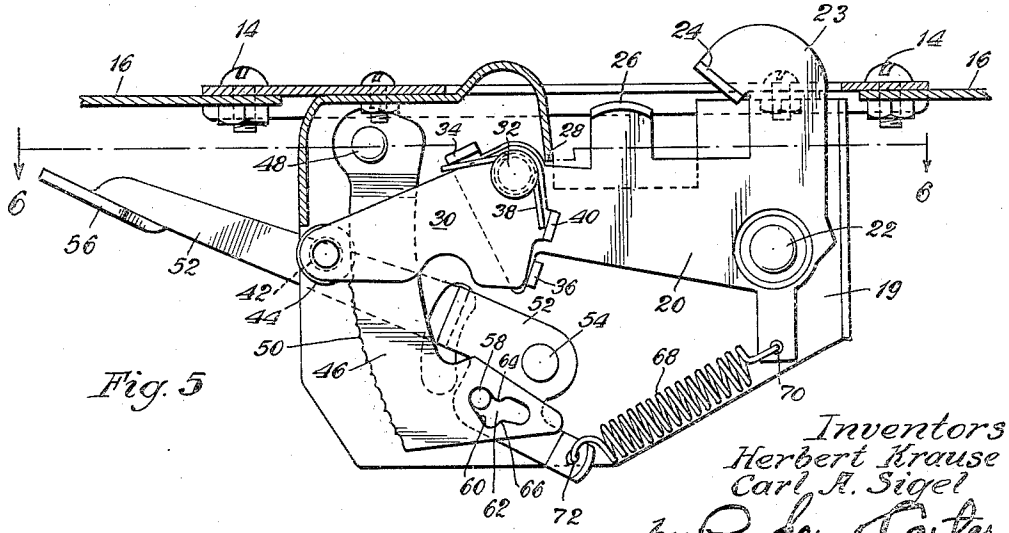


Fig. 5



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2,729,487

HOOD LATCH

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Application February 14, 1952, Serial No. 271,554

4 Claims. (Cl. 292—99)

This invention relates to latch constructions for closure members. More specifically, this invention relates to the art of latches for automobile closures.

It is an object of this invention to provide a hood latch having superior and advantageous operating characteristics.

It is a further object of this invention to provide a hood latch wherein movement of a closure of an automobile toward closed position forces a latch member into engagement with the closure.

It is a further object of this invention to provide a latching member with improved means for holding the latching member in latching position.

A further object of this invention is to provide an improved means for releasing a latch member from operative position and holding it in operative position.

A still further object is to provide a latch member and a keeper member with improved resilient means for returning the latch member to inoperative position.

An ancillary object of this invention is to provide a latch which is operated with comparative ease and which is designed for convenient use and manufacture thereof.

Other objects of this invention will appear from time to time in the course of the following specification and claims.

Reference being taken now to the accompanying drawings, it will be seen that:

Figure 1 represents an automobile closure member showing the latch device of this invention in a preferred location;

Figure 2 represents a sectional view of the latching device shown in Figure 1 taken along the lines 2—2 of Figure 1;

Figure 3 represents a plan view of the device shown in Figure 2 taken along the lines 3—3 of Figure 2;

Figure 4 represents a sectional view of the latching device in operative position taken along the lines 4—4 of Figure 3;

Figure 5 is a sectional view similar to Figure 4 with the latching member in inoperative position and the keeper member omitted;

Figure 6 is a sectional view taken on the lines 6—6 of Figure 5;

Figure 7 is an end view of the device shown in Figure 4 taken along line 7—7 of Figure 4;

Figure 8 shows a modified form of the invention; and Figure 9 shows an end view of Figure 8.

Referring now in detail to the accompanying drawings wherein like numerals designate like parts of the invention throughout, 2 represents a hood or closure member of an automobile body indicated generally at 4. In the preferred form of this invention, the latching device is associated with the hood portion of the automobile and the relatively fixed body portion 4 of the automobile, and is indicated generally at 6 in Figure 1. As is customary in the art of hood latches, the latch is employed to secure the hood portion 2 to the relatively fixed body portion 4 of the automobile.

The hood portion 2 carries a normally fixed keeper member 8 which is attached to a member 12 on the hood portion by any suitable means such as bolts 10 and attaching portion 11. The keeper member 8 is designed to be engaged by a latching member on the relatively fixed automobile body portion 4. A base member 18 is fixed to a frame member 16 of the automobile body portion by any suitable means such as bolts 14. The base member 18 preferably includes a depending portion 19 upon which the latching mechanism is mounted. Pivotally mounted on the portion 19 as at 22 is a latching member 20 which is adapted to engage the keeper 8 on the automobile hood. Latching member 20 is provided with a bolt portion 24 projecting from an upstanding portion 23 and designed to engage an inclined portion 25 on the keeper member. By referring to Figure 4, it will be seen that the bolt portion 24 and the inclined portion 25 on the keeper are given an inclination so that in latching position the portions 24 and 25 are flush with each other. A flange 26 is provided on the latching member 20 and presents a striker adapted to be contacted by a surface 9 on hte keeper 8 as the keeper and its associated hood 2 move toward closed position. It will be seen, then, that contact of the surface 9 on the keeper 8 with the striker, or flange 26, will rotate latch lever 20 into keeper engaging or operative position.

Clockwise movement of latch lever 20 is limited by surface 28 on the base member portion 19.

Means is provided for holding the latching member 20 in latched position with respect to the keeper member 8. In the preferred form of the invention, this means takes the form of a pawl 30 which is pivotally mounted as at 32 on the latch member 20. Stop projections 34 and 36 are provided on the latching member to limit relative movement between the pawl and the latching member. Disposed around pivot member 32 which is carried by the latch member 20 is a coil spring 38 having angularly arranged opposed ends which abut against stop projection 34 on the latch member 20 and a stop projection 40 on the pawl 30. It will be seen that pawl 30 is disposed in angular relationship to latch member 20, and is adapted to engage a ratchet 46 pivoted to the base portion 19 at 48. Detent 42 is carried by the pawl 30 and engages a series of serrations 50 on the ratchet 46. A boss 44 (seen best in Figure 6) is disposed on the opposite side of the ratchet 46 and serves to guide the movement of the pawl 30 with respect to the ratchet. Movement of the latch lever is thus precluded by the engagement of the pawl 30 with ratchet 46. The pawl may be disengaged from ratchet 46 and permit movement of latch lever 20 in two ways. The pawl 30 may rotate (against the action of spring 38) clockwise with respect to pivot 32 and latch lever 20 and thus increase the effective distance between pivot 22 and detent 42, resulting in disengagement of detent 42 with ratchet 46. On the other hand, counterclockwise movement of ratchet 46 about its pivot 48 will disengage ratchet 46 from pawl detent 42. The movement of the ratchet 46 is controlled by a ratchet actuating lever 52.

The ratchet actuating lever 52 is pivoted to the base portion 19 at 54 and is provided with a finger piece 56 for actuation thereof. It will be understood by those skilled in the art that lever 52 may be actuated by a cable or any other suitable means. The lever 52 has a connection with ratchet 46 which provides four controlling functions for the ratchet. The connection permits locking the ratchet in pawl engaging position, releasing the ratchet for freedom of movement of the ratchet out of pawl engaging position, positive motivation of the ratchet out of pawl engaging position and positive motivation of the ratchet into pawl engaging position.

A projection 58 is arranged on the ratchet locking

and releasing lever 52 and is received within a slot indicated generally at 60 on the ratchet 46. It will be seen that in the position of the projection 58, shown in Figure 2, the projection 58 precludes movement of the ratchet. The slot 60 is provided with an enlarged portion 62 which allows relative movement of the ratchet 46 with respect to the projection 58 when the lever 52 is swung about its pivot toward the position shown in Figure 5. The slot 60 is provided with a camming portion 64. Upon contact of the projection 58 with the camming portion 64, as the lever 52 is moved toward the position shown in Figure 5, the projection 58 will positively swing the ratchet member 46 about its pivot 48 away from the pawl carried detent 42. The slot 60 is provided with another camming portion 66 which is engaged by the projection 58 as the lever 52 moves from ratchet releasing position (shown in Figure 5) to ratchet locking position (shown in Figure 2). Upon swinging projection 58 counterclockwise about pivot 54, the projection 58 will engage camming portion 66 and cam ratchet 46 into pawl engaging position.

A spring 68 is connected to the latch member 20 as at 70 and to the ratchet releasing lever 52 as at 72. The spring 68 thus serves the dual function of biasing the latch member 20 toward inoperative position and the ratchet locking and releasing lever 52 toward locking engagement with ratchet 46.

Associated with and surrounding the keeper 8, as shown in Figures 2 through 7 inclusive, is a spiral spring 74 which is adapted to bias the keeper 8 and its associated hood closure 2 upwardly. The spring 74 has one end abutting against attaching portion 11 and has its other end seated on an annular member 78 which is slidably mounted on the keeper member 8. As best seen in Figure 3, the annular member 78 has opposed flanges 80 and 82 which contact the base plate 18. When thus arranged, the flanges 80 and 82 contact the base plate 18 as the keeper moves into latching position, shown in Figure 4, and compress the spring 74. When the latch member 20 is released from the keeper, the spring 74 will serve to bias the hood closure 2 upwardly and away from the base plate 18. The inclined portion 25 on the keeper cams the inclined bolt 24 of the latch lever 20 to inoperative position as the keeper 8 moves upwardly under the action of spring 74.

A modified form of keeper member is shown in Figures 8 and 9. Indicated at 8*a* is a keeper member which is adapted to be fixed to a fixed member 12*a* on the hood closure by suitable attaching means 10*a* and attaching portion 11*a*. A pair of ears 84 depend from the attaching portion 11*a* in transversely spaced relation to the keeper 8*a*. A U-shaped spring member 86 has its end portions 88 coiled around a pivot member 90. The ends of the spring member terminate as at 92 and abut against a keeper attaching portion 11*a*. The bight portion 96 of the U-shaped spring member abuts against base member 18. It will be understood that when the keeper member 8*a* moves into latching position, the bight portion 96 abuts against the base plate 18 and tensions the coils 88, thus providing a force biasing the keeper 8*a* and its associated closure member upwardly, and serving to force latch bolt 24 to inoperative position.

The use and operation of the latching device shown and described herein is as follows:

Assuming that the automobile closure 2 is in partially raised position, as indicated in Figure 2, and the closure member is started toward closed position, the keeper member 8 will contact the strike 26 on latch member 20 and rotate keeper engaging portion 24 into latching engagement with its mating surface 25 on the keeper. As the latch member 20 moves into its latching position, pawl 30 will be swung clockwise, as seen in Figure 2, against the bias of spring 38. This relative swinging of the pawl 30 with respect to the latch member 20 results in an increase in the affective distance between latch member pivot 22 and ratchet engaging projection 42 on the pawl 30 and moves the pawl detent 42 out of engagement with ratchet 46, thus allowing the pawl 30 and its associated latch member 20 to move downwardly, with respect to the ratchet, into the position shown in Figure 4.

In the position shown in Figure 4, spring 68 biases latch member 20 toward inoperative position. When the keeper 8 is in latched position, the opposed flanges on collar 78 rest on the base plate 18 and compress spring 74. When employing the keeper shown in Figure 8, it will be realized that bight portion 96 of U-shaped spring member 86 rests against the base plate 18 thereby tensioning spring 86 to provide a force biasing keeper member 8*a* upwardly out of latch engaging position. It is believed well to point out here that both the keeper associated spring members 74 and 86, respectively, and also the latch spring member 68 tend to return latch member 20 toward inoperative position. The spring members 74 and 86 perform this function by providing a force tending to move the latch member engaging portions 25 and 25*a*, respectively, upwardly against mating portion 24 on the latch member 20.

When it is desired to release the latch member from its operative or engaging position, shown in Figure 4, to the inoperative or disengaging positions, shown in Figures 2 and 5, the ratchet actuating lever is swung about its pivot from the position shown in Figure 2 to the position shown in Figure 4. Initial movement of the ratchet engaging projection 58 of the ratchet actuating lever 52 into the intermediate position of the slot 62 will result in freeing the ratchet 46 for movement away from pawl detent 42. The force of the spring members 68 and 74 will be sufficient ordinarily to rotate latch member 20 clockwise into inoperative position, as seen in Figure 2 and thus force ratchet 46 away from pawl engaging position. As the ratchet actuating lever 52 is moved toward its extreme position shown in Figure 5, the projection 58 will contact projection 64 and positively force ratchet member 46 out of pawl contacting position. When the ratchet 46 is moved out of pawl engaging position, the latch member 20 will rotate clockwise on its pivot 22 into inoperative or unlatching position.

While it will be realized that we have shown and described a preferred form of the invention, we wish it to be understood that the invention shown and described herein is capable of such modification as falls within the scope of the hereinafter appended claims and that the drawings and description of the invention herein should be taken only in an illustrative sense and not in any limiting sense.

We claim:

1. In a hood latch assembly for motor vehicles or the like, a base member having a keeper-receiving aperture therein, a latch lever movably mounted on said base and adapted upon movement thereof to extend into alignment with said keeper-receiving aperture, a pawl and ratchet holding means between said latch member and said base and formed and adapted to hold said latch lever in said aligned position said pawl being pivotally mounted on said latch lever, said ratchet being pivotally mounted on said base member, an actuating member pivoted to said base member for releasing said pawl and ratchet assembly to allow said latch lever to move to disengaged position, and resilient means interconnected with and extending between said actuating member and latch lever for biasing said actuating member toward inoperative position and said latch lever toward a position out of alignment with said keeper-receiving aperture.

2. In a hood latch assembly for motor vehicles or the like a base member having a keeper-receiving aperture therein, a latch lever movably mounted on said base member, a pawl and ratchet assembly between said latch

lever and said base for holding said latch lever in latching position said pawl being pivotally mounted on said latch lever, said ratchet being pivotally mounted on said base member, an actuating member pivoted to said base member for releasing said pawl and ratchet assembly, said actuating member having a projection in normal locking engagement with said ratchet, a cam portion on said ratchet member adapted to be contacted by said projection upon movement of said actuating member for thereby moving the ratchet member out of engagement with said pawl and releasing said latch lever and resilient means associated with said actuating member and said latch lever for biasing said actuating member toward inoperative position and said latch lever toward non-latching position.

3. In a latch assembly for motor vehicles or the like a base member having a keeper-receiving aperture therein, a latch lever movably mounted on said base member and having a keeper-engaging portion adapted to extend into alignment with said keeper receiving aperture, a pawl and ratchet assembly between said latch lever and said base for holding said latch lever in said aligned position, an actuating member pivoted to said base member for disengaging said pawl and ratchet assembly and releasing said latch lever, said actuating member having a camming connection with said ratchet, said connection including continuously engaged cam portions on said actuating member and ratchet adapted to move said ratchet into and out of pawl-engaging position the cam portion on said ratchet having a part thereon serving as limit means for the travel of the camming portion on said actuating member.

4. In a latch assembly for motor vehicles or the like a base having a keeper-receiving aperture therein, a latch lever movably mounted on said base member and having

a keeper-engaging portion adapted to extend into alignment with said keeper-receiving aperture, a pawl and ratchet assembly between said latch lever and said base for holding said latch lever in said aligned position, said assembly including a ratchet pivoted to said base member and a pawl pivoted to said latch lever, a ratchet release actuating lever pivoted to said base member and having a manually operable end portion, an actuating connection between said actuating lever and said ratchet, said actuating connection including a slot in said ratchet adjacent an end portion thereof and a camming projection on said actuating lever permanently positioned within said slot for movement therein in response to movement of said actuating lever, said ratchet being held in pawl-engaging position when said projection is at one end of said slot and in pawl-releasing position when said projection is at the opposite end of said slot and yielding means associated with said actuating means and said latch lever for biasing said actuating lever toward inoperative position and said latch lever toward a position out of alignment with said keeper receiving aperture.

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