Feb. 14, 1933. C. HOLLERITH 1,897,805

HOOD LATCH

Filed July 8, 1930

FIG. 2

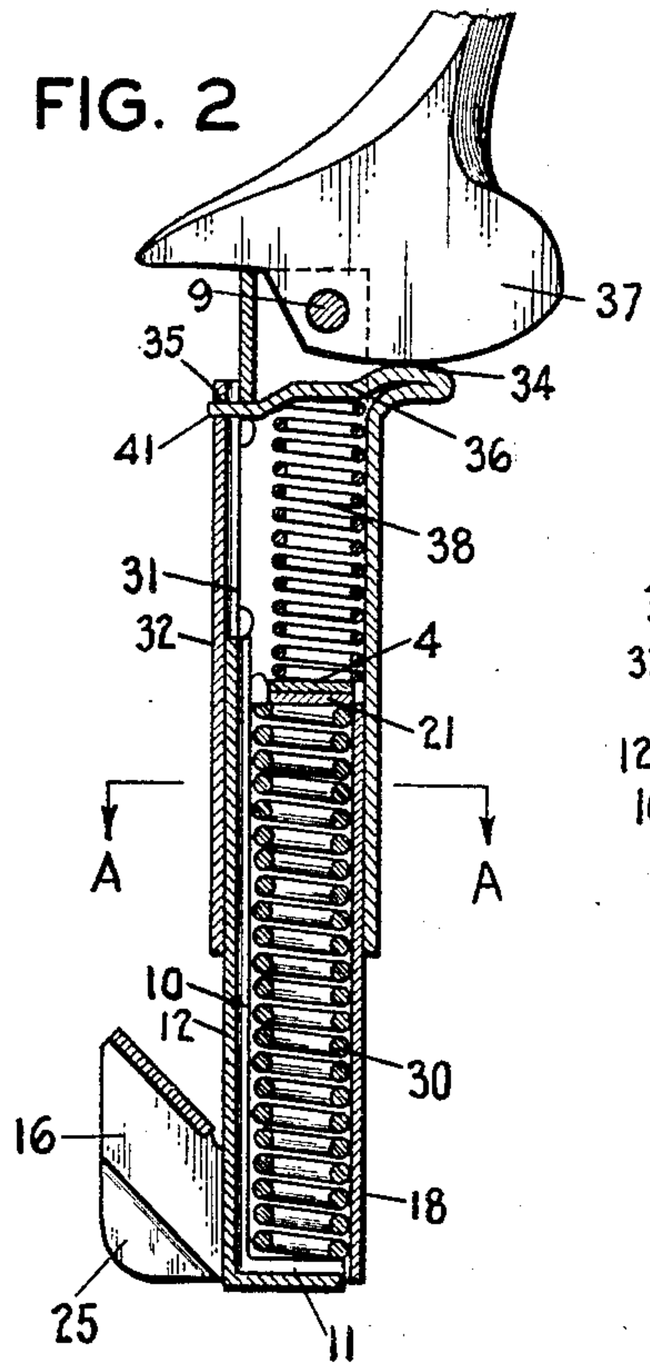
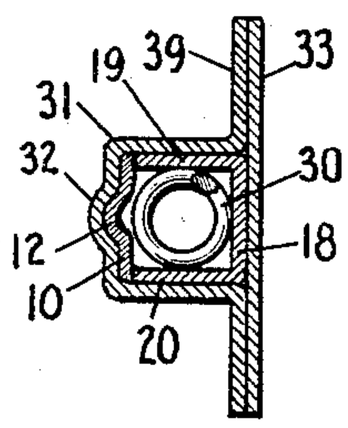


FIG. 4



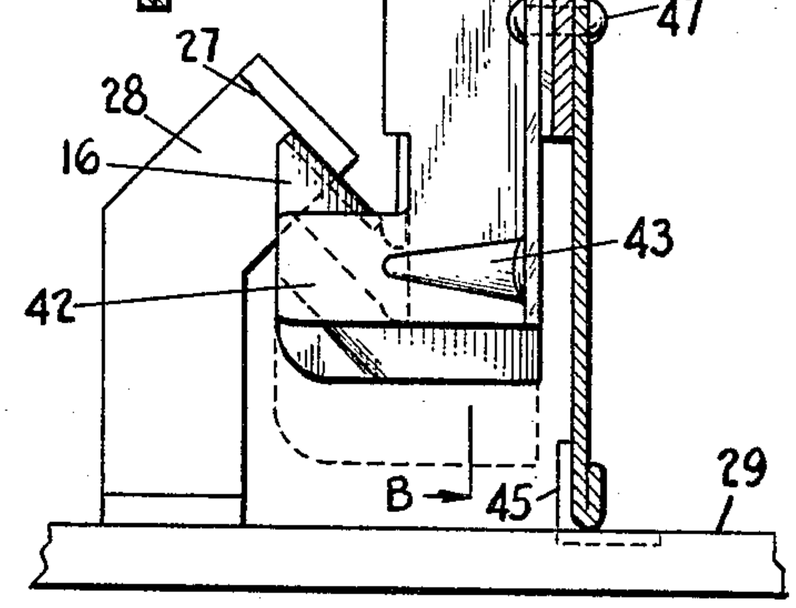


FIG. 1

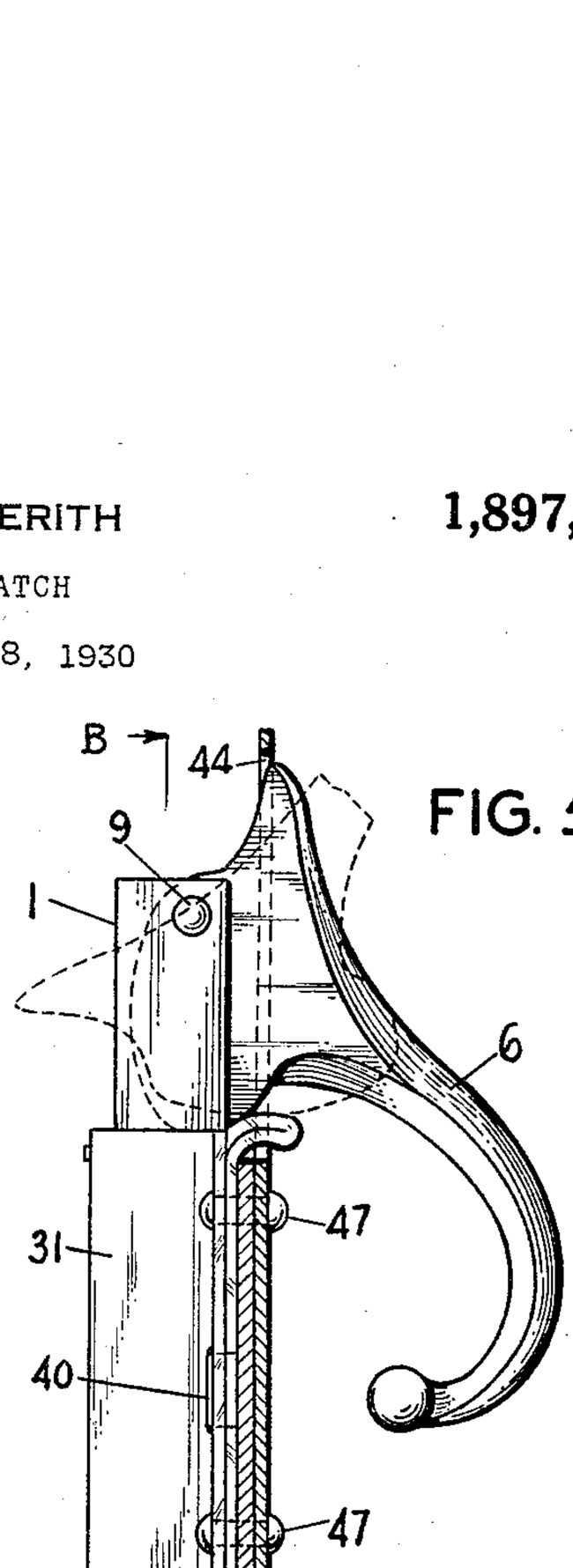


FIG. 3

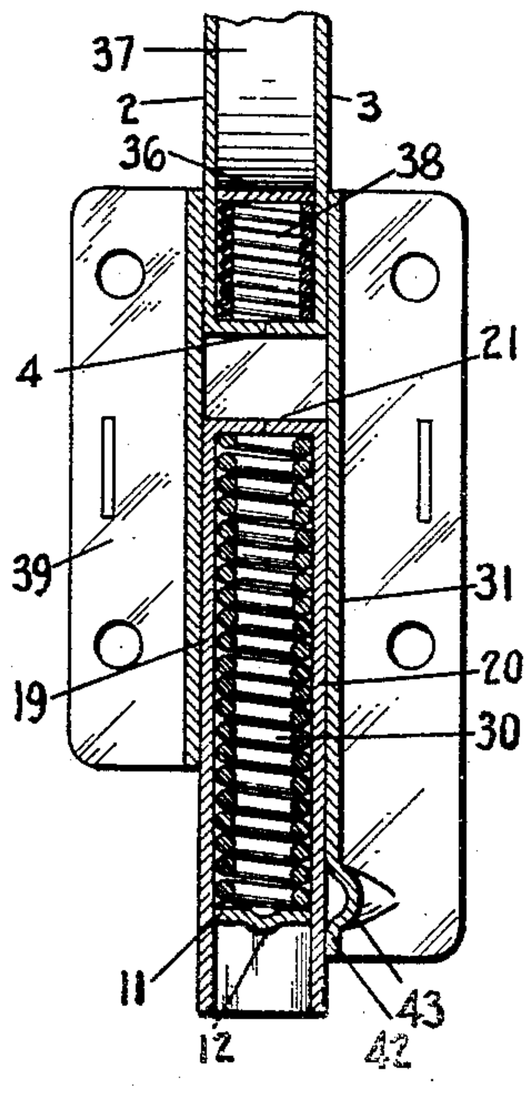


FIG. 5

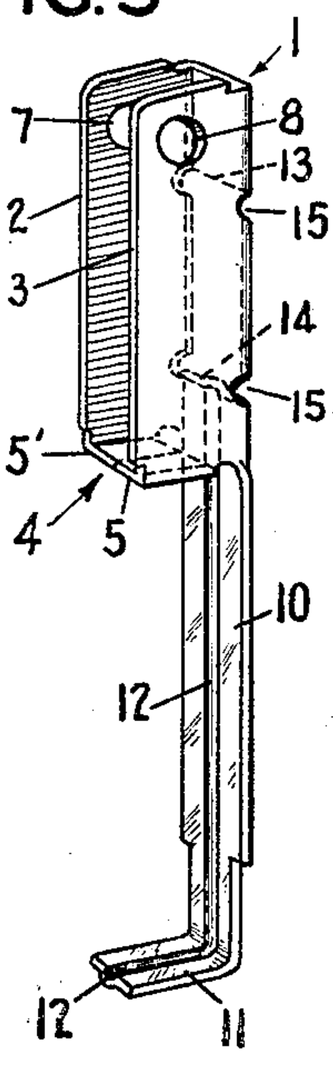


FIG. 6

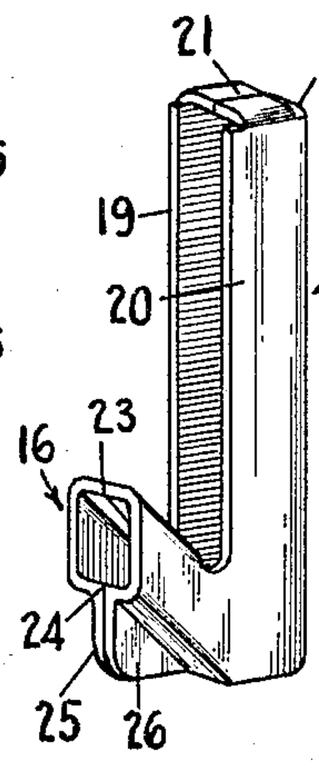
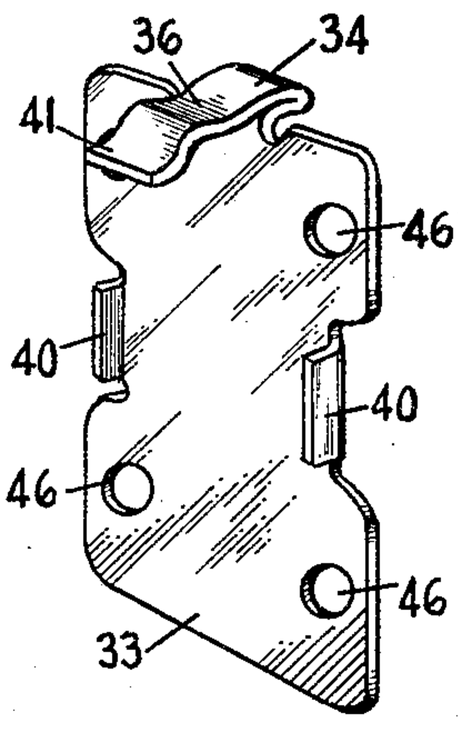


FIG. 7



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ATTORNEY

Patented Feb. 14, 1933 1,897,805

UNITED STATES PATENT OFFICE

CHARLES HOLLERITH, OF JACKSON, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO TERNSTEDT MANUFACTURING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN

HOOD LATCH

Application filed July 8, 1930. Serial No. 466,484.

This application relates to latches for closures and is disclosed herein with particular reference to such closures as automobile engine hoods.

One of the objects of the invention is to construct a hood latch of great strength, light construction and pleasing appearance.

Another object of the invention is to construct a hood latch with spring connection between the operating handle and the hook so that it will be yieldingly held against the keeper when in closed position and another spring connection between the hood and a stationary member to yieldingly hold the hook in unlatched position, the parts being so designed as to give maximum strength to the spring connections with minimum size of the cooperating parts.

Other objects will appear in the appended description, reference being had to the drawing in which:

Fig. 1 is a section through a portion of an engine hood and hood sill showing the latch in operative position in respect to the keeper.

Fig. 2 is a central section in the plane of the paper of the latch in Fig. 1 with the latch in open position.

Fig. 3 is a section taken on line B—B of Fig. 1.

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

Fig. 5 is a perspective view of the slide to which the handle is attached.

Fig. 6 is a perspective view of the hook and shank.

Fig. 7 is a perspective view of the back plate of the latch.

My invention is an improvement on the latch construction disclosed in application No. 320,468 of Charles W. Walters. In that latch the hook member moves between the sides of the slide so that the spring enclosed by the sides of the hook member is of small diameter compared to the width of the slide. I construct the slide and the hook member so that they are of substantially the same width which permits one to use a larger spring between the sides of the hook member with the same width of slide.

My invention is also an improvement on the latch in the above mentioned application of Charles W. Walters in that a second spring is employed to hold the slide in open position. Thus the hook is not only yieldingly held in engagement with the keeper when it is locked but the hook and slide are also yieldingly held in open position when the latch is out of engagement with the keeper.

Referring to the drawing, the latch member proper is made up of a slide 1 having two spaced sides 2, 3, in the upper part with bent-over ends 5′ and 5 to form a spring abutment 4. This slide is open at the top and receives an operating handle 6 pivoted in the holes 7, 8, in the sides by means of a bolt or pin 9. The slide 1 has an extension or finger 10 bent over at the lower end to form a second spring abutment 11. To give the finger 10 added strength a bead 12 is preferably formed therein as well as in the abutment 11.

The slide 1 is open at the back between the sides 2 and 3 to form a slot, the ends of which are designated by dotted lines 13, 14, in Fig. 5. To prevent corner cracks forming in this slot the sides adjacent the end of the slot may be cut out as at 15.

In the construction shown in the drawing the slide of Fig. 5 would be made from a sheet of metal stamped into the shape shown, thus giving strength and rigidity with lightness and low cost.

The hook member consists of the hook proper designated by reference character 16 and a shank 17. This hook member in the modification shown in the drawing is stamped from sheet metal into the shape shown in Fig. 6. The shank has a back 18 and two sides 19 and 20 so that it is open at the remaining side. The sides 19 and 20 are bent over to form a spring abutment 21. The hook member 16 as shown in Fig. 6 has two sides of channel shape which meet at the top line 23 and at the bottom line 24. The sides of the hook also have bottom extensions 25, 26 pressed into engagement and spot welded, riveted or otherwise secured together. This construction gives great rigidity for the amount of material used in the

hook. The upper surface of the hook is made slanting, as shown, to engage the slanting surface 27 of the keeper 28, which keeper may be secured to the sill 29 of the automobile frame or to the cowl at one end of the hood and to the radiator at the other, whichever form is preferred. The slide of Fig. 5 is assembled in relation to the hook shank by fitting the abutment 11 into the opening between the sides 19 and 20 of the hook with a spring 30 between the abutments 11 and 21. This spring 30 is normally under tension and will hold abutment 21 against abutment 4, thus holding the hook and slide together when they are removed from connection with the other parts.

By the construction described it will be seen that the outer plane of the sides 2 and 3 of the slide 1 do not extend beyond, and preferably are in the same plane as, the planes of the outer sides 19 and 20 of the shank 17 of the hook. This permits of the use of a spring 30 of increased diameter. If the sides 2 and 3 of the slide extended down to the foot 11 the shank of the hook would have to be made narrower to pass between these sides and the spring 30 would be of smaller diameter. Thus by cutting away these sides and using a projecting finger on the slide I am able to use a larger spring without changing the proportions of the other parts of the latch.

The slide and hook assembly as just described fit in a housing or frame made up of a channel member 31 preferably having a bead 32 to receive the bead 12 of the finger and a back plate 33 (Fig. 7). The back plate 33 has an extension bent outwardly to form a cam member 34 and then inwardly to enter a slot 35 in the top of the channel shaped part of the housing, as shown clearly in Fig. 2. The projection 34 of the back plate is preferably bent downward at 36 to form a depression to yieldingly hold the cam 37 of the handle 6 in the latched position, as shown in Fig. 7. This projection or cam follower makes it easier to lift the slide by the cam. The greater the movement of the slide the longer this projecting piece should be to obtain the same ease of lift. A spring 38 is assembled in position between the abutments 4 and the abutment formed by the opposite side of depression 36.

The back plate is pierced at a plurality of places to form holes 46 which register with holes in the outwardly extended sides 39 of the channel shaped member 31 so that rivets, bolts or other fastening means 47 may pass through the back plate, the channel member and the side of the hood, as shown in Fig. 1, to rigidly fasten the latch to the hood. To fasten the back plate 33 to the channel member 31 with the hook, slide and springs housed therein I preferably stamp lugs 40 so as to extend, as shown in Fig. 7. These lugs enter slots in the sides 39 of the channel member and are upset to hold the parts together, thus the latch is rigid and may be handled or stored as a separate unit before assembled with the hood. If desired, the end 41 of the extension on the back plate may be upset to uphold the parts of the housing together when assembled.

To keep the hook from engaging with the keeper on raising the hood by the handle or bail (not shown) in the unlatched position of the latch I form a guard 42 as shown clearly in Fig. 1. This guard may be an integral extension of the channel member of the housing and to give it added strength a bead 43 may be stamped therein.

When the parts have been assembled as thus described and the handle secured in the upper part of the slide by the bolt or pin 9 the latch is complete and may be sold as a separate unit to be placed in position on the hood of automobile engines. The hood of course would be slotted at 44 to receive the handle and also to receive the projecting cam 37 on surface 34 of the extension on the back plate 33. When thus assembled the rivets or bolts will hold the latch to the engine hood. The operation of the latch is as follows:

To latch the engine hood the latter will be dropped into position with the handle, as shown in full lines in Fig. 2 and dotted lines in Fig. 1. The hook will then be below the guard 42, as shown in dotted lines in Fig. 2. The hood will then rest against rail 45 and the guard 42 and the hook will be vertically beneath the keeper surface 27. The handle 6 on being depressed to the position shown in full lines in Fig. 1, will through cam 37, engaging cam surface 34, raise the pin 9 and the attached slide 1. Cam surface 34 on the back plate of course remains stationary. Movement of the handle therefore raises the slide 1 and compresses spring 38 between the movable abutment 4 and the stationary abutment beneath surface 36. The movement of the slide also tends to compress spring 30 between abutments 11 and 21. This yieldingly pulls shank 17 and the hook 16 upward until the hook engages surface 27 on keeper 28. The parts are so designed that when this engagement takes place the cam 37 has not quite cleared cam surface 34 so as to continue the compression of spring 30 to always insure that the hook will be held in engagement with the keeper by spring action. Continued movement of the operating handle brings the cam 37 into the depression 36 where it is held by the spring action on the slide 1. Due to the slanting surface 27 of the keeper 28 the hood is pulled inward

in the latched position until the lower part rests against the rail 45, thus holding it rigidly in position.

To unlatch the hood handle 6 on raising brings the cam 37 out of the depression 36 and over the cam surface 34. As the cam surface rises the spring 38 forces the slide 1, the hook shank 17 and the hook 16 downward because the rising of the cam surface permits the pin 9 to descend. When the handle is once started in the raised position the slide and hook will lower until the hook is beneath the guard 42 and clears the keeper surface 27. The hood is thus unlatched and it may be raised either by the handles 6 or by a separate bail attached thereto, preferably the latter in most cases, as hood latches are ordinarily placed on each edge of the hood and are too far apart to be used to comfortably raise the hood, especially with engines of more than six cylinders in line.

By constructing the hood in the way described, the sides 19 and 20 of the hook shank are spaced as far apart as the sides 2 and 3, which are approximately coextensive therewith. This permits the spring 30 to be of the same diameter as the spring 38, which is an important feature since it is advisable to hold the hook against the keeper with high spring pressure.

The spring 38 of course could be omitted and obtain still the features inherent in the remaining parts of the latch, but it is preferable to use this spring as otherwise the slide handle and hook would be held in the open position only by gravity which would cause the parts to rattle.

While I have shown the keeper as attached to the sill of the automobile body adjacent the engine the keeper may be attached on one end to the cowl and on the other to the radiator shell so that the hood will be more independent of body movements.

The handle of the latch may be plated with nickel or chromium or otherwise finished to harmonize with the finish of the hood or automobile body. It is usually desirable to make the stampings in the latch of steel and to plate these parts with cadmium or some other non corrosive metal that may be plated at low cost.

Having described my invention, what I claim is:

1. In hood latches, a shank having two spaced sides, a hook on one end of said shank, a slide aligned with said shank and located between the planes of the outside surfaces of the sides thereof, means including a spring for yieldingly resisting relative movement between the shank and slide, a housing for said slide, means for moving the slide within the housing.

2. In engine hood latches, a hook having a shank with two spaced sides, a slide having two spaced sides aligned with and abutting against said shank but located within the planes of the outside surface of the sides thereof, a spring located between the sides of said shank to yieldingly resist movement between the slide and shank, a frame around said slide, and means for moving said slide to move the hook and place tension on said spring.

3. In engine hood latches, a hook having a shank with two spaced sides and an abutment, a slide having two spaced sides aligned with and abutting against said shank but located between the outside surfaces of the sides thereof, a finger attached to said slide having a second abutment, a spring between said abutments, a third abutment on said slide, a frame around said slide, a fourth abutment attached to said frame, a spring between said third and fourth abutments, means for moving said slide and hook in relation to said frame, and a guard fixed to the hood positioned above the hook when in unlatched position.

4. In hood latches, a shank having two spaced sides, a hook on one end of said shank, a slide aligned with said shank and located between the planes of the outside surfaces of the sides thereof, means including a spring for yieldingly resisting relative movement between the shank and slide, a housing for said slide, means for moving the slide within the housing, and means including a spring for yieldingly resisting said movement.

5. In engine hood latches, a hook having a shank with two spaced sides, a slide having two spaced sides aligned with and abutting against said shank but located within the planes of the outside surface of the sides thereof, a spring located between the sides of said shank to yieldingly resist movement between the slide and shank, a frame around said slide, a spring located between the sides of the slide to yieldingly resist movement between the slide and the frame, and means for moving said slide to move the hook and place tension on said spring.

6. In engine hood latches a hook having a shank with two spaced sides and an abutment, a slide having two spaced sides aligned with and abutting against said shank but located between the outside surfaces of the sides thereof, a finger attached to said slide having a second abutment, a spring between said abutments, a third abutment on said slide, a frame around said slide, a fourth abutment attached to said frame, a spring between said third and fourth abutments, and means for moving said slide and hook in relation to said frame.

7. In engine hood latches, a hook having a shank with two spaced sides and an abut-

ment, a slide having two spaced sides aligned with and abutting against said shank but located between the outside surface of the sides thereof, a finger attached to said slide having a second abutment, a spring between said abutments, a third abutment on said slide, a frame around the slide, a fourth abutment attached to said frame, a spring between said third and fourth abutment, and a handle lever pivoted in said slide and having a cam engaging said fourth abutment.

8. In engine hood latches, a hook having a shank with two spaced sides and an abutment, a slide having two spaced sides aligned with and abutting against said shank but located between the outside surface of the sides thereof, a finger attached to said slide having a hook on its free end, said finger and hook having a strengthening bead formed therein, a spring between said abutment and the hook on said finger, a third abutment on said slide, a frame around the slide having a fourth abutment, a spring between the third and fourth abutments, and a handle lever pivoted on said slide and having a cam engaging said fourth abutment.

9. In engine hood latches a shank having a hook on one end and an abutment on the other, a slide having sides terminating at said abutment, a finger on said slide extending from said abutment towards the hook, said finger having a second abutment, a spring between said abutments, a third abutment attached to said slide, a cam plate, a spring between said third abutment and said cam plate, and means for placing tension on both of said springs.

10. In engine hood latches, a hook having a shank with spaced sides forming an open channel, an abutment at one end of said shank, a slide engaging the outside of said abutment and having spaced sides located within the outside surface planes of said shank whereby the channel in the shank is at least as large as the channel between the spaced sides of the slide, a pivot pin on said slide, a third abutment on said slide projecting between the spaced sides of said shank, a spring between the first and third abutment, a fourth abutment adapted to be secured to the hood, a spring between the second and fourth abutments, and means attached to said pin for moving said slide to place tension on both of said springs.

11. In hood latches, a keeper, a movable hook member, a spring urging the hook to move away from the keeper, a handle, and spring means between the handle and the hook to move the hook into engagement with the keeper when the handle is moved to close the latch.

12. In hood latches, a stationary member, a movable hook member, an operating member movable relatively to the stationary and the hook members, a spring between the operating and the stationary members, a spring between the operating and the hook members, and a handle to move the slide against the action of the first mentioned spring and to move the hook member through the second mentioned spring.

13. In hood latches, a stationary member, a movable hook member, a movable operating member, a compression spring between the hook and operating members, a handle pivoted to the operating member and having a cam engaging the stationary member, and a compression spring between the operating member and the stationary member.

14. In hood latches, a stationary housing, a shank having a hook slidable in said housing, a slide movable relatively to said housing and to said shank, a spring between the shank and the slide, a spring between the housing and said slide, and a handle to move the slide against the action of the last mentioned spring and to move the shank through the first mentioned spring.

15. In hood latches, a stationary housing, a shank slidable in said housing and having a hook, a slide telescoping with said shank, a compression spring between said hook and slide, a compression spring between the slide and the housing, a handle pivoted to the slide and having a cam, and a cam seat with which said cam engages.

16. In hood latches, a hood having a slot, a housing inside said hood and adjacent said slot, a slide movable in said housing, a handle pivoted to said slide and having a cam, and a cam follower protruding outwardly through said slot to reduce the resisting force of the cam follower normal to the cam.

17. In hood latches, a hood having a slot, a hook member, a handle in said slot having a cam, a connection between the handle and the hook member, and a cam follower projecting outwardly through said slot.

18. In hood latches, a hood having a slot, a housing inside the hood, a slide in the housing, a handle pivoted to the slide and having a cam, and a cam follower consisting of a strip extending outwardly through the slot and inwardly across the housing.

19. In hood latches, a member having a hook, a guard adjacent the hook, and a handle to move the hook to unlatching position and beneath the guard.

20. In hood latches, a keeper, a member having a hook, a guard adjacent the hook, and a handle for moving the hook out of contact with the keeper and beneath said guard.

21. In hood latches, a housing, a member fitting in said housing and having a hook,

a guard attached to said housing adjacent said hook, and a handle for moving said member in the housing to position the hook beneath said guard.

In testimony whereof, I have signed my name to this specification this third day of July, 1930.

CHARLES HOLLERITH.