Aug. 5, 1958 T. H. JOHNSTONE 2,846,253

HOOD LATCH

Filed May 31, 1956 2 Sheets-Sheet 1

Fig. 1

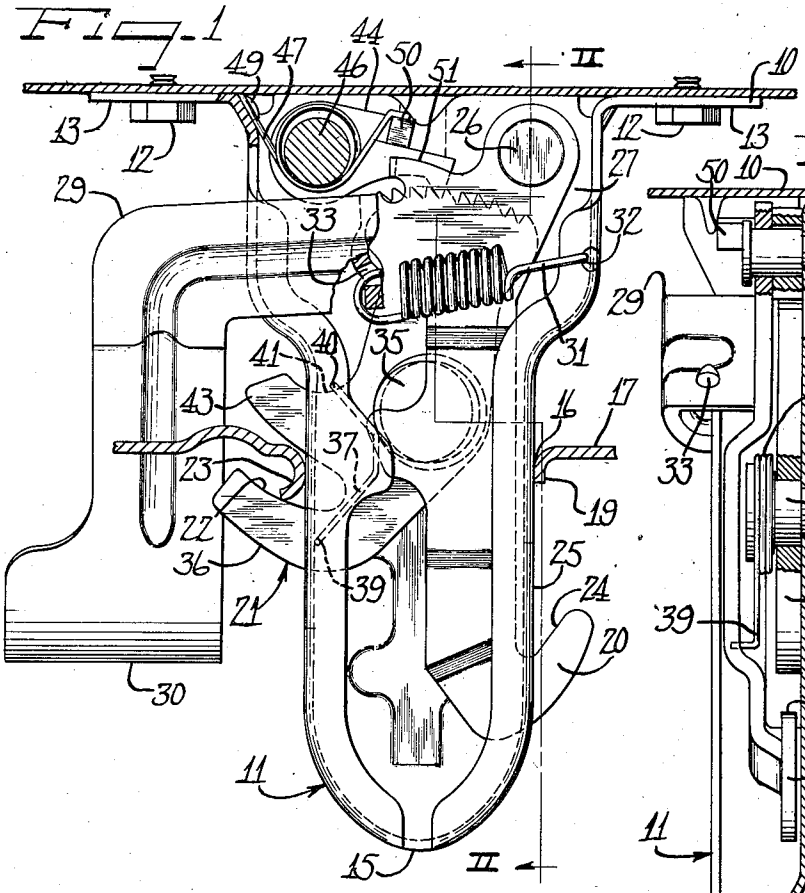


Fig. 2

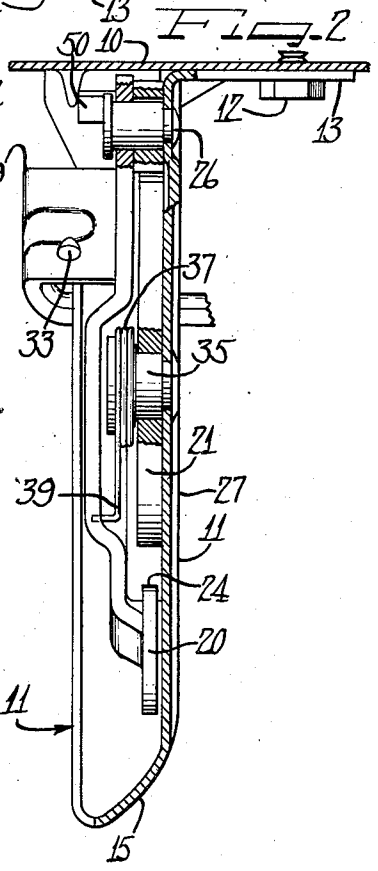
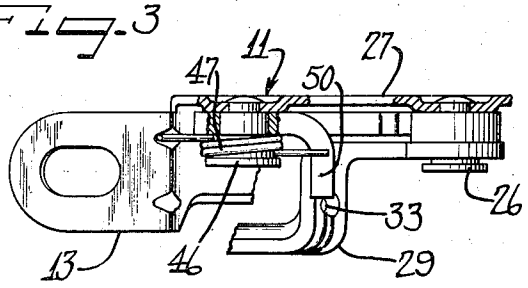


Fig. 3



Inventor

Theodore H. Johnstone

by Hill, Sherman, Meroni, Gross & Simpson Attys

Aug. 5, 1958 T. H. JOHNSTONE 2,846,253

HOOD LATCH

Filed May 31, 1956 2 Sheets-Sheet 2

Fig. 4

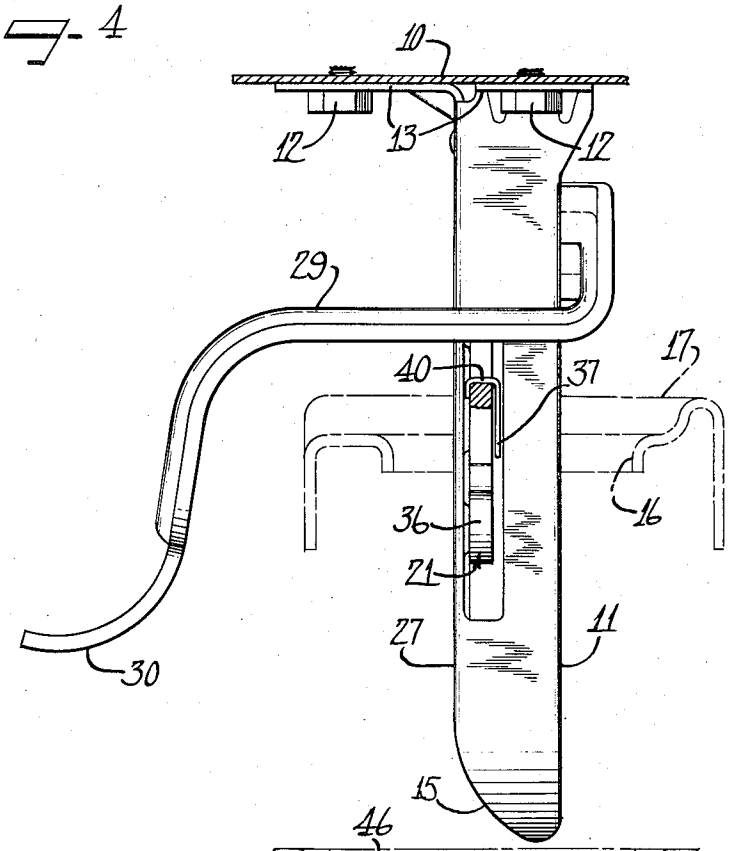
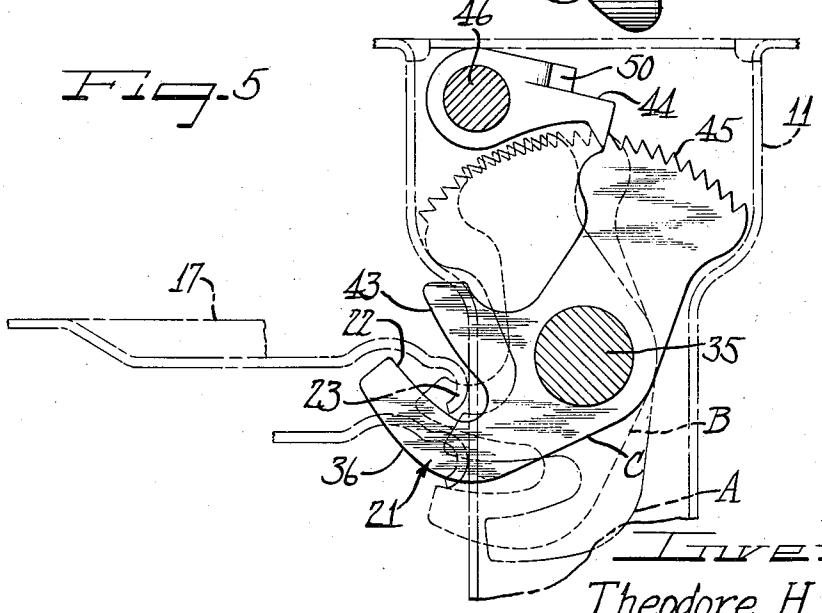


Fig. 5



Inventor

Theodore H. Johnstone

By Kiel Sherman, Merrill, Grace & Kenyon Attys

United States Patent Office 2,846,253 Patented Aug. 5, 1958

2,846,253

HOOD LATCH

Theodore H. Johnstone, Berkley, Mich., assignor to Houdaille Industries, Inc., Buffalo, N. Y., a corporation of Michigan

Application May 31, 1956, Serial No. 588,286

3 Claims. (Cl. 292—25)

This invention relates to improvements in latching mechanisms for use on automobiles and more particularly relates to improvements in such latching mechanisms as may be employed for latching automobile hoods of the so-called "alligator" type.

A principal object of the invention is to provide a simple and efficient hood latch having both a safety catch and a positive latch positively latching the hood closed in various positions of the hood with respect to its keeper and taking up on the latch as the hood is moved toward a closed position.

Another object of the invention is to provide a new and improved form of hood latch having a safety catch and a positive latch in which the positive latch is released by movement of the safety catch in a release direction, and in which the positive latch is taken up upon the tendency of the hood to move toward a closed position.

A further and more specific object of the invention is to improve upon the hood latching mechanisms heretofore in use in automotive vehicles by utilizing the latch casing as a centering guide for the hood and carrying both the positive latch and safety catch in the latch casing, biasing the positive latch in retracted relation with respect to the casing and biasing the safety catch in projected relation with respect to the casing and moving the positive latch in latching position by engaging the positive latch with the keeper during hood closing movement, and also utilizing a pawl and ratchet to take up on a positive latch and released by the safety catch upon retractible movement thereof.

These and other objects of the invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a view in rear elevation of a hood latch constructed in accordance with the present invention with certain parts broken away and certain other parts shown in vertical section;

Figure 2 is a partial fragmentary sectional view taken substantially along line II—II of Figure 1;

Figure 3 is a fragmentary top plan view of the latch with certain parts broken away and certain other parts shown in horizontal section;

Figure 4 is a view of the latch in side elevation looking at the latch from the opposite side thereof than in Figure 1; and

Figure 5 is a partial fragmentary view of the positive latch and its holding pawl and ratchet, with certain parts broken away and certain other parts shown in section and showing the latch in its various positions of movement from a released to an extreme latching position.

In the embodiment of the invention illustrated in the drawings, a plate **10** of a transversely pivoted alligator type of hood (not shown) of an automotive vehicle is shown as having a depending latch casing **11** secured thereto as by bolts **12**, extending through spaced projecting flanged portions **13** of the latch casing.

The latch casing **11** may be formed from a single piece of sheet metal, as by a stamping operation and has a rounded nose **15** guiding the casing for movement within an apertured portion **16** of a stationary plate **17** on the hood body. The apertured portion **16** is provided with a downwardly extending flanged portion **19** having guiding engagement with the casing. The flanged portion **19** is also adapted to be engaged by a safety catch **20** pivotally mounted within the casing and biased in projected relation with respect to the casing, as will hereinafter more clearly appear as this specification proceeds, to limit opening movement of the hood, should the positive latch **21** be accidentally released.

The positive latch **21** is shown in Figure 1 as being projected from the opposite side of the casing **11** from the safety catch **20** and as having a locking slot **22** therein, engageable with a downwardly and inwardly curved end portion **23** of the apertured portion **16** and flange **19** of the stationary plate **17**, and forming a keeper for said positive latch.

The safety catch **20** has a hook-like engaging end portion **24** normally projecting through a wall **25** of the latch casing adjacent the lower end thereof and is pivotally mounted on the latch casing adjacent the upper end thereof on a pivot pin **26** carried in a forward wall **27** of the latch casing and riveted or otherwise secured thereto. The safety catch **20** also has a release lever **29** secured thereto and extending outwardly therefrom through the open rear portion of the latch casing and then along the side of the latch casing beyond the side thereof and downwardly and forwardly therefrom. The forwardly projecting forward end portion of the release lever **29** forms a hand grip **30**, extending downwardly and forwardly therefrom, and herein shown as being formed integrally therewith to pivot the safety catch **20** in a retracted position within the latch casing **11**, and to accommodate free opening movement of the hood from the front thereof.

The safety catch **20** is biased in the projected position shown in Figure 1 by a tension spring **31** hooked at one end in the aperture of an apertured portion **32** of the latch casing **11** and hooked at its other end in the aperture of an apertured portion **33** of the release lever **30**.

The positive latch **21** is pivoted intermediate its ends within the latch casing on a pivot pin **35** riveted or otherwise secured to the forward wall **27** of the latch casing. Said positive latch is shown as being spaced inwardly of the safety catch **20** and as having a downwardly and outwardly extending nose portion **36** within which the locking slot **22** is formed. A torsion spring **37** carried on the pivot pin **35** is provided to bias the safety catch in retracted relation with respect to the latch casing. The torsion spring **37** is shown as having one leg **39** engaging the side wall of the latch casing and an opposite leg **40** hooked over a recessed advance edge **41** of the positive latch.

The nose **36** of the positive latch **21** is shown as having a strike surface **43** defining the upper margin of the locking slot **22**. The strike surface **43** projects a slight distance beyond the side wall of the latch casing **11**, when the positive latch is in the retracted position indicated by reference character "A" in Figure 5. The strike surface **43** is thus in position to engage the inturned keeper surface **23** of the apertured portion **16** of the stationary plate **17**, and to move the positive latch into engagement with the keeper against the bias of the torsion spring **37** by striking the keeper as the hood is closed.

The positive latch **21** is taken up on and held in a latching position by a pawl **44** engageable with ratchet teeth **45** on the opposite side of the pivot pin **35** from the nose **36**, and herein shown as being formed in-

tegrally with the upper edge of the latch. The pawl 44 is mounted on a pivot pin 46 adjacent the upper end of the latch casing and at the opposite side thereof from the pivot pin 26. The pivot pin 46 may be riveted or otherwise secured to the front wall 27 of the latch casing. A torsion spring 47 is mounted on the pivot pin 46. One leg of the torsion spring 47 engages within a recessed portion 49 of the latch casing adjacent the upper outer side thereof. The opposite leg of the torsion spring 47 engages a lug 50 projecting laterally outwardly from the pawl 44 into position to be engaged by a camming release surface 51 of the safety catch 20.

The camming release surface 51 of the safety catch 20 is shown as being spaced beneath the axis of a pivot pin 26 and as extending beneath the lug or ear 50 to engage the lug 50 and then release the pawl 44 from the ratchet teeth 45 to accommodate retractible movement of the positive latch by the torsion spring 37, as the safety catch is released. If, however, the hand should be released from the release lever 29 after release of the positive latch, the spring 31 will immediately project the safety catch in position to engage within the flanged portion 19 of the stationary plate 17, to prevent accidental opening of the hood.

During hood closing movement, the strike surface 43 of the slot 22 will project slightly beyond the side of the latch casing as indicated by reference character A in Figure 5. As the strike surface or edge 43 engages the inturned keeper portion of the apertured portion 16 of the plate 17, the positive latch will be rotated in a clockwise direction upon continued downward movement of the hood. This will bring the latch to position B, the ratchet 44 holding the latch in a locked position and taking up on the latch as it moves from position B to its fully latched position C shown in Figure 5. Thus, as the hood is moved downwardly toward a closed position, the pawl will take up on the latch and any movement of the hood caused by vibration or jiggling will tend to cause the pawl to take up on the latch and to hold the latch from moving in a release direction.

It is of course understood that as the latch is projected by engagement of the strike surface 43 with the inturned keeper surface 23, that the safety catch is retracted by engagement with the rounded edge of the apertured portion 16 of the stationary plate 17 until the safety catch has passed the flange 19, at which time the spring 31 will project the safety catch 20 into position to catch within the flange 19 and prevent accidental opening of the hood.

When it is desired to open the hood, it is merely necessary to grasp the hand grip portion 30 of the lever 29 by reaching through the hood and to lift up on said hand grip portion. This will move the safety catch 20 in a release direction and at the same time will disengage the pawl 44 from the ratchet teeth 45 and accommodate the torsion spring 37 to retract the positive latch and permit free opening movement of the hood, provided upward pressure is exerted on the hand grip 30 of the release lever 29 until the safety catch 20 has moved past the apertured portion 16 of the stationary plate 17.

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

I claim as my invention:

1. In a hood latch for automotive vehicles, a latch casing, a positive latch pivotally mounted within said casing and projectible from one side of said casing, an auxiliary safety catch pivotally mounted within said casing and projectible from the opposite side of said casing, spring means biasing said safety catch in projected relation with respect to said casing, spring means biasing said positive latch in retracted relation with respect to said casing, said positive latch having a locking slot therein engageable with a keeper the upper outer face of which locking slot defines a strike nose projecting from said latch casing when the positive latch is in its extreme retracted position, for striking the keeper and moving said locking slot into latching engagement therewith upon movement of said latch casing toward the keeper, said positive latch having ratchet teeth thereon extending along the end thereof opposite from said locking slot, a pawl engageable with said ratchet teeth for taking up on said positive latch during hood closing movement and holding said positive latch in a latched position, a torsion spring biasing said pawl into engagement with said ratchet teeth, a release lever secured to said safety catch for releasably moving said safety catch, and a camming face on said safety catch for engaging and releasing said pawl upon movement of said safety catch in a release direction and accommodating release movement of said positive latch.

2. In a hood latch for automotive vehicles, a latch casing, a positive latch pivotally mounted within said casing and projectible from one side of said casing, an auxiliary safety catch pivotally mounted within said casing and projectible from the opposite side of said casing, spring means biasing said safety catch in projected relation with respect to said casing, spring means biasing said positive latch in retracted relation with respect to said casing, said positive latch having a locking slot therein engageable with a keeper the upper outer face of which locking slot defines a strike nose projecting from said latch casing when the positive latch is in its extreme retracted position, for striking the keeper and moving said locking slot into latching engagement therewith upon movement of said latch casing toward the keeper, said positive latch having ratchet teeth thereon extending along the end thereof opposite from said locking slot, a pawl engageable with said ratchet teeth for taking up on said positive latch during hood closing movement and holding said positive latch in the latched position, a release lever secured to said safety catch and projecting therefrom and accessible through the grill of the hood body for releasing said safety catch, and a camming face on said safety catch engageable with said pawl for releasing said pawl from said ratchet teeth to accommodate release of said positive latch upon movement of said safety catch in a release direction.

3. In a hood latch for automotive vehicles, a latch casing adapted to be mounted on a movable part of the hood, a positive latch carried within said latch casing for projectible movement therefrom, a pivot pin pivotally mounting said positive latch on said latch casing intermediate the ends of said positive latch, a safety catch carried within said latch casing, a pivot pin at the upper end of said latch casing pivotally mounting said safety catch within said latch casing adjacent its upper end in overlying relation with respect to said positive latch, a tension spring connected between said latch casing and safety catch and biasing said safety catch in projected relation with respect to said latch casing, a torsion spring biasing said positive latch in retracted relation with respect to said latch casing, said positive latch having a locking slot therein on one side of the axis of said pivot pin, for engagement with the keeper, the upper outer surface of which locking slot defines a strike surface projecting from said latch casing when said positive latch is in a retracted position and engageable with the keeper upon hood closing movement, to move said locking slot into locking engagement with the keeper as the hood is closed, said positive latch having ratchet teeth extending along the opposite end thereof from said locking slot, a pawl engageable with said ratchet teeth, a pivot pin pivotally mounting said pawl in said latch casing, a torsion spring biasing said pawl into engagement with said ratchet teeth, an ear extending from said pawl and overlying said safety catch and a camming face on said safety catch engage-

able with said ear for releasably moving said pawl upon retarctible movement of said safety catch.

References Cited in the file of this patent

UNITED STATES PATENTS

2,508,090 Beems et al. ---------- May 16, 1950

2,698,762 Dall ---------- Jan. 4, 1955

2,763,505 Krause ---------- Sept. 18, 1956

FOREIGN PATENTS

693,341 Great Britain ---------- June 24, 1953