B. JONES.

WINDOW CONSTRUCTION.

APPLICATION FILED AUG. 16, 1919.

1,357,569.

Patented Nov. 2, 1920.

2 SHEETS—SHEET 1.

FIG. 1.

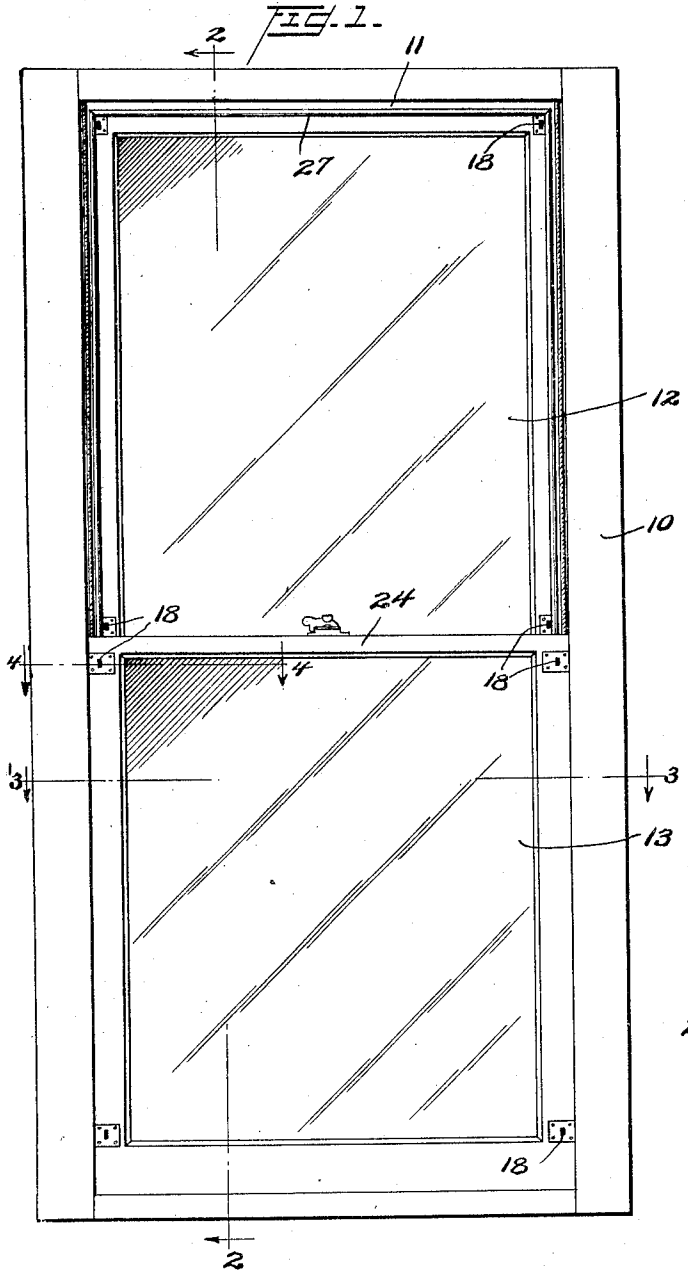
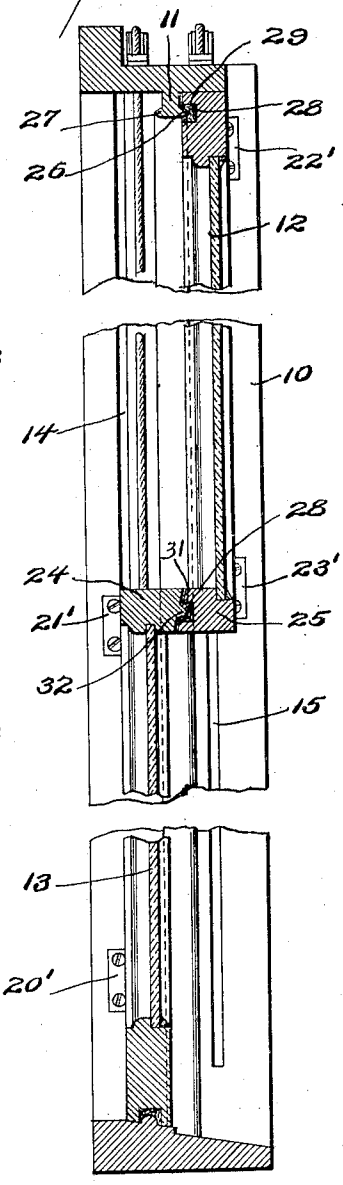


FIG. 2.



Inventor

Bevan Jones,

By Foster, Freeman, Watson & Coit,

Attorneys.

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2 SHEETS—SHEET 2.

FIG. 3.

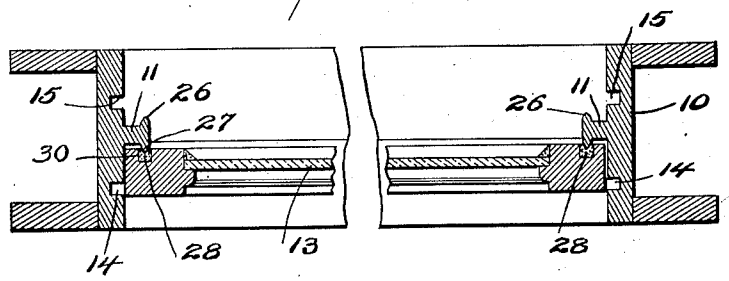


FIG. 4.

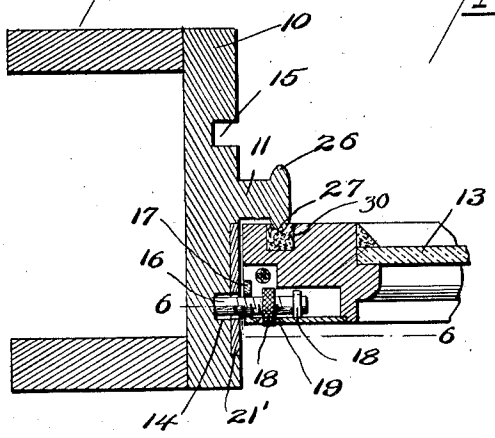


FIG. 5.

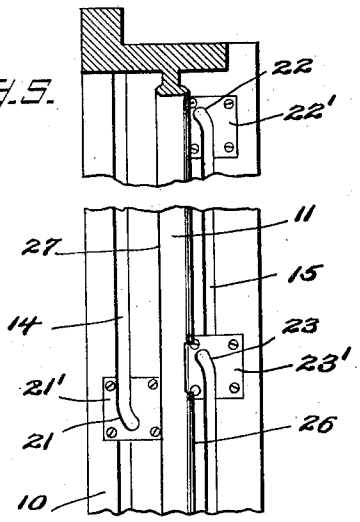
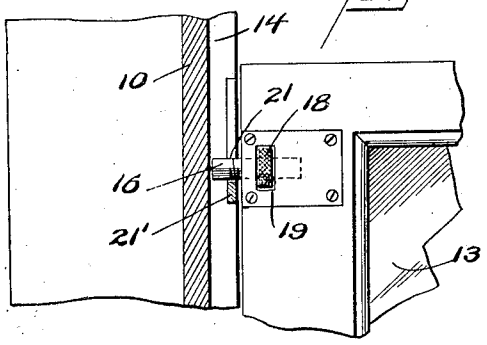
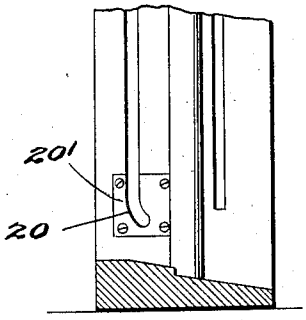


FIG. 6.





Inventor

Bevan Jones,

By Foster, Freeman, Watson & Coit,

Attorneys.

UNITED STATES PATENT OFFICE.

BEVAN JONES, OF NEW YORK, N. Y.

WINDOW CONSTRUCTION.

1,357,569. Specification of Letters Patent. Patented Nov. 2, 1920.

Application filed August 16, 1919. Serial No. 317,950.

To all whom it may concern:

Be it known that I, BEVAN JONES, a citizen of the United States, residing in New York, county of New York, State of New York, have invented certain new and useful Improvements in Window Constructions, of which the following is a specification.

The present invention relates to window constructions.

The objects of the invention are to provide a window of simple construction, and in which the usual friction and binding will be eliminated; which will provide a weather-tight seal between the sash and frame when the sash is closed; in which swelling, shrinking and warping of wooden sash and frames, or bending and waving of metal sash and frames is substantially eliminated and which permits effective tight closing of the sash; in which there is no rubbing contact between any of the surfaces of the structural members of the frame and sash, consequently no removal of finish and protecting coatings; in which rattling of the sash in the frame, in either closed or open position is eliminated; in which yielding weather strips of felt, rubber or metal may be applied, preferably being set in grooves to protect them from abrasion, and contacting with opposed parts only when the window is closed; and in which the sash can be easily removed from the frame; and generally to provide an improved construction. These and other objects and features of novelty will be apparent from the following description read in connection with the accompanying drawings, in which:

Figure 1 is an inside elevation of a window constructed in accordance with the present invention;

Fig. 2 is a sectional view taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken substantially on line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 1;

Fig. 5 is a sectional view similar to Fig. 2 with the sashes removed, and

Fig. 6 is a partial sectional view taken on line 6—6 on Fig. 4.

Referring to the drawings the numeral 10 indicates a window frame having on three of its inner surfaces the projecting parting strips 11, there preferably being no other projections on the interior of the frame. In the form of the invention herein illustrated the window has the usual upper and lower sashes 12 and 13 respectively, the lower sash 13 being mounted to move vertically inside the parting strip 11, while the upper sash 12 is mounted to move vertically outside the parting strip.

For the purpose of guiding the sashes, the opposite vertical sides of the frame are formed with the grooves 14 and 15 disposed substantially parallel to, and spaced from the parting strips a sufficient distance to prevent contact between the sash and the parting strips. As shown clearly in Figs. 1 and 4 each of the sashes at its opposite corners adjacent the top and bottom is provided with the projecting bolts 16 adapted to travel in the grooves in the window frames so that the sashes are guided during their vertical sliding movements. The grooves 14 and 15 being spaced relative to the parting strips 11 so that the window sashes are held just out of engagement or contact with the parting strips there is no friction between the sashes and parting strips when the window is being opened or closed. In order to prevent play or looseness of the sashes the bolts 16 are constructed so that the amount they project from the sashes may be adjusted. For this purpose the bolts 16 are guided in supports 17 and each carries a thumb nut 18 projecting through an aperture 19 in the front of the sash so that the nut 18 may be rotated easily from inside the window, and the bolts 16 should contact lightly with the bottom of the grooves 14 and 15 so as to hold the sashes in proper position and yet not produce unnecessary friction in operating the window. The surfaces of the sashes are thereby held free from contact with the frame the sashes being slightly smaller than the frame. Swelling or shrinking in width of wooden sashes may be compensated for by a slight adjustment of the bolts. The width of the grooves is such that the bolts will fit them without looseness, thus eliminating rattling of the sashes in any position. Slight waves or bends in the frame will not affect the operation of the sashes.

As stated above, the sashes are held positively out of engagement with the parting strips when being opened and closed. Means is provided, however, for forcing the sashes into contact with the parting strip when they are in closed position. For this purpose the lower grooves 14 at their lower

ends are provided with the curved portions 20 extending toward the parting strip, and located at a distance above each curve 20 substantially equal to the vertical distance between the pair of bolts 16 on the side of the lower sash is another similar curved portion 21. Thus, at the end of the final closing movement of the lower sash it is displaced laterally but held vertical by the cooperating pins 16 and curves 20 and 21, and forced against the parting strip 11. The entire contacting surfaces of the sash and parting strips are thus forced together simultaneously and substantially with no sliding friction. The grooves 15 for the outer sash are provided with similar curved portions 22 and 23 so that the upper sash at the end of its closing movement is forced laterally against the parting strips. These lateral displacements of the sashes also bring the upper cross-bar 24 of the lower sash and the lower cross-bar 25 of the upper sash into engagement. Thus, a weather-tight seal is provided. Swelling or shrinking in thickness of the sash will not affect the movement or tight closing of the sash. It is obvious that the relative positions of the ribs and packing on the respective parts may be reversed if desired. The packing being set in the grooves is protected from abrasion. A similar construction may be provided between the cross-bars 24 and 25.

As shown in Fig. 2, the parting strip is preferably provided with the oppositely disposed flanges or ribs 26 and 27, the former of which is adapted to engage the packing 28 disposed in the groove 29 formed in the upper sash. In a similar manner, the rib 27 is adapted to engage the packing 28 disposed in the groove 30 of the lower sash. It is to be understood that normally the window sashes when open are out of engagement with the ribs 26 and 27, and it is only when the sashes are closed that they are brought into contact with the ribs 26 and 27 of the parting strips. In a similar manner one of the cross-bars as 25 may be formed with a groove 31 carrying packing 28 adapted to be engaged by horizontal rib 32 on the adjacent face of the cross-bar 24, the rib 32 being brought into engagement with the packing only when the sashes are closed due to the lateral displacement of the same. The yielding packing will compensate for slight warping of wooden sash or waving and bending of metal sash in effecting a tight seal.

It is to be understood that the present invention is applicable to either metal or wooden constructions or combinations of both. The form shown in the drawings is best adapted for a wooden window construction, and in this case the curved portions of the vertical grooves 14 and 15 are formed in metal plates 20′, 21′, 22′ and 23′, said plates being set in so that their outer faces are flush with the interior surface of the window frame. In a wooden window, I may prefer to form the grooves and parting strips of metal, to be applied to the wooden frame. The two grooves and parting strip on each surface of the frame may be in one piece, or with a separate removable or depressible parting strip, to allow the sash to be revolved. A similar construction in metallic windows may be adopted.

When it is desired to remove one of the sashes from the frame the nuts 18 at one side of the sash may be turned to retract the bolts 16. Then this side of the sash may be moved away from the parting strip and out of the frame. A slight lateral movement of the sash in its own plane thereafter disengages the bolts 16 at the other side of the sash from the groove. In order to place the sash back into the frame the above operations are performed in the reverse order.

Although a specific embodiment of the invention has been described in detail it is to be understood that the invention is not thus limited but includes modifications and changes which come within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A window construction including in combination, a frame, upper and lower sashes, parting strips between said sashes, and means to guide said sashes positively out of engagement with said strips when open or partly open and to force the sashes against said strips when closed.

2. A window construction including in combination, a frame having parting strips and formed with grooves parallel to and spaced from said strips, said grooves having portions extending toward said strips, a sash having projections traveling in said grooves, said sash being forced against said strips by the projections when in the portions of the grooves extending toward the parting strips and disengaged from contact with the strips when the projections are in the other portions of the grooves.

3. A window construction including in combination, a frame having parting strips, a sash, one of the last two mentioned parts having a packing groove, and the other a rib adapted to project into said groove, packing in said groove and coöperating means on the sash and frame adapted to guide the sash in vertical movement, the rib contacting with the packing when the sash is closed and out of engagement therewith in all other positions.

4. A window construction including in combination, a frame having parting strips and formed with grooves parallel to and spaced from said strips, said grooves having portions extending toward said strips, a

sash having projections disposed in said grooves, said sash adapted to be forced against said strips without sliding friction when the projections are in the portions of the grooves extending toward the parting strips and to move out of engagement with the strips when in the other portions of the grooves, the sashes moving without any sliding friction between any parts of the sash and frame, excepting that of the projections on the sash in the grooves.

5. A window construction including in combination, a frame having parting strips, upper and lower sashes in said frame, a plurality of said parts having packing grooves and opposing ribs adapted to project into said grooves, packing in said grooves, and coöperating means on the sashes and frames to move the sashes toward each other without sliding friction between the ribs and packing and to force said ribs and packing into contact when the sashes are closed.

6. A window construction including in combination, a frame having parting strips, upper and lower sashes in said frame, a plurality of said parts having packing grooves and opposing ribs adapted to project into said grooves, one of the sashes having a packing groove and the other an opposing rib along their meeting rails, packing in said grooves, and coöperating means on the sashes and frames to move the sashes toward each other without sliding friction between the ribs and the packing and to force said ribs and packing into contact when the sashes are closed, the sashes being out of contact with the uprights of the frames, excepting between the projections on the sashes and the walls of the grooves and between the packing and the ribs.

7. A window construction including in combination, a frame having parting strips and formed with grooves parallel to and spaced from said strips, said grooves having portions extending toward said strips, a sash having projecting, withdrawable bolts adjacent its corners and adapted to travel in said grooves, said sash being forced against said strips by said bolts when in the portions of said grooves extending toward the parting strips and withheld from contact with said strips when in the other portions of said grooves, said sash being removable when said bolts are withdrawn.

In testimony whereof I affix my signature.

BEVAN JONES.