Dec. 27, 1949 A. CLAUD-MANTLE 2,492,683

HOOD LATCH

Filed Sept. 24, 1947 3 Sheets-Sheet 1

Fig. 1.

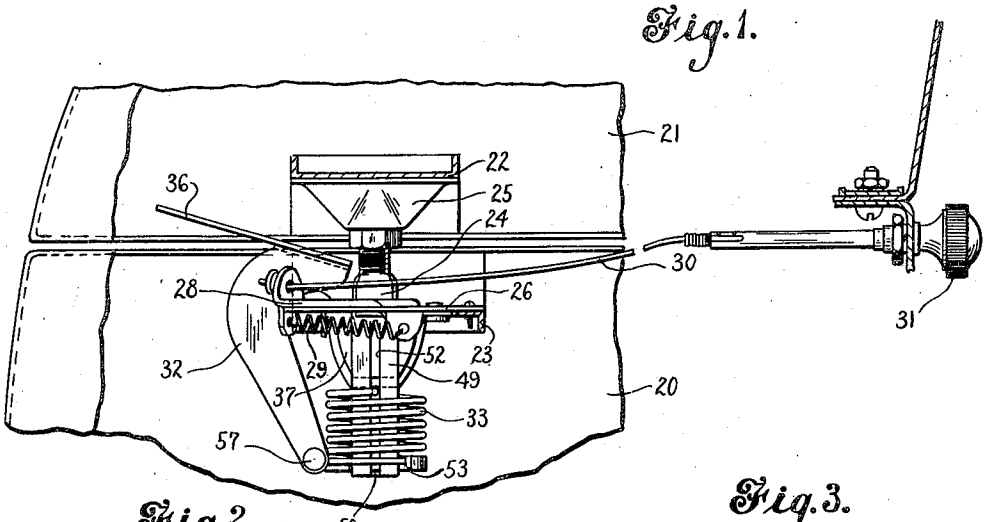


Fig. 2.

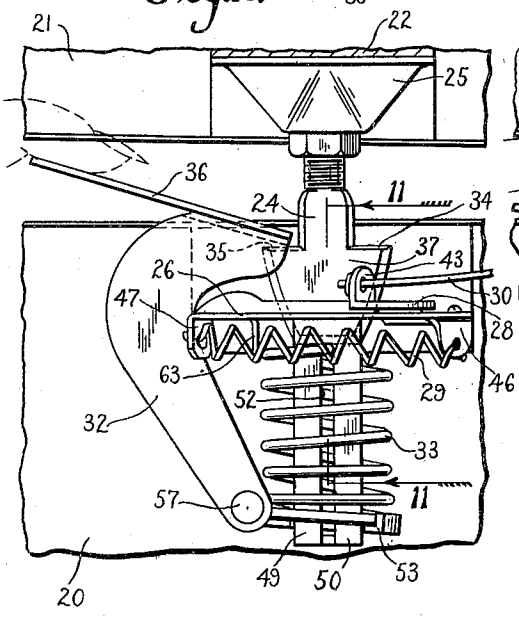
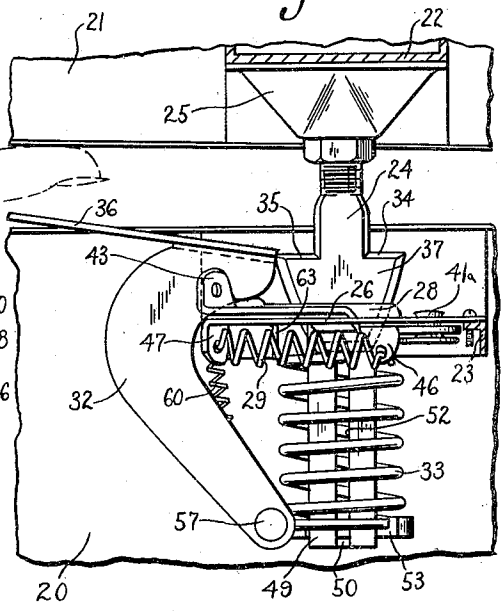


Fig. 3.



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HOOD LATCH

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Fig. 4.

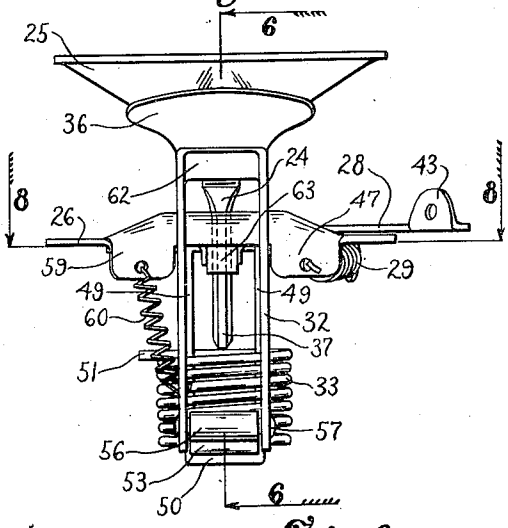

Fig. 5.

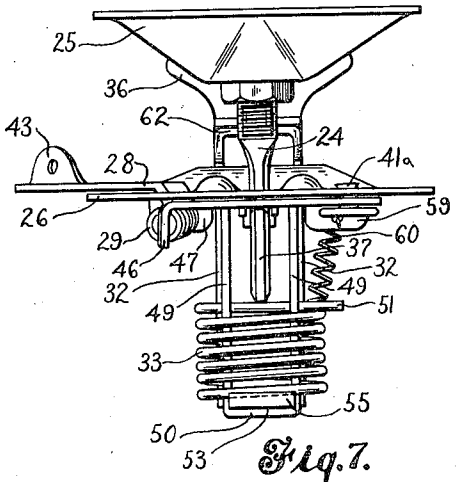

Fig. 6.

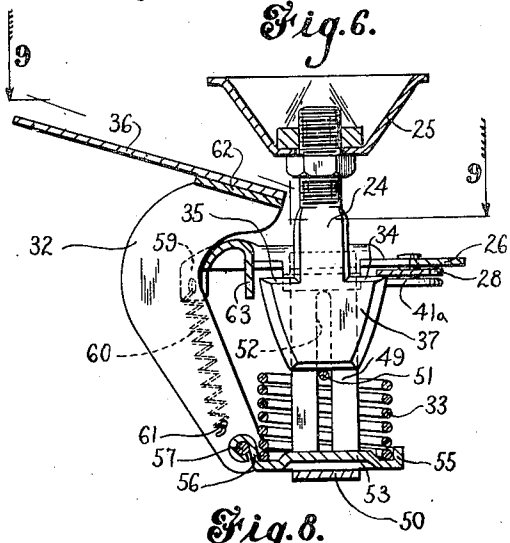

Fig. 7.

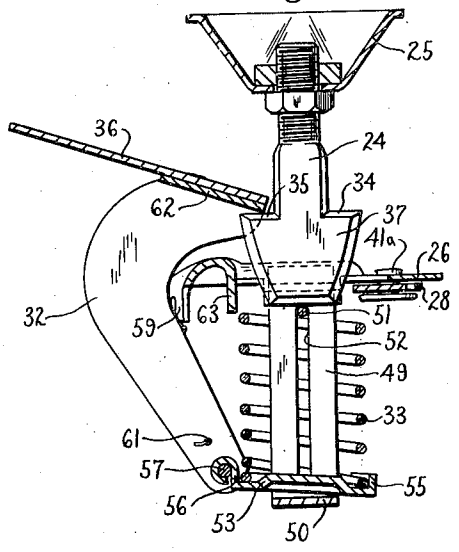

Fig. 8.

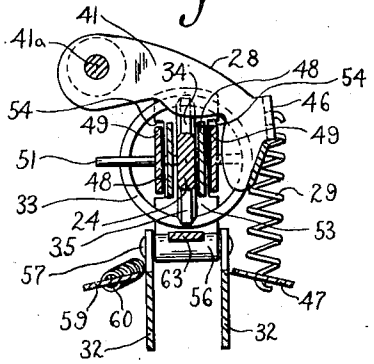

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Fig. 9.

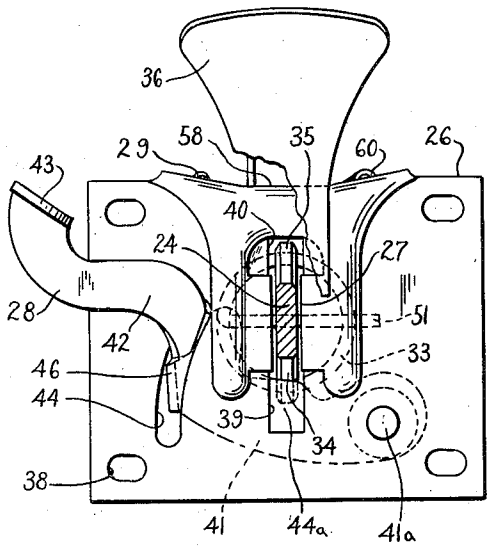


Fig. 10.

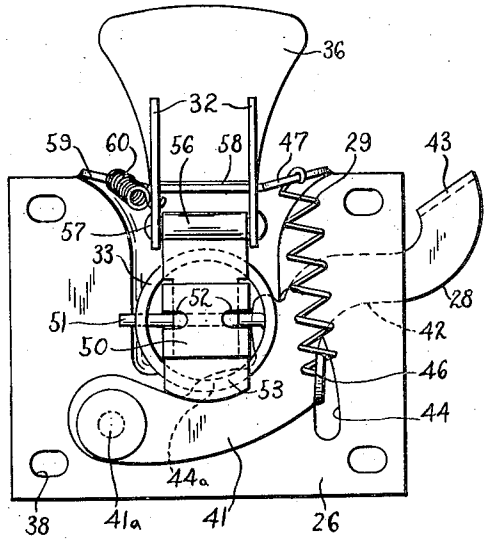


Fig. 11.

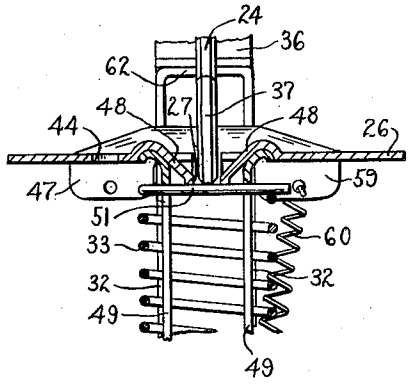
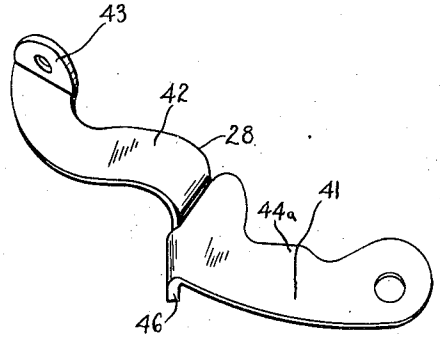


Fig. 12.



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Patented Dec. 27, 1949 2,492,683

UNITED STATES PATENT OFFICE

2,492,683

HOOD LATCH

Arthur Claud-Mantle, Trumbull, Conn., assignor to The Bassick Company, Bridgeport, Conn., a corporation of Connecticut

Application September 24, 1947, Serial No. 775,879

20 Claims. (Cl. 292—11)

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This invention relates to hood latches, and more particularly to latches for hoods of the alligator type, where the lid is pivoted at the rear. The forward end portion of the lid carries a keeper in the form of a depending post cooperating with a movable latch member associated with the lower or fixed part of the hood. In latches of this kind there is a lifting spring that lifts the lid to a limited extent when the primary latching means is released, and there is a safety catch to prevent more than a limited lift of the lid without the necessity for manual release of the safety catch. The primary latching mechanism is usually released from the interior of the car, and when this occurs the lift spring lifts the lid to a point where the safety catch is engaged, thereby preventing further movement.

One of the objects of the present invention is to provide an improved safety catch device which, among other things, has a cushioning or snubbing action, so as to do away with the shock or sharp blow that has heretofore been incidental to the initial release of the lid.

Another object is to provide an improved form and arrangement of the safety catch.

Another object is to provide an improved arrangement of lifting spring for the lid.

Another object is to provide an improved hood latch structure having a minimum number of parts and involving a simple and compact arrangement of elements.

In the accompanying drawings:

Fig. 1 is a side elevation, partly in section, and with parts broken away, illustrating a device embodying the invention, the hood being in the closed position;

Fig. 2 is a view on a larger scale, showing certain parts illustrated in Fig. 1, the lid being raised as far as permitted by the safety catch, and the movable lower member of the primary latch being shown in the released position;

Fig. 3 is a view similar to Fig. 2, showing the condition after the safety catch has been moved out of blocking position;

Fig. 4 is a front view of the latch mechanism, omitting the supports for the upper and lower members of the latch;

Fig. 5 is a similar view looking from the rear of the latch, the latch in both of these views being shown in the latched position;

Fig. 6 is a section on line 6—6 of Fig. 4;

Fig. 7 is a view similar to Fig. 6, illustrating the action which takes place when the keeper engages the safety catch member;

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Fig. 8 is a section on line 8—8 of Fig. 4;

Fig. 9 is a section on line 9—9 of Fig. 6;

Fig. 10 is a bottom plan view of the lower member of the latch;

Fig. 11 is a section on line 11—11 of Fig. 2; and

Fig. 12 is a detail perspective view of the swinging latch lever.

In the form illustrated in the drawings, the latch is of the general type previously mentioned, comprising a keeper in the form of a depending post or plunger carried by the forward end portion of the lid and adapted to enter at its lower end into a slot of a lower plate carried by the fixed part of the hood, said plate being equipped with a swinging latch lever adapted to take over a shoulder on the keeper to hold the lid in the closed position, the swinging lever being moved to the releasing position by a pull on a cable attached to a manipulating member within the car. The latch has a lifting spring to lift the lid when and as the primary latch is released, and it is provided with a safety catch having the function previously stated. In some of its features the latch illustrated in the drawings is similar to that shown in my Patent No. 2,333,465, dated November 2, 1943, the keeper being of a similar type although differing in some important respects, as hereinafter mentioned. As in that patent, also, the lifting spring for the hood engages with the lower edge of the keeper, but in its form, arrangement and action the spring of the present latch differs substantially. There is also a very considerable difference in the safety catch device, as will be apparent from the following description. In the device herein shown, the keeper has a shoulder to cooperate with the swinging latch lever, and a second and opposite shoulder to cooperate with the safety device, and the lid-lifting spring is a helical spring disposed substantially vertically and cooperating at one end with the keeper, and also having the additional function of cushioning or snubbing the pivoted safety catch.

In the drawings, the fixed part of the hood is indicated at 20, the lid at 21, the transverse member carrying the keeper at 22, the transverse member carrying the lower latch plate at 23, and the keeper at 24. The keeper is carried upon a plate 25 suitably attached to the transverse member 22. The lower latch plate, carried by transverse member 23, is shown at 26, the same being provided with an aperture 27 receiving the lower end of the keeper. This latch plate is equipped with a swinging latch lever 28 acted upon by a spring

29 and adapted to be pulled by a cable 30 for releasing the keeper. A manipulating member, shown as a knob 31 connected to the cable 30, is located within the car. The safety catch member is indicated at 32, this being a pivoted lever pivoted at the lower end and mounted upon the lower latch member, and cooperating with the keeper in the manner hereinafter described. This safety lever is under the influence of the helical spring 33, which is the lid-lifting spring, and which lifts the lid by acting against the lower edge of the keeper. The keeper has a head in the form of a flat member provided with a rearwardly disposed shoulder indicated at 34, which cooperates with the latching lever, and a forwardly disposed shoulder 35 to cooperate with the upper end portion of the safety lever 32, the latter lever being equipped at its upper end portion with a manipulating pad portion 36.

The member 25 is in the form of a sheet metal cup which may be screwed or otherwise connected to transverse member 22, and it has welded in its lower portion a small block having a threaded socket into which is screwed the threaded shank of the keeper, the keeper being locked in position by a lock nut, as disclosed in Patent 2,333,465. The shoulders 34 and 35 provided at the upper part of the head 37 of the keeper are identical, and located at the same elevation on the keeper, and either one may act in conjunction with the latching lever while the other acts in conjunction with the safety lever 32, in the manner hereinafter described. The keeper is adjusted vertically by turning it in its upper threaded socket, and by the arrangement described a nicer vertical adjustment of the keeper is possible, the increments of adjustment being turns of 180° rather than 360°. The front and rear edges of the keeper head are shaped to provide a wedge-shaped head that is slightly rounded in side elevation, the front and rear edges and also the lower edge being somewhat sharpened by beveling.

The latch plate 26 is a rectangular plate provided at the corners with holes, as shown in Figs. 9 and 10, so that it can be screwed to the transverse carrying member 23, which member is suitably cut away to receive the latch plate. The corner holes are indicated at 38, and these are somewhat elongated so as to permit some adjustment of the latch plate transversely of the hood. The aperture or slot 27 in the latch plate which receives the keeper has an enlarged extension 39 at the rear edge (Fig. 9) and an enlarged extension 40 at the forward edge, said extensions being adapted to accommodate the front and rear edges, respectively, of the keeper head. The latch lever 28 has the shape shown in Fig. 12, the same having an end portion 41 underlying the latch plate and pivoted thereto by riveted pivot pin 41a. The other end portion of the lever, which is designated 42, is located for the most part at the upper face of the plate, said portion being offset from the lower portion and having an outer end provided with a lug 43 connected to the cable 30, and an inner end joined to the portion 41 and passing through a motion-limiting arcuate slot 44 in the latch plate. Portion 41 of the latch lever has at one side an extension 44a located immediately beneath the slot enlargement 39. This part 44a, which is the latching part, is normally held in the relation shown in Fig. 9 by the coil spring 29, said spring being connected at one end to lug 46 on the latching lever, and at the opposite end to a depending lug 47 at the forward end of the latch plate.

Between the slot enlargements 39 and 40 the metal of the latch plate 26 is bent at each side of the slot, as indicated at 48 (Fig. 11), so as to provide an upwardly flaring throat for receiving and centering the keeper head, this throat being similar to the one shown in Patent 2,333,465.

Rigid with the latch plate and depending from the lower part thereof are cheek members 49 that are used for mounting the lid-lifting spring 33, there being two opposing cheeks directed in planes longitudinal with respect to the hood, said cheeks being at opposite sides of and parallel to the keeper slot. These cheeks may be conveniently formed at integral parts of a U-shaped sheet metal member which has its upper ends rigidly fixed to the latch plate by suitable means. In the case illustrated the upper ends of the cheeks are curved outwardly and received in grooved portions of the latch plate, which grooved portions are created as incidents to the formation of the throat-forming parts 48. In the case shown, the upper ends of the cheek members are welded in these grooves. The lower connecting part of the U member providing the cheek members is indicated at 50.

The lid-lifting spring 33 encircles the cheeks 49 in the manner shown in the drawings, and this spring has an upper end portion, indicated at 51, that is directed diametrically of the spring coil and guided in a vertical direction by engagement with slots 52 provided in the respective cheek members. The slots 52 extend at their upper ends to points substantially at the level of the lower edge of the flaring throat in the latch plate, and at their lower ends the slots 52 are extended slightly into the bottom or connecting member 50, as appears from Fig. 10. The spring part 51 is adapted to be engaged by the keeper, as the keeper moves to the latched position, thus compressing the spring 33. The lower end of the spring rests against and is received in a rest plate 53. This plate is a sheet metal plate of a width substantially equal to that of the frame providing the cheek members and having side notches 54 in which the cheek members are accommodated. The rest plate rests on the bottom of the frame, and it has a curved rear edge portion provided with an upstanding flange 55 positioning the lowermost turn of the lifting spring.

At its forward edge the rest plate 53 has a transverse extension 56 bent around a pin 57 that provides a pivot for the safety lever 32 at the lower end of said lever. The lever 32 is of duplex formation, having sheet metal legs that are extended over the ends of the pin 57, after which the ends of the pin are riveted over. The lever 32 is of curved shape, as shown, so as to extend upwardly and rearwardly over a notched portion 58 provided upon the forward edge of the latch plate, this notched portion being formed by bending down a part of the forward edge of the plate. The lug 47, previously described, may be formed as a part of this bent-down portion, the same being at one side thereof, and at the opposite side is a similar lug 59 serving to anchor one end of a coil spring 60, the other end of which is connected to one side member of the safety lever near the lower end of the lever, as indicated at 61. The spring 60 normally holds the safety lever in the position shown in Fig. 6, where the lever is engaged with the forward edge of the latch plate, and the upper end portion 62 of the lever (to which the manipulating pad 36 is attached) is in overhanging relation with respect to the keeper head, as

shown in Fig. 6. The portion 62 is the intermediate or connecting portion of an element in the shape of an inverted U which serves as a safety catch.

At the forward end of the slot extension 40, previously described, a depending integral lug 63 is provided upon the latch plate, said lug being useful in cooperating with the forward edge of the keeper head as the keeper head moves into and out of the latching position.

The manipulating pad 36 may be connected to the upper connecting portion 62 of the U-shaped safety catch in a convenient manner, as by welding.

In the latched position of the hood the safety catch has a location and position such as those shown in Fig. 1, the safety catch lever being disposed forwardly of the keeper and forwardly of the latching means, the pivot of the catch lever being disposed within the fixed part of the hood near the front end at a level somewhat below the upper edge of the fixed part, and the pad portion of the safety catch extending forwardly and upwardly so that the free end of the pad portion extends slightly above the lower edge of the lid, as shown in Fig. 1.

The operation of releasing the latch will be clear from the foregoing description. The spring 33, reacting against the lower end of the spring-positioning frame, acts on the keeper to move the lid upwardly. This movement continues until the keeper head engages the safety catch in the position shown in Fig. 2, and when the keeper engages the catch the impact is taken up by reason of the resilient mounting of the lower end of the catch, described above. As the keeper head engages the safety catch, the safety catch lifts bodily to a certain extent, the rest plate 53 swinging up against the resiliently resisting and moving forward part of the spring coil, the rear part of the spring coil serving as a pivot, as will be apparent from Fig. 7. The arrangement is such that, when the keeper engages the safety catch lever, a limited upward translating movement of said lever is permitted. The lid is at this time held against further upward movement by the safety catch. The attendant then places his hand upon the forward end of the safety catch pad, as indicated in Fig. 2, and by depression of this forward end to a slight extent the safety device is released, the safety member being swung forwardly. It is then very convenint for the attendant to release the pad, and, by turning over his hand, to lift the lid from the lower edge of the latter, as indicated in Fig. 3.

In the operation of closing the hood, the keeper in descending has its curved or cam-shaped forward edge engage the rear edge of the safety lever top, which rear edge in this instance is provided by the rear edge of the pad, which causes the safety catch to be cammed forwardly, and, when the upper edge of the keeper head passes below the adjacent part of the safety catch, the latter part moves to the position of Figs. 1 and 6.

It is understood that the cushioning of the safety catch is provided by the same spring which acts to lift the hood, thus simplifying the structure. The lifting spring is very effective in its lid-lifting action inasmuch as it is a spring in the form of an upright coil having effective engagement with the lower edge of the keeper head by reason of the guiding of the upper end portion or finger of the spring by the cheek members. The lifting spring is also well protected by the lower latch plate so that it cannot be readily displaced or injured or prevented from operating satisfactorily to lift the lid. The device has the advantage that the safety catch is mounted on the lower plate rather than the upper plate of the latch structure, which enables the safety catch to be more accurately positioned when the latch is installed in the hood. The cushioning of the safety catch not only does away with shocks and noise, but preserves the parts against breakage. The upper part of the latch which carries the keeper can be of simple structure, and the keeper is readily accessible for adjustments or replacement. It is also advantageous to provide the keeper with a head having shoulders at opposite sides for cooperation with the latching lever and the safety catch, respectively, a given shoulder being usable with either the latch lever or the safety catch, and it is of advantage to have the latch lever or similar catch member disposed rearwardly of the keeper, and the safety catch lever disposed forwardly of the keeper.

It is to be understood that various changes and modifications may be made in the structure shown without departure from the principles of the invention or the scope of the claims.

What I claim is:

1. In a hood latch for hoods of the alligator type having a primary latch including members located respectively on the lid and on the fixed part of the hood, a safety catch for limiting the opening movement of the lid comprising parts mounted on the respective parts of the hood and adapted to engage each other when the lid is lifted to a predetermined extent, one of said safety catch parts being a manually movable part, and means for cushioning the lid-limiting action of said safety catch, said movable safety catch part having a pivot on which it is swingable, and said cushioning means comprising a resilient mounting for said pivot mounting it for upward translating movement.

2. In a hood latch for alligator hoods including a fixed keeper on the lid, a cooperating latching device on the lower part of the hood, and a spring which lifts the lid upon its release, a pivoted safety catch carried by the lower part of the hood, an upwardly movable base member to which said catch is pivoted, and a cushioning spring pressing against said base member in a downward direction.

3. In a hood latch for alligator hoods including a fixed keeper on the lid, a cooperating latching device on the lower part of the hood, and a spring which lifts the lid upon its release, a pivoted safety catch carried by the lower part of the hood, said safety catch having a pivot which is movably and resiliently supported, support of said pivot being provided by the lid-lifting spring.

4. In a hood latch for alligator-type hoods in which there is a primary latch between the lid and the fixed part of the hood and in which a spring lifts the lid when and as it is released, a safety catch lever having a pivot, and a support connected to said pivot movably and resiliently mounted on the lower part of the hood.

5. In a hood latch for alligator-type hoods in which there is a primary latch between the lid and the fixed part of the hood and in which a spring lifts the lid when and as it is released, a safety catch lever having a pivotal support movably and resiliently mounted on the lower

part of the hood, the lid-lifting spring being a coil carried by the lower part of the hood, and said pivotal support having support from said spring.

6. In a hood latch comprising upper and lower plates, of which the upper carries a depending rigid keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper to latch the hood, an upright helical spring located at the under portion of the lower plate and having a substantially diametrically located upper end portion extending transversely to the keeper and acting on the keeper from beneath for urging the keeper in an upward direction, and means providing an upright guide for the upper end portion of the spring.

7. In a hood latch comprising upper and lower plates, of which the upper carries a depending rigid keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper to latch the hood, an upright helical spring located at the under portion of the lower plate and having a substantially diametrically located upper end portion extending transversely to the keeper and acting on the keeper from beneath for urging the keeper in an upward direction, and means providing an upright guide for the upper end portion of the spring, said means comprising a frame depending from the lower plate and having slotted sides in which the upper end portion of the spring is guided.

8. In a hood latch comprising upper and lower plates, of which the upper carries a depending rigid keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper to latch the hood, an upright helical spring located at the under portion of the lower plate and having a substantially diametrically located upper end portion extending transversely to the keeper and acting on the keeper from beneath for urging the keeper in an upward direction, and means providing an upright guide for the upper end portion of the spring, said means comprising a frame depending from the lower plate and having slotted sides in which the upper end portion of the spring is guided, the coil portion of said spring being in embracing relation to said frame.

9. In a hood latch comprising upper and lower plates, of which the upper carries a depending rigid keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper to latch the hood, an upright helical spring located at the under portion of the lower plate and having a substantially diametrically located upper end portion extending transversely to the keeper and acting on the keeper from beneath for urging the keeper in an upward direction, and means providing an upright guide for the upper end portion of the spring, said means comprising a frame depending from the lower plate and having slotted sides in which the upper end portion of the spring is guided, the coil portion of said spring being in embracing relation to said frame, the hood latch also having a safety catch member resiliently supported from the lower end of said spring.

10. In a hood latch comprising upper and lower plates of which the upper carries a depending keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper to latch the hood, a spring located at the under portion of the lower plate and acting on the keeper from beneath for lifting the lid of the hood, and a safety catch member resiliently supported from said spring and limiting the opening movement of the lid when said detent means is released.

11. In a hood latch comprising upper and lower plates of which the upper carries a depending keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper to latch the hood, a spring located at the under portion of the lower plate and acting on the keeper from beneath for lifting the lid of the hood, and a safety catch member resiliently supported from said spring and limiting the opening movement of the lid when said detent means is released, said spring being in the form of an upright coil, said safety catch member having a pivot resiliently supported from the lower end of said spring.

12. In a hood latch comprising upper and lower plates of which the upper carries a depending keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper to latch the hood, a spring located at the under portion of the lower plate and acting on the keeper from beneath for lifting the lid of the hood, and a safety catch member resiliently supported from said spring and limiting the opening movement of the lid when said detent means is released, said spring being in the form of an upright coil, said safety catch member having a pivot resiliently supported from the lower end of said spring, the lower plate having a depending frame in respect to which said spring is in embracing relation, and said safety catch member being pivoted to a rest plate interposed between said spring and the bottom of said frame.

13. In a hood latch comprising upper and lower plates of which the upper carries a depending keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper at the rear part of the keeper to latch the hood, a lid-lifting spring located at the under portion of the lower plate, and a safety catch member pivotally mounted from the lower plate and co-acting with the keeper at the forward part of the keeper.

14. In a hood latch comprising upper and lower plates of which the upper carries a depending keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper at the rear part of the keeper to latch the hood, a lid-lifting spring located at the under portion of the lower plate, and a safety catch member pivotally mounted from the lower plate and co-acting with the keeper at the forward part of the keeper, the keeper having a forwardly disposed shoulder to cooperate with said safety catch member, and a rearwardly disposed shoulder to cooperate with said detent means.

15. In a hood latch comprising upper and lower plates of which the upper carries a depending keeper, the lower plate having mounted thereon movable detent means adapted to overlie the keeper at the rear part of the keeper to latch the hood, a lid-lifting spring located at the under portion of the lower plate, and a safety catch member pivotally mounted from the lower plate and co-acting with the keeper at the forward part of the keeper, the keeper having a forwardly disposed shoulder to cooperate with said safety catch member, and a rearwardly disposed shoulder to cooperate with said detent means, said shoulders being at the same level.

16. A hood latch comprising upper and lower plates of which the upper carries a depending flat keeper disposed in a vertical plane longi-

tudinal to the hood, the keeper having lateral shoulders at opposite edges, a primary latch member cooperating with one of said shoulders, and a safety catch member cooperating with the other shoulder.

17. A hood latch comprising upper and lower plates of which the upper carries a depending flat keeper disposed in a vertical plane longitudinal to the hood, the keeper having lateral shoulders at opposite edges, a primary latch member cooperating with one of said shoulders, and a safety catch member cooperating with the other shoulder, said shoulders being at the same level and each being adapted to cooperate with either the primary latch member or the safety catch member, and the keeper having a screw-threaded shank screwing into a socket carried by the upper plate whereby the keeper is vertically adjustable by increments of 180°.

18. In a hood latch, a lower plate having a slot to receive a depending keeper, a movable primary catch on said plate, a swinging safety catch lever movable in a vertical plane, and a spring mounted beneath said plate and having an upper end adapted to engage the keeper to lift the hood lid and a lower part acting as a support for the safety catch lever which permits a limited translating movement of said lever in an upward direction.

19. In a hood latch for alligator-type hoods in which the lid carries a fixed keeper and the fixed part of the hood carries a primary catch,

the latter being disposed rearwardly of the keeper, a pivoted upwardly extending safety catch lever having a lower pivot carried by the lower part of the hood forwardly of the primary catch and the keeper, said pivot being disposed within the fixed part of the hood, said safety catch lever cooperating directly with the keeper by engagement with the same to limit the opening movement of the lid.

20. In a hood latch for alligator-type hoods in which the lid carries a fixed keeper and the fixed part of the hood carries a primary catch, the primary catch being disposed rearwardly of the keeper and the keeper having a shoulder on the forward portion thereof, a pivoted upwardly extending safety catch lever in the form of an inverted U pivoted at its lower end to the fixed part of the hood, the intermediate or connecting part of the U cooperating with the said shoulder on the keeper to limit the opening movement of the lid.

ARTHUR CLAUD-MANTLE.

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