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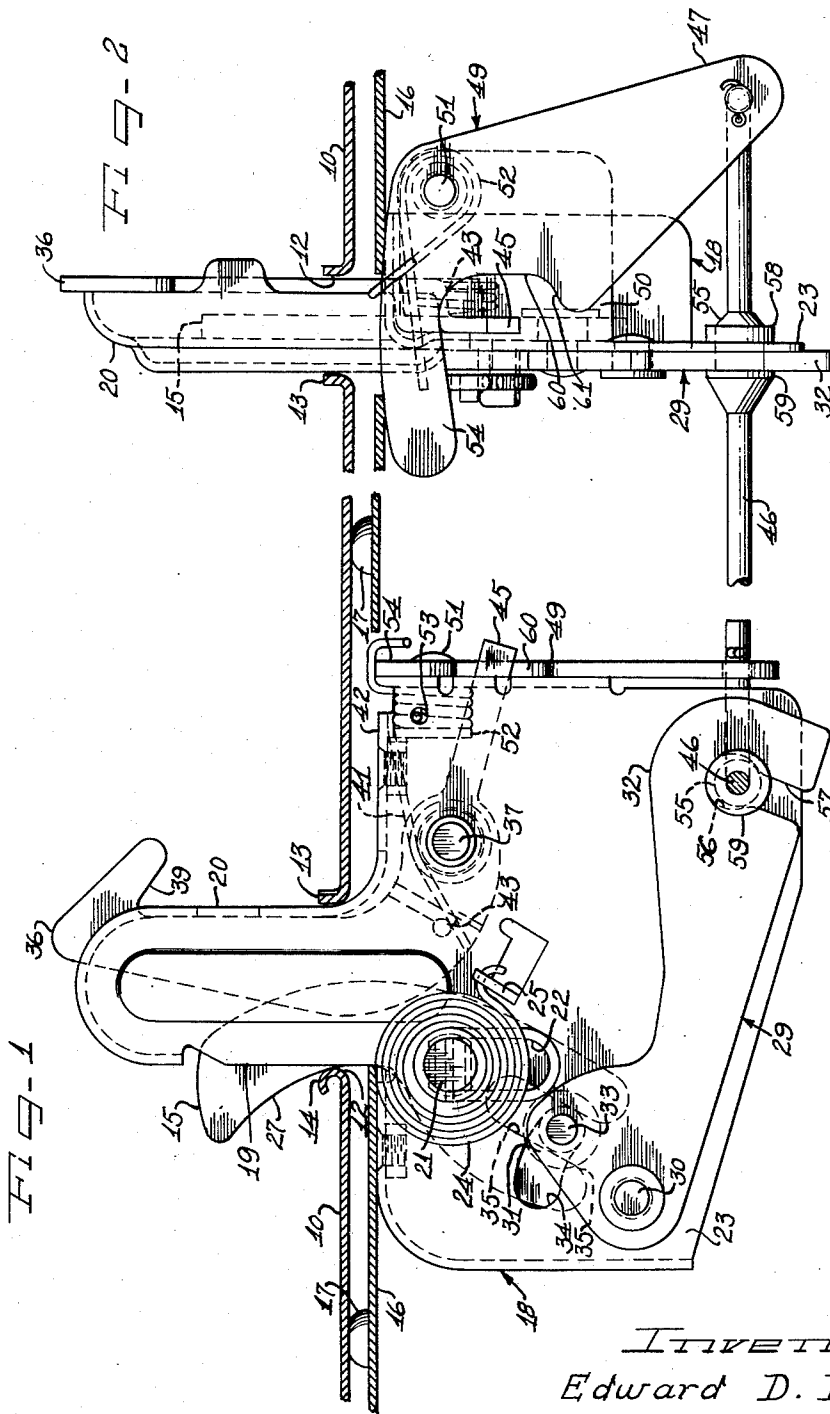
E. D. DALL

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LATCH RELEASE MECHANISM

Filed Nov. 22, 1950

2 Sheets-Sheet 1



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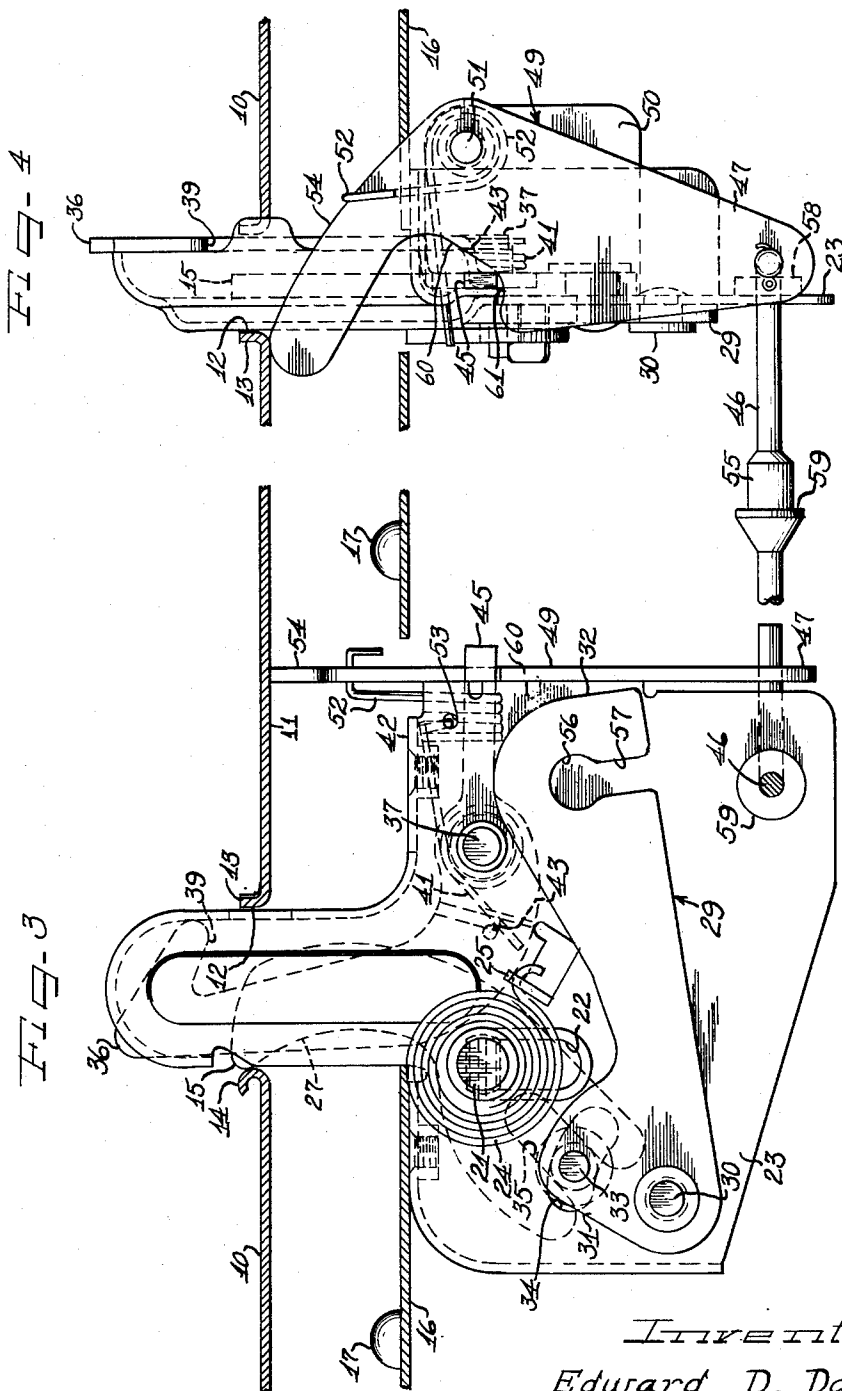
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2 Sheets-Sheet 2



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## LATCH RELEASE MECHANISM

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Application November 22, 1950, Serial No. 197,041

10 Claims. (Cl. 292—6)

This invention relates to improvements in latching mechanisms for use on automobiles of the type which may be employed for latching automobile hood covers of the "alligator" type, and more particularly relates to a new and improved form of release for such a latching mechanism.

A principal object of my invention is to provide a novel form of latch release mechanism arranged with a view toward releasing the latch and safety catch of a car hood and for positively raising the hood during the unlatching operation into position to be readily opened by hand.

Another and principal object of my invention is to provide a latch means and release therefor, eliminating the springs heretofore used to raise the hood and positively releasing the latch and safety catch and at the same time raising the hood to readily be grasped for opening by the hand.

Still another object of my invention is to provide a new and improved form of latch release mechanism particularly adapted for hood latches of automobiles and arranged with a view toward utmost simplicity and compactness in construction and operation rendering unnecessary the heavy springs heretofore used to initially raise the hood, upon release of the latch mechanism.

Another object of my invention is to provide a latch mechanism adapted for latching hoods of automobiles in a closed position, together with a release therefor positively releasing the main latch and initially raising the hood and releasing the safety catch without the use of the powerful springs heretofore used to initially raise the hood into engagement with the safety catch upon release of the main latch, and making it unnecessary to use the fingers to release the safety catch.

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 view in front elevation of a hood latch and release constructed in accordance with my invention, showing the latch mechanism in hood latching position;

Figure 2 is a front elevation of the same latch mechanism and release, with the hood in a closed position;

Figure 3 is a view somewhat similar to Figure 1, but showing the latch and safety catch bolt in released positions; and

Figure 4 is a view like Figure 2 but showing the latch and safety catch in released positions.

As shown on the drawings:

In the embodiment of my invention illustrated in the drawings, a plate 10 of a transversely pivoted hood of an automobile is shown as being apertured at 12. Surrounding the apertured portion of the hood plate is an upstanding flange 13 having a portion thereof curved upwardly and inwardly as at 14 to be engaged by a main latch 15 and to provide a keeper for said main latch in the form of a rounded rigid member.

The upper margin of the fixed portion of the hood body is usually provided with a horizontal plate or flange, such plate or flange being indicated at 16. On the top surface of this plate are mounted the customary impact rubber buttons 17, 17 engaged by the hood plate 10 when the hood is closed. The plate 16 may also have a latch casing 18 mounted on its under surface and generally depending therefrom.

The latch 15 may be slidably guided in a slotted side wall 19 of an upstanding guide channel 20 of the casing 18, extending upwardly of the plate 16 within the apertured portion 12 of the plate 11, when the hood is closed.

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The guide channel 20 has a uniformly rounded upper nose portion and forms an upright guiding continuation of said casing during hood closing movement and when the hood is closed.

The latch 15 is herein shown as being mounted on a pivotal pin 21 pivotally and slidably guided in a vertically extending slot 22 formed in a vertical plate 23, of the casing 18. A torsion spring 24 is shown as encircling the pin 21 and as having its inner end extending within and crimped to an open slotted end portion of the pin 21. The opposite end of the spring 24 is shown as being of a generally hook like form, hooked to an ear 25, pressed outwardly from the plate 23.

The spring 24 thus urges the latch 15 and pin 21 in an uppermost position with respect to the plate 23 and slot 22, and retains an arcuate surface 27 of the latch 15 in engagement with the rounded engaging or keeper portion 14 of the aperture 12. The arcuate surface of the latch 15 is so formed and the slot 22 is so arranged that the latch 15 is always maintained in a latched position under control of the dogging lever 29 regardless of how tight the hood may be closed. Also, the spring 24 continues to take up on the latch until the pin 21 reaches the upper end of the slot 22 as in my Patent No. 2,658,779, issued November 10, 1953, and entitled "Latch Mechanism."

A dogging lever 29 is pivotally mounted on the outside of the plate 23 on a transverse pivot pin 30, suitably secured to said plate beneath and spaced toward the left hand side of the latch 15, and extending outwardly therefrom. Said dogging lever is generally in the form of a bell crank and has one lever arm 31 extending toward the lower end portion of the latch 15 and a second dogging arm 32 herein shown as extending toward the right hand side of the plate 23, and selectively locked in a dogging position as will hereinafter more clearly appear as this specification proceeds. The lever arm 31 has a pin 33 secured thereto and extending inwardly therefrom through an arcuate slot 34 into engagement with a downwardly opening slotted lower end portion 35 of the latch 15.

When the dogging lever 29 is held from movement and is in a dogging position, the latch 15 is free to move downwardly along the slot 22 about the pin 21 against the spring 24 under guiding engagement with the pin 33, slidably engaging the slot 34. Thus, when the hood is being closed and the aperture 12 passes around the upright guide 20, the plate 10 will engage the upper end of the latch 15 and move it downwardly along the slot 22 into a position where the extreme end of the latch will pass through the apertured portion 12 of the plate 11. At this point the spring 24 will urge the latch 15 and pin 21 to move upwardly along the slot 22 and take up on the keeper surface 14 and hold the hood closed, regardless of how tightly the hood may be closed, the tendency being to maintain and urge the hood into a closed position at all times. When the hood latch is in the position shown in Figure 1 the pin 21 is in an extreme upper position in the slot 22 and the latch may be taken up no further.

Since the latch 15 is held from pivotal movement about the axis of the pin 21 by the dogging lever 29, any pull on the hood plate 10 in a direction to tend to open the hood will exert a force on the latch 15 in a clockwise direction, but since it is held against such movement by the pin 33 and dogging lever 29, the hood will be fully locked until the dogging arm 32 is released.

A safety catch 36 is provided to prevent the hood from flying open if the main latch 15 should accidentally be released. The safety catch 36 is herein shown as extending upwardly along the outer face of the guide 20 of the casing 18 beyond the upper end thereof and as being pivotally mounted on the plate 23 on a pivot pin 37, secured to said plate and extending inwardly thereof and spaced slightly to the right of the guide 20. The safety latch 36 has a downwardly opening hooked upper end portion 39 adapted to come into engagement with the flange 13 and plate 10 to positively hold the hood from opening, should the latch 15 be released, and until release of the safety catch 36, which must be by a positive operation. Release of the safety catch is usually effected by sticking the fingers in the space between plates 16 and 10 and releasing the catch with the fingers.

A torsion spring 41 is shown as encircling the inner end portion of the pivot pin 37 on the outside of the safety catch 36. One end of said torsion spring abuts the underside of an inwardly extending flange 42 of the casing 18. The other end of said torsion spring extends within the safety catch 36 and abuts an offset portion 43 thereof, and maintains said safety catch in the safety catch position shown in Figure 1 until released by a positive operation. The safety catch 36 is shown as having a lever arm 45 extending from the pivot pin 37 toward the right hand end of the plate 23. The lever arm 45 serves as a release lever to positively move the safety catch 36 to a released position, as will hereinafter more clearly appear as this specification proceeds.

Referring now to the dogging means for the dogging lever 29 and the means for raising the hood and releasing the safety catch 36 after release of said dogging lever, a rod 46 is mounted for slidable movement with respect to the plate 23 and extends therethrough in relatively loose relationship with respect thereto. The rod 46 may have an eye (not shown) on its outer end, which may be grasped by the hand to permit release of the hood latch by reaching through the grill and grasping the end of said rod. It may also be operated from the dashboard by reversing the position of the latch casing and operatively connecting a cable (not shown) thereto. The inner end of the rod 46 is shown in Figure 3 as being turned outwardly at substantially right angles and as extending through and as being pivotally connected to a depending lever arm 47 of a release lever 49. The release lever 49 is pivoted on the outside of a plate 50 of the casing 18 on a pivot pin 51. The plate 50 is shown in Figure 2 as extending at right angles with respect to the plate 23 of said casing, and the pin 51 is shown as extending to both sides of said plate, to afford a pivotal mounting for the release lever 49 on the plate 50 on one side of said plate, and to afford a mounting for a torsion spring 52 on the other side of said plate. The torsion spring 52 has one end portion extending through a hole 53 in the plate 23, and another end portion hooked over an upper outwardly projecting arm 54 of the release lever and urging said lever to move in a counterclockwise direction into the position shown in Figure 2.

The rod 46 has an enlarged generally cylindrical dogging portion 55 urged by the spring 52 into engagement with an enlarged generally circular portion 56 of a keyhole slot 57, formed adjacent the right hand end of the dogging arm 32 of the dogging lever 29, and opening toward the ground. Said dogging portion of said rod is also urged into engagement with a similar aperture (not shown) in the plate 23 and a boss 58, extending inwardly from said plate, to positively lock the dogging lever 29 in a dogging position and hold the latch 15 in a latching position.

Tension on the rod 46 in a direction to disengage the dogging portion 55 thereof from the keyhole slot 57 will pivot the release lever 49 in a clockwise direction into engagement with the bottom of the plate 10. At this time the dogging portion 55 will be disengaged from the keyhole slot 57, allowing the dogging lever 29 to pivot in a counterclockwise direction about the axis of the pin 30. This will release the latch 15 for unlatching movement and allow opening of the hood. The dogging portion 55 of the rod 46 has an outer shouldered portion 59 adapted to abut the outer side of the dogging lever 29 and limit movement of said rod inwardly of said dogging lever.

The arm 54 of the release lever 49 is shown as extending in a generally horizontal direction, when the dogging lever 29 is locked in a dogging position and as being movable into engagement with the bottom of the plate 11 of the hood 10, and as pivoting the hood upwardly toward the safety catch, as the dogging portion 55 of the rod 46 is released from the dogging lever 29.

The release lever 49 also has a recessed portion 60 beneath the lever arm 54 and having an engaging portion 61 underlying the end of the lever 45 and coming into engagement with the undersurface thereof, to pivot the lever and the safety catch 36 in a counterclockwise direction against the spring 41, to release said safety catch, for opening of the hood, as it is positively moved upwardly by the lever arm 54 of the release lever 49. As soon as the rod 46 is released, however, the spring 52 will return the dogging portion 55 of said rod into dogging engagement with the dogging lever 29. This assures that the latch 15 will always be in a latched position upon release of the rod 46, the spring 24 urging the dogging lever 29

to move in a clockwise direction into position to be engaged by the dogging portion of said rod. It also assures that the safety catch will always be in position to catch the hood when partially open and the dogging rod 46 is then released, and prevents accidental opening of the hood, the spring 41 constantly urging the safety catch 36 into a safety catch position when the release lever 49 moves away from the lever 45. Where it may be desired to operate the release from the dashboard, a catch may be provided on the dashboard to hold the rod 46 and release lever 49 in a latch release position until positively released by hand.

In operation of the release when the hood is closed the rod 46 may be operated to disengage the dogging portion 55 from the keyhole slot 57 to release the dogging lever 29 and allow the latch 15 to move into an unlatching position as a force is exerted on said latch by movement of the plate 10 and keeper 14 upwardly along said latch. As the dogging lever 29 and latch 15 are released, the upper engaging surface of the lever arm 54 of the release lever 49 will come into engagement with the underside of the plate 10 and positively lift the hood upon further pivotal movement of the release 49 effected by the rod 46. During lifting movement of the hood the engaging portion 61 of the safety catch release lever 49 will come into engagement with the underside of the release lever 45 and pivot the safety catch 36 against the spring 41 into position to allow the hood to pass thereby when grasped by the hand in the space between the plates 16 and 10. Upon release of the rod 46, the spring 52 will return the safety catch release to the inoperative position shown in Figure 2. This will bring the enlarged dogging portion 55 of the rod 46 into engagement with the enlarged portion 56 of the keyhole slot 57 and hold the dogging lever 29 from movement, and the latch 27 in a latching position.

It will be seen from the foregoing that the safety device of the present invention affords a simplified means for releasing the latch to move in an unlatching direction and also positively lifts the hood to a position where it may readily open by grasping by the hand, it being understood that at the end of the lifting operation, the safety catch 36 is also released.

It may further be seen that the latch and latch release of my invention eliminates the use of the strong springs heretofore necessary to initially lift the hood so that it may be opened by hand, and that as soon as the rod 46 is released, the spring 52 will return the dogging rod 46 into a dogging position into engagement with the dogging lever 29, it being understood that the latch is returned to a latching position by the spring 24 which yieldably urges the latch into such a position at all times.

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

I claim as my invention:

1. A hood latch release for association with a hood body and a swingable hood having a latch mounted on the hood body for engagement with the swingable hood, a dogging lever having slidable engagement with the latch and dogging the latch in a latching position and a safety catch separate from said latch, the improvements comprising a pivoted safety catch release lever having one arm underlying the hood for initially raising the hood upon pivotal movement of said release lever, and another arm engageable with said safety catch to release said safety catch on the hood releasing operation, a rectilinearly movable release rod operatively connected with said pivoted safety catch release lever and having an intermediate dogging portion and spring means urging said dogging portion into dogging engagement with said dogging lever, said dogging portion being so spaced with respect to said one arm on said pivoted safety catch release lever underlying the hood, that operation of said rod will first move said dogging portion of said rod out of dogging engagement with said dogging lever and will then pivot said safety catch release lever to initially open the hood and move said safety catch out of safety catch position.

2. In a latch for association with a closure member and a cooperating member, a latch plate on one of the members and having a latch slidably and pivotally mounted thereon and moved with respect thereto into latching engagement with the other of the members, a latching dog pivotally mounted on said latch plate and having slidable engagement with said latch, a safety catch pivotally mounted on said latch plate for engagement with the

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other of said members and holding said closure member from opening movement, and manually operable release means for said safety catch and latch including a latch release member having dogging engagement with said latching dog, a pivoted safety catch release lever engageable with said safety catch, an operative connection between said latch release member and safety catch lever, to pivot said safety catch lever to release said safety catch by movement of said latch release member out of dogging engagement with said latching dog.

3. In a latch for association with a closure member and a cooperating member, a latch plate mounted on one of said members and having a latch slidably and pivotally mounted thereon for engagement with the other of said members, a latching dog pivotally mounted on said latch plate and having slidable controlling engagement with said latch, a safety catch pivotally mounted on said latch plate for engagement with the other of said members and holding said closure member from opening movement, and manually operable means for said safety catch and latch including a movable latch release member having engagement with said latching dog and holding said latching dog in a dogging position with respect to said latch, a pivoted safety catch release lever connected with and operated by said latch release member, said safety catch release lever having an engaging end portion operable to engage the other of said members and move said members apart upon movement of said release member in an unlatching direction, and spring means returning said safety catch release lever to an inoperative position and moving said latch release member into dogging engagement with said latching dog.

4. In a latch for association with a closure member and a cooperating member, a latch plate mounted on one of said members and having a latch slidably and pivotally mounted thereon and moved with respect thereto for engagement with the other of said members upon closing movement of said closure member, a latching dog pivotally mounted on said latch plate and having slidable engagement with said latch, a safety catch pivotally mounted on said latch plate for engagement with the other of said members, and manually operable release means for said safety catch and latch including a latch release member mounted on said latch plate for slidable movement with respect thereto in a direction normal to the plane of said latch plate and having an intermediate dogging portion having engagement with said latching dog holding said latching dog in position to dog said latch in a latching position, a pivoted safety catch release lever, and an operative connection between said latch release member and said safety catch release lever, said safety catch release lever having one arm engageable with the other of said members and moving said members apart upon release of said latch release member from engagement with said latching dog, and said safety catch release lever also having another arm spaced from said first arm and engageable with said safety catch and releasing said safety catch upon further movement of said release member after release from said latching dog.

5. In a hood latch for association with a hood body and a swingable hood, a latch casing mounted on the hood body including two plates, one of which extends at right angles with respect to the other, a latch mounted on one of said plates for movement about a sliding pivot and extending upwardly therefrom into position to engage the hood, a dogging lever pivotally mounted on said one plate and having slidable engagement with said latch and dogging said latch into latching position, a safety catch pivotally mounted on said one plate and extending upwardly therefrom, a spring yieldably urging said safety catch into position to engage said hood upon release of said latch, a latch release member guided in said plate for rectilinear movement with respect thereto, and having an enlarged dogging portion engageable with said dogging lever and releasably holding said dogging lever in a position to dog said latch in a latching position, and a safety catch release lever pivotally mounted on the other of said plates and operatively connected with said latch release member and moved thereby into position to initially raise the hood and then release said safety latch upon movement of said release member out of holding engagement with said dogging lever.

6. In a hood latch for association with a hood body and a vertically movable hood, a latch casing mounted on the hood body and including two plates, one of which extends at right angles with respect to the other, a latch

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mounted on one of said plates for movement about a sliding pivot and extending upwardly therefrom, a dogging lever pivotally mounted on said one plate and having slidable engagement with said latch and dogging said latch in a latching position, a safety catch pivotally mounted on said one plate and extending upwardly therefrom into position to engage said hood, a release member guided in said one plate for rectilinear movement with respect thereto in a direction normal to the plane of said plate and having a dogging portion movable into engagement with said dogging lever and holding said dogging lever in a dogging position, a safety catch release lever pivotally mounted on the other of said plates, an operative connection between said release member and said safety catch release lever to pivot said safety catch release lever in a direction to release said safety catch upon release movement of said release member, said safety catch release lever having a lever arm underlying the hood and moving said hood in an opening direction upon release of said release member from dogging engagement with said dogging lever, and having another arm underlying a projecting portion of said safety catch and moving said safety catch to a release position as said dogging portion of said release member is moved out of dogging engagement with said dogging lever and the hood is positively raised by said safety catch release lever.

7. In a hood latch for association with a hood body and a swingable hood, a latch casing mounted on the hood body and including two plates, one of which extends at right angles with respect to the other, a latch mounted on one of said plates for movement about a sliding pivot, a dogging lever pivotally mounted on said one plate and having slidable engagement with said latch and dogging said latch in a latching position, a safety catch pivotally mounted on said one plate and extending upwardly therefrom, a latch release member guided in said plate for rectilinear movement with respect thereto in a direction normal to the plane thereof and having an intermediate portion normally having engagement with said dogging lever and holding said dogging lever in a dogging position, a safety catch release lever pivotally mounted on the other of said plates, an operative connection between said latch release member and said safety catch release lever to pivot said safety catch release lever in a direction to release said safety catch upon release movement of said release member, said safety catch release lever having an arm underlying said hood and spaced therebeneath and engageable therewith to move said hood in an opening direction upon movement of said latch release member out of dogging engagement with said dogging lever, and said safety catch release lever also having an engaging arm portion spaced beneath said arm underlying the hood and underlying said safety catch for moving said safety catch in a direction to release said safety catch from the hood upon the initial upward movement of the hood.

8. In a hood latch for association with a hood body and a swingable hood, a latch casing mounted on the hood body including two plates, one of which extends at right angle with respect to the other, a latch mounted on one of said plates for movement about the sliding pivot, a dogging lever pivotally mounted on said one plate and having slidable engagement with said latch and dogging said latch in a latching position, a safety catch pivotally mounted on said one plate and extending upwardly therefrom, a release rod guided in said one plate for generally rectilinear movement with respect thereto in a plane normal to the plane of said plate and having an intermediate portion movable into position to have engagement with said dogging lever and holding said dogging lever in a dogging position, a safety catch release lever pivotally mounted on the other of said plates, a pivotal connection between said release rod and said safety catch release lever, said safety catch release lever having an arm underlying the hood and moving said hood in an opening direction upon release of said intermediate portion of said rod from dogging engagement with said dogging lever, and having another arm underlying said safety catch and moving said safety catch in a direction to release the hood upon initial movement of the hood.

9. In a hood latch for association with a hood body and a swingable hood, a latch casing mounted on the hood body including two plates, one of which extends at right angles with respect to the other, a latch mounted

on one of said plates for movement about a sliding pivot, a dogging lever pivotally mounted on said plate and having slidable engagement with said latch and dogging said latch in a latching position, a safety catch pivotally mounted on said one plate and extending upwardly therefrom, a release rod guided in said one plate for rectilinear movement with respect thereto in the plane normal to the plane of said plate and having an intermediate enlarged dogging portion movable into position to have engagement with said dogging lever and holding said dogging lever in a dogging position, a safety catch release lever pivoted on the other of said plates, a pivotal connection between said release member and said safety catch release lever, said safety catch release lever having one lever arm underlying the hood, said safety catch having an arm extending from the pivotal axis thereof and underlying said lever arm, and said safety catch release lever having an engaging arm portion underlying said arm extending from said safety catch and coming into engagement therewith upon a predetermined pivotal movement of said safety catch release lever, and spring means returning said dogging portion of said rod into dogging engagement with said dogging lever upon release of said rod.

10. In a hood latch for association with a hood body and a swingable hood, a latch casing mounted on the hood body including two plates, one of which extends at right angles with respect to the other, a latch mounted on one of said plates for movement about a sliding pivot, a dogging lever pivotally mounted on said one plate and having slidable engagement with said latch and dogging said latch in latching position, a safety catch pivotally

5 mounted on said one plate and extending upwardly therefrom, and having a release arm extending to the opposite side of its pivotal axis from the safety catch portion thereof, a spring engageable with said safety catch and biasing said safety catch into a safety catch position, a safety catch release lever pivoted on the other of said plates, a release rod guided in said one plate for rectilinear movement with respect thereto and having an intermediate enlarged dogging portion normally positioned to have engagement with said dogging lever and holding said dogging lever in a dogging position and also having operative connection with said safety catch release lever, a spring connected with said safety catch release lever and urging said rod into dogging engagement with said dogging lever, said safety catch release lever having an arm underlying the hood and overlying said release arm of said safety catch, and also having a spaced engaging arm portion coming into engagement with said release arm upon movement of said intermediate enlarged dogging portion of said rod out of dogging engagement with said dogging lever and the initial vertical movement of said hood effected by movement of said arm of said safety catch release underlying the hood.

## References Cited in the file of this patent

## UNITED STATES PATENTS

2,188,334	Claude-Mantle	Jan. 30, 1940
2,193,132	Hynes	Mar. 12, 1940
2,246,794	Dall	June 24, 1941
2,256,465	Brubaker	Sept. 23, 1941
2,274,711	Krause	Mar. 3, 1942