March 3, 1942. R. HILL ET AL 2,274,696

HOOD LATCH AND OPERATING MEANS THEREFOR

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Fig. 1

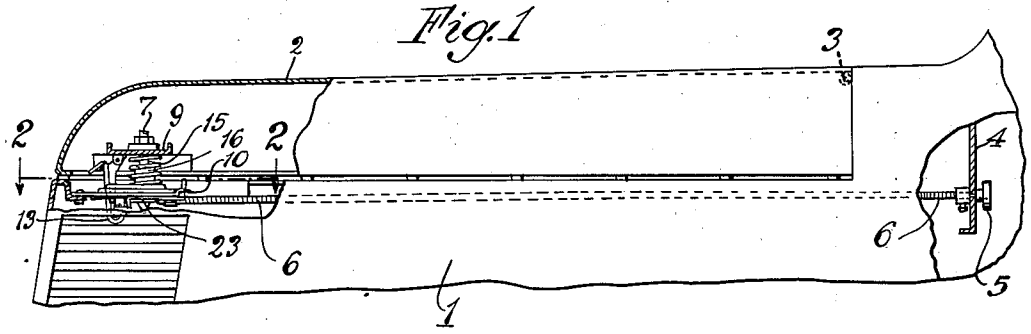
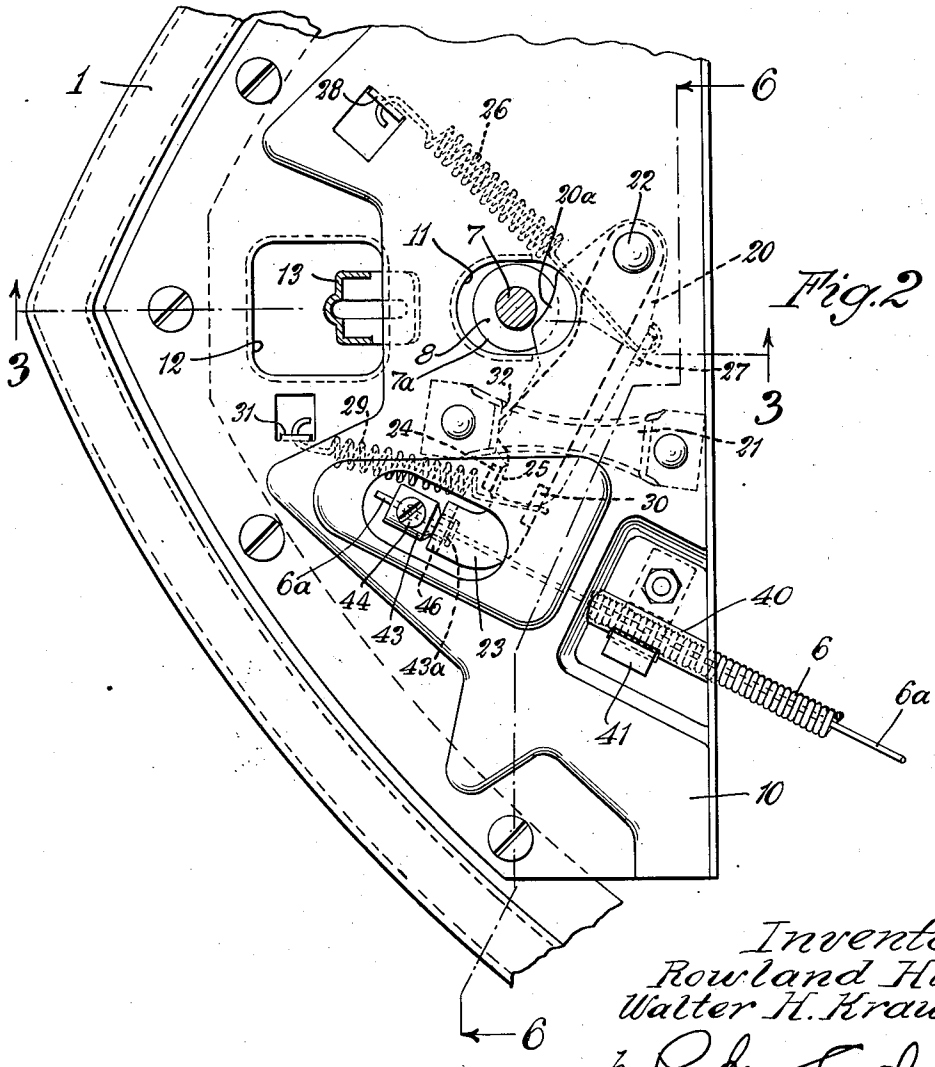


Fig. 2



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Fig. 3

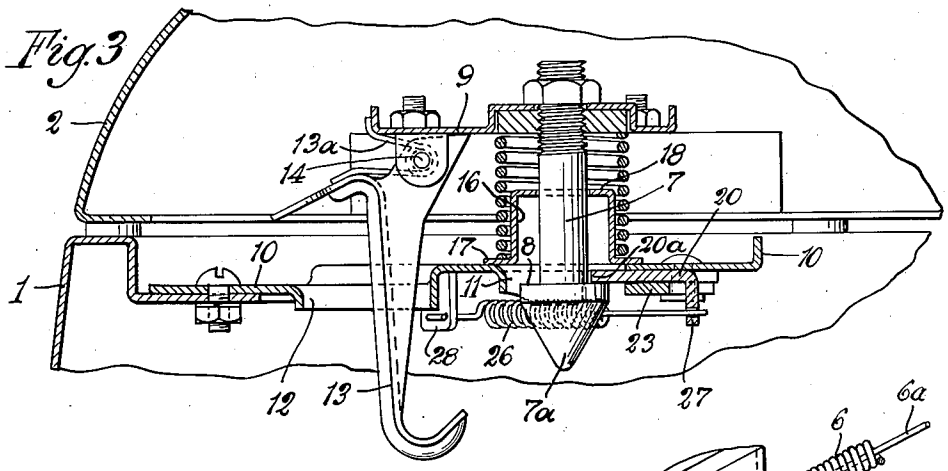
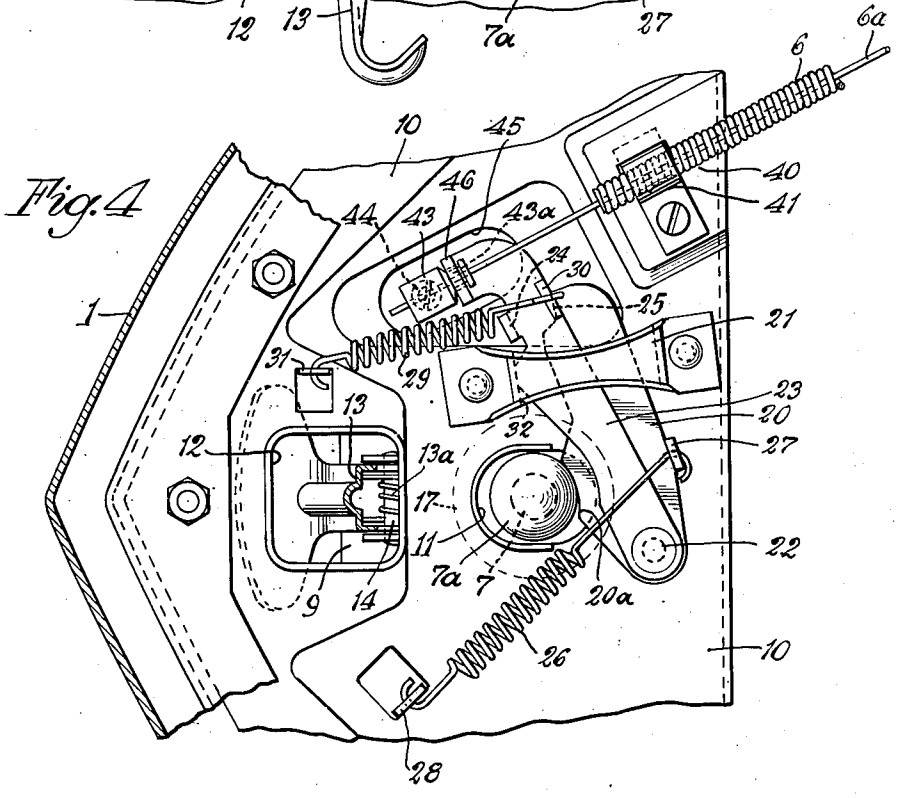


Fig. 4



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HOOD LATCH AND OPERATING MEANS THEREFOR

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Fig. 5

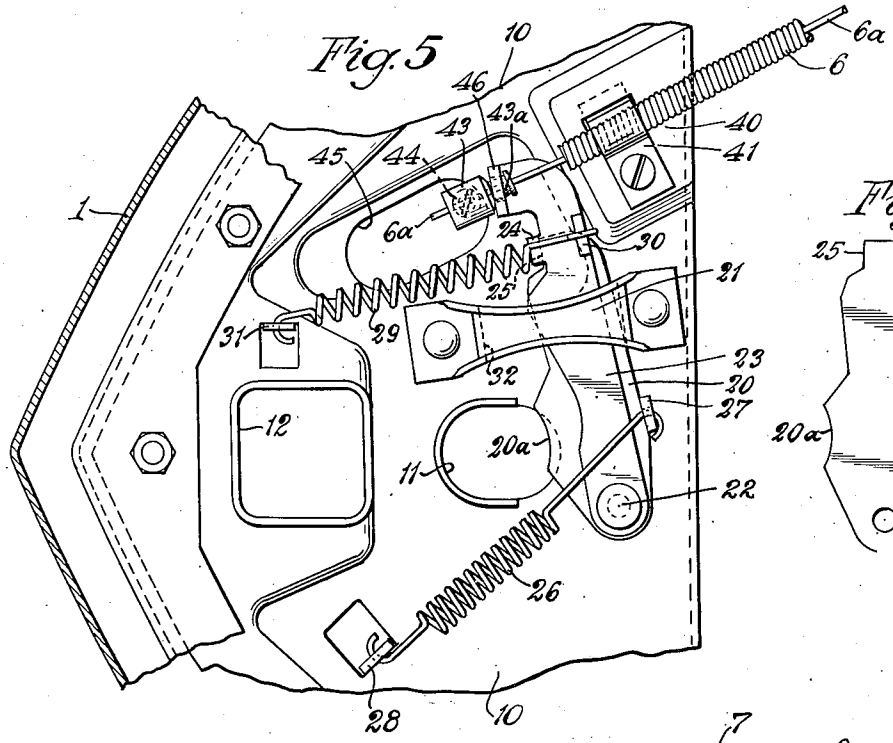


Fig. 7

Fig. 6

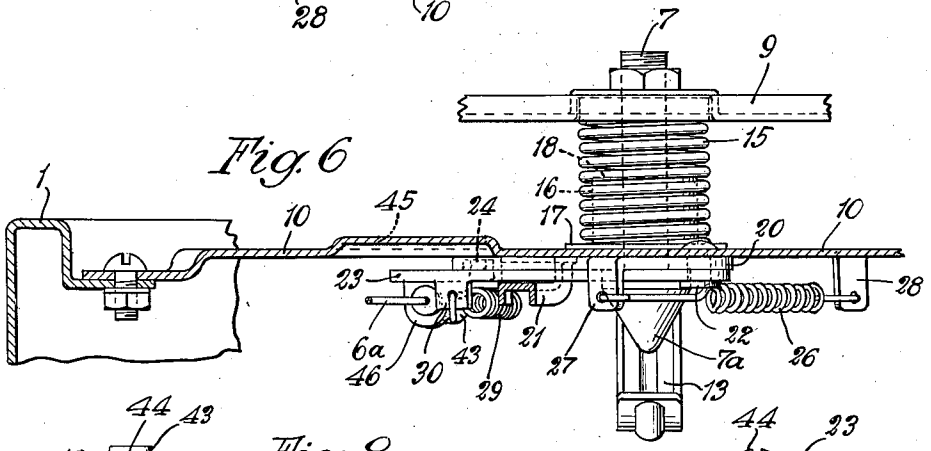


Fig. 8

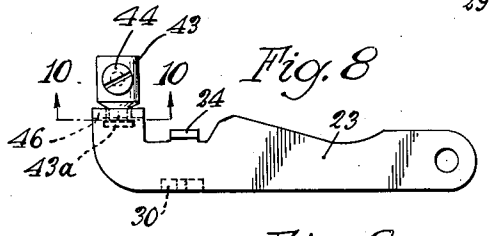


Fig. 9

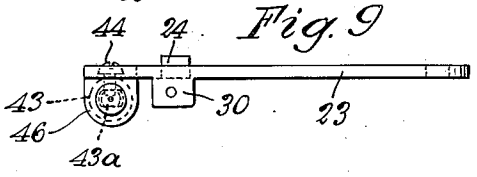
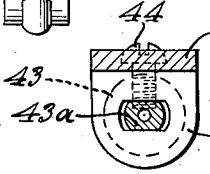


Fig. 10



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UNITED STATES PATENT OFFICE

2,274,696

HOOD LATCH AND OPERATING MEANS THEREFOR

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Application January 4, 1941, Serial No. 373,110

6 Claims. (Cl. 292—225)

Our invention relates to an improvement in hood latches and is particularly applicable to hood latches as applied to alligator type hoods, in which the hood closure is hinged or movably mounted at its rear end in such fashion that the forward end may be swung up to give access to the parts within the hood.

One purpose is the provision of an improved type of latch for an alligator hood closure in which the latch may initially be released only from within the car.

Another purpose is the provision of improved connecting means between the latch and the internally operable actuating or releasing means therefor.

Another purpose is the provision of an improved latch structure operable by remote control within the car.

Another purpose is the provision of an improved latch structure in which a plurality of concentrically pivoted levers are employed, mounted on a keeper receiving aligning plate, one of said levers serving as a latch for engaging with the keeper, the other serving as means for moving the latch lever to release position, the latch lever being also independently movable to release position in response to the downward movement of the keeper to latching position.

Another purpose is the provision of an improved latch which yields more freely to the camming action of the keeper, which may if desired be of spearhead shape, when the closure is lowered to closing position.

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

We illustrate our invention more or less diagrammatically in the accompanying drawings wherein:

Fig. 1 is a side elevation with parts broken away;

Fig. 2 is a section on the line 2—2 of Fig. 1, on an enlarged scale;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a partial bottom plan view of the structure shown in Fig. 2, with parts in a different position;

Fig. 5 is a view similar to Fig. 4, with the latching means in releasing position;

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

Fig. 7 is a plan view of the latch lever;

Fig. 8 is a plan view of the latch actuating lever;

Fig. 9 is an end elevation of the lever of Fig. 8; and

Fig. 10 is an enlarged section on the line 10—10 of Fig. 8.

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

Referring to the drawings, 1 generally indicates an automobile hood, and 2 a hood closure, which may be hinged or otherwise movably secured at its rear end, a hinge 3 being diagrammatically illustrated. It will be understood, however, that in general some type of multiple or lever arm hinged structure may be employed. Since the details of the hinge do not of themselves form part of the present invention, the hinge 3 will be considered as merely a diagrammatic illustration of a hinge for movably supporting the rear end of the closure 2.

4 illustrates an instrument panel, upon which may be mounted any suitable control button 5, connected to the wire 6a in the conduit 6, whereby, as will later appear, a pull on the button 5 actuates the below described latch. Referring, for example, to Fig. 3, 7 illustrates a combined centering member and latch keeper, which may for example have a spearhead 7a terminating at its upper end in a latching ledge 8. The spearhead shaft 7 may be secured to a plate or support 9, which in turn is mounted in any suitable manner upon the closure 2. A lower plate or support, generally indicated as 10, is mounted in any suitable fashion on the hood 1, in vertical alignment with the support 9. It is apertured as at 11 to receive the end of the spearhead and is further apertured as at 12 to permit the penetration therethrough of a safety latch 13, pivoted as at 14 upon the support 9. The safety latch does not of itself form part of the present invention and will not be further described.

15 is a spring, herein shown as coiled about the keeper stem 7 and compressed between the support 9 and a cup 16, and which has a bottom flange 17 adapted to engage the upper face of the support 10. It will be understood that when the closure 2 is in raised position, the cup 16 is thrust by the spring downwardly about the head 7a, and its upper flange 18 serves as a stop for limiting its further downward movement along the stem 7. When the parts are in the closed position, the spring 15 is compressed, and when the below described latch structure is released, it is effective to raise the closure 2 a slight distance above the hood 1 and to raise the latch ledge 8 of the spearhead 7a up out of alignment with the latch lever 20, which may be supported in any suitable guide 21 formed or mounted on the lower side of the support 10, and is pivoted

as at 22. The raising of the closure 2 is also effective to permit the operator to reach in and manually release the safety catch 13, which would otherwise engage a side of the aperture 12 and prevent any further lifting of the closure 2.

In order to actuate the latch lever 20 we provide the following structure: An additional lever 23 is concentrically pivoted, as at 22, and is provided with a lip 24 adapted to engage a portion of the lever 20, as at 25. It will be understood that the engagement between the two levers may be made in any satisfactory way, but we find it convenient to employ such a lip engaging the forward edge of the lever 20. Independent means are provided for normally holding both levers in latching position. We illustrate, for example, a coil spring 26, one end of which is secured to the lever 20, as at 27, and the other to an offset or ear on the plate 10, as at 28. 29 is a second spring, one end of which is secured to the lever 23, as at 30, and the other end to an ear or offset on the plate 10, as at 31. It will be understood that the lever 20 is normally held in latching position by the spring 26, but may recede from latching position independently of the position of the lever 23 or of its actuating means. On the other hand, if the lever 23 is withdrawn from latching position, it withdraws with it the lever 20. The end of the guide 21 may serve as a limit means for both levers for limiting their movement toward latching position, as at 32. The guide is of sufficient length, however, to permit both members to recede entirely from latching position.

In order to move the levers unitarily from latching position, or in order to cause the lever 23 to withdraw the lever 20 from latching position, we provide any suitable tension members, such as the flexible wire 6*a*, which may be provided with the flexible surrounding conduit 6, the conduit 6 passing through the guide portion 40 of the support 10, as shown for example in Fig. 4. Any suitable clamping means 41 may be employed to clamp the conduit 40 in position. The end of the wire 6*a* passes through a fitting 43 and may be adjustably secured thereto as by any suitable set screw 44. The result is an adjustable connection between the end of the lever 23 and the wire 6*a*, which may be easily made and adjusted, as the set screw 44 is accessible through an aperture 45 in the plate 10. The connection permits a relative oscillation of the fitting 43 in relation to the flange 46 of the lever 23 through which it passes. This prevents any perceptible excess strain on the wire 6*a* and reduces or prevents fatigue and breakage.

The flattening or shoulder of the reduced portion 43*a* of the fitting 43 and of the opposed portions of the aperture in the lever flange 46 through which it passes, as shown in Fig. 10, prevents rotation of the fitting in relation to the lever and insures that the set screw 44 will be readily accessible through the aperture 45. This is particularly advantageous in assembly line practice in automobile plants, since the workman can readily thread the wire 6*a*, or its equivalent, through the central aperture of the fitting 43 and then insert and tighten the set screw 44 to make a proper adjustment in relation to the lever 23. The fact that the set screw 44 and the end of the wire 6*a* are always in alignment with the aperture 45 of the plate 10 is a great convenience and time saver on the assembly line.

It will be understood, also, that the outer end 32 of the guide 21 serves as a stop for limiting the outward movement of either or both of the levers 20 and 23.

It will be realized that, whereas we 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 our invention. We therefore wish our description and drawings to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting us to our precise showing.

For example, where we have illustrated the wire 6*a* in the conduit 6, it will be understood that any suitable actuating means may be employed. For example, a simple wire with spaced bearings or aligning means or any other suitable tension member may be used, whereby the operator, by moving the manual member 5 or its equivalent, may form within the automobile draw out on the actuating lever 20 and release the latch. And, with reference to the springs 26 and 29, herein shown as coil tension springs, it will be understood that, while we find these springs practical, other forms and locations of spring may be employed without departing from the spirit of our invention.

It will also be understood that, whereas we have illustrated what we call a spearhead keeper with the concentric coil spring 15 thereabout effective initially to raise the closure 2 when the latch is released, we do not wish to be limited to the employment of our latching and unlatching means with any specific keeper, or with any specific means for raising the closure.

The use and operation of our invention are as follows:

In latch type hood closures we find it advantageous to have the keeper ride over the latching means without having this riding over movement of the latching means to release position have any effect on the tension member, such as 6*a*, which is employed to release the latch from inside of the automobile. Thus, when the spearhead 7*a* or its equivalent is lowered into closing position upon the downward movement of the hood closure 2, the inclined surface 7*a* of the keeper cams the lever 20 to release position, engaging its forward edge 20*a*. The lever 23 is not moved, and there is no strain upon or movement of the tension member 6*a*, or the connection between said tension member and the lever 23, and of course no movement of the manual knob 5. The result is a saving of wear and strain upon the associated parts. On the other hand, when the operator wishes to release the latch from within the automobile, a pull on the knob 5 is effective to draw the tension member 6*a* inwardly and to rotate the lever 23, and with it the lever 20, to release position. In practice it is impossible for any tamperer to have access to the interior of the hood or hood closure without first getting into the car and pulling on the handle or knob 5.

The user, when he wishes filling station service, simply pulls on the knob, with the result that the spring 15 slightly lifts the closure 2 and draws the spearhead 7*a* out of latching alignment with the lever 20. When the lever returns after the release of the handle 5, the spearhead or keeper has passed beyond it, and the outside operator or attendant can then reach his hand in beneath the edge of the closure 2 and move the safety latch 13 to release position against the spring 13*a*, and by the same movement lift the hood upwardly. When the attendant wishes to close

the hood or closure, he merely pushes it or slams it down, and the keeper portion 7a rides over the lever 20 and cams it to release position, after which the spring 26 snaps it back to latching position without any movement of the wire 6a or any of its associated parts, with the consequent saving of strain and wear and fatigue of the wire and of its connections with the actuating lever 23.

We claim:

1. In a latch assembly, a horizontal latch support apertured to receive a keeper, a pair of levers of unequal length concentrically pivoted on said support on a generally vertical axis and extending in a like direction from the pivot, the shorter of said levers constituting a latching lever and the longer an unlatching lever, means effective normally to urge the latching lever toward latching position, with a latch portion of said lever extending into alignment with said keeper receiving aperture, means for normally urging the unlatching lever toward inoperative position, and manually operable means for moving the unlatching lever to the unlatching position, said levers having interconnecting parts adapted to move the latching lever to unlatching position in response to unlatching movement of the unlatching lever, while leaving the latching lever free to move to the unlatching position independently of the location of the unlatching lever.

2. In a latch assembly, a horizontal latch support apertured to receive a keeper, a pair of levers of unequal length concentrically pivoted on said support on a generally vertical axis and extending in a like direction from the pivot, the shorter of said levers constituting a latching lever and the longer an unlatching lever, means effective normally to urge the latching lever toward latching position, with a latch portion of said lever extending into alignment with said keeper receiving aperture, means for normally urging the unlatching lever toward inoperative position, and manually operable means for moving the unlatching lever to the unlatching position, said levers having interconnecting parts adapted to move the latching lever to unlatching position in response to unlatching movement of the unlatching lever, while leaving the latching lever free to move to the unlatching position independently of the location of the unlatching lever, the operating means being connected to the end of the longer lever at a point beyond the end of the shorter or latching lever.

3. In a latch assembly, a horizontal latch support apertured to receive a keeper, a pair of levers of unequal length concentrically pivoted on said support on a generally vertical axis and extending in a like direction from the pivot, the shorter of said levers constituting a latching lever and the longer an unlatching lever, means effective normally to urge the latching lever toward latching position, with a latch portion of said lever extending into alignment with said keeper receiving aperture, means for normally urging the unlatching lever toward inoperative position, and manually operable means for moving the unlatching lever to the unlatching position, said levers having interconnecting parts adapted to move the latching lever to unlatching position in response to unlatching movement of the unlatching lever, while leaving the latching lever free to move to the unlatching position independently of the location of the unlatching lever, and a unitary guide and support for both levers, including a strap secured at each end to the lower face of the support and underlying both said levers.

4. In a latch assembly, a horizontal latch support apertured to receive a keeper, a pair of levers of unequal length concentrically pivoted on said support on a generally vertical axis and extending in a like direction from the pivot, the shorter of said levers constituting a latching lever and the longer an unlatching lever, means effective normally to urge the latching lever toward latching position, with a latch portion of said lever extending into alignment with said keeper receiving aperture, one of said levers overlying the other, means for normally urging the unlatching lever toward inoperative position, and manually operable means for moving the unlatching lever to the unlatching position, said levers having interconnecting parts adapted to move the latching lever to unlatching position in response to unlatching movement of the unlatching lever, while leaving the latching lever free to move to the unlatching position independently of the location of the unlatching lever.

5. In a latch assembly, a horizontal latch support apertured to receive a keeper, a pair of levers concentrically pivoted on the lower side of said support for rotation about a common generally vertical axis, one of said levers overlying the other, said levers being of unequal length, the shorter of said levers constituting a latching lever and the longer of said levers constituting an unlatching lever, yielding means adapted normally to urge said latching lever towards latching position, with the latch portion of said lever extending into alignment with the keeper receiving aperture, separate yielding means adapted normally to urge the unlatching lever toward inoperative position, actuating means connected to the unlatching lever at a point beyond the end of the latching lever, said unlatching lever having a portion projecting into the path of movement of the latching lever and adapted to interconnect therewith and to move the latching lever to unlatching position in response to an actuating movement of the unlatching lever, the latching lever being free to move to unlatching position while the unlatching lever is in inoperative position.

6. In a latch assembly, a horizontal latch support apertured to receive a keeper, a pair of levers of unequal length concentrically pivoted on said support on a generally vertical axis and extending in a like direction from the pivot, the shorter of said levers constituting a latching lever and the longer an unlatching lever, means effective normally to urge the latching lever toward latching position, means for normally urging the unlatching lever toward inoperative position, and manually operable means for moving the unlatching lever to the unlatching position, said levers having interconnecting parts adapted to move the latching lever to unlatching position in response to unlatching movement of the unlatching lever, while leaving the latching lever free to move to the unlatching position independently of the location of the unlatching lever, the operating means being connected to the end of the longer lever at a point beyond the end of the shorter or latching lever.

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