

W. J. LARKIN.
WINDOW.

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1,048,550.

Patented Dec. 31, 1912.

Fig. 1.

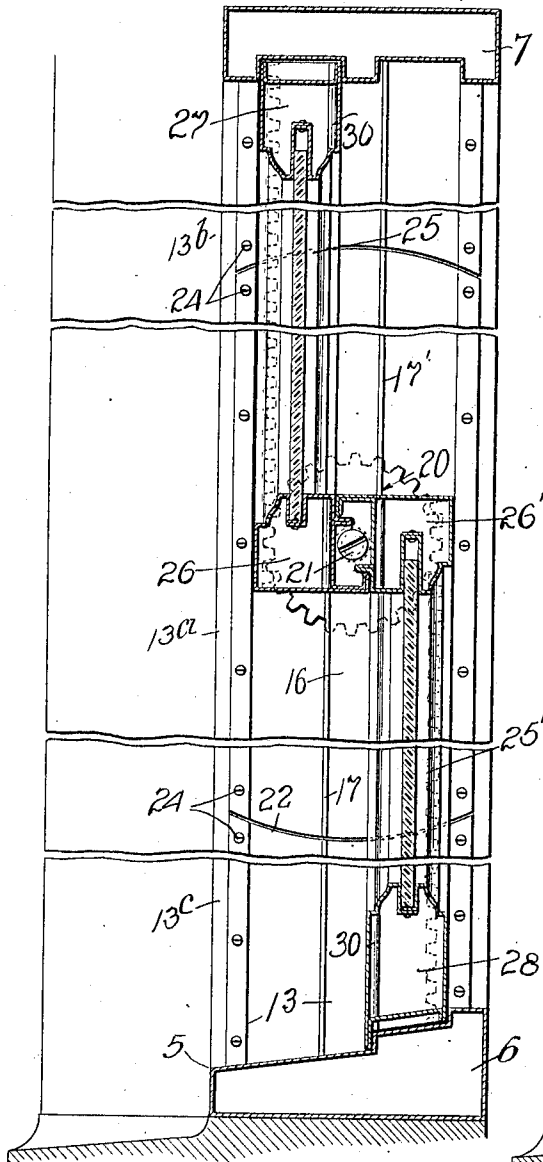


Fig. 2.

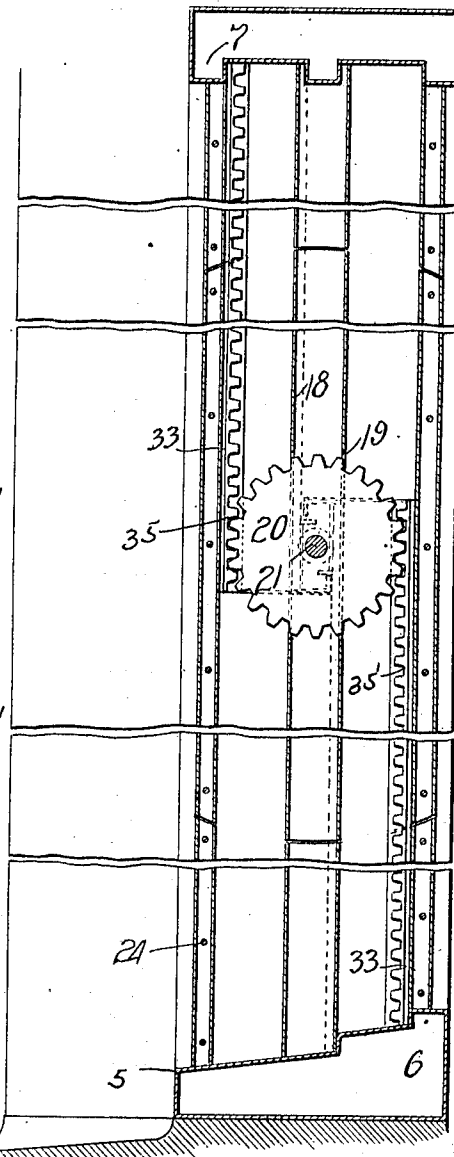
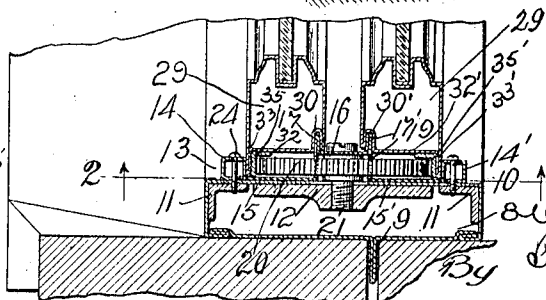


Fig. 3.

Witnesses
H. R. L. White.
R. A. White.



Inventor

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Att'y

UNITED STATES PATENT OFFICE.

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WINDOW.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM J. LARKIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Windows, of which the following is a specification.

My invention relates to improvements in windows and more particularly to metallic windows in which the sashes and frames are made of sheet metal.

One of the objects of my invention is to provide a window structure wherein the two sashes counterbalance each other, so dispensing with the customary sash weights, and connecting the upper and lower sashes for simultaneous movement in opposite directions.

Another object of my invention is to provide a construction whereby the sashes when brought into register may be freed for rotation about a common transverse axis to facilitate washing of the windows and to permit the windows to be brought into horizontal superposed position, opening substantially the entire frame area of the window.

A further object of my invention is to provide a construction of the character described which may simply and effectively be constructed of sheet metal and which will provide an efficient and weather tight window structure.

In the drawings, wherein I have illustrated an operative embodiment of my invention, Figure 1 is a central vertical section through the frame and sashes of a window; Fig. 2 is a section on line 2—2 of Fig. 3; Fig. 3 is a central horizontal section through the window with the sashes brought into register.

In the construction shown, 5 indicates in general the window frame preferably constructed of sheet metal, the sill and head portions, 6 and 7, being of any suitable configuration, constructed of sheet metal, and the jambs 8 being in the form of hollow plinths, rectangular in their cross section, and preferably provided with ribs 9 on their outer sides. The inner sides 10 of the jambs are flat, planar vertical faces.

Each hollow jamb 8 is strengthened at its inner corners, that is to say, the corners adjoining the inner faces 10, by angle strips 11, preferably of wrought metal, and centrally of each face 10 there is provided

within the hollow jamb a bearing plate 12, suitably riveted or otherwise secured thereto.

A vertical guiding-rail structure 13 is provided upon each jamb, consisting preferably, in its sectional configuration, of a single piece of sheet metal folded to provide outer and inner guiding rails 14 and 14' preferably of hollow rectangular formation, flat base portions 15 and 15' converging in the bottom-most plane of the rail structure to lie flush against the face 10 of the jamb, and a center rail structure 16 preferably formed to provide along its opposite edges doubled ribs 17 and 17' extending inward toward the middle of the frame. What I may term the side walls or riser 18 (Fig. 2) of the rail 16 are cut away, as at 19, sufficiently to clear a gear wheel 20 which is mounted upon a pivot pin 21, extending into the central reinforcement 12 to receive a bearing therein, the headed end of the pin extending through the center rail 16, between the ribs 18, to afford a pivotal bearing for the rail structure. The gear wheel 20 is secured to the central section of rail 16 of the guide rail structure before the latter is placed in position, and thereafter held by screws 24—24.

Vertically each rail 13 is divided into three sections, a central section 13^a, a top and a bottom section, 13^b and 13^c, the length of the central section 13 being in length equal to the space occupied by the two sashes when in registering position, and the line of juncture 22 of the central section with the end sections being on an arc struck from the pivots 21 as a center, or otherwise so arranged that the central section of the rails may be rotated about the pivotal studs 21 as a center without interference with the end sections of the rail structure. The end sections 13^b and 13^c of the rail structure are not necessarily detachable and may be secured upon the jambs 8 in any suitable fashion, but the central section should be readily detachable from the jambs, and to this end it is secured in position by screws 24 or other removable fastening means, passing through the outer rails 14 and 14' and engaging in the reinforcing corner angles 11 of the jambs.

The upper and lower sashes 25 and 25' have their meeting rails 26 and 26' and their upper and lower rails 27 and 28 of any suitable character, preferably made of hollow

sheet metal construction, but the side rails or stiles 29, 29', of both sashes are alike constructed with grooves 30, 30', for engagement with the respective tongues 17, 17', of the center rail structure; with side walls 32, 32', spaced to clear the gear wheels 20 with ease, and tongues 33, 33', arranged to engage the confronting faces of the rails 14 and 14', to be guided thereby. Within the angle of the side portions 32—32' and ribs 33—33' of each stile, there are provided rack bars 35, and 35', engaging the gear 20.

As the rack bars 35 and 35' engage the gear wheel 20 on opposite sides thereof, it is obvious that as one sash is moved toward central position the motion thereby imparted to the gear wheel moves the other sash similarly toward central position, so that by raising the lower sash, the upper sash is lowered and both windows may thus be brought into central register. When the sashes are in this position, the holding screws 24 of the central rail section, may readily be removed and the entire sash structure, with the central rail section 13^a, may be rotated about the pivotal axis provided by the pivots 21, the sashes carrying in rotation with them the central portion 13^a of the rail structure and the gear 20 locking the sashes together and rotating therewith. In this way, obviously, the sashes may be brought to horizontal position to free to the utmost extent the window opening, or the exterior surfaces of the sashes may be brought inward into the room for purposes of washing and the like.

It will be observed that in the operation of the window, the sashes are never taken out of their guiding rails, and, the entire structure being of metal, the movable parts may operate indefinitely without losing their accuracy of register or ease of movement. The counterbalancing of the sashes one against the other does away with all weights for balancing purposes and insures that whenever the window is opened for ventilation, it will be opened in fashion which experience teaches is the proper one, viz., with equal open areas at the top and the bottom of the sash.

While I have herein described in some detail a particular embodiment of my invention for purposes of full disclosure, it will be apparent to those skilled in the art that numerous changes in the particular construction might be made without departure from the spirit and scope of my invention and within the scope of the appended claims.

What I claim is:

1. In a window frame structure opposite jambs in the form of hollow plinths, angle

strips within said plinths strengthening the corners thereof, and a vertical guide rail structure for each jamb comprising a single sheet of metal folded to provide outer and inner guiding rails, 14—14', of rectangular formation, flat base portions, 15—15', within said rails, and a central rail structure formed to provide along its opposite edges doubled ribs, 17—17', extending inward toward the middle of the frame; screws connecting said rails to said angle strips and upper and lower sashes of sheet metal, each constructed to provide grooves 30—30' and tongues 33—33', respectively for coaction with the doubled ribs of the central rail and with the guiding rails of the rail structure, and angle strips strengthening the corners between said tongues 33—33' and the body portions of the sashes, as described.

2. In a window frame structure, opposite sheet metal jambs each providing outer and inner rails, 14—14', and a center rail lying in a plane nearer the middle of the frame than the normal plane of said jamb, said jambs having each a pivotal central section, a pinion mounted for rotation with said central section, and upper and lower sashes of sheet metal having base portions 32—32' in substantially the plane of said central rail portion and tongues 33—33' extending outwardly from the edges thereof for coaction with said rails of the jamb, said pinion lying between the planes of said central rail portion and the normal plane of said jamb, and angle strips in the corners between said tongues and base portions of the sashes, said angle strips being formed to provide racks for coaction with said pinion, as described.

3. In a window structure, the combination of a metallic frame; jambs providing planar inner surfaces, reinforced at their corners, and a central internal reinforcement; pivot pins projecting inwardly from said jambs, supported in said central reinforcement; guide rail structures pivoted on said pins, each comprising, in a unitary sheet metal structure, guides 14, 14' and ribs 17, 17'; means for removably securing said guiding rails in vertical position, engaging the reinforcing strips at the corners of the jambs; sheet metal upper and lower sashes, providing ribs 33 and 33' for engagement with the guides 14, 14', and recesses 30, 30' to receive the ribs 17, 17'.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

WILLIAM J. LARKIN.

In the presence of—

W. LINN ALLEN,
MARY F. ALLEN.