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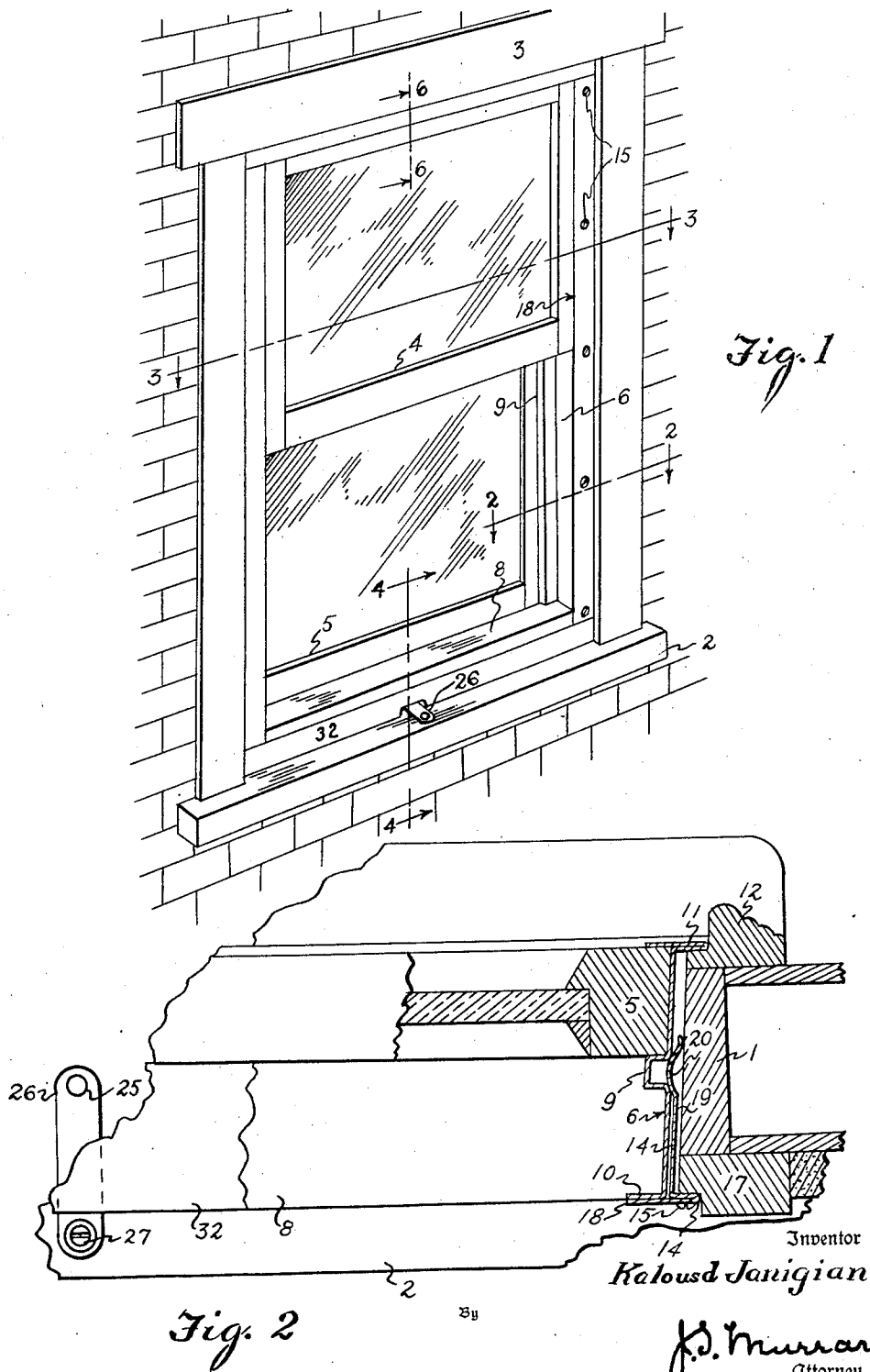
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2,344,877

WINDOW CONSTRUCTION

Filed July 13, 1942

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Fig. 3

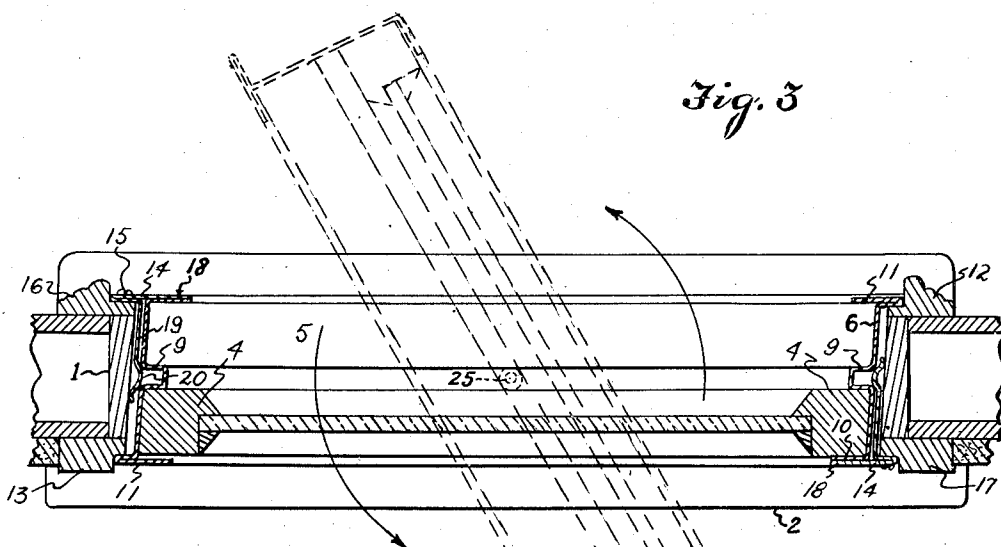
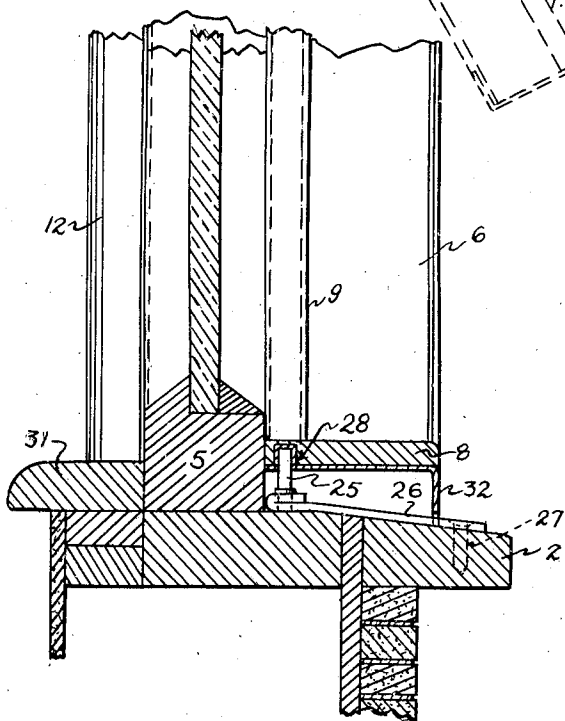


Fig. 4



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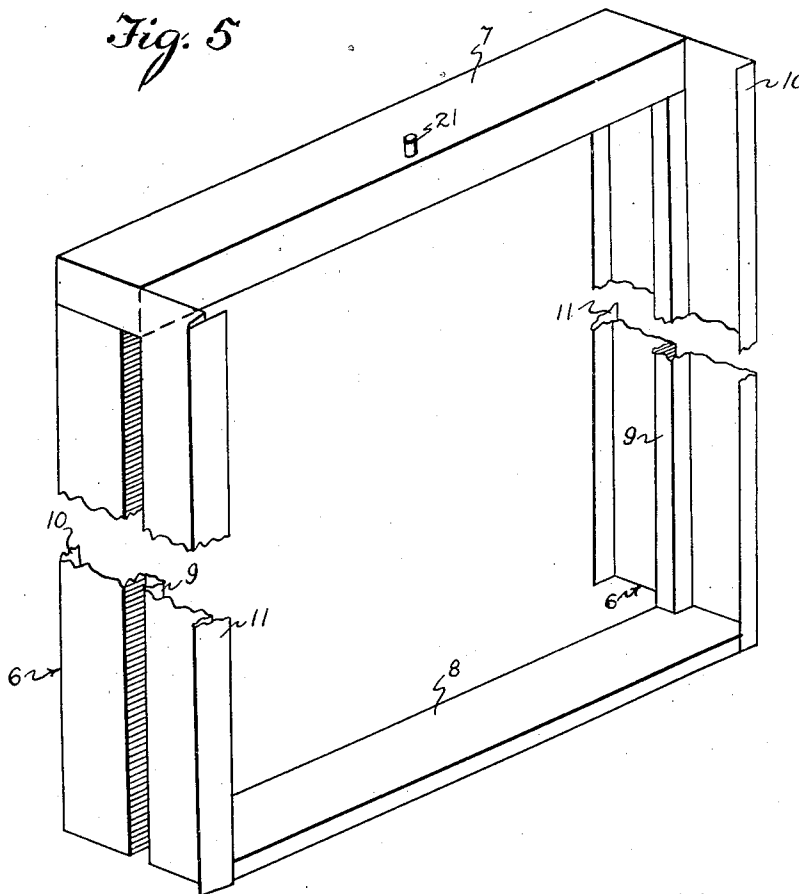
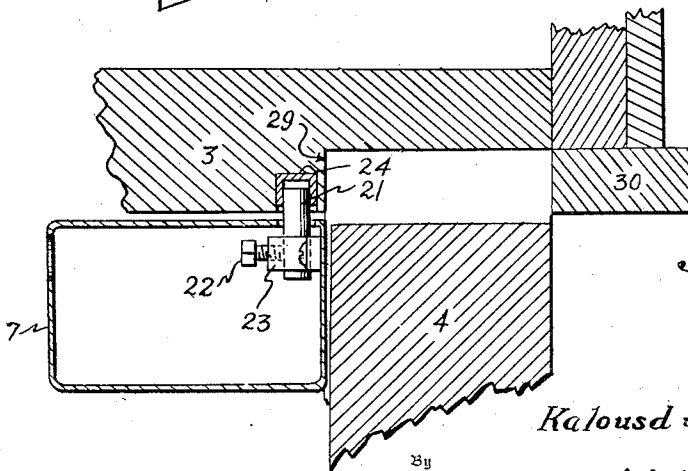


Fig. 6

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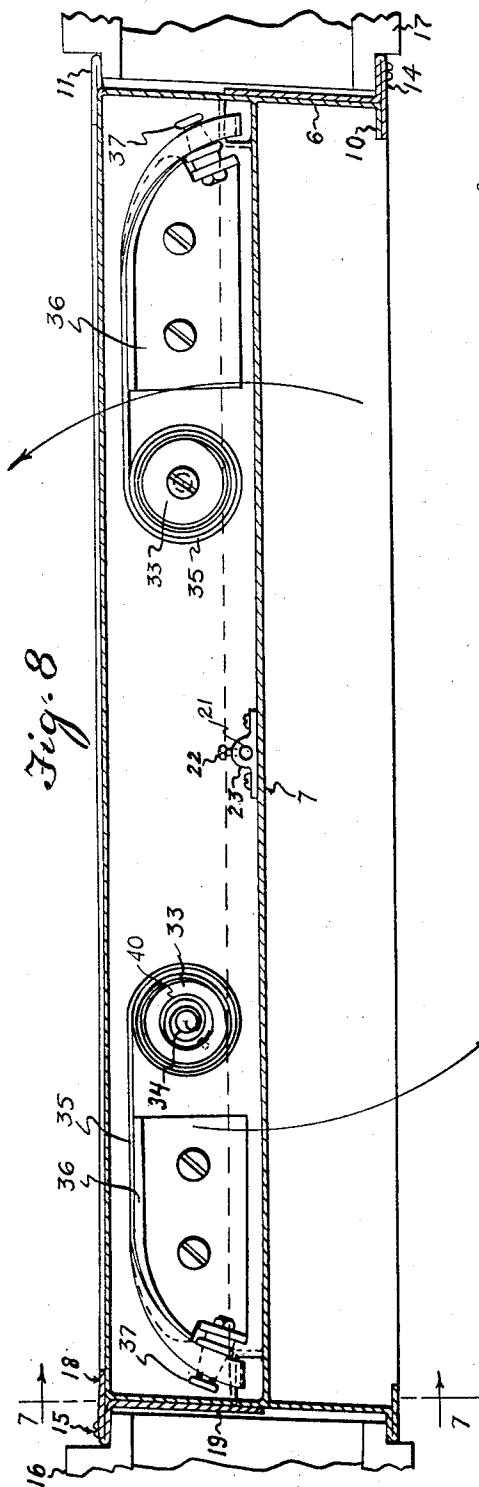
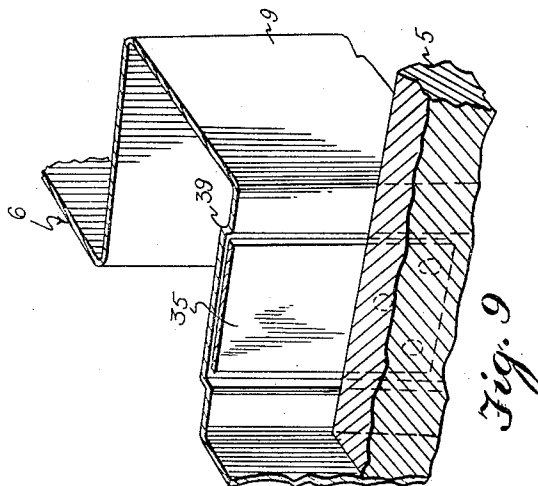
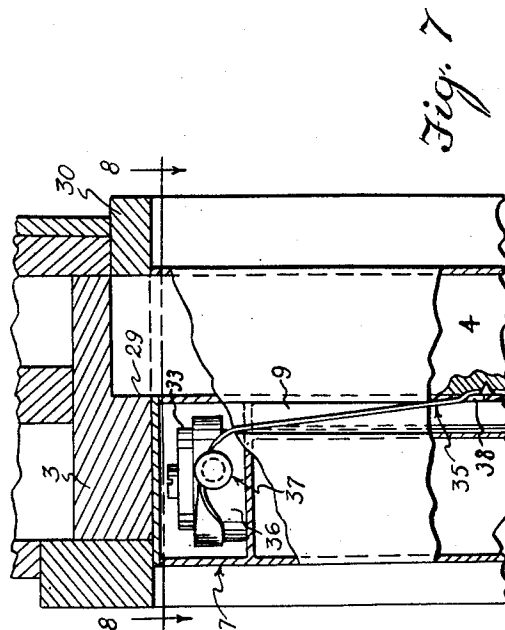
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2,344,877

WINDOW CONSTRUCTION

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Application July 13, 1942, Serial No. 450,716

2 Claims. (Cl. 20—51)

This invention relates to window constructions and particularly constructions employing a sash frame pivoted in a window frame at the medial vertical axis of said frames, so that ready access may be had to both faces of the glass for cleaning or other purposes.

Objects of the invention are to provide improved means for pivotally installing the sash frame, for spring counterbalancing the sashes to slide freely and maintain their raised or partially raised positions, and for weather-sealing the installation.

These and various other objects are attained by the construction hereinafter described and illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective exterior view of the improved window construction.

Fig. 2 is a horizontal sectional view taken through the lower portion of the window, on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal section taken through the upper part of the window, on the line 3—3 of Fig. 1.

Fig. 4 is a vertical sectional view taken through the lower portion of the window, and particularly showing provision for pivoting the sash frame at its bottom.

Fig. 5 is a perspective view of the sash frame.

Fig. 6 is a vertical cross-sectional view taken on the line 6—6 of Fig. 1, and particularly showing a provision for pivoting the sash frame at its top.

Fig. 7 is a vertical sectional view taken on the line 7—7 of Fig. 8, and particularly showing one of the two sashes counterbalancing provisions.

Fig. 8 is a horizontal sectional view taken on the line 8—8 of Fig. 7 and further showing said counterbalancing provision.

Fig. 9 is a fragmentary perspective view of one of the side members of the sash frame showing how the same is used to guide a tape transmitting the counterbalancing effort.

In these views, the reference character 1 designates the uprights of a fixed window frame, further comprising a sill 2 and lintel 3, both horizontally elongated. Upper and lower sashes 4 and 5 serve jointly to form a closure for said frame but are not directly slidable therein as in ordinary practice. Parallel runways for said sashes are formed by the side members 6 of a sash frame which further comprises upper and lower cross members 7 and 8. It is preferred to construct the sash frame of sheet metal, the sides 6 being formed medially thereof with chan-

nel-forming ribs 9 guiding the sashes and taking the place of the usual parting strips. The vertical margins of the sides 6 are bent to form flanges 10 projecting in parallelism with the ribs 9 and coacting therewith to form sash runways. Each side member 6 further forms a stop 11 limiting a pivotal movement of the sash frame about its central vertical axis, such stop being produced by bending each side member in proximity to one of its flanges 10 in a direction opposite to such flange and return-bending it to afford the stop 11 a double thickness of metal and to form said flange 10. The two stops 11 occupy a diagonal relation on the sash frame, and seat respectively against finish strips 12 and 13, one disposed interiorly and the other exteriorly of the window, as best appears in Fig. 3.

For weather-stripping the described window, relatively thin and resilient sheet metal strips are applied to the fixed frame, in an opposite diagonal relation to that of the stops 11, said strips comprising return-bent two-ply portions 14 secured by screws 15 respectively to inner and outer finish strips 16 and 17 of the window, one ply having an extension 18 marginal of the strip to overlap and bear firmly on the adjacent flange 10, when the sash frame is within the window opening, and the other ply being bent substantially at a right angle to extend along the adjacent upright 1, as indicated at 19. The portions 19 are formed near vertical margins thereof with beads 20 which seat in the channels formed by the ribs 9, when the sash frame is in the window opening. Thus a double sealing effect is exercised by the strips 14, 18, 19, strongly safeguarding the window against the weather.

The upper member 7 of the sash frame is hollow and within said member a pin 21 is secured by a set screw 22 in a bracket 23, said pin projecting above the member 7 to engage in a socket 24 set into the lintel 3 (see Fig. 6). Substantially aligned vertically with the pin 21 is a pin 25 upstanding on one end of an arm 26, pivotally mounted at its other end on the sill 2 by a screw 27 or the like. The pin 25 engages in a socket 28 embedded in the cross member 8 of the sash frame, and the pins 21 and 25 jointly establish an axis medial to the sash frame and window opening for swinging of the sash frame, as indicated by dash line showing of Fig. 3.

When the sash frame is in its limiting position within the window opening and the upper and lower sashes are respectively fully raised and fully lowered, the sashes serve to lock the sash frame against pivotal movement. Thus the raised sash

4 seats against the lintel 3 between a shoulder 29 of said lintel and a finish strip 30, (see Fig. 7), and the lowered sash 5 seats on the sill 2 between inner and outer finish strips 31 and 32. The strip 32 is preferably sheet metal and has a horizontal portion raised above the sill 2 and providing a seat for the sash frame, the pin 25 projecting upwardly through such portion. The arm 26 extends sufficiently outward beyond the strip 32 to permit applying the screw 27 to the outer end of said arm.

A counterbalancing provision for the sashes is carried by and within the member 7 of the sash frame and is best shown in Figs. 7, 8 and 9. Thus two rollers 33 are installed in the member 7 at opposite sides of its center, being journaled on pins 34 rigidly carried by said member. Peripherally secured to said rollers and adapted to wind thereon are tapes 35 which extend oppositely from the rollers to the end portions of the member 7. Installed in said portions are guide shoes 36 on each of which a guide pulley 37 is journaled to rotate about a horizontal axis, and the tapes 35 make a quarter turn downward over said shoes and guide pulleys and are moreover brought by the shoes and pulleys into vertical alignment with the ribs 9. Extending downwardly through the channels formed by the ribs, the tapes pass through slots 38 formed in the upper portions of the ribs (see Fig. 7) and are terminally fastened respectively to the respective sashes. Each rib is indented as indicated at 39 for a suitable distance downwardly from its slot 38 to accommodate the corresponding tape. Springs 40 coiled within the rollers 33 are fastened at their inner ends to the pins 34 and at their outer ends to the rollers, and urge the rollers rotatively in directions such as to wind the tapes thereon. The forces exerted by said springs are such as to assure easy raising of the sashes and maintenance of their raised or partially raised positions.

Installing the sashes to slide as described in a pivoted sash frame permits such swinging of said frame as is shown in dash lines in Fig. 3, whereby ready access is had to the outer faces of the sashes for cleaning and glass replacement is facilitated. It is apparent that the sash frame may be freely swung upon sufficiently raising the lower sash and lowering the upper sash to disengage them respectively from the sill and lintel of the fixed frame.

Installing the counterbalancing rollers and springs, as described, within the hollow upper member of the sash frame and utilizing the hollow ribs 9 as guides for the tapes leading from said rollers achieves a very compact yet highly effective arrangement.

Mounting the lower pivot pin for the sash frame on the swinging arm 26 allows a slight self-adjustment of the sash frame, as it is swung into the window opening, assuring a proper centering of said frame in the opening of the fixed frame. Also provision of the arm 26 overcomes any difficulty in initial installation of the sash frame in its pivoted relation to the fixed frame. That is to say, use of said arm permits the lower pivot pin to be set into its socket 28 prior to inserting the sash frame in the fixed frame. As the sash frame is brought into place its upper pivot pin is set into the corresponding socket 24. The screw 27 is applied when the sash frame is in place.

The various described sheet metal parts are preferably suitably rust-proofed. Said parts may be inexpensively formed in quantity lots as stampings or rolled strips.

What I claim is:

1. A window construction comprising a sash, a frame wherein said sash is vertically slidable, such frame comprising a hollow top member and sheet metal side members, the side members having channel-forming guide ribs for the sash, a spring housed within the top member of the frame for at least partially counterbalancing the sash, and a flexible tape transmitting the spring effort to the sash and extending downwardly through the upper portion of one of said ribs, such rib having an opening through which the tape extends for attachment to the sash, a roller adapted for rotation by said spring and whereon the tape winds, a guide shoe for said tape within said top member, and a guide pulley for the tape mounted on the shoe, the shoe providing a guide surface for the tape curved to change the direction of tape travel from travel substantially in a vertical plane to travel to one side of such plane, the tape extending downwardly into the rib from the pulley.

2. A window construction comprising two sliding sashes, a sash frame having vertically elongated sheet metal side members, each forming parallel runways for the sashes and each having a channel-forming rib common to both its runways, a second frame within which the sash frame is installed, and wherein the sash frame is normally disposed substantially in its entirety, means pivoting the sash frame on the second frame to swing about a vertical axis, and sheet metal weather strips installed within the second frame and resiliently bearing upon the edges formed by the channels of the sash frame, when the sash frame is normally positioned.

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