

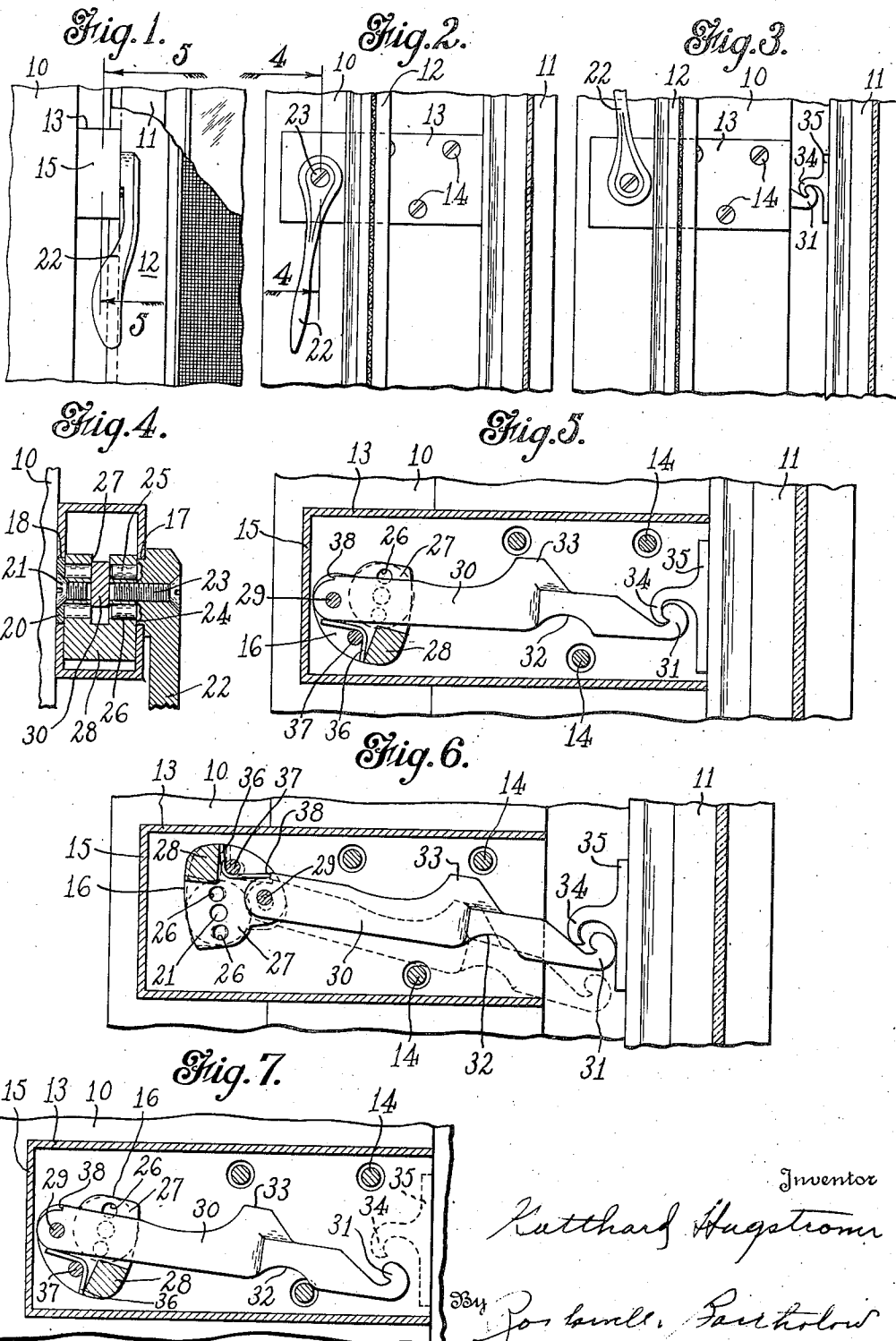
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WINDOW OR DOOR FASTENER

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WINDOW OR DOOR FASTENER

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This invention relates to a fastener for swinging or hinged closure members such as doors or windows, and is particularly applicable to a casement window, for example, to be used as an auxiliary closing means in addition to the usual casement window operator.

In the operation of a casement window, for example, it sometimes occurs that the window sash will stick when the sash is in closed position, and in such case it is sometimes difficult to free it with the usual casement operator. Also, in some instances the window is hard to close by the usual window operator, and needs some auxiliary means to draw it to fully closed position. In the present invention a device is provided which will free a sticky sash so that it can be conveniently operated in the usual manner, or will, when the sash is nearly closed, reach out and engage it and draw it to fully closed position. Further, the present fastener is so constructed that it will remain in an out-of-the-way position unless its use is desired. In other words, unless it is really needed, its presence on the window frame may be disregarded entirely.

One object of the invention is to provide a fastener for a hinged closure which will draw the closure member to fully closed position, or release it for opening when it is inclined to stick.

A still further object of the invention is the provision of a closure fastener of the type described which, when not needed, will not interfere with the normal and usual operation of the closure member by the usual means.

A still further object of the invention is the provision of a device of the character described which will consist of a very few parts so that it may be economically constructed, and which will at the same time be positive and efficient in operation.

A still further object of the invention is the provision of a fastener for a casement window or the like which may be operated in one direction to draw the window to fully closed position, and operated in the other direction to push the window outwardly from the frame in case it is inclined to stick, and which is so constructed that it may be used for either a right- or left-hand window by a change in position of the operating crank.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawing:

Fig. 1 is a front elevational view of a window

having mounted thereon a fastener embodying my invention;

Fig. 2 is a side elevational view of the fastener and casing within which it is mounted, showing the window sash in closed position;

Fig. 3 is a view similar to Fig. 2 showing the window in slightly open position;

Fig. 4 is a sectional view on line 4-4 of Fig. 2;

Fig. 5 is a longitudinal sectional view through the casing of the fastener on line 5-5 of Fig. 1; and

Figs. 6 and 7 are views similar to Fig. 5 but showing the fastener in different positions in its operation.

To illustrate a preferred embodiment of my invention I have shown at 10 the frame of a casement window, the sash of which is shown at 11, the sash being as usual hinged at one side to swing to an open position in the usual manner. It is common practice to place the screen of a casement window on the inside of the window sash so that no obstruction will be present to prevent the window from swinging outwardly to be opened, and such a screen is shown in the present instance at 12. In such case it is, of course, desirable that any operating means for the window shall be so mounted that its operating parts may be accessible at the inside of the screen. As the description proceeds it will be obvious that this is true of the present fastener.

The fastener embodying the invention comprises a case 13 which may be secured to the window frame by screws 14. The case is closed upon all four sides, and at the rear end 15, but is open at the front end or the end facing the window sash.

Within the case 13 is a hub 16, which hub is mounted for rotation relatively to the case. While the particular manner of mounting the hub may be varied without departing from the principles of the invention, in the present instance a rotatable mounting is conveniently secured by means of devices secured to the side faces of the hub, which devices have bearings in circular openings in the case. These openings are shown at 17 and 18, and from Fig. 4 it will be observed that the hub 16 fits fairly snugly between the side walls of the casing and is larger than the openings.

At the side of the casing which lies against the window frame a bearing washer 20 is secured to the hub 16, which washer fits snugly in the opening 18 so as to rotate therein, and is secured to the hub by means of the screw 21. Upon the other side of the casing a crank arm

22 is secured to the hub by means of a screw 23, which crank arm is provided with a bearing boss 24 fitting within the opening 17. The bearing boss 24 is circular so as to rotate in the circular opening 17, and is slightly smaller in diameter than the adjacent portion of the crank 22 so as to provide a shoulder around the boss which abuts the exterior face of the wall of the case. The crank is also provided with pins 25 adapted to seat in openings 26 in the hub, so that the crank will be rigidly secured to the hub. It may here be stated that similar openings 26 are provided at the other face of the hub 16, so that the only operation required to change the fastener from a right-hand door to a left-hand door is to transpose the crank 22 and bearing washer 20, the remaining parts being symmetrical with respect to a longitudinal vertical plane through the casing.

As shown in Figs. 4 to 6, the hub member 16 is slotted as at 27, this slot being relatively large so as to in effect divide the hub into two laterally spaced parts connected by the web 28. Disposed within the slot 27 and pivoted to the hub at 29 is the rear end of the arm 30 of a catch member, which member projects forwardly from the hub and is adapted at its free end, where it is provided with a knuckle or hooked portion 31, to project from the open end of the casing. This catch member may be provided with a recess 32 at the lower side thereof, and with a projection or boss 33 at the upper side.

The knuckle portion or hooked end 31 of the catch member is designed to engage and cooperate with a complementally shaped knuckle or hook member 34 provided upon a base plate 35 secured to the window sash. The members 31 and 34 are so shaped that they will engage and grip one another in such a manner that when once engaged they will not become disengaged during the movement of the fastener to draw the window to closed position, but will readily become disengaged when the movement of the arm 30 is reversed and its movement tends to push the sash to open position.

As has been hereinbefore described, the arm 30 is pivoted to the hub 16 at the point 29. However, in order to secure the proper movement of the arm 30 to effect the results above set forth, it is necessary that the arm be restrained in movement about the pivot point 29, so that it will tend to swing with the hub 16 until some obstruction to such swinging movement is encountered, at which time it will be free to be moved longitudinally with respect to the casing without further swinging or pivotal motion. In the illustrated embodiment of my invention this is accomplished by mounting a leaf spring 36 within the slot 27. This leaf spring is of L-shaped formation, one arm bearing against the web member 28, while the other bears against the arc-shaped end of the arm 30. The spring may be held in position by means of the pin 37 mounted in the hub and extending across the slot 27 at the vertex of the angle made by the two arms of the spring. The rear end of the arm 30 may be provided with a shoulder 38 against which the end of the spring 36 contacts when the end of the arm 30 is in protracted position, so as to limit the movement of the parts in this direction.

The operation of the device will now be described. When the window is in slightly open position, as shown in Fig. 6, and before any movement of the fastener to draw it to closed position, the arm 30 and associated parts of the de-

vice are in the dotted line position shown in Fig. 6, the crank 22 being in its upper position, shown in Fig. 3. At this time it will be understood that the sash has been closed to a sufficient extent so that the knuckle or hook member 34 will lie above the knuckle 31 on the arm 30. The crank 22 is now rotated from the position shown in Fig. 3 to that shown in Fig. 2, or in a counter-clockwise direction. This rotates the hub 16 in a counter-clockwise direction, and during the first part of this movement the friction between the spring 36 and the circularly shaped end of the arm 30 causes the arm to rotate with the hub, thus moving the arm from the dotted line position to the full line position in Fig. 6. This causes the hook 31 to engage the hook 34, and further swinging or pivotal movement of the arm 30 is prevented. A continued rotation of the crank 22 and hub 16 moves the pivot point 29 from the full line position in Fig. 6 to the position shown in Fig. 5, and the arm 30 is drawn rearwardly in a direction substantially longitudinal to the casing, this movement being permitted by the spring 36, which merely rides around the curved or arc-shaped end of the arm 30. Owing to the gripping or engagement of the parts 31 and 34, this retraction of the arm 30 into the casing draws the sash to fully closed position. Moreover, the parts remain in the position shown in Fig. 5 as long as the sash is closed, for the engagement between the parts 31 and 34 will prevent the arm 30 from dropping downwardly in position to disengage the hook 31 from the hook 34. It will be understood that otherwise this arm would drop downwardly, as the arm overbalances the crank 22 when there is no deterrent to the rotation of the hub 16. Thus while the arm 30 and hub 16 would tend to rotate in a clockwise direction, as shown in Fig. 5, when the parts are at rest they are prevented from so doing by the gripping action of the parts 31 and 34.

If it is desired to open the sash the crank 22 is rotated in a clockwise direction from the position shown in Fig. 2, which movement first causes the arm 30 to move forwardly and disengage the hook 31 from the hook 34, permitting the arm 30 to be swung downwardly due to its frictional connection with the hub 16, until the arm strikes the lower portion of the case. Continued rotation of the hub moves the arm forwardly against the plate 35 and positively pushes the sash open. When the arm reaches its final position it lies in the dotted line position shown in Fig. 6, and at this time the crank 22 is in the upper position shown in Fig. 3. At this time it will also be noted that the end of the spring 36 lies against the shoulder 38, thus limiting further relative movement between the hub 16 and arm 30.

It will be noted that in the full open position of the arm 30 the pivot 29 lies slightly above the axis of rotation of the hub 16, which axis is the center line of the screws 21 and 23, so that pressure upon the forward end of the arm 30 will rotate the hub in a counter-clockwise direction, and retract the arm 30 within the casing. With this arrangement no impediment will be offered to the closing of the window sash by the usual operator, even if the arm 30 is in protracted position, for the plate 35 will strike the end of the hook 31 and push the arm inwardly from the position shown in dotted lines in Fig. 6 substantially to the position shown in Fig. 7. During this movement the arm 30 will not be swung up-

wardly to engage the members 31 and 34. The arm 30 will remain in the position shown in Fig. 7, so that the window sash may be operated in the usual way if the use of the fastener is not desired.

It will also be noted that when the fastener is in closed position, as shown in Fig. 5, the pivot point 29 lies slightly below the center of rotation of the hub 16, so that the window sash will positively be held in closed position.

Reference has also been made to the fact that the weight of the arm 30 is sufficient to overbalance that of the crank 22, so that this weight will always tend to keep the arm 30 in a lower position out of the path of the knuckle 34. Therefore, when the arm 30 is drawn inwardly, as shown in Fig. 7, it will drop to its lower position unless engaged with the hook 34 (as in Fig. 5), and will lie out of the path of the member 34 so that it will offer no obstruction in the ordinary opening and closing of the sash.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. A fastener for a closure member comprising a case adapted to be secured to the frame of said member, a hub rotatably mounted in the case, means at the exterior of the case for rotating said hub, an arm projecting from the case, means on the closure member with which said arm is adapted to engage, means connecting said arm with said hub whereby when the latter is rotated the arm is first raised and then retracted into the case, said means including a spring carried by the hub and bearing against the end face of the arm.

2. A door fastener as set forth in the preceding claim, wherein the end of the arm is provided with stop means contacting said spring to limit relative movement of the arm and hub in one direction.

3. A fastener for a closure member comprising a case adapted to be secured to the frame of said member, a hub rotatably mounted in the case, means at the exterior of the case for rotating said hub, an arm projecting from the case, means on the closure member with which said arm is adapted to engage, and means connecting said arm with said hub whereby when the latter is rotated the arm is first raised and then retracted into the case, said arm in any position of the hub dropping by gravity to the lower portion of the case when not engaged with said means on the closure member.

4. A fastener for a closure member comprising a case adapted to be secured to the frame of said member and having openings in its side

walls, a hub in the case, bearing members secured to said hub and rotatably mounted in said openings, a latch member pivoted to said hub eccentrically of its axis of rotation and adapted to be protracted from and retracted into the case by oscillation of said hub, and means on the closure member with which said latch member engages to draw said member to closed position.

5. A fastener for a closure member comprising a case adapted to be secured to the frame of said member and having openings in its side walls, a hub in the case, bearing members secured to said hub and rotatably mounted in said openings, a latch member pivoted to said hub eccentrically of its axis of rotation and adapted to be protracted from the case, means on the closure member with which said latch member engages to draw said member to closed position, a crank having one of said bearing members as a part thereof, and said crank and said other bearing member being interchangeable whereby said case may be applied to right- or left-hand closure members.

6. A fastener for a closure member comprising a case adapted to be secured to the frame of said member and having openings in its side walls, a hub in the casing having detachable bearing members rotatably mounted in said openings, a latch member pivoted to said hub eccentrically of its axis and adapted to be protracted from and retracted into the casing by oscillation of said hub, and said closure member and said latch member being provided with interengaging knuckles whereby when once engaged accidental disengagement thereof is prevented, and means for effecting engagement of said knuckles when said hub is rotated.

7. A fastener for a closure member comprising a case adapted to be secured to the frame of said member, a hub rotatably mounted in the case, a latch member pivoted at one end to said hub and adapted to project from the case at its other end, friction means acting to restrain movement of said member about its pivot, and means on said closure member with which said arm engages to draw the member to closed position, said arm overbalancing said hub whereby the arm when free of said engagement drops to a lower position in the case.

8. A fastener for a closure member comprising a case adapted to be secured to the frame of said member, a hub rotatably mounted in the case, a latch member pivoted at one end to said hub and adapted to project from the case at its other end, and means yieldingly holding said arm against movement about its pivot, said means comprising a spring acting between said arm and a part of said hub, and said spring limiting relative rotation of said hub and arm in one direction.

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