

Aug. 26, 1941.

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2,253,660

HOOD LATCH

Filed March 25, 1938

3 Sheets—Sheet 1

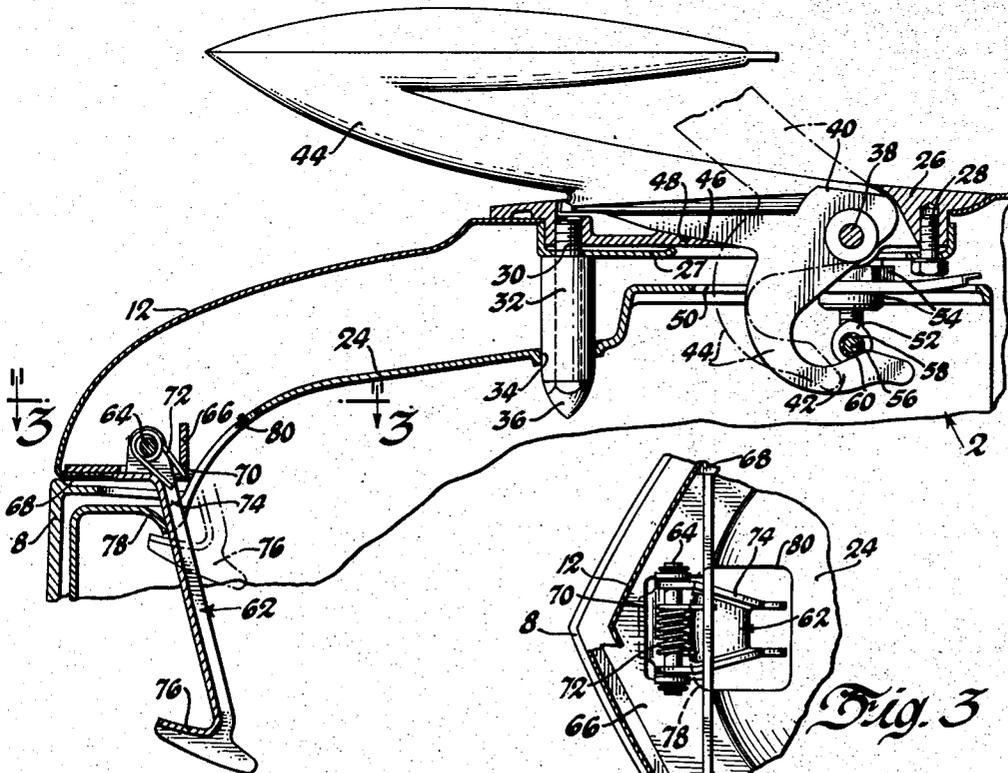
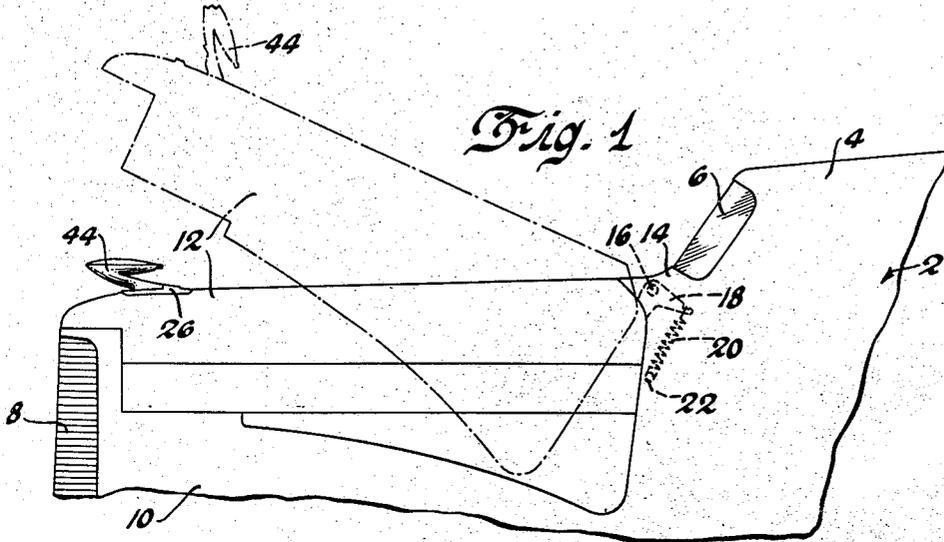


Fig. 2

Fig. 3

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3 Sheets-Sheet 2

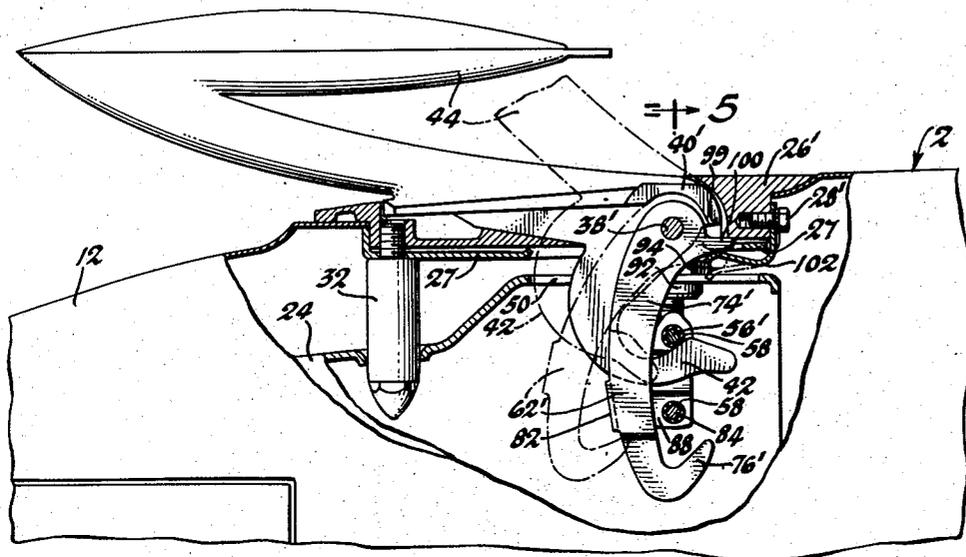


Fig. 4

5-5

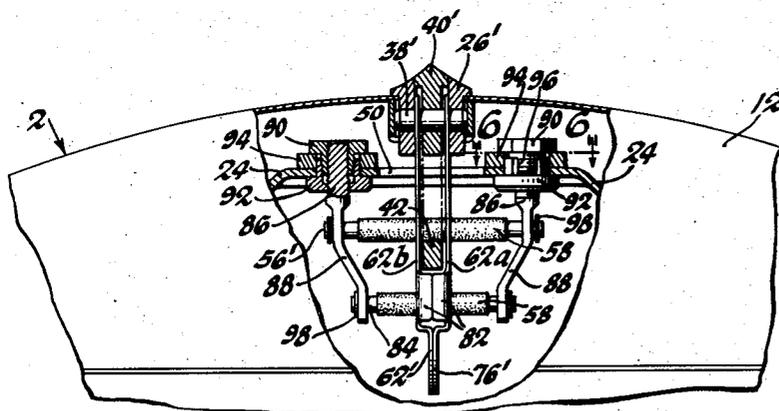


Fig. 5

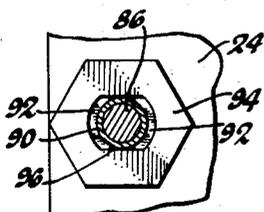


Fig. 6

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3 Sheets-Sheet 3

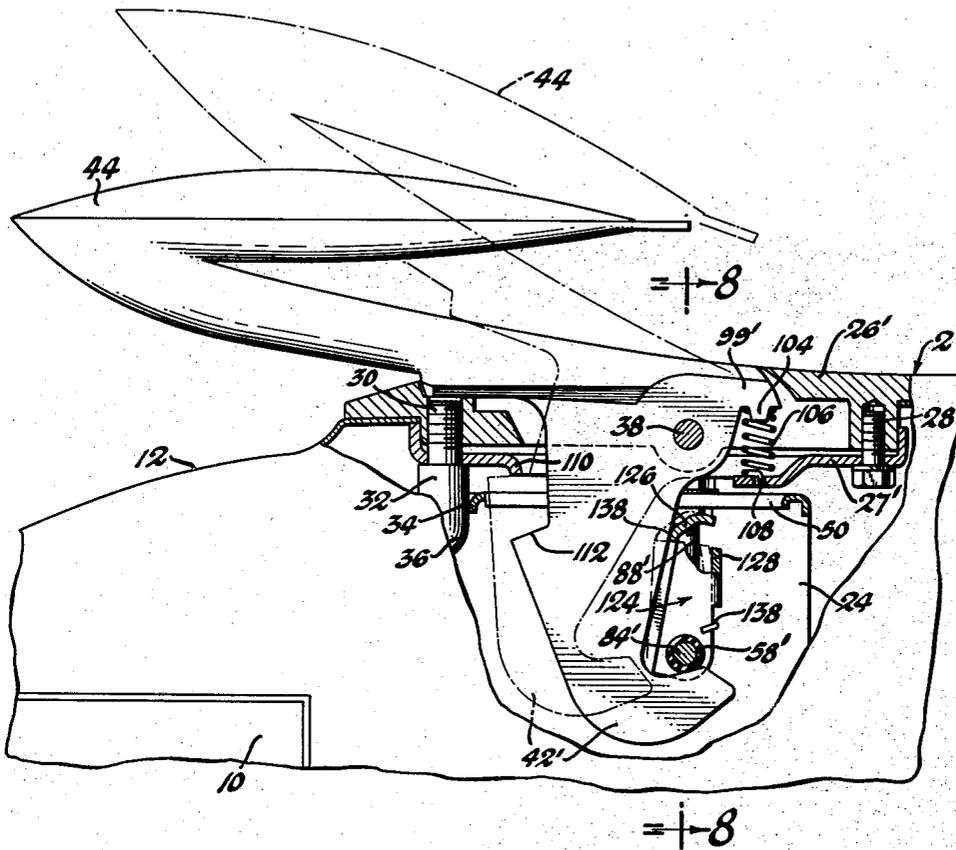


Fig. 7

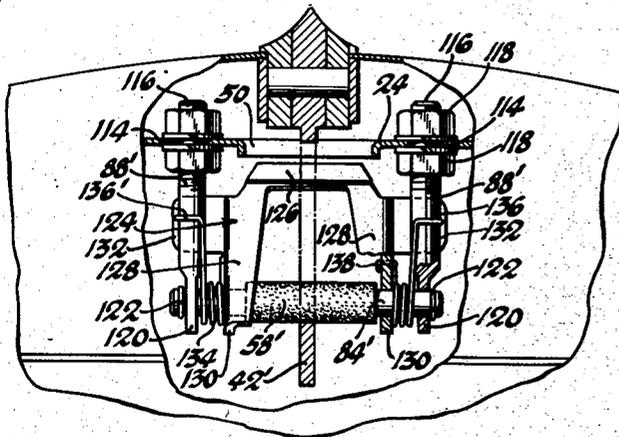


Fig. 8

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# UNITED STATES PATENT OFFICE

2,253,660

## HOOD LATCH

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Application March 25, 1938, Serial No. 197,998

9 Claims. (Cl. 292—128)

This invention relates to automotive vehicles and has particular reference to a means for securing the hood door in closed position.

The invention is applied to hood doors which are hinged adjacent the cowl and open upwardly from the front and have the latching mechanism at the front of the vehicle adjacent the radiator.

With hood doors of the type described there is the danger of the hood opening when the front part of the hood is not thoroughly or securely latched, due to the rapid passage of the vehicle through the air. If the hood door opens slightly the forward motion of the vehicle will cause the air to raise the door to an increasing degree until it finally swings backward and obstructs the view of the driver. It is one of the objects of the present invention to make a fool-proof latch which will be operative to hold the hood down in case the normal latching means should for any reason be not securely latched when the hood door is lowered.

The latch of the invention is shown in three species on the drawings. In one species the forward part of the hood door immediately over the radiator is provided with a frame in which a hook is pivoted. The handle of the hook may form the usual radiator ornament. The hook is inside the hood door and is adapted to engage with a pin mounted on a stationary part of the vehicle. A second hook at the extreme forward end or tip of the vehicle is spring pressed so as always to be moved into engagement with a lip or flange at the extreme front of the vehicle. A pilot pin fitting into an opening adjacent the latches accurately positions the front of the hood so that the latches are always accurately in engagement with their respective catch portions.

In the second species the two hooks are mounted in the frame at the front of the hood door and are adapted to engage separate pins mounted on a stationary part of the vehicle. In order to unlatch the latch of this species a given amount of movement of one latch will cause the second latch to be thrown from engagement with its pin.

In the third species a single hook is used, but two catches are provided, one catch being the normal catch under which the hook engages, and the second being a safety catch with which the hook will engage in case the hook misses engagement with its regular catch. This safety catch is a U-shaped element pivoted to the normal catch and adapted to be moved by a spring into the path of the hook, but capable of being

pressed by the hook out of the path of the hook when the hood door is lowered.

On the drawings

Figure 1 is a side view of a part of an automotive vehicle showing the type of hood door used and showing in dotted outline the hood door in partially raised position.

Figure 2 is an enlarged sectional detailed view through the latch of the invention, showing the handle and hook in dotted outline in unlatched position.

Figure 3 is a sectional plan view on the line 3—3 of Figure 2.

Figure 4 is a sectional view similar to Figure 2 of the second species of the invention, with the unlatched position of the hooks shown in dotted outline.

Figure 5 is a sectional detailed view on the line 5—5 of Figure 4.

Figure 6 is a sectional detailed view on the line 6—6 of Figure 5.

Figure 7 is a view similar to Figures 2 and 4 of another species of the invention.

Figure 8 is a sectional detailed view of the structure of Figure 7, taken on the line 8—8 of Figure 7.

Referring to the drawings, the numeral 2 indicates an automotive vehicle as a whole. The vehicle has the usual top 4, windshield 6, radiator grille 8, rigid hood side panel portion 10, and the hood door 12. The hood door is pivoted at its rear adjacent the cowl 14, and is movable on the axis at 16. A hinge bracket 18 is movable about the axis 16 and is likewise secured to the hood, and a coil spring 20 is secured to one end of the bracket and at its other end 22 to a stationary part of the vehicle. There is one bracket 18 and one spring 20 at each side of the vehicle and the springs 20 constantly tend to urge the hood door 12 to the dotted line position shown in Figure 1.

At the front of the vehicle underneath the hood there is provided an arched part 24 which extends from side to side of the vehicle and over the radiator and is a rigid and permanent part of the vehicle. It is suitably secured at its sides to the upright panels 10 and to the core of the radiator.

The front part of the hood door 12 has an opening over which a frame 26 is secured by means of the under plate 27, the machine bolt 28 and the threaded bolt 30 of the pilot pin 32, which is adapted to be received in an opening 34 in the arch 24. The end of the pilot pin 32 is pointed as indicated at 36 so that it may readily be

received in the opening 34. The purpose of the pilot pin 32 and the opening 34 is accurately to position the front end of the hood when it is in closed position and to prevent any lateral movement of the hood.

The frame 26 has an opening in its middle and a pin 38 is suitably mounted in the sides of the frame across the opening. On this pin 38 there is journaled the latching member 40 having the hook 42 at its lower end, inside the vehicle, and the handle part 44, outside the vehicle. In the present instance the handle part 44 also serves as the radiator ornament of the vehicle. The frame 26 has the inwardly extending part 46 at its front end which is adapted to engage with a flat 48 on the underside of the handle 44 to limit the downward movement of the handle 44 and to position it so that it is retained in the position shown in Figure 1.

The arch 24 has an opening 50 immediately below the pin 38 in order that the hook 42 may pass therethrough. At each side of the opening 50 an eye bolt 52 is threaded into the arch 24. Suitable lock washers 54 at each side of the arch 24 rigidly hold the eye bolts in position. Between the eye bolts the catch or pin 56 is mounted, and around the pin the wear element 58 is placed. In the latched position of the hood, the hook 42 engages beneath the pin 56 and against the wear portion 58. In order to release the hook 42 the operator raises upward on the end of the handle 44. Some resistance will be encountered because the engaging portion 60 of the hook 42 is tightly in contact with the wear element 58 which must be somewhat sprung into position in order tightly to hold the hood door in place. An upward movement of the handle 44 will cause the handle and latch to assume the dotted line position (Figure 2) and a further upward movement of the handle 44 will raise the hood.

The raising of the hood due to the release of the hook 42 will be limited by the latch 62 at the front of the vehicle. This latch 62 is hinged or pivoted to a pin 64 rigidly mounted in a bracket 66 secured to the inturned flange 68 at the tip of the hood door 12. The bracket 66 has an opening 70 through which the end of the hook projects and a coil spring 72, wound around the shaft 64, has its ends pressing against the bracket 66 and against the open end of the shank 74 of the latch 62. The spring therefore always urges the latch to the position shown in Figure 2.

The lower end of the shank 74 of the latch 62 has the hook 76 which is adapted to engage against a downturned catch or lip 78 formed at the edge of an opening 80 at the front of the arch 24. When the handle 44 has released the hook 42 to raise the hood, the initial raising will be permitted only by the length of the shank 74, or when the hook 76 strikes the lip 78 as shown in the dotted line position. When the hood has been raised to the distance allowed by the length of the shank 74, the operator may place his hand between the tip of the hood door 12 and the upper part of the grille 8 to push the latch 62 inwardly, to release the hook 76, to allow the complete raising movement of the hood.

When the operator lowers the hood the catch 76 of its own accord will engage under the lip 78 to assure that the hood door 12 is at least partially latched. In order securely to latch the hood the operator must press down on the handle 44 to force the hook 42 into engagement under the pin 56. If for any reason the hook 42 should

not be engaged under the pin 56 and the driver should place the vehicle in motion, there is the likelihood that the rush of air, because of the forward motion of the vehicle, will tend to raise the hood door 12. This raising will take place only to the extent allowed by the length of the shank 74. If the raising of the hood is commenced and extends to the limit of the length of the shank 74 the position of the hood and the rattle of the parts will at once notify the driver that the hood has not been securely latched.

In the species of Figures 4, 5, and 6, the handle 44, the hood door 12, arch 24, the pilot 32, and frame 26' are substantially the same as that shown in the preceding figure. The latching member 40' operates in substantially the same way as the latching member 40 of the species of Figures 1-3 inclusive and is different in shape only. The frame 26' has the pivot pin 38' on which the latching member 40' is pivoted. The hook 42 is the same as the corresponding hook in the species of Figure 2.

The pin 38' has pivoted thereon the second latching member 62'. The shank 74' thereof extends downwardly considerably below the hook 42 and terminates in a hook 76'. The latch 62' comprises two elements 62a and 62b as is best shown in Figure 5. These elements straddle the hook 42 and have the inwardly bent tabs 82, below which the elements 62a and 62b unite to form the hook 76'.

For the hook 42 there is provided a catch or pin 56' which has therearound a wear member similar to the wear member 58 in Figure 2. A second catch or pin 84 is positioned immediately below the pin 56' and has a wear member 58 therearound. The two pins 56' and 84 are mounted in the manner best shown in Figure 5. At each side of the opening 50 in the arch 24 there are mounted the threaded ends 86 of the lateral pin retainers 88. The threaded ends are held in position by means of the threaded bushings 90 and 92 and the washer 94, positioned between the top bushing 90 and the arch 24. At the right of Figure 5, and in Figure 6, the arch 24 is shown as provided with an enlarged opening 96 the purpose of which is to allow an adjustment of one of the lateral members in order that the pins and their wear members may be easily positioned. The pin retainers 88 have openings therein in which the pins 56' and 84 are mounted. Suitable C washers or cotter keys 98 hold the pins in place.

From an examination of Figure 4 it will be noted that the three pins 38', 56' and 84 are in the same vertical plane.

The operation of the structure of Figures 4, 5, and 6 is as follows: The parts are in the latched position of the hood as shown in Figure 4. When the operator desires to raise the hood door 12 he will push upwardly on the handle 44 to swing the latch member 40' on its pivot pin 38'. This will cause the hook 42 to become disengaged from the pin 56'. The continued movement of the hook 42 toward the dotted line position in Figure 4 will cause the shoulder 99 on the member 40' to strike against the extension 100 on the hook 62' to throw the hook 76' free of the link pin 84. The hood may now be raised to its uppermost position. When the hood is lowered the hook 76' of the latch 62' will immediately fall under the pin 84, because the shoulder 99 and extension 100 are out of contact. The operator will now press downwardly firmly on the handle 44 to cause the hook 42 to engage under the retaining

pin 58'. If for any reason the handle 44 is not pulled down far enough to force the hook 42 in engagement with its pin there is the likelihood that the forward movement of the vehicle against the air will cause the hood to be raised. The amount to which the hood will be raised will be limited by the distance shown between the angle in the hook 76' and the pin 84'. When the front end of the hood has been raised this distance the hook 76' will engage with the pin 84' to prevent further raising of the hood.

The frame 26' has a spring 102 secured thereto by means of the machine bolt 28'. This spring is generally L-shaped and presses against the underside of the extension 100 on the latch member 62' and constantly urges the latch 62' to the position shown in full lines in Figure 4. The upward movement of the handle 44 will cause the lug 100 to press the spring to the dotted line position shown in Figure 4.

In the species shown in Figures 7 and 8, the handle is indicated at 44. This handle is pivoted in the frame 26', secured to the hood door 2 by means of the under plate 27', the machine bolt 28 and the bolt 30 of the pivot pin 32. The frame 26' and the under plate 27' have mating openings in order that the hook 42' may extend through the hood door and project into the inside thereof. The hook 42' is integral with the handle 44 and is pivotally mounted on a pin 38 secured in the frame 26'.

The handle 44 beyond the pivot pin 38 is provided with an extension 99' and this extension has a stud part 104 which retains one end of a coil spring 106, the opposite end of which is bent as indicated at 108 and fits into an opening in the under plate 27'. The purpose of this coil spring is always to urge the handle and hook to the full line position shown in Figure 7.

The under plate 27' has a downturned flange 110 against which a shoulder 112 on the back of the hook 42' is adapted to strike when the handle and hood are moved from the full line to the dotted line position. The engagement of parts 110 and 112 will prevent further movement of the handle itself, but by pushing on the handle the hood door 12 may be raised.

Referring to Figure 8, the arched part 24 at the front of the vehicle is provided with an opening 50 mating with the openings in the frame 26' and in the underplate 27' in order that the hook 42' may project sufficiently low enough to engage under the wear member 58' on a pin 84'. This wear member 58' and pin 84' serve as a catch underneath which the hook 42' engages when the hood door 12 is in lowered position, as shown in Figure 7. The arch 24 is provided with openings 114 at either side of the opening 50. In these openings there are received the threaded ends 116 of the supports 88'. Suitable lock nuts and washers 118 hold the threaded end 116 rigidly in position. The supports 88' extend downwardly and their ends terminate in the flattened part 120 and each of these flattened parts is provided with an opening to receive the end of the shaft or pin 84'. A suitable C washer 122 is received in a groove in the end of the pin 84' and holds the pin in position.

A safety catch indicated as a whole at 124 is made of stamped metal and is of generally U shape. The hook 42' is adapted to engage beneath the transverse part 126 of the safety catch, while the legs 128 are angular in shape and have one part of their lower ends 130 provided with an opening in which the pin 84' is received. Lateral

wings 132 extend from each of the legs 128 of the safety catch 124 and are adapted to strike against the supports 88' to limit the forward movement of the safety catch. Suitable springs 134 are coiled about the pin 84' between the ends 120 and the ends 130, and each spring has one of its ends 136 bent to engage the supports 88' and the other end 138 bent to engage the legs 128 of the safety catch 124. The springs are so wound that they will always urge the safety catch and the wings 132 against the supports 88'.

The operation of the device is as follows: the full line position shown in Figure 7 indicates the down or latched position of the hood door 12. If the operator desires to raise the hood he will move the handle 44 from the full line position to the dotted line position. This will swing the hook to the dotted line position and cause the shoulder 112 to engage with the abutment 110. Further pressure or raising movement on the handle 44 will cause the hood door 12 to be raised. When the hook 42' has been moved from the full line to the dotted line position in Figure 7, the safety catch 124 will also be moved from the full line to the dotted line position. This movement will be caused by the spring 138 and is due to the fact that when the hook 42 is in latched or full line position the shank part of the hook indicated at 138 will strike against the part 126 of the catch and push it to the right (Figure 7) to cause the wings 132 to be moved away from the supports 88'. When the hood is raised and the hook 42' released from the pin 84' the tendency of the safety catch is to be moved to the dotted line position. When the operator lowers the hood and if for any reason he should negligently not cause the hook 42' to engage under the pin 84' and the wear member 58', the safety catch 124 will prevent the hood from being raised by the air which is encountered in the forward movement of the vehicle. The hook will be caught under the transverse or catch part 126, if it should miss the pin 84'. If the operator, in pushing down on the handle 44 to throw the hook 42' under the pin 84', should cause the butt end of the hook to strike directly against the pin 84' and fail to latch the hood, the danger of raising the hood will be avoided due to the safety catch 124. If in the forward movement of the vehicle the hood door should be raised, as soon as the butt end of the hook 42' rises above the pin 84', the weight of the handle 44 and the action of the spring 106 will cause the hook 42' to engage in the opening between the legs 128 of the safety catch 124 to cause the hook to engage the transverse or catch part 126 of the safety catch.

I claim:

1. In a latch for the hood door of an automotive vehicle, a reinforcing member secured to the door, a handle pivoted to the member and movable to operate the latch, a hook projecting through the hood door, said hook secured to said handle and operable therewith, a catch secured to the vehicle under the hood and adapted to be engaged by the hook when the door is in lowered position, and means secured to the catch and acting as a safety catch to engage the hook when the door is in lowered position and when the hook is not engaged by the latch.

2. In a latch for the hood door of an automotive vehicle, a reinforcing member secured to the door, a handle pivoted to the member and movable to operate the latch, a hook secured to the handle, said hook projecting through the hood

door, a pin secured to the vehicle, said pin engageable by the hook when the door is in lowered position to hold the hood door in latched position, a movable safety catch mounted on the pin, said catch adapted to move into the path of the hook and to be engaged by the hook when the door is lowered, said catch acting to hold the hook when the hook is not engaged by the pin.

3. In a latch for the hood door of an automotive vehicle, a combined handle and hook element pivoted to the hood door, said handle being on the outside of the door and movable to operate the hook and said hook extending through the door, a spring between the handle and the door and constantly urging the handle toward its latched position, a catch secured to the vehicle and with which the hook is adapted to engage when the door is in closed position to hold the hood door in latched position, a safety catch pivoted to the first-named catch and adapted to engage the hook when said hook is not engaged with the first-named catch and when the hood door is in lowered position.

4. In a latch for the hood door of an automotive vehicle, a combined movable handle and hook element pivoted to the hood door, an abutment on the door, a shoulder on the back of said hook adapted to engage with said abutment to limit the movement of the handle and to enable the handle to engage the door to raise the same, and a catch on the vehicle adapted to be engaged by the hook when the door is in lowered position to latch the hood.

5. In a latch for the hood door of an automotive vehicle, a combined movable handle and hook element pivoted to the hood door, an abutment on the door, a shoulder on the back of said hook adapted to engage with said abutment to limit the movement of the handle and to enable the handle to engage the door to raise the

same, a catch on the vehicle adapted to be engaged by the hook when the door is in lowered position to latch the hood, and a safety catch pivoted to said first mentioned catch and adapted to be engaged by the hook when the door is in lowered position and the hook is not engaged with the first mentioned catch.

6. In a safety catch for the door of the hood of an automotive vehicle, said door having a hook, supports secured to the vehicle, a pin secured by said supports, said pin acting as a catch to retain the hook, and a safety catch pivoted to said pin.

7. In a safety catch for the door of the hood of an automotive vehicle, said door having a hook, supports secured to the vehicle, a pin secured by said supports, said pin acting as a catch to retain the hook, and a safety catch pivoted to said pin, said safety catch comprising a U-shaped element having the legs of the U pivoted to the pin.

8. In a safety catch for the door of the hood of an automotive vehicle said door having a hook, supports secured to the vehicle, a pin secured by said supports, said pin acting as a catch to retain the hook, a safety catch pivoted to said pin, said safety catch comprising a U-shaped element having the legs of the U pivoted to the pin, and a plurality of wings on the safety catch adapted to engage with the supports to limit the movement of the catch in the direction of the hook.

9. In a safety catch for the door of the hood of an automotive vehicle, said door having a hook, supports secured to the vehicle a pin secured by said supports, said pin acting as a catch to retain the hook, a safety catch pivoted to said pin, and a spring constantly urging said safety catch away from the supports.

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