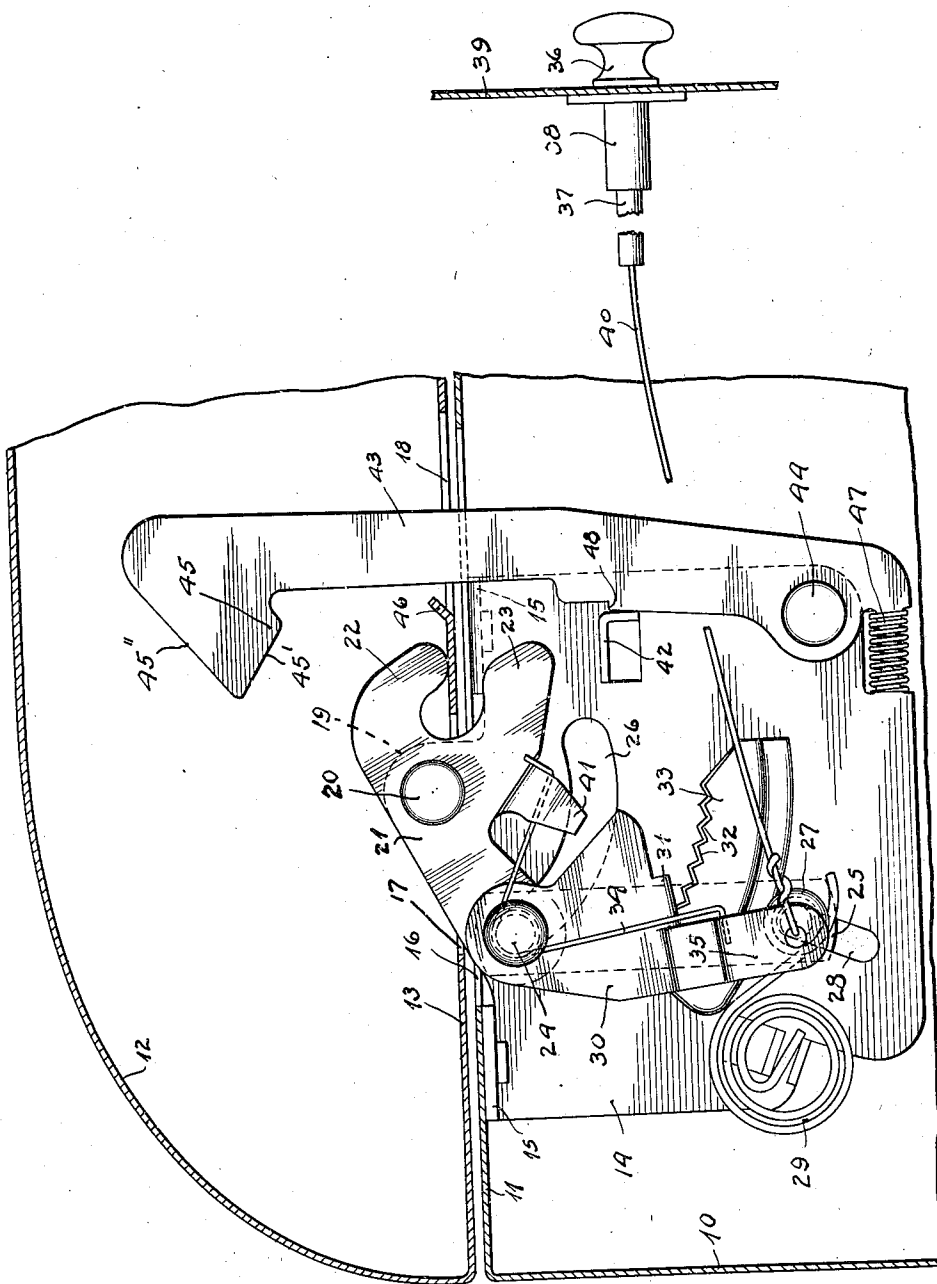


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INVENTOR
KENNETH E. BRUBAKER.

Charles Allen
Atty =



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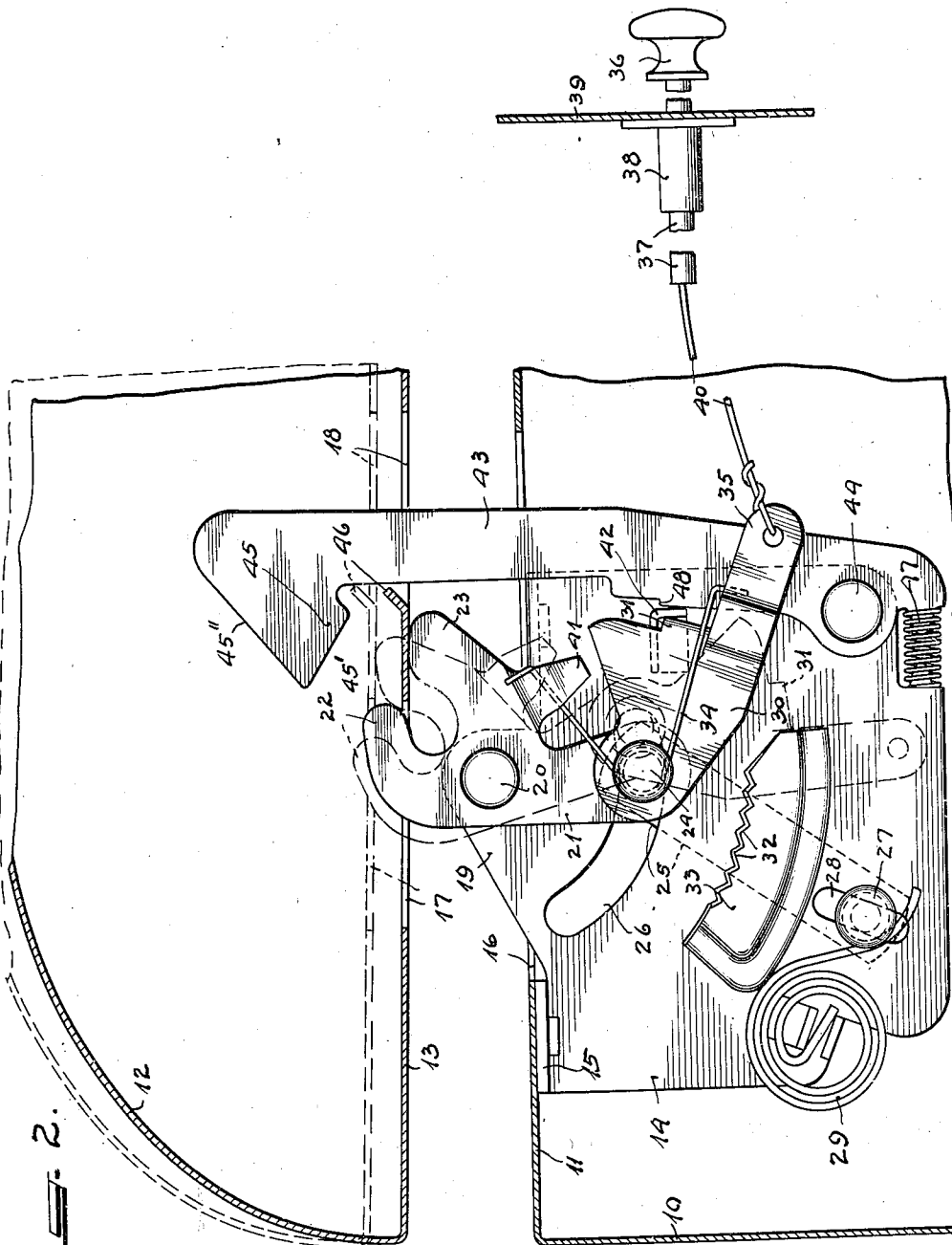
AUTOMOBILE HOOD LATCH

by

KENNETH E. BRUBAKER.

Charles Allen
Attys

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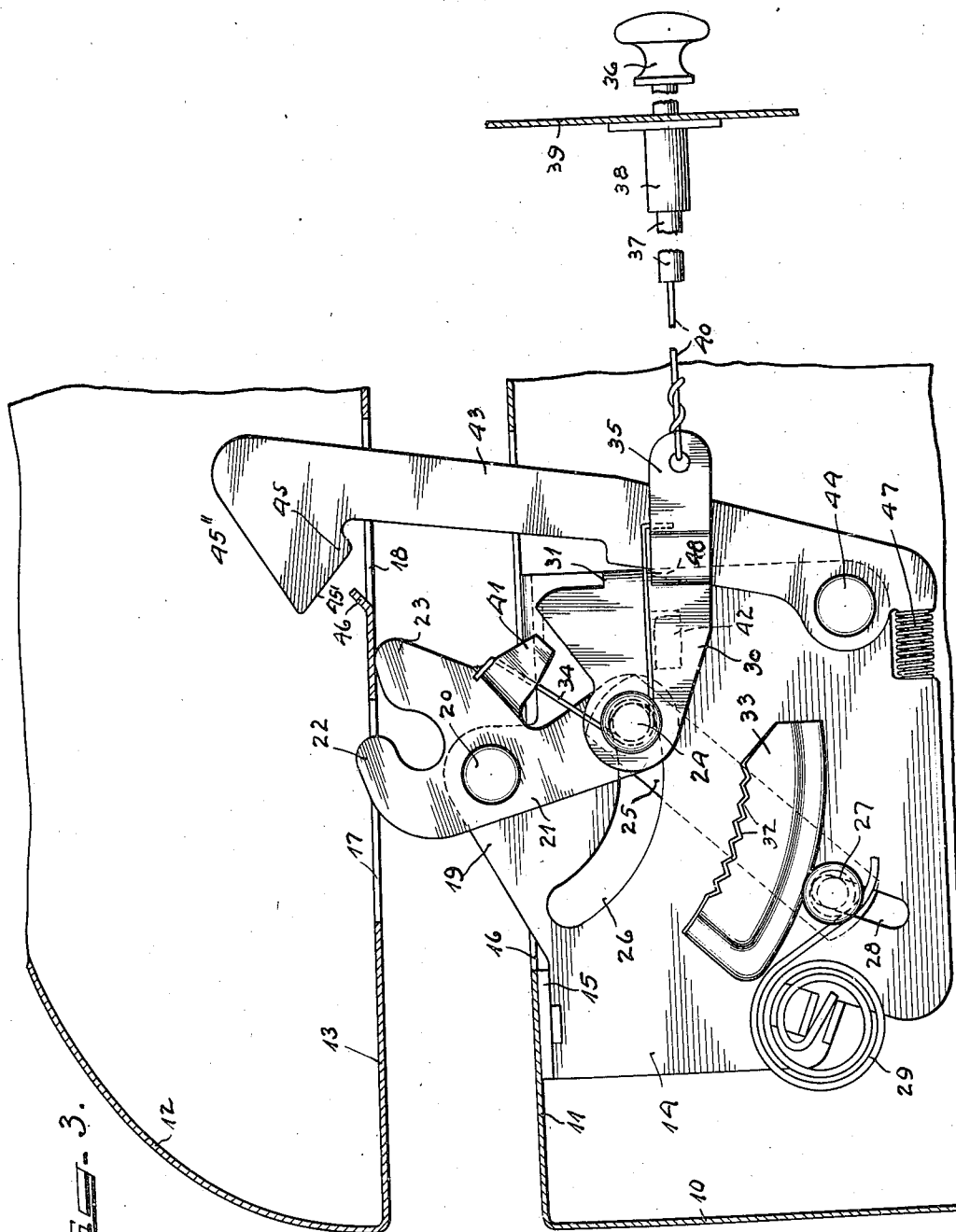


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by

WETTER
KENNETH E. BRUBAKER.
Charles E. Miller.
Attys.

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UNITED STATES PATENT OFFICE

2,256,465

AUTOMOBILE HOOD LATCH

Kenneth E. Brubaker, Waukegan, Ill., assignor to
Hondaille-Hershey Corporation, a corporation
of Michigan

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6 Claims. (Cl. 292—25)

This invention relates to automobile hood latching structures, particularly to the type designed for latching control of hoods of the so-called "Alligator" type, in which the hood cover is hinged at its rear end along a hinge line extending transversely of the vehicle. For such type of hood, main latching means is usually provided operable from the interior of the automobile for unlatching the cover for partial opening, and additional or safety catch means are provided for limiting further opening movement of the cover until released for full opening of the cover. In some prior arrangements, it is necessary, after a partial opening of the cover, to reach in and manually release the safety catch means to permit full opening of the cover.

The important object of my invention is to provide a simple, economically manufactured latching and safety catch assembly in which the unlatching movement of the main latching mechanism and the release of the safety catch means can be accomplished from within the vehicle passenger compartment, so that it will be unnecessary to reach into the hood through a partial cover opening for releasing of the safety catch.

A further object is to provide improved structure and arrangement in which a main latch bolt and a safety catch hook are separate members with which control mechanism is associated and actuatable from within the vehicle passenger compartment, so that as a result of a first manipulation of the control means the main latch bolt will unlatch the hood cover and effect a partial raising thereof, and a second manipulation of the control means will effect setting of the safety catch member to an ineffective position so that the cover may be fully raised, after partial opening thereof by the main latch bolt.

My invention involves various features of construction, arrangement and operation, all of which are embodied in the structure shown on the drawings, in which drawings—

Figure 1 is a side elevation of the main latch mechanism, the safety catch means and the controlling means, with the hood body and cover shown in vertical section;

Figure 2 is a view similar to Figure 1, with the parts in position after operation of the main latch bolt to unlatch and partially raise the cover; and

Figure 3 is a view similar to Figure 1, showing the arrangement of the parts after a second manipulation of the control means for setting

the safety catch member to ineffective position for full opening of the cover.

The hood body 10 has a supporting plate 11 extending transversely thereof along its forward end, and the cover 12 has a keeper plate 13 extending transversely thereof along its forward end. The latching assembly comprises a supporting base 14 having laterally deflected portions 15 forming feet whereby the supporting base may be secured as by riveting or welding against the under side of the supporting plate 11 adjacent to a passageway 16 through the plate 11. The keeper plate 13 has the passageways 17 and 18 therethrough in register with the passageway 16.

The supporting base 14 has the upward extension 19 that projects through the passageway 16 for projection through the passageway 17 when the cover is closed, the projection affording a fulcrum stud 20 for the latch bolt 21. At its outer end the latch bolt has the latching arm 22 engaging against the top of the keeper plate 13 when the latch bolt is in its latching position to hold the cover closed, as shown on Figure 1. The bolt has also the lifting arm 23 which, upon movement of the latch bolt to unlatching position, engages against the under side of the keeper plate 13 to partially raise the cover, as shown on Figures 2 and 3.

The latch bolt 21 is on the front side of the supporting base 14 and at its inner end receives a stud or pin 24 secured to and extending from the upper end of a link 25 disposed along the rear side of the base 14, the stud 24 projecting through an arcuate slot 26 in the base 14 which is concentric with the fulcrum stud 20. At its lower end the link 25 has a guide stud or pin 27 extending through a guide slot 28 in the base 14, and a spring 29 anchored on the base 14 engages at its end against the stud 27 to exert upward longitudinal pressure against the link 25, which pressure is communicated by the stud 24 to the latch bolt 21. As the latch bolt is rocked toward latching or unlatching position, the spring pressure exerted against the stud 24 will pass to either side of a center line of pressure extending through the fulcrum stud 20 and the lower stud 27 on the link 25, so that movement of the latch bolt toward latching or unlatching position will first be resisted by the spring pressure and then, after the center line of pressure is passed, the spring pressure will quickly move the latch bolt to its final latching or unlatching position.

Depending from the stud 24 in front of the

latch bolt 21 is a combined detent and actuating member 30 which has a portion deflected to form a detent tooth 31 cooperable with detent teeth 32 on a rack 33 which may be a portion of the supporting base 14 and deflected therefrom. The teeth 32 are in an arcuate row concentric with the guide slot 26, and when the latch bolt is in its latching position, the tooth 31 will engage with one of the teeth 32 to lock the latch bolt against unlatching movement. A spring 34 anchored on the stud 24 has one end engaging the latch bolt 21 and its other end engaging the arm 35 extending from the member 30, this spring tending to swing the member 30 in clockwise direction to hold its tooth in engagement with the rack teeth.

Means are provided for actuation of the member 30 from a point remote from the hood. As shown, a control knob 36 is provided within the vehicle passenger compartment, the knob being at the outer end of a bar 37 slidable in a sleeve 38 which may be secured on the instrument panel 39. A wire 40 extends from the bar 37 to the end of the arm 35 of the member 30. Referring to Figure 1, when the knob 36 is pulled out, the member 30 will be swung in counterclockwise direction to first disengage its tooth 31 from the rack 33 to unlock the latch bolt for unlatching movement, and then the member 30 will come into engagement with an abutment extension 41 on the latch bolt for swing of the latch bolt toward unlatching position, and when the stud 24 crosses the center line of spring pressure, the spring pressure will tend to complete such movement of the bolt to unlatching position. However, the latch bolt will be prevented from reaching its full unlatching position by a stop 42 on the base 14 which is in the path of the tooth 31 on the member 30 when this member is pulled by the knob 36, and so long as the pull is maintained, the tooth 31 will remain in position against the stop 42, as shown by the full lines on Figure 2. Upon release of the knob 36, the spring 34 will swing the member 30 downwardly away from the stop 42 and then the pressure of the spring 29 against the latch bolt will complete swing of the latch bolt to its full unlatching position, as shown by the dotted lines on Figure 2, the tooth 31 of the member 30 then abutting the inner end of the rack plate 33. The stop 42 may be formed by a portion deflected from the base 14, the stop, as shown, comprising a horizontal portion and a depending vertical portion.

The safety catch means comprises a safety catch arm 43 fulcrumed at its lower end on a stud 44 supported by the base 14 and extending upwardly through the passageway 16 in the plate 11 and normally through the passageway 18 in the keeper plate 13 for cooperation of its hooked end 45 with the keeper lip 46 deflected from the keeper plate 13. A compression spring 47 interposed between the base 14 and the lower end of the arm 43 tend to hold this arm in forward position against the vertical portion of the stop 42, as clearly shown on Figures 1 and 2. In this position of the arm 43, its hook end 45 will be in the path of the keeper lip 46 after unlatching of the cover and partial raising thereof by the latch bolt 21, and further opening movement of the cover will be substantially prevented, as shown on Figure 2. As has been explained, when the knob 36 is pulled out and pull thereon maintained, the member 30 will be swung up for stop engagement of its tooth 31 with the stop 42 and the member 30 will be prevented from

engagement with the safety catch arm 43. If pull on the knob 36 is now released to permit the spring 34 to swing the member 30 away from the stop and to permit the latch bolt to be swung to its full latching position, as shown by dotted lines on Figure 2, a second pull on the knob 36 will swing the member 30 for travel of its tooth 31 against the arm 43 without interference by the stop 42, the arm being then swung inwardly until the tooth 31 has reached a point along the arm above a detent shoulder 48 on the arm, the spring 47 then swinging the arm a short distance forwardly to bring the shoulder 48 below the tooth 31 to detain or hold the member 30 in this upper position against the pressure of the spring 34. Upon such inward swing of the arm 43 by the member 30, the arm hook end 45 is moved out of the path of the keeper lip 46, as shown on Figure 3, and the cover has now been released so that it may be swung to its full open position. The lower edge 45' of the hook end 45 is inclined to form a cam surface disposed in the path of the keeper lip 46 after the arm 43 has been swung inwardly by the member 30, and when the cover is raised after release thereof from the catch hook, the keeper tongue 46 will engage with this cam surface and the arm 43 will be swung sufficiently inwardly to withdraw its shoulder 48 from below the tooth 31 so that the spring 34 may restore the member 30 with its tooth against the inner end of the rack 33, as shown by the dotted lines on Figure 2. Upon release of the arm 43 from the tooth 31 it will swing back to its normal position against the stop 42. Now, when the open cover is swung downwardly for closure thereof, the keeper tongue 46 will engage with the upper inclined or cam edge 45'' of the hook end 45 and the arm 43 will be swung out of the way and the keeper plate 13 will then engage with the lifting arm 23 of the latch bolt and the latch bolt will be swung toward its latching position, which movement is quickly completed by the cross center spring pressure and the cover will be latched closed as shown on Figure 1. The arrangement may be such that the stud 24 will not fully reach the outer end of the guide slot 26 after closure of the cover, so that the pressure from the spring 29 will continue to be exerted against the latch bolt so that the bolt will take up any slack or looseness of the cover and hold it securely closed against rattling. After passage of the keeper lip 46 past the hook end of the arm 43, this arm will be swung back by the spring 47 into its normal position against the stop 42.

I thus provide simple and efficient latching and safety catch assembly in which the driver within the vehicle has full control of the unlatching and partial raising of the cover, and releasing of the safety catch means, it being noted that the safety catch member, being positioned inwardly behind the latch bolt, renders it impractical to effect release of the safety catch by the insertion of the hand through the partial cover opening.

I have shown a practical and efficient embodiment of the features of my invention and I do not desire to be limited to the exact construction, arrangement and operation shown and described, since changes and modifications may be made without departing from the scope of the invention.

I claim as follows:

1. A latching assembly for an automobile hood comprising keeper structure on the hood cover, a latch bolt on the hood body normally in posi-

tion to latch the cover closed and adapted when moved to unlatching position to effect a partial opening of said cover, an actuating member connected with said latch bolt, control means at a point remote from said hood connected with said actuating member, a first manipulation of said control means effecting movement of said latch bolt to unlatch the cover and effect a partial opening thereof, a safety catch member normally in position to prevent further opening of the cover after partial opening thereof by the latch bolt, and means whereby upon a second manipulation of said control means said actuating member will engage with and set said safety catch member to ineffective position independently of any movement of said latch bolt so that the cover may be fully opened.

2. A latching assembly for an automobile hood comprising keeper structure on the hood cover, a rockable latch bolt on the hood body adapted when moved to latching position to hold the cover closed and when moved to unlatching position to unlatch the cover and effect a partial opening thereof, an actuating member pivoted on said latch bolt, control means at a point remote from said hood connected with said actuating member, a first manipulation of said control means causing swing of said actuating member to rock said latch bolt to its unlatching position, a safety catch member normally so positioned relative to said keeper structure to prevent further opening movement of the cover after a partial opening thereof by the latch bolt, and means whereby upon a second manipulation of said control means said actuating member will engage with and move said safety catch member to an ineffective position which will permit further opening of the cover, means for interlocking said actuating member and said safety catch member after setting of said safety catch member to its ineffective position, and means whereby upon further movement of said cover said safety catch member will be engaged thereby and moved to release such interlocking engagement for return of said safety catch member to its normal position after such further opening of the cover.

3. A latching assembly for an automobile hood comprising keeper structure on the hood cover, a rockable latch bolt on the hood body adapted normally to latch the cover closed and adapted to be rocked to unlatch the cover and effect a partial opening thereof, a detent member pivoted to said latch bolt, a detent abutment engageable by said detent member when said latch bolt is moved to latching position whereby said bolt will be locked against unlatching movement, control means at a point remote from said hood and connected with said detent member, means whereby upon a first manipulation of said control means said detent member will be first released from said detent abutment for unlocking of the latch bolt and said detent member will then engage with said latch bolt to effect rocking thereof to its unlatching position, a safety catch member normally in position relative to said keeper structure to prevent further opening of the cover after partial opening thereof by said latch bolt, means whereby a second manipulation of said control means will swing said detent member into engagement with said safety catch member to set said safety catch member to an ineffective position for permitting further opening movement of the cover after a partial opening thereof, means interlocking said detent member and said safety catch member after such set-

ting of said safety catch member to ineffective position, and means whereby further opening of said cover will move said safety catch member to release said interlock, whereby said safety catch member may return to its normal position after further opening movement of the cover.

4. A latching assembly for an automobile hood comprising keeper structure on the hood cover, a latch bolt on the hood body rockable to latching or unlatching position and adapted when moved to unlatching position to effect a partial raising of said cover, crossover spring pressure means engaging with said latch bolt to effect quick rocking thereof to its latching or unlatching position after an initial movement of the bolt toward such position, a detent member pivoted on said bolt and a detent abutment engageable by said detent member when said latch bolt is moved to latching position whereby to lock said bolt in its latching position, control means outside of said hood connected with said detent member, a pull on said control member when said latch bolt is in latching position effecting first swing of said detent away from said detent abutment for unlocking said latch bolt and then engagement of the detent member with said latch bolt for rocking of said latch bolt toward unlatching position and for operation of said spring pressure means to continue such rocking movement of the bolt, a stop in the path of the pulled detent member for preventing completion of the latch bolt movement to unlatching position by the spring pressure means, means effective upon release of said control means for swinging said detent member away from said stop, a safety catch member, spring means normally yieldably holding said safety catch member relative to said keeper structure to prevent further opening of said cover after partial opening thereof by said latch bolt, means whereby a second pull on said control means will swing said detent member into engagement with said safety catch member to set said safety catch member to ineffective position so that said cover may be further opened after its partial opening by the latch bolt, means interlocking said detent member and said safety catch member after such setting of said safety catch member to ineffective position, and means whereby further opening of said cover after partial opening thereof will move said safety catch member to release said interlock whereby said safety catch member may be restored to its normal effective position after such further opening of said cover.

5. A latching assembly for an automobile hood comprising keeper structure on the hood cover, a latch bolt on the hood body normally in latching position to hold the cover closed and adapted when rocked to unlatching position to effect a partial opening of the cover, cross over spring pressure means engaging with said latch bolt to effect quick movement thereof to its latching or unlatching position after an initial movement of the bolt toward such position, an actuating member pivoted on said latch bolt, control means outside of said hood connected with said actuating member, a pull on said control means when said bolt is in latching position causing swing of said actuating member into engagement with said bolt to swing said bolt toward unlatching position and for operation of said spring pressure means to continue such rocking of the latch bolt, a stop in the path of said actuating member preventing full movement of said latch bolt

to unlatching position by said spring pressure means, a spring effective upon release of said control means after pull thereof to swing said actuating member away from said stop so as to permit said spring pressure means to complete the rocking of said latch bolt to its unlatching position, a safety catch member, spring means normally holding said safety catch member relative to said keeper structure to prevent further opening of said cover after partial opening thereof by said latch bolt, said actuating member being adapted upon a second pull on said control means to be swung into engagement with said safety catch member for setting thereof to ineffective position so that said cover may then be further opened, means interlocking said actuating member and said safety catch member after such setting of said safety catch member, and means effective upon further opening of the cover for causing said cover to move said safety catch member to release said interlock and to permit said safety catch member to be returned to its normal position after such further opening of the cover.

6. A latching assembly for an automobile hood comprising keeper structure on the hood cover, a latch bolt on the hood body normally in position to latch the cover closed, a safety catch member separate from said latch bolt and normally in position to limit the opening movement of the cover after unlatching thereof by the latch bolt, an actuating member connected with said latch bolt and normally disengaged from said safety catch member, control means at a point remote from said hood connected with said actuating member, a first manipulation of said control means effecting movement of said latch bolt to unlatch said cover, and means whereby upon a second manipulation of said control means said actuating member will engage with and set said safety catch member to ineffective position independently of movement of said main latch bolt so that the cover may be fully opened.

KENNETH E. BRUBAKER.