

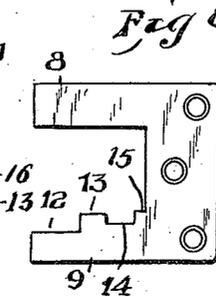
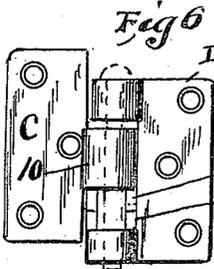
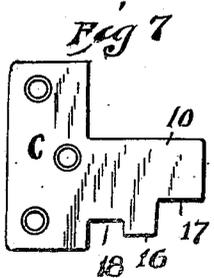
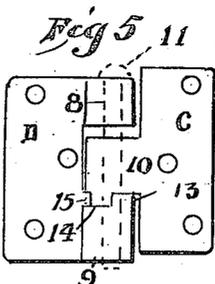
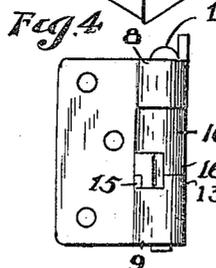
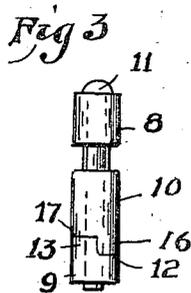
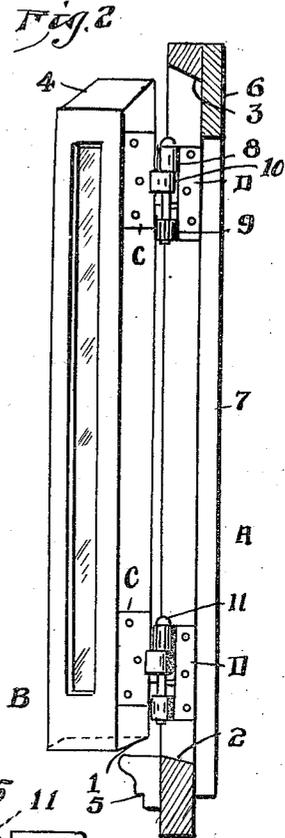
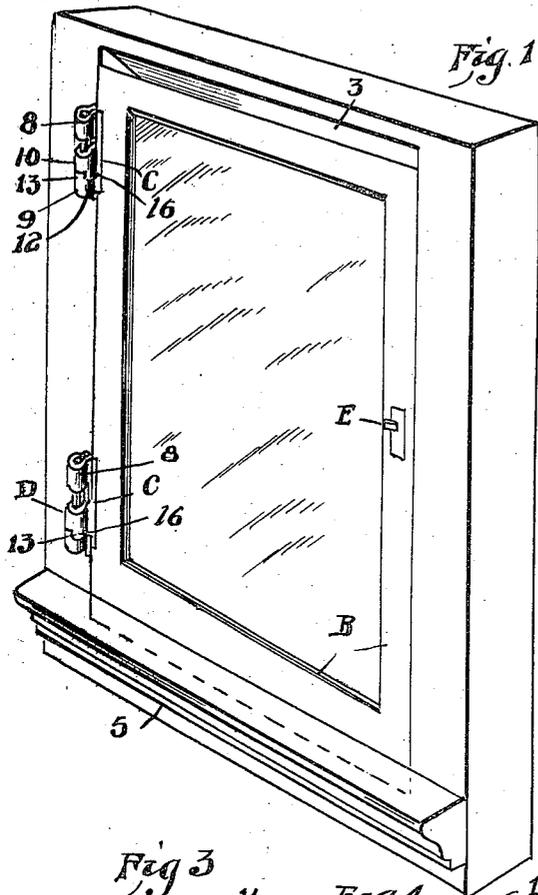
Sept. 9, 1924.

G. W. DE WATERS

1,508,013

HINGE

Filed March 28, 1923



INVENTOR.
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UNITED STATES PATENT OFFICE.

GEORGIANNA W. DE WATERS, OF PITTSBURGH, PENNSYLVANIA.

HINGE.

Application filed March 28, 1923. Serial No. 628,225.

To all whom it may concern:

Be it known that I, GEORGIANNA W. DE WATERS, a citizen of the United States, and residing in the city of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented or discovered the new, useful, and Improved Hinge, of which the following is a specification.

My invention consists in certain new and useful improvements in hinges for mounting swinging closures such as windows and the like.

My improved hinge, while useful for many other purposes, is more particularly designed for hanging casement windows which are arranged to drop vertically when closed to seal the window opening, and which must be first slightly elevated before they can be swung open.

I provide means whereby the proper elevation to fully clear the window sill must be effected, before the window can be swung open, and also whereby when the window is being swung closed it will be in the proper elevated position to clear the window sill and when closed it will drop into the proper sealing position.

I also provide means whereby the open window is prevented from swinging towards its closed position.

I also provide means whereby the opening movement of the window is limited so that it cannot strike the wall to mar the same.

For the purpose of clearly illustrating the principles of my invention, I show the same in the accompanying drawings applied to a casement window embodying the invention described and claimed in Letters Patent of the United States 1,436,951, issued to me on November 29, 1922, but it will be understood that the scope of my present invention is not to be limited thereby.

In the accompanying drawings, which are however merely intended to illustrate the principles of my invention without limiting the scope of the latter to the construction shown, Fig. 1 is an inside perspective of a casement window shown in its closed position, the window being hung with hinges embodying my present invention; Fig. 2 is a view showing the window frame in vertical section and the window swung open to its fullest extent; Fig. 3 is an enlarged front view of one of the hinges in the position shown in Fig. 1; Fig. 4 is a view looking from the left in Fig. 1 showing one of the hinges

in the position assumed when the window is approximately half open; Fig. 5 is a view also looking from the left in Fig. 1, showing the hinge in the position which it assumes when the window is fully open; Fig. 6 is a view looking from the opposite side showing the hinge in the same position as in Fig. 5; Fig. 7 is a view of the sash leaf of the hinge with the barrel shown extended, or before it is bent into cylindrical form, and Fig. 8 is a similar view of the frame leaf.

The following is a detailed description of the drawings.

A represents the window frame which is, of course, built into the building in the usual manner, and B represents the glazed sash which is hinged to the frame by one of its vertical edges and swings clockwise in opening. The bottom of the sash is provided with an inclined surface 1 which, when the sash is closed, rests upon and mates with a downwardly and an outwardly inclined surface 2 which forms the outer portion of the window sill. The top of the window opening is provided with a downwardly and outwardly inclined surface 3, and the top of the sash is provided with a complementary inclined surface 4. The sash, however, is sufficiently less in height than the opening in the window frame, so that when the sash is in its closed position, it may be lifted vertically on its hinges so as to clear the inner portion of the window sill without scraping when the window is swung open, and when the window is being closed, it may be elevated to clear the window sill and when it has reached its closed position it may then drop so that the inclined surface 1 will rest upon and mate with the inclined surface 2.

The upper portion of the window frame is provided with the transverse plate 6 which seals the space between the top of the sash and the surface 3 of the frame when the window is lowered into its closed position. Suitable vertically disposed sealing plates 7 may be provided at the outer sides of the window frame to overlap and seal the vertical edges of the sash when closed.

The window is shown hung by means of my improved hinges, which hinges are composed of a sash leaf C and a frame leaf D, the said leaves being attached to the sash and the window frame, respectively, by screws in the usual manner. The frame leaf D is provided with upper and lower pintle barrels 8 and 9 respectively, the same being

spaced apart in the usual manner. The sash leaf C is provided with the intermediate pintle barrel 10 which is interposed between the pintle barrels 8 and 9 so that the pintle 11 may be inserted through said barrels to pivotally connect the hinge plates together.

The pintle barrel 8 has squared ends. The lower end of the barrel 9 is squared, but its upper end is notched to provide the socket 12 followed in the direction of rotation of the window by an angular abutment 13, which is in turn followed by a socket 14 preferably of less depth than the socket 12, which socket 14 is followed by the angular abutments 15 beyond which is the socket 12.

The upper end of the barrel 10 of the sash plate C is squared but its lower end is notched to form a downwardly extending shoulder 16 which when the window is closed seats in the socket 12 of the barrel 9 of the frame plate D as shown in Figs. 1 and 3. Next in the direction of rotation the lower end of the barrel 10 is cut away upwardly to form the recess 17 and between the other side of the recess 17 and the shoulder 16 is the shoulder 18 of somewhat less depth than the shoulder 16.

When the window is closed and the shoulders 16 seat in the sockets 12, the recesses 17 provide clearance for the abutments 13, as shown in Figs. 1 and 3.

It is evident the engagement of the shoulder 16 in the socket 12 in the case of both the upper and lower hinges lock the window in its closed position, and said window cannot be swung in opening, unless it be first elevated so that the shoulder 16 of the barrel 10 will raise clear from the socket 12. Sufficient space is provided between the upper and lower barrels 8 and 9 of the frame plate D to provide for this vertical movement of the barrels 10 of the sash leaves C. When the window in its closed position has been elevated sufficiently to enable the shoulder 16 of the barrel 10 to clear the socket 12 of the barrel 9, the lower edge of the window is sufficiently raised so that in opening the window it will clear the inner window sill 5 without scraping. When the window is closed the sash is preferably supported on the surface 2, thus providing a gravity seal.

When the window is raised, as described, it may be swung clockwise into its open position, the shoulders 16 of the barrels 10 of the upper and lower sash leaves C riding on the abutments 13 of the barrels 9 of the frame leaves D.

The window will be maintained in its elevated position while it swings past the window sill and until the shoulders 16 as the barrels 10 turn, pass off of the abutments 13 and drop down into the sockets 14 in the barrels 9 with the lesser shoulders 18 resting on the abutments 13. This will

allow the sash to drop and the shoulders 16 will be held by the weight of the window in the sockets 14, thus being prevented from movement counterclockwise to close the window by the end walls of the abutments 13 and being prevented from movement clockwise by the abutments 15. By properly positioning the sockets 14 the window may be locked in a closed position substantially parallel with the wall, and be thus prevented from swinging back against the wall.

It is evident from the foregoing that the window is locked by the hinges against beginning its opening movement until it has been raised sufficiently in the frame to clear the inner window sill 5 without scraping as it swings open. It is further evident that when once raised and its opening movement is started, owing to the engagement of the shoulders 16 of the barrels 10 with the abutments 13 of the barrels 9, the window will be held elevated until swung into approximately its full open position.

It is further evident that when the window has reached its fully opened position, the dropping of the shoulders 16 into the sockets 14 will lock the window against movement in either direction, so that it cannot be accidentally closed, nor can it be pushed backward sufficiently to strike or injure the wall.

It is also evident that by raising the open window sufficiently to enable the shoulders 16 to rise out of the sockets 14 and ride on the abutments 13, the window may then be swung closed, it being held in its elevated position until closed, by the shoulders 16 riding on the abutments 13. When the window, thus held elevated, reaches its closed position, the shoulders 16 will ride off of the abutments 13 and drop into the sockets 12, thereby permitting the sash to drop down so that its lower beveled surface 1 will mate with and rest upon the surface 2 of the window frame.

I have designated the hinge hand members as leaves, but it will be understood that the same need not be flat plates such as shown, but may be of any character adapted for attachment to the sash and frame or other elements.

The upper barrels 8 of the leaves D perform the important function of limiting the distance the sash may be elevated in releasing the locking engagement of the barrels. Thus, the sash can be raised only until the upper ends of the barrels 10 impinge against the lower ends of the barrels 8. Therefore the sash cannot be accidentally dismounted, and excess movement and unnecessary lost motion will not occur.

I prefer to provide a suitable catch or lock indicated at E which may have a suitable handle or lever so that the sash may be unlocked and raised by the same motion or op-

eration. The lock is preferably a spring lock or is provided with a spring catch, so that when the sash is swung into its closed position and dropped as already described the sash will be automatically locked.

What I desire to claim is:—

1. In a hinge for casement windows and the like, the combination of a pintle barrel to be mounted on the frame and a pintle barrel to be mounted on the sash and axially superimposed on the frame barrel, and a pintle extending through said barrels, the upper end of the frame barrel having a socket adjacent to the frame, and next in the direction of opening the sash an upwardly extending abutment followed by a second socket which is followed by a second abutment which also forms the rear wall of the first socket, and the lower end of the sash barrel being provided with a depending abutment which seats in the first named socket of the frame barrel when the sash is closed, thus preventing the sash from swinging open until it is first raised and said sash barrel abutment being adapted to impinge upon the first abutment of the frame barrel when the sash is raised and is being opened, and said sash barrel abutment being further adapted to be lowered into the second socket of the frame barrel when the sash is opened to prevent the sash swinging from its position until it has been first raised, said sash barrel being also provided with an upwardly recessed socket to receive the first named abutment of the frame barrel when the sash is closed.

2. In a hinge for casement windows and the like, the combination of a pintle barrel to be mounted on the frame and a second pintle barrel to be mounted on the sash and

superimposed on the first barrel, and a pintle extending through said barrels to connect them together, the upper end of the frame barrel being provided with an upwardly extending abutment with a sunken socket on either side thereof, and the lower end of the sash barrel being provided with a depending abutment which when the sash is closed occupies one of said sockets and when the sash is opened occupies the other socket, so that the sash cannot be moved from either its opened or closed position except it first be elevated sufficiently to permit the abutment of the sash barrel to clear the abutment of the frame barrel.

3. In a hinge for casement windows and the like, the combination of a pintle barrel to be mounted on the frame and a second pintle barrel to be mounted on the sash and superimposed on the first barrel, and a pintle extending through said barrels to connect them together, the upper end of the frame barrel being provided with an upwardly extending abutment with a sunken socket on either side thereof, and the lower end of the sash barrel being provided with a depending abutment which when the sash is closed occupies one of said sockets and when the sash is opened occupies the other socket, so that the sash cannot be moved from either its opened or closed position except it first be elevated sufficiently to permit the abutment of the sash barrel to clear the abutment of the frame barrel, and an upper sash barrel also engaged by the pintle and spaced above the sash barrel to permit vertical movement of the latter.

Signed at Pittsburgh, Pa.

GEORGIANNA W. DE WATERS.