Dec. 31, 1940. W. H. KRAUSE 2,227,144

LIFTING MEANS FOR AUTOMOBILE HOODS

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Fig. 1

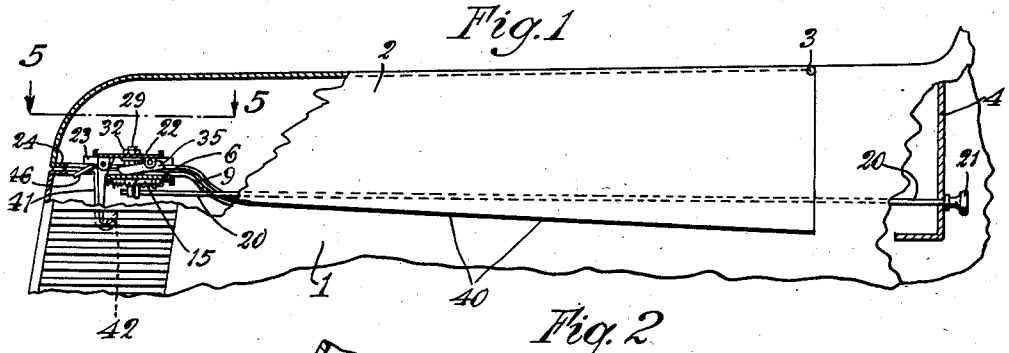


Fig. 2

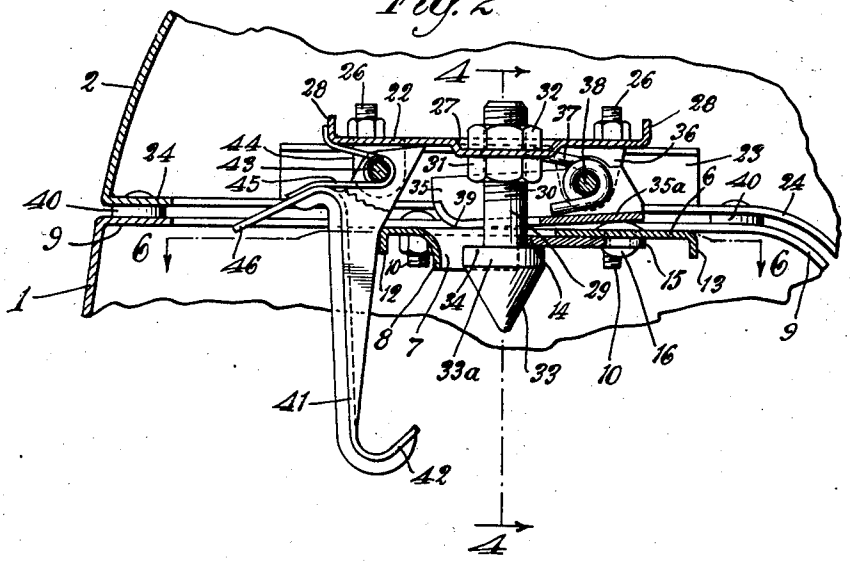
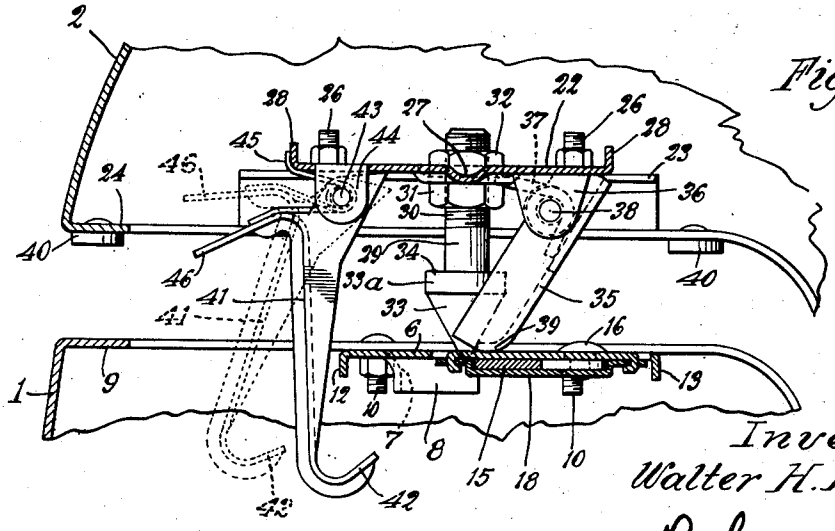


Fig. 3



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Fig. 4

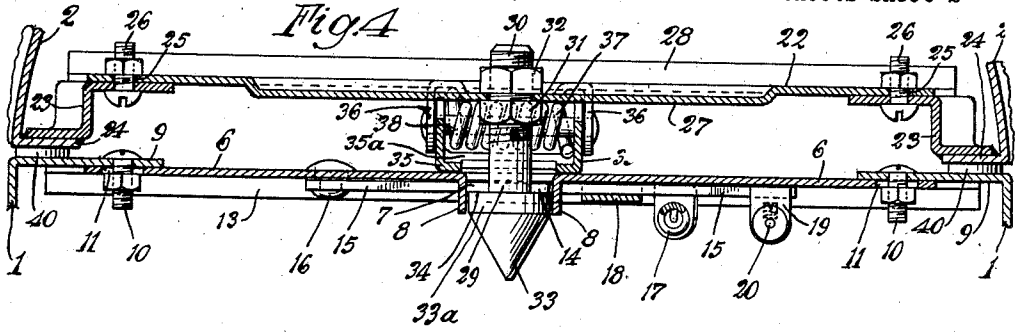


Fig. 5

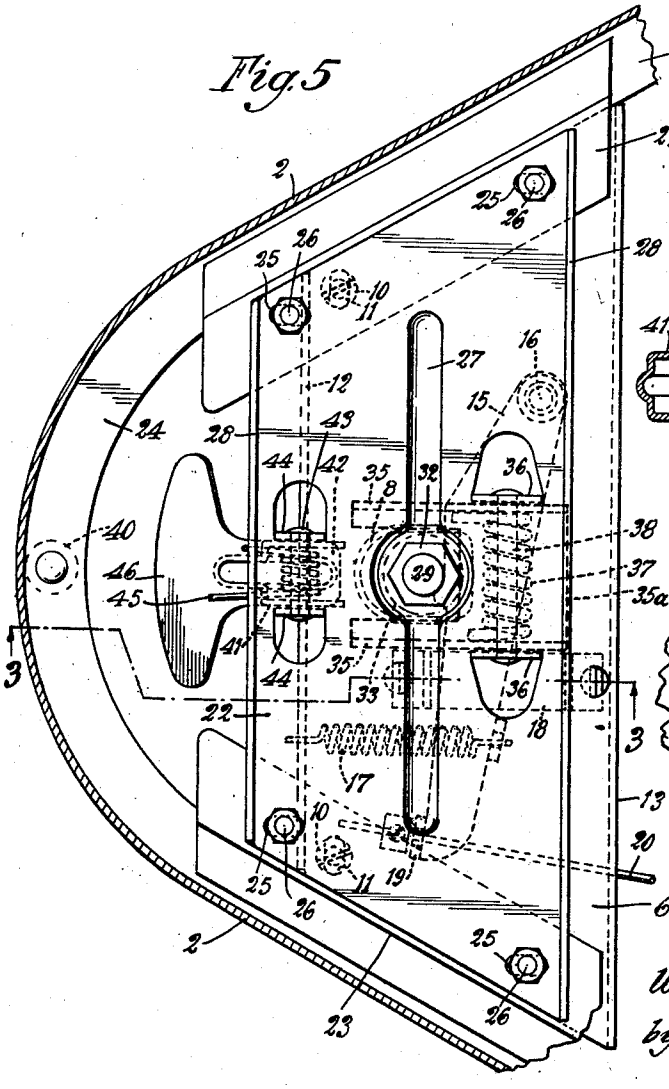
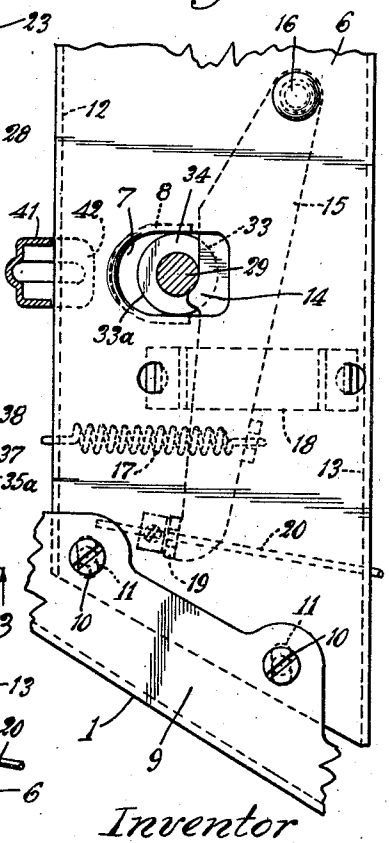


Fig. 6



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Fig. 7

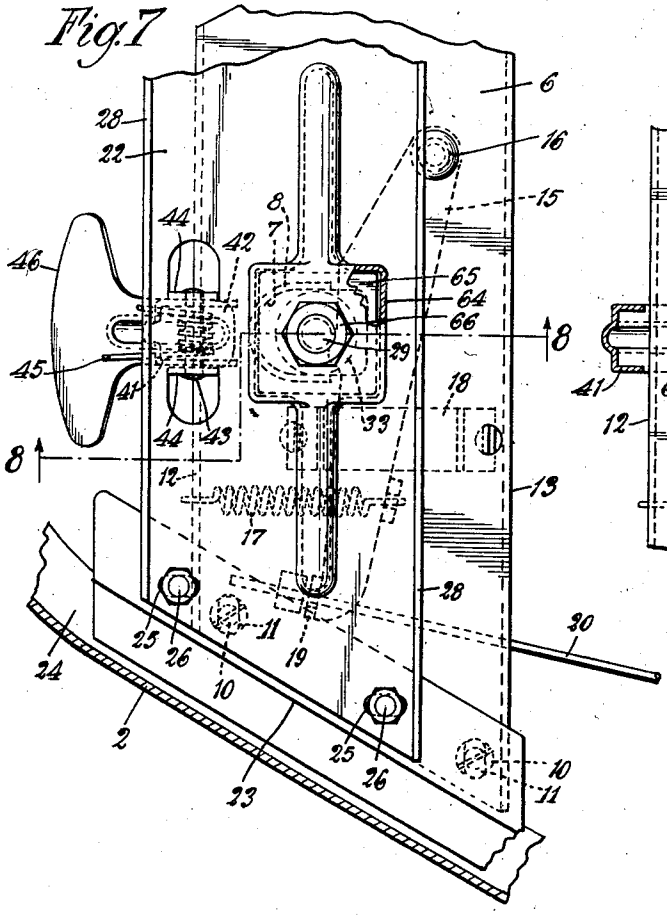


Fig. 9

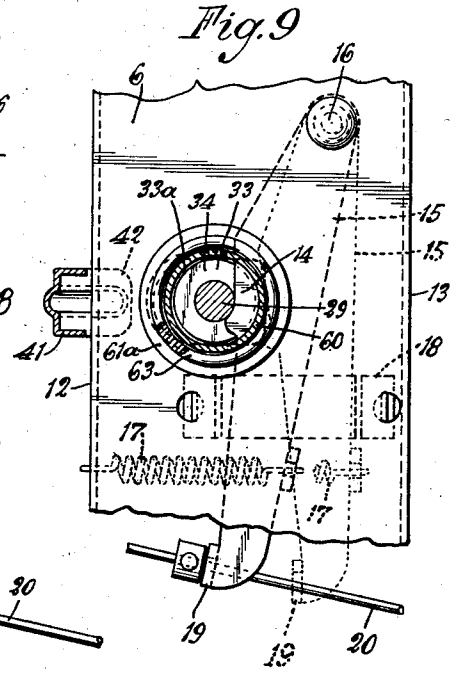
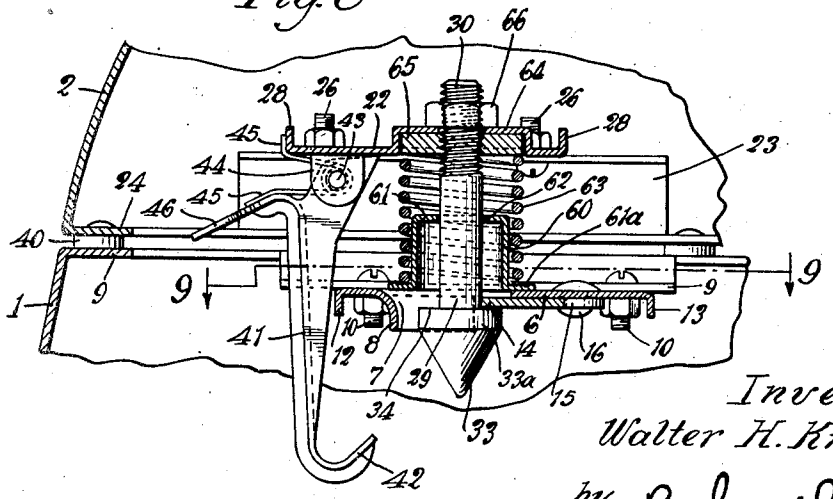


Fig. 8



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Fig. 10

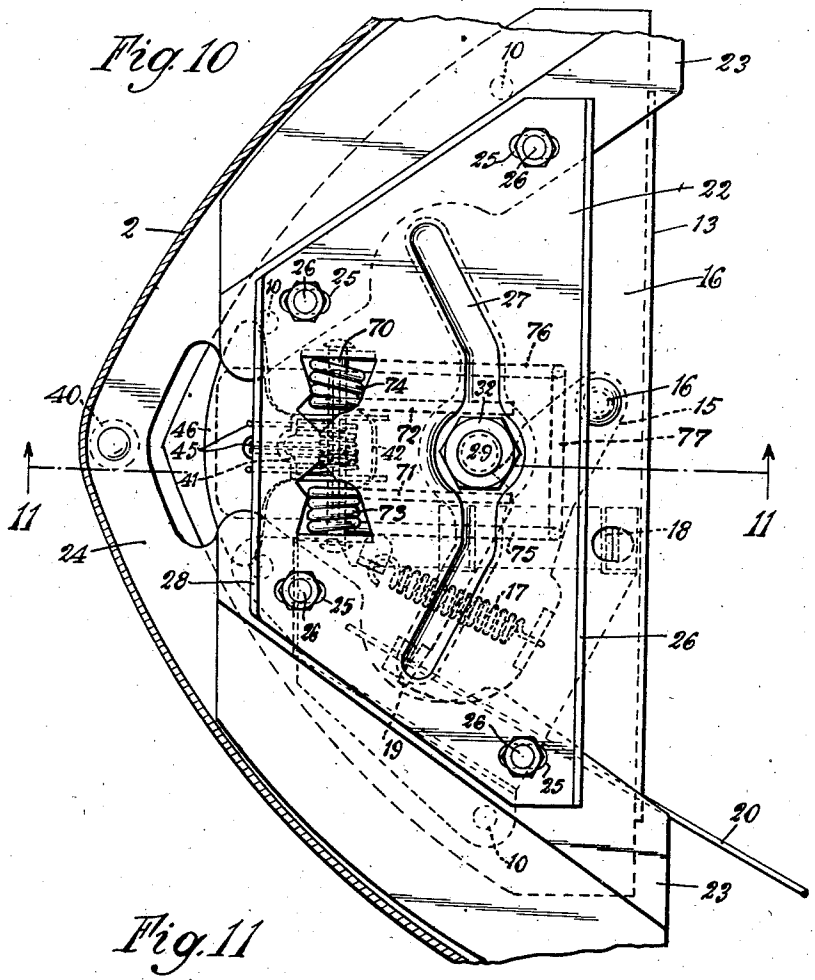
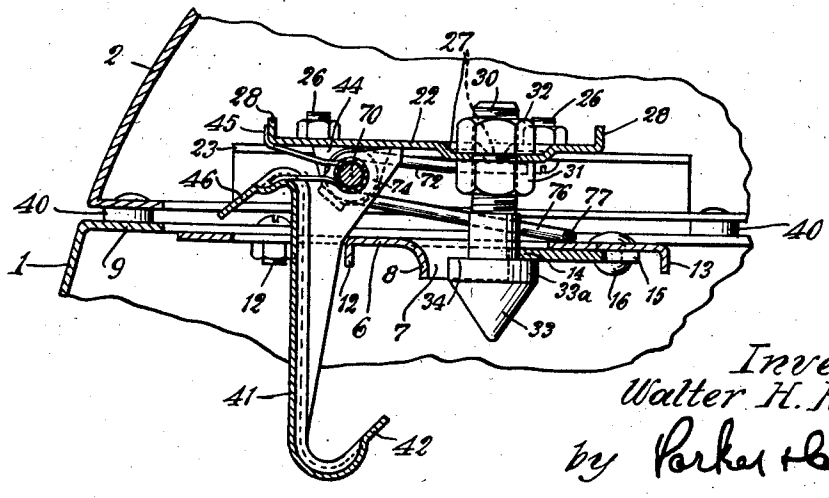


Fig. 11



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UNITED STATES PATENT OFFICE

2,227,144

LIFTING MEANS FOR AUTOMOBILE HOODS

Walter H. Krause, Chicago, Ill., assignor to Chicago Forging & Manufacturing Company, Chicago, Ill., a corporation of Illinois

Application May 18, 1939, Serial No. 274,315

7 Claims. (Cl. 292—1)

My invention relates to means unitarily applicable to an automobile hood and hood closure having primary latching means, secondary safety latching means, and means for lifting the hood closure a predetermined distance in response to release of the primary latching means and prior to the release of the secondary safety latching means.

Other purposes will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings wherein:

Fig. 1 is a side elevation with parts in vertical longitudinal section;

Fig. 2 is a vertical longitudinal section on an enlarged scale illustrating part of the material shown in Fig 1;

Fig. 3 illustrates the structure of Fig. 2 with the hood in partially raised position, taken substantially on the line 3—3 of Fig. 4;

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a section on the line 5—5 of Fig. 1 on an enlarged scale;

Fig. 6 is a section on the line 6—6 of Fig. 2;

Fig. 7 is a partial view similar to Fig. 5, illustrating a variant form of the device;

Fig. 8 is a section on the line 8—8 of Fig. 7;

Fig. 9 is a section on the line 9—9 of Fig. 8;

Fig. 10 is a plan view similar to Fig. 5 of a variant form of the device; and

Fig. 11 is a section on the line 11—11 of Fig. 10.

Like parts are indicated by like characters throughout the specification and drawings.

Referring to the drawings, and for example to Fig. 1 and following, 1 generally indicates an automobile hood and 2 a closure therefor, transversely and horizontally hinged at its rear end as at 3. It will be understood, however, that the hinge shown is diagrammatic and that any suitable mounting for the rear end of the closure 2 may be employed. 4 generally indicates the instrument panel of the vehicle. It will be understood that in the claims, however, I may employ the term "hood" to indicate the hood closure 2, since it cooperates with the normally fixed portion 1 to constitute a complete hood or enclosure for the engine.

Mounted on the hood 1 is a member which I may call a bottom plate, generally indicated at 6 and shown in some detail for example in Fig. 6. It is illustrated as having a transversely elongated aperture 7 surrounded by a downwardly turned flange 8. The plate 6 may be mounted in any suitable fashion upon the hood 1. I illustrate for example flanges 9 at each side of the hood 1 to which the plate 6 may be secured by bolts 10 or by any other suitable securing means

Any suitable adjusting slots may be provided on the plate 6, as shown for example at 11 in Fig. 6. Preferably the plate 6 is mounted for lateral adjustment, the slots 11 being laterally or transversely elongated, whereby the aperture 7 may be aligned with the latching means below described. 12 indicates a downwardly turned flange adapted to receive the secondary or safety latching member below described. An additional rearward reinforcing flange 13 may be provided.

Mounted on the lower side of the plate 6 I illustrate a latch member 14 shown as formed of sheet metal and mounted on or forming part of a lever 15 pivoted as at 16 for rotation about a vertical pivot and urged by a spring 17 toward latching position. 18 is any suitable retaining member for the lever 15 which may be secured to the bottom of the plate 6. 19 is a downwardly projecting lug on the end of the lever 15 which is adapted to receive any suitable operating element or rod 20 which terminates in any suitable operating handle member diagrammatically shown at 21. The member 21 may be mounted on or adjacent the instrument panel 4 of the vehicle, in a position convenient to the driver's seat.

22 indicates a transversely extending plate mounted on the hood closure 2, for example upon intermediate brackets 23 secured upon the inturned lower edges or flanges 24 of the hood closure 2. It will be understood, of course, that any suitable securing and supporting means may be employed. I illustrate the member 22 as mounted for longitudinal adjustment and for that purpose I provide adjusting slots 25 through which pass any suitable securing bolts 26 whereby the member 22 is secured upon the upper inner flanges of the brackets 23. The transversely extending member 22 is downwardly offset as at 27, which offset may serve as a reinforcing means and is not in general essential. It is also provided with reinforcing flanges 28, shown as upwardly extending.

Mounted on the downwardly offset central portion 27 is a combined centering and locking keeper 29, which may for example be formed of rod stock screw threaded as at 30 and held in position by upper and lower nuts 31, 32. It has secured or formed at its lower end a spear head, or downwardly pointed cone 33 having a generally horizontal upper ledge or locking keeper 34 adapted to receive the lever or locking member 15, for example when the parts are in the position shown in Fig. 2. 35 indicates a forked lifting lever or

levers pivoted on ears 36, formed in the plate 22, and normally thrust or urged toward the lifting position as by the spring or springs 37. In the form herein shown, for example in Fig. 5, it will be observed that a spring 37 is coiled about a pivot pin 38, and that the forked lever 35, which straddles the locking keeper 29, is mounted on or associated with the pin, whereby, in response to the flexure of the spring 37, the levers 35 are urged in a counter-clockwise direction. Referring to the position of the parts as shown in Figs. 2 and 3, the lower ends of the forked lever have rounded and flanged end portions 39 opposed to the upper face of the lower plate face. It will be understood, therefore, that when the latch portion 14 of the lever 15 is moved into release position, the spring 37 is released to rock the levers 35 about their pivots, this rocking movement tending to raise the hood or closure member 2 to the slightly elevated position in which it is shown for example in Fig. 3.

Any suitable pads or cushioning members of rubber or the like, as shown at 40, may be employed for cushioning the contact between the opposed portions of the hood 1 and the hood closure 2.

I provide a secondary or safety latching means which includes a lever or hook 41 with a latching or hook portion proper 42. The hook member is pivoted as at 43 between ears 44 which may be downwardly struck from the upper transverse plate 22. Any suitable means may be employed for urging the hook 42 normally into vertical alignment with the securing lip 12. I illustrate for example a coil spring 45. The hook is provided also with a finger or handle piece 46, preferably formed integrally therewith, the purpose of which will later appear.

Referring to Figs. 7, 8 and 9, I illustrate a variation in the lifting means. I illustrate for example, opposed to the plate 6, a generally cylindrical upwardly extending member 60, with a partial top closure 61, centrally apertured as at 62 to admit therethrough the shank of the guiding member or pin 29, and an outward bottom flange 61*a*. As will be observed from Fig. 8, the head 33 of the pin is located below the bottom of the cylinder 60 when the parts are in locking position, but the internal diameter of the cylinder is sufficient to permit the head to extend upwardly therethrough. The cylinder 60 serves as an abutment, and as a guiding or positioning means for a coil spring 63, which is compressed between the top surface of the plate 6 and the bottom surface of the upper plate 22, when the hood is closed. The upper plate 22 is shown as recessed as at 64 to receive a square nut or abutment 65 screw threaded on the screw threaded portion of the pin 29. 66 is any suitable nut which serves to lock the above described assembly in position.

Referring to the form of Figs. 10 and following, I illustrate a variant form of lifting spring. In place of the pin 43 of Fig. 6, I employ a longer pin 70, which performs the double function of serving as a pivot for the safety latch structure 41 and of supporting a lifting spring, which includes upper side elements 71, 72, which terminate in coils 73, 74, wound about the pin 70, the coils being extended in the bottom members 75, 76, which are connected at their end as by the cross portion 77.

In the form herein shown I illustrate a one-piece wire spring. It will be understood, as shown in Fig. 11, that the bend 77 abuts against the lower plate 6, whereas the portions 71, 72 abut against the lower face of the downwardly offset 27 of the upper plate 22. Thus, the spring structure described normally tends to raise the closure 2 when the primary latch means is closed.

It will be realized that whereas I have described and illustrated a practical and operative device, nevertheless many changes may be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting me to my precise showing. For example, whereas I have shown a specific spear shaped rod, it will be understood that variations in form, shape and material may be made without departing from the spirit of my invention.

The use and operation of my invention are as follows:

Referring to all the forms herein, I provide a compact structure for carrying a lock or latch which holds the closure portion 2 of the hood in final locked position, and an additional latch 41 which permits a limited upward movement of the member 2. In the form of Figs. 1 and following, I provide a spring-urged lever or levers 35 tending to raise the member 2, as shown in Fig. 3, when the latch 14 is released, as for example by a pull on the manual handle 21 operated from or near the instrument panel. In the form of Figs. 7 and following, I illustrate a variant lifting means, which includes a spring 63 and cup shaped member 60 surrounding the rod 29. In each case the effective operation is substantially the same.

When the member 2 is moved into the closed position in which it is shown for example in Figs. 1 and 8, the lever 15, including the latch portion 14, is urged into locking position by its controlling spring, and the parts are firmly locked. When the operator releases the lever 15 by pulling on the handle 21, the spring means 37 or 63 are effective to raise the member 2 a predetermined distance. This distance is preferably sufficient to permit the hand of an operator to penetrate beneath the lower edge of the member 2 easily, to contact the handle 46 of the supplemental catch 41. The operator can then, by one unitary movement, lift the member 2 and at the same time rotate the handle 46 sufficiently to move the hook 42 out of vertical alignment with the abutment ledge 12 of the plate 6.

Note that the conic head 33 merges into a cylindrical portion 33*a* of a length sufficient to engage and provide a proper bearing with the downturned flange 8 of the plate 6. Note that this flange 8 does not entirely surround the aperture penetrated by the head 33, as the latch member 14 cuts in at one side or end of the aperture. The cylindrical portion 33*a* of the head 33 engages the flange 8 at diametrically opposed sides of the head. The length of the aperture 7 of the plate 6 permits a certain relative movement of the guiding head and the lower plate 6 in a longitudinal direction. This is important in connection with the upward and downward movement of the closure, and particularly where lever supports, compound hinges, or the like, are employed for the rear end of the hood.

With reference to the lever structure 35, whereas I illustrate a unitary structure including two levers connected by an integral transversely extending portions 35*a*, it will be understood, of

course, that a single lever or leg may be employed. Note that the upper end of each such lever or leg **35** is formed to engage the opposed face of the supporting plate **22**, to serve as a stop for limiting the rotation of the levers in response to the action of the spring **37**.

I find it practical to stamp the entire lever structure, including the connecting piece and flanges, out of a single piece of sheet stock.

In the operation of this device, if it happens that an operator, filling station attendant, or the like, does not slam the member **2** down sufficiently far to move the parts into locking position, no risk of accident is involved if, as the vehicle starts, wind pressure is sufficient to raise the hood, as the safety latch or hook **41** will permit only a relatively slight upward movement of the member **2**. However, the lifting movement will be sufficient to be apparent to the operator, who can then stop the car and firmly close the member **2**. It is advantageous that, when the member **2** is closed, no outsider can normally obtain access to either the latch lever **15** or to the supplemental catch **41**. It is only when the operator releases the lever **15** by pulling on the handle **21** that an outsider can have access to the handle **46**, and may thereby lift the member **2**. Thus, if the vehicle is locked, with its doors closed, it is safe from any normal tampering.

It will be understood, of course, that in a broad sense the forms of Fig. 10 and following are functionally equivalent to the forms of the earlier figures, it being clear that various types of spring may be advantageously employed under different conditions.

I claim:

1. In a unitary structure for use with a hood having a fixed portion and movable portion and latch-part mounting plates mounted one respectively on each said portion, one of said mounting plates being superposed above the other, and a latch and a keeper mounted respectively one on each said latch-part mounting plate, a lifting lever on one of said plates, yielding means for urging it toward lifting position, the other of said plates having an abutment portion aligned with the operative end of said lever over which the end of said lever is free to move transversely thereacross as the plates are separated, and means for limiting the arc of rotation of the lever to prevent it from passing over center, so that it will be in proper position to be moved to tensioned condition when the upper plate is again lowered toward latching position.

2. In a unitary structure for use with a hood having a fixed portion and movable portion and latch-part mounting plates mounted one respectively on each said portion, one of said mounting plates being superposed above the other, a latch and a keeper mounted respectively one on each said latch-part mounting plate, a double armed lifting lever on one of said plates, and yielding means for urging it toward lifting position, the other of said plates having an abutment portion aligned with the operative end of said lever over which the end of said lever is free to move transversely thereacross as the plates are separated.

3. In a unitary structure for use with a hood having a fixed portion and movable portion and latch-part mounting plates mounted one respectively on each said portion, a latch and a keeper mounted respectively one on each said latch-part mounting plate, a double armed lifting lever on one of said plates, and yielding means for urging it toward lifting position, the free ends of said lifting lever being adapted for engagement with the opposite plate, and being free to move transversely thereacross as the plates are separated, the individual ends of said lifting lever being located one on each side of the keeper.

4. In a unitary structure for use with a hood having a fixed portion and movable portion and latch-part mounting plates mounted one respectively on each said portion, and a latch and a keeper mounted respectively one on each said latch-part mounting plate, a lifting lever on one of said plates, and yielding means for urging it toward lifting position, the free end of said lifting lever being adapted for engagement with the opposite plate and being free to move transversely thereacross as the plates are separated, said yielding means including a coil spring concentric with the axis of movement of the lever, one end of said spring being opposed to the plate on which the lever is mounted, the other being opposed to an intermediate portion of the lever.

5. In a vehicle hood latch assembly for a hood having a fixed portion and a movable portion, and latch-part mounting plates mounted one respectively on each such portion, said plates being adjacent and superposed when the hood is closed, a combined centering member and keeper mounted on one of said plates, the other of said plates being apertured to receive it, and a latch mounted on said apertured plate, a lifting lever pivoted in relation to one of said plates, yielding means for urging it toward lifting position, the other of said plates having an abutment portion aligned with the operative end of said lever when the parts are in closed position, the free end of said lever being adapted for engagement with said abutment portion.

6. In a vehicle hood latch assembly for a hood having a fixed portion and a movable portion, and latch-part mounting plates mounted one respectively on each such portion, said plates being adjacent and superposed when the hood is closed, a combined centering member and keeper mounted on one of said plates, the other of said plates being apertured to receive it, and a latch mounted on said apertured plate, a lifting lever pivoted in relation to one of said plates, yielding means for urging it toward lifting position, the other of said plates having an abutment portion aligned with the operative end of said lever when the parts are in closed position, the free end of said lever being adapted for engagement with said abutment portion, said lifting lever being mounted on the plate on which the combined centering member and keeper is mounted, the abutment portion of the opposite plate being located adjacent the aperture through which the combined centering member and keeper penetrates.

7. In a vehicle hood latch assembly for a hood having a fixed portion and a movable portion, and latch-part mounting plates mounted one respectively on each such portion, said plates being adjacent and superposed when the hood is closed, a keeper mounted on one of said plates, the other of said plates being apertured to receive it, and a latch mounted on said apertured plate, a lifting lever pivoted in relation to one of said plates, yielding means for urging it toward lifting position, the other of said plates having an abutment portion aligned with the operative end of said lever when the parts are in closed position, the free end of said lever being adapted for engagement with said abutment portion.

WALTER H. KRAUSE.