

A. FROMHOLD.
HOLLOW METAL WINDOW CONSTRUCTION.
APPLICATION FILED FEB. 17, 1911.

1,049,223.

Patented Dec. 31, 1912

Fig. 1.

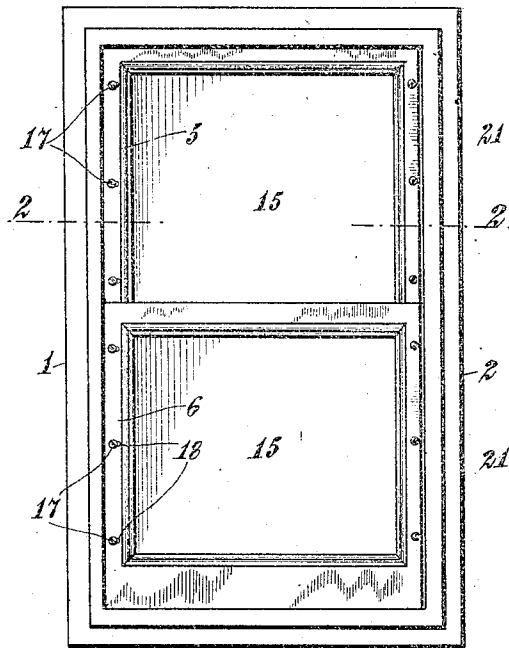


Fig. 2.

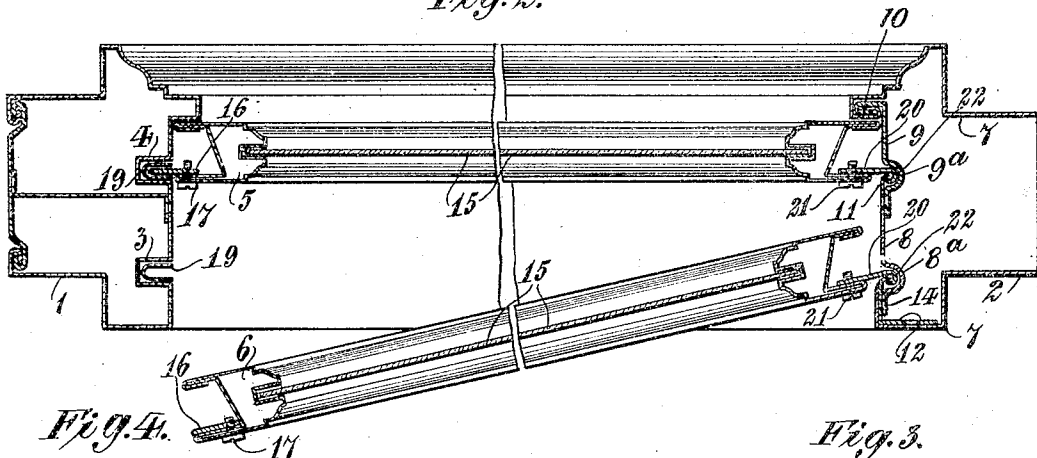


Fig. 4.

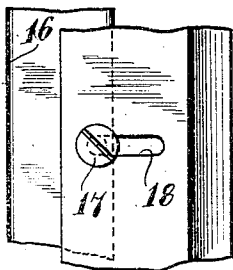
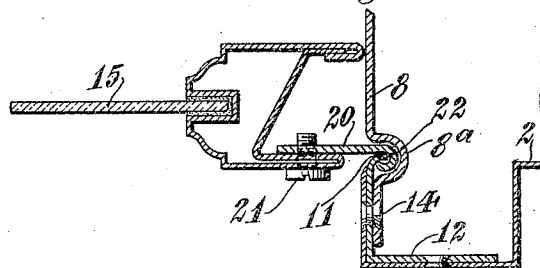


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

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HOLLOW-METAL WINDOW CONSTRUCTION.

1,049,223.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALEXANDER FROMHOLD, a citizen of the United States, residing at Rutherford, in the State of New Jersey, have invented certain new and useful Improvements in Hollow-Metal Window Construction, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates particularly to the construction of window frames and sashes of hollow metal in which the window sash is arranged to swing upon a vertical axis and in which, it may also be, the sash is arranged to slide vertically as well as to swing.

The object of the invention is to provide a simple and efficient hinge joint between the sash and the frame which will permit the sash to be swung freely and, it may be, to be raised and lowered also, will provide a joint which shall be not only secure against rattling but weather tight, and shall be capable of easy assembling, either at the shop or on the job, and even after the frame is set in place.

The invention will be more fully explained hereinafter with reference to the accompanying drawings in which it is illustrated as embodied in a convenient and practical form, and in which—

Figure 1 is a view in elevation of a double-sash window and frame to which the invention is applied. Fig. 2 is a view in horizontal section on the plane indicated by the line 2—2 of Fig. 1, on a larger scale and broken out to save space. Fig. 3 is a partial detail view in section, on a scale larger than that of Fig. 1, showing more clearly some features of construction. Fig. 4 is a detail view showing the adjustable guide and locking flange on the free side of the sash.

The vertical frame members or jambs 1 and 2, formed of sheet metal in any convenient manner, except as hereinafter indicated, are adapted to be built into the walls of the building as usual. The jamb 1 is shown as formed with vertical grooves 3 and 4 to receive respectively the adjustable flanges which are secured to the free sides of the upper and lower sashes 5 and 6 as hereinafter described. The jamb 2, which in this instance is at the hinge side of the sash, and is adapted for a double sash window, is formed mainly of a continuous sheet of metal 7, while the side adjacent to the

sash is preferably made up, in a double sash frame, of two separate pieces 8 and 9. At all events there is formed in the face of the frame adjacent to the sashes a substantially semi-circular groove 8^a or 9^a, for such sash. As shown the piece or sheet 9 is preferably secured to the sheet 7, which forms the body of the frame, by a folded seam 10. The piece or sheet 8 which, in a double sash frame, serves not only to provide the groove 8^a for one sash, but the retaining flange or pintle member of the hinge joint, may be secured by the piece or sheet 9 by rivets, as indicated in Fig. 2, or by any other suitable means, and may also be secured at its other edge by rivets 14, or any other suitable means, to the edge of the body sheet 2, as clearly shown in Figs. 2 and 3. In a single sash frame the retaining flange or pintle member of the joint may be formed, as it is shown in the drawings to be formed in the case of the lower sash, as a separate piece 12, secured by rivets, or by any other suitable means, to the frame body and, in the construction shown, to the separate piece 8. The formation of this retaining flange or pintle member as a separate piece is, however, merely a matter of convenience in the manufacture and assembling. In any case this retaining valve or pintle member is formed with a rolled edge, as shown at 22 in Figs. 2 and 3, which is turned inward into the corresponding groove 8^a or 9^a, so that it may cooperate with the corresponding member of the joint on the sash. The latter has formed therewith or, preferably, formed separately and detachably secured thereto, as by screws 21, a strip or narrow plate of metal 20 which forms the sash member of the joint. The free edge of this sash member of the joint is rolled, as clearly shown in Fig. 3, so as to fit externally the groove 8^a or 9^a, as the case may be, of the frame, and to receive internally, the rolled edge 11 of the retaining flange 12 or 8 as the case may be. Each sash is suitably formed, as usual, to receive the glass 15, and at its free side has secured thereto, by screws 17 in slots 18, the adjustable guiding and locking flange 16, which is adapted to enter the corresponding groove 3 or 4 in the frame to hold the sash in its closed position, when swung to, and also to guide the sash in its vertical movement, if such movement is provided for. The grooves 3 and 4, are preferably

provided with bushings 19 to cooperate with the flange 16. It will be understood that in a double sash window and in any window in which a sash is intended to move vertically as well as to swing upon a vertical axis the groove 3 or 4, as the case may be, is extended from top to bottom of the frame or for such a distance as it is desired to have the sash slide, and that the grooves 8^a and 9^a, in the opposite member of the frame, together with the retaining flanges 8 and 12, are also extended from top to bottom of the frame and that the sash member 20 of the joint is continuous from top to bottom of the sash.

It will now be seen that the sash and frame may be assembled readily either in the shop or on the job and even after the frame has been built into the walls of the building, that the grooved contacting surfaces of the joint make a weathertight joint, effective against the passage of wind or rain, that the large extent of contacting surface of the joint effectively prevents looseness and rattling, that the sash can be swung easily upon the frame, and that, if desired, the sash may slide as well as swing upon the frame.

It will be obvious that various changes in details of construction and arrangement may be made to suit different conditions of use and that the invention is not limited to the particular construction shown and described herein. It will also be obvious that the improved joint is capable of application to doors, &c., as well as to windows.

I claim as my invention:

1. In window construction, the combination of a frame having a longitudinal groove formed therein, a window sash having a flange with its edge rolled concentrically with said groove to fit the same exteriorly and to form interiorly a locking groove, and a retaining flange secured to the frame and having its edge bent inward to enter within the locking groove formed by the rolled edge of the flange on the sash and retain the same in said groove whereby the sash may swing upon the frame as upon a hinge.

2. In window construction, the combination of a frame having a longitudinal substantially semi-circular groove formed therein and extended from top to bottom, a window sash having a flange with an edge rolled concentrically with said groove to fit

the same exteriorly and to form interiorly a locking groove and movable longitudinally and rotarily therein, and a flange secured to the frame and extended from top to bottom thereof and having its edge rolled inward to enter within the locking groove formed by the rolled edge of the flange on the sash and retain the same in said groove.

3. In window construction, the combination of a frame having its working face composed of a plurality of parts, one of said parts having a longitudinal substantially semi-circular groove formed therein and the other of said parts having its edge rolled inward toward said groove to form a retaining flange, and a sash having secured thereto a plate with its end rolled concentrically with said groove to fit the same exteriorly and to form interiorly a locking groove and adapted to receive and to be engaged by the edge of said other part whereby the sash may swing upon the frame as upon a hinge.

4. In window construction, the combination of a frame having its working face composed of a plurality of parts, one of said parts having a longitudinal groove formed therein, another of said parts having a longitudinal groove formed therein parallel with the first and having one edge rolled in toward the first named groove, and a third part having its edge rolled inward toward the second named groove, and a plurality of sashes each having secured thereto a plate with its edge rolled to fit the corresponding groove and to be engaged by the inwardly rolled edge of the corresponding part of the face of the sash.

5. In window construction, the combination of a frame, having a longitudinal substantially semi-circular groove formed therein, a window sash, a flange detachably secured to said sash and having its edge rolled to fit said groove, and a retaining flange secured to the frame and having its edge rolled inward to engage the rolled edge of the flange of the sash and hold the same in its seat in said groove, whereby the sash may swing upon the frame as upon a hinge.

This specification signed and witnessed this 14th day of February A. D., 1911.

ALEXANDER FROMHOLD.

Signed in the presence of—

ELLA J. KRUGER,

HELEN M. HAINES.