June 19, 1923.

1,459,668

S. U. BARR

WINDOW

Filed June 3, 1920

4 Sheets-Sheet 1

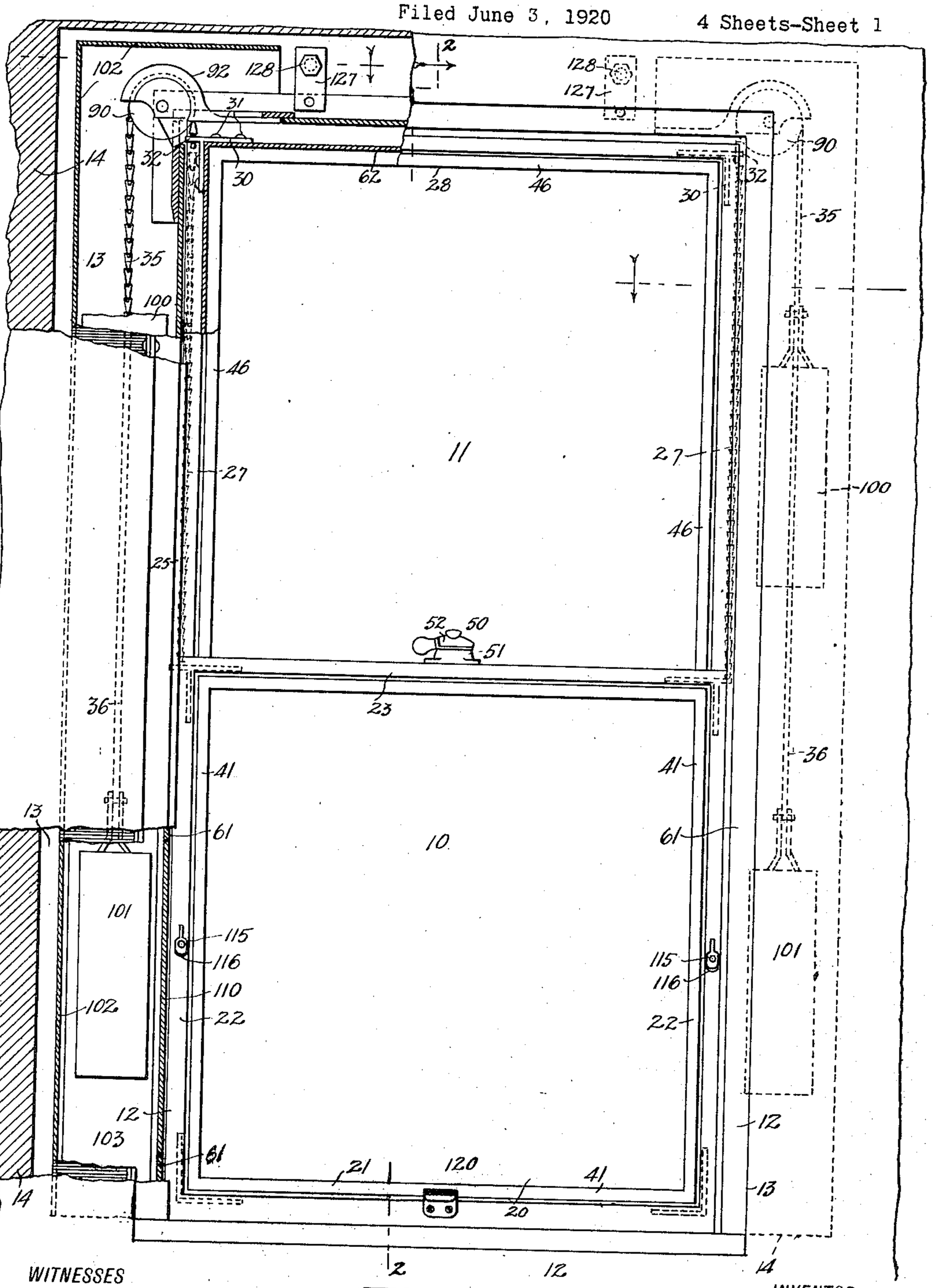

Fig. 1.

WITNESSES

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Fig. 2.

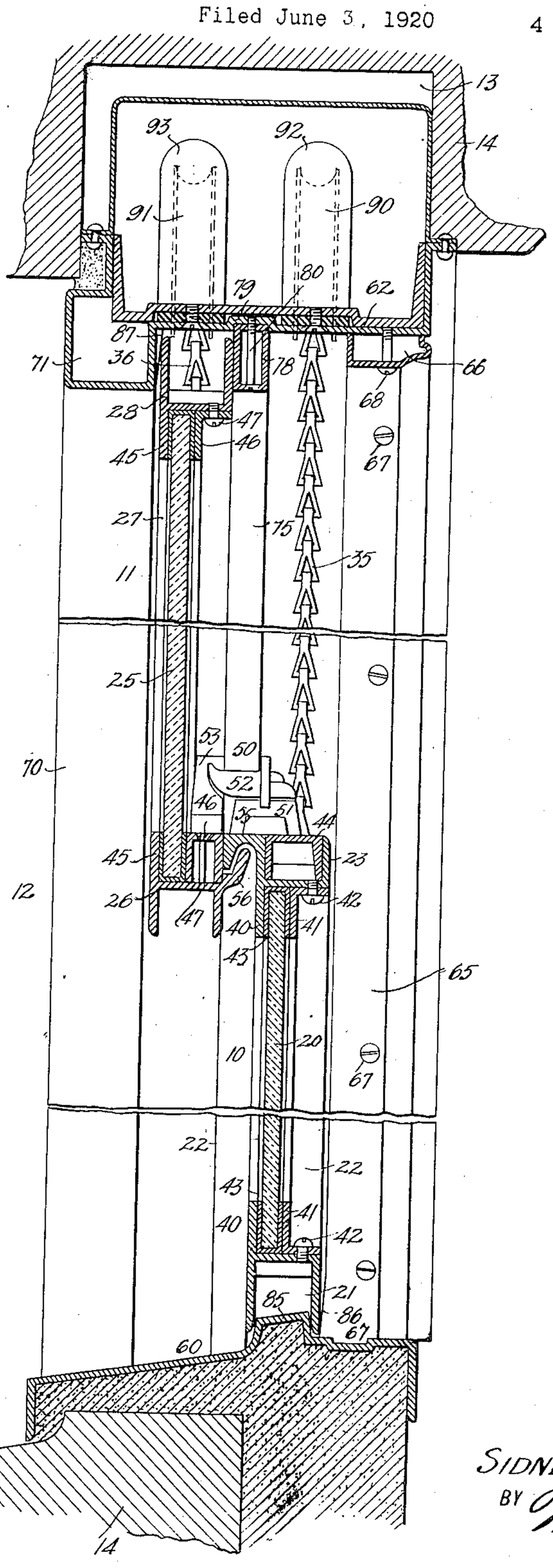

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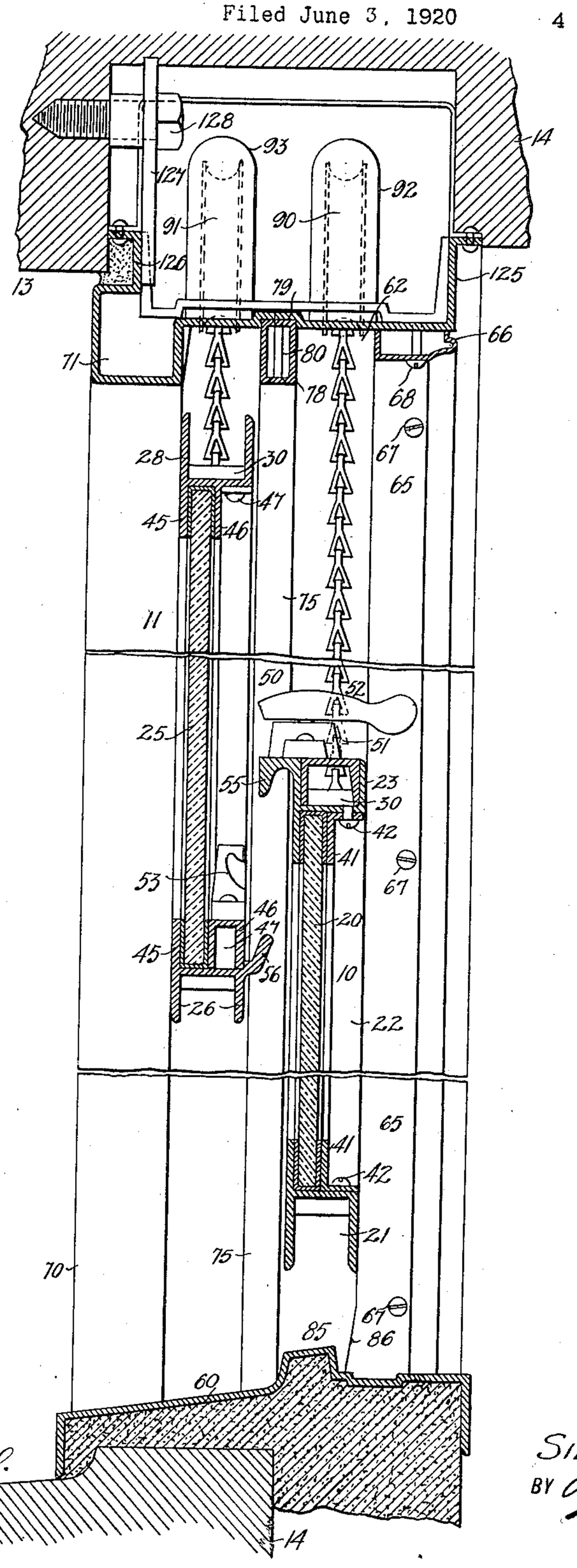
Fig. 3.



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1,459,668

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4 Sheets-Sheet 4

Fig. 6.

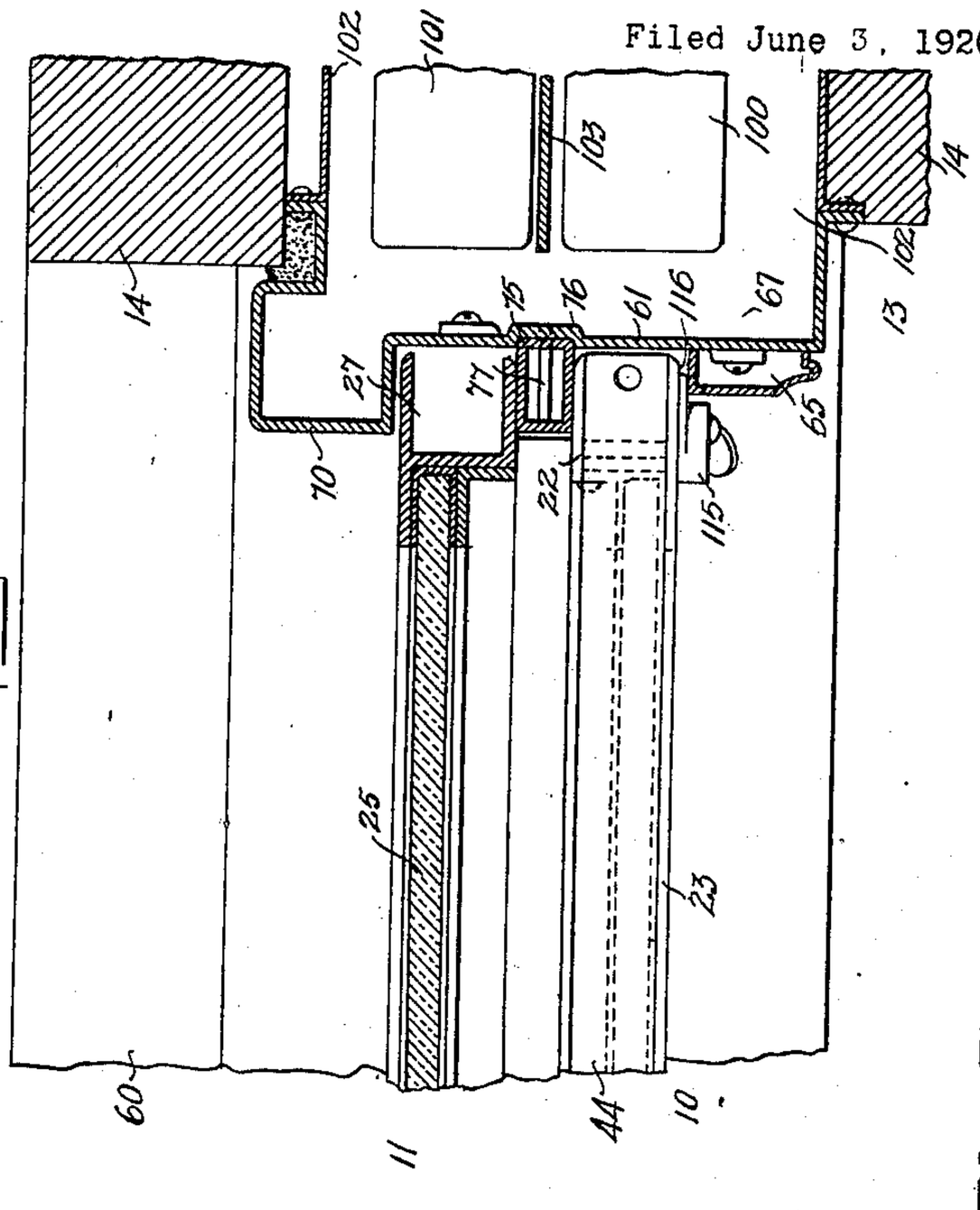


Fig. 7.

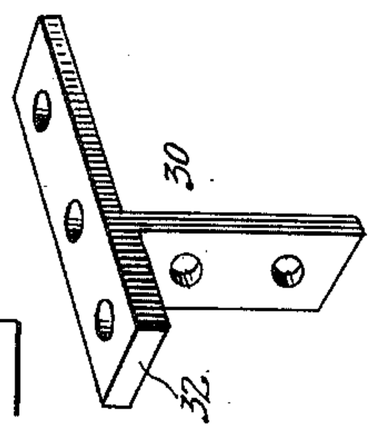


Fig. 5

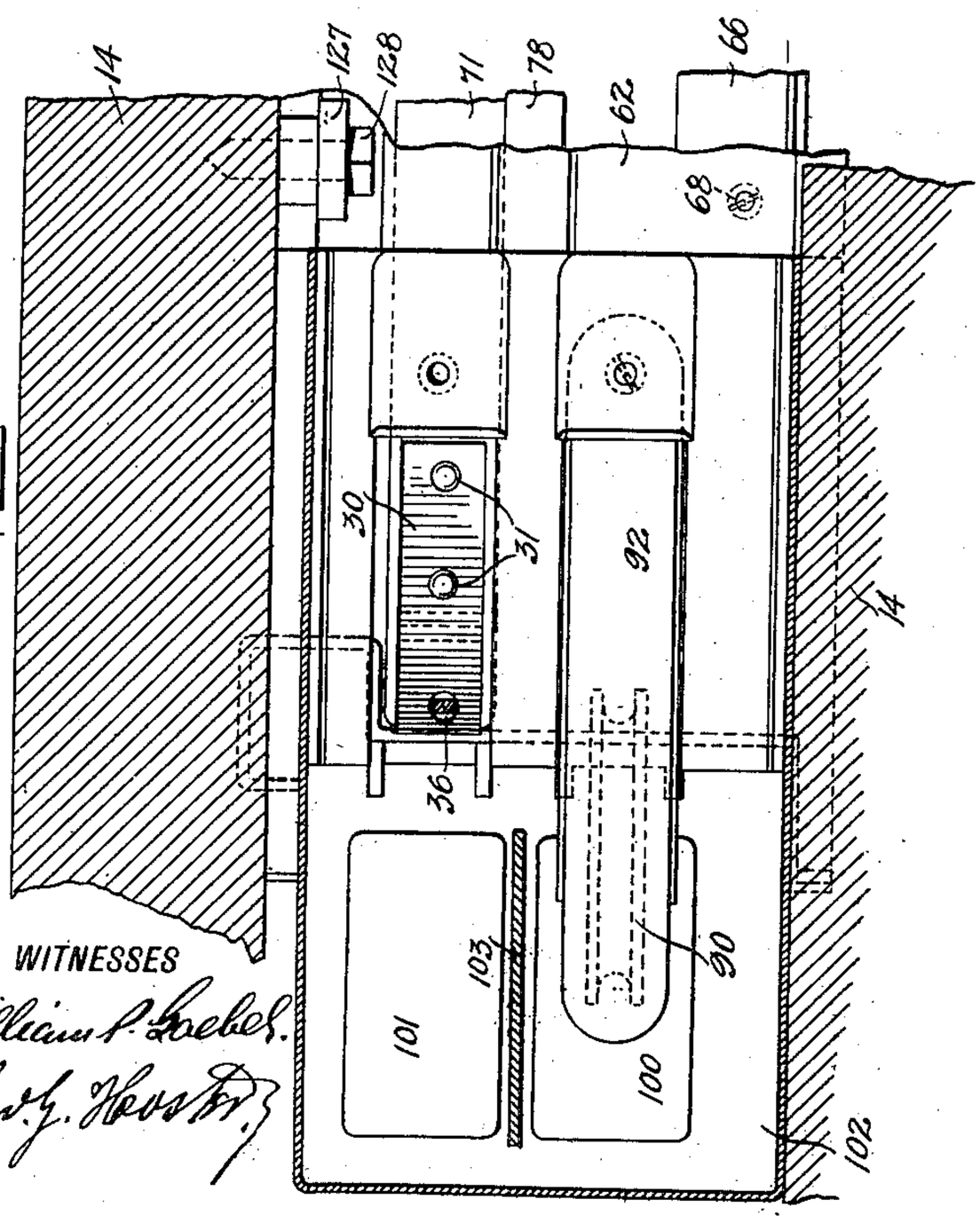
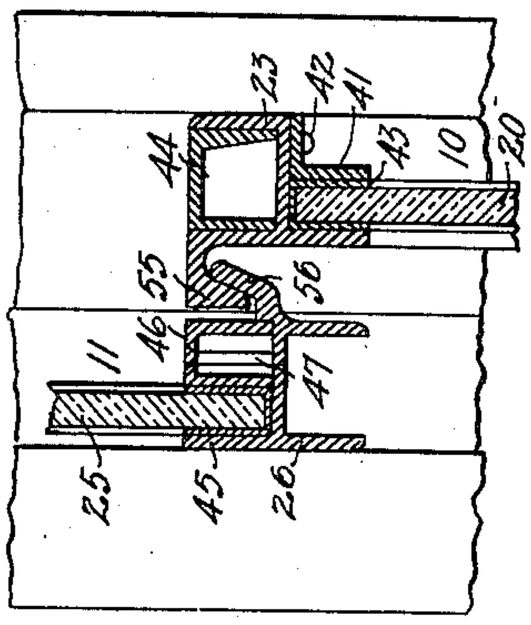


Fig. 4.



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UNITED STATES PATENT OFFICE.

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WINDOW.

Application filed June 3, 1920. Serial No. 386,309.

To all whom it may concern:

Be it known that I, SIDNEY U. BARR, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Window, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved window arranged to permit of easily and conveniently moving the sashes up and down and to render the window air and water tight at the time the sashes are in closed and locked position and without the use of packing strips or the like.

Another object is to provide exceedingly strong and durable sash frames which can be manufactured at a comparatively low cost.

With these and other objects in view, the invention consists of certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an inner face view of the improved window in position in the window opening of the wall of a building, the sash being in closed position and parts being shown broken out and parts in section;

Figure 2 is an enlarged cross section of the same on the line 2—2 of Figure 1;

Figure 3 is a similar view of the same with the lower and upper sashes in open position;

Figure 4 is a similar view of the meeting rails of the lower and upper sashes in meeting position prior to drawing the meeting rails together when locking the sashes;

Figure 5 is a plan view of one of the upper corners of the window with one of the pulleys and its housing removed and the weight box and the wall of the building shown in section;

Figure 6 is an enlarged sectional plan view of the window on the line 6—6 of Figure 2; and

Figure 7 is a perspective view of one of the reinforcing and connecting knees or brackets connecting the upper ends of the stiles with the corresponding rail of a sash frame and to which knees the ends of the sash chains are attached.

The window in its general construction consists of lower and upper sashes 10 and 11 mounted to slide up and down in a window frame 12 set in the window opening 13 of the wall 14 of a building. The lower sash 10 is provided with a window pane 20 and a metallic sash frame formed of a bottom rail 21, stiles 22 and a meeting rail 23, and the upper sash 11 comprises a window pane 25 and a metallic sash frame formed of a meeting rail 26, stiles 27 and a top rail 28. The several rails and stiles of the lower and upper sashes 10 and 11 are preferably made of channel iron to combine lightness with strength. The rails and stiles of each sash are fastened together at the corners by brazing or welding and in addition the upper corners of each sash are reinforced by angular knees or brackets 30 fitting into the channels of the channel iron fastened thereto by screws, rivets or other fastening devices 31 (see Figure 5). Each of the knees 30 is provided with a sidewise extending flange 32 to which the corresponding suspension chains 35 or 36 for the lower and upper sashes 10 and 11 are secured. The sash frame for the lower sash 10 is provided at its rails and stiles with integral flanges 40 forming an abutment for the outer marginal face of the window pane 20 held in place at the marginal inner face by retaining strips 41 of angle iron fastened in place on the rails and stiles by screws 42 or other similar fastening devices. It is understood that the flanges 40 and the retaining strips 41 are spaced apart to accommodate the margin of the window pane 20 and the usual packing or cushion 43. It is understood that the retaining strips 41 can be readily removed for conveniently replacing a broken window pane 20 by a new one. The meeting rail 23 of the lower sash 10 is provided with a filling piece 44 of channel iron placed upside down in the channel of the meeting rail 23 so as to close said channel of the meeting rail to provide a solid top for the meeting rail. The sash frame of the upper sash 11 is similarly constructed, that is, its rails and stiles are provided with integral retaining flanges 45 and retaining strips 46 removably attached to the rails and stiles by screws 47 or other fastening devices. The retaining strips 46 for the stiles 27 and the top rail 28 are made of angle iron while the retaining strip 46 for the meeting rail 26 is preferably made of channel iron remov-

ably fastened in place by its screws 47. It will be noticed that the retaining strip 46 for the meeting rail 26 of the upper sash 11 provides a solid top for this meeting rail and which is flush with the filling piece 44 (see Figure 2), at the time the sashes are closed, to form a support for a locking and drawing device 50 attached to the meeting rails 23, 26 and which drawing and locking device comprises a fixed member 51 secured to the meeting rail 23 and having a movable member 52 adapted to engage a fixed member 53 secured to the retaining strip 46 of the meeting rail 26 of the upper sash 11. The meeting rails 23 and 26 are provided with integral hook-shaped interlocking members 55, 56 adapted to engage one the other on swinging the sashes 10 and 11 into closing position (see Figure 4) and moving out of engagement on locking the closed sashes together by the drawing and locking device 50, as shown in Figure 2.

The window frame 12 is made of metal and comprises a sill 60, side bars or jambs 61 and a top crossbar 62, and the frame 12 is provided with inner stop beads 65 at the sides and a top stop bead 66, the said stop beads 65 and 66 being removably fastened in place by screws or other suitable fastening devices 67, 68 (see Figures 2 and 6). The window frame is further provided with outer stop beads 70, 71 of which the side stop beads 70 form integral parts of the side bars or jambs 61 (see Figure 6) and the top stop bead 71 forms an integral part of the top crossbar 62, as shown in Figure 2. The outer stop beads 70 and 71 also form the scribe moldings for the window frame. Side parting strips 75 are set in recesses 76 formed in the side bars or jambs 61 and are fastened thereto by screws 77 or other fastening devices, and a top parting strip 78 is set in a recess 79 formed in the top crossbar 62, and the said parting strip 78 is fastened in place by screws 80 or similar fastening devices (see Figure 2). It is understood that the stop beads and parting strips form guideways for the sashes 10 and 11 to slide in.

The sill 60 of the window frame 12 is shaped to correspond to the sill of the window opening, as will be readily understood by reference to Figures 2 and 3, and the said sill is provided with an integral raised joint member 85 adapted to be straddled by the front and back arms of the bottom rail 21 of the lower sash 10 at the time the latter is moved downward into a closed position (see Figure 2). In order to form a tight joint between the stiles 22 and the parting strips 75 and between the front member of the bottom rail 21 and the sill joint member 85, the following arrangement is made: The lower ends of the inner stop members 65 are provided with integral wedges 86 adapted to be engaged by the stiles 22 on moving the lower sash 10 downward into closed position thus pushing the lower sash outward to form face joints between the stiles 22 and the parting strips 75 and a face joint between the front member of the bottom rail 21 and the joint member 85. It is understood that the lower sash 10 is suspended by its chain 35 in an inward position at the time the sashes open, that is, with the stiles 22 in contact with the inner stop beads 65, but when the sash is moved downward into closed position the wedges 86 push the sash outward for making the face joints above mentioned. The upper sash 11 when in open position hangs downward with its stiles 27 in contact with the outer stop beads 70, but when the upper sash 11 is moved into closed position then an inward movement is given to the sash by the stiles 27 thereof moving into engagement with wedges 87 formed on the upper ends of the outer stop beads 70 (see Figures 2 and 3). By this inward movement of the upper sash 11 its stiles 27 are moved in face contact with the parting strips 75, and the front member of its upper rail 28 moves into face contact with the top parting strip 78. Now when the locking device 50 is manipulated to lock the meeting rails 23 and 26 together, as above explained, then this device coacts with the wedges 86 and 87 to render the sashes air and water tight when in closed position. It is understood that when the drawing and locking device 50 draws the meeting rails 23, 26 together they make firm contacts at their adjacent faces, as will be readily understood by reference to Figure 2.

The suspension chains 35, 36 pass over the usual grooved pulleys 90, 91 journaled in housings 92, 93 removably attached to the top crossbar 62 of the window frame in the manner more fully shown and described in an application for Letters Patent for a window, Serial No. 386,615 filed under even date herewith, so that further description of the same is not deemed necessary. The outer ends of the chains 35 and 36 support the usual counterbalancing weights 100, 101 extending within the weight box 102 and separated from each other by a partition 103. Access to the weight boxes is had by removable sections 110 of the side bars 61 of the window frame.

The stiles 22 are provided with sash binders 115 mounted to swing and having cam members 116 adapted to pass between the stiles and the inner stop beads 65 to lock the lower sash 10 in place when in open position to prevent lowering or raising of the sash from the outside. The bottom rail 21 of the lower sash 10 is provided with a suitable handle 120 to permit the user to conveniently move the lower sash 10 into open or closed position. The top crossbar 62 of the window frame is provided with front

and rear flanges 125, 126, of which the rear flange is provided with upwardly extending arms 127 engaged by bolts 128 for fastening the arms to the wall 14 (see Figure 3) to hold the window frame in place in the window opening.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a window, a window frame and a lower sash, the window frame having a sill provided with a raised member, the said frame having stop beads and parting strips forming guideways for the sash to slide in, the said stop beads being provided with inclines, the said sash having stiles and a bottom rail of inverted channel shape adapted to straddle the said raised member, the stiles being adapted to engage the said inclines to press the bottom rail into engagement with the raised member and to press the stiles against the parting strips to form a tight joint between the said contacting parts.

2. In a window, a window frame and a sash, the window frame having stop beads and parting strips forming guideways for the said sash to slide in, the stop beads having wedges and the said sash having stiles and rails, of which the stiles are adapted to engage the said wedges to press the stiles against the parting strip and thereby form face joints between the stiles and parting strips.

3. A window, comprising a window frame and lower and upper sashes, the window frame having inner and outer stop beads and parting strips forming guideways for the sashes to slide in, the stop beads being provided with wedges, the window frame having a sill provided with a raised member, the sashes having stiles and rails, of which the lower ends of the stiles of the lower sash are adapted to engage the wedges at the lower ends of the inner stop beads to press the stiles against the parting strips and the bottom rail against the said raised member, and the upper ends of the stiles of the upper sash are adapted to engage the wedges on the outer stop beads to press the stiles against the parting strips, and a drawing and locking device on the meeting rails of the said sashes to draw the meeting rails in free contact with each other at the time the sashes are in closed position, the said drawing and locking device coacting with the said wedges to move the stiles into face contacts with the parting strips.

4. A window comprising a metallic window frame and lower and upper sashes having metallic stiles and rails, the window frame having inner and outer stop beads and side and top parting strips forming guideways for the said sash stiles to slide in, the inner stop beads having wedges at their lower ends and the outer stop beads having wedges at their upper ends, the said window frame having a sill provided with an integral raised joint member, the stiles of the lower sash being adapted to engage the wedges on the inner stop bead and the stiles of the upper sash being adapted to engage the wedges on the outer stop bead, and a drawing and locking device engaging the meeting rails of the said lower and upper sashes, the said drawing and locking device and the said wedges on closing and locking the sashes coacting to form tight joints between the stiles of the sashes with the side parting strips, to form a tight joint between the bottom rail of the lower sash with the said raised joint member, to form a tight joint between the top rail of the upper sash and the top parting strip and to form a tight joint between the meeting rails.

5. A window, comprising a metallic window frame and lower and upper sashes having metallic stiles and rails, the window frame having inner and outer stop beads and side and top parting strips forming guideways for the said sash stiles to slide in, the inner stop beads having wedges at their lower ends and the outer stop beads having wedges at their upper ends, the said window frame having a sill provided with an integral raised joint member, the stiles of the lower sash being adapted to engage the wedges on the inner stop beads and the stiles of the upper sash being adapted to engage the wedges on the outer stop bead, a drawing and locking device engaging the meeting rails of the said lower and upper sashes, the said drawing and locking device and the said wedges on closing and locking the sashes coacting to form tight joints between the stiles of the sashes with the side parting strips, to form a tight joint between the bottom rail of the lower sash with the said raised joint member, to form a tight joint between the top rail of the upper sash and the top parting strip and to form a tight joint between the meeting rails, a suspension device for the said lower sash to hold the latter inward with its stiles in engagement with the inner stop beads and out of engagement with the parting strips at the time the lower sash is open, and a suspension device for the said upper sash to hold the latter outward with its stiles in engagement with the outer stop beads and out of engagement with the parting strips at the time the upper sash is open.

6. A window, comprising a metallic window frame and lower and upper sashes having metallic stiles and rails, the window frame having inner and outer stop beads and side and top parting strips forming guideways for the said sash stiles to slide in, the inner stop beads having wedges at their lower ends and the outer stop beads having wedges at their upper ends, the said

window frame having a sill provided with an integral raised joint member, the stiles of the lower sash being adapted to engage the wedges on the inner stop bead and the stiles of the upper sash being adapted to engage the wedges on the outer stop bead, the meeting rails of the said upper and lower sashes having integral hook-shaped interlocking members adapted to engage one the other on moving the sashes into closed position and prior to locking the same, and a drawing and locking device engaging the meeting rails of the said lower and upper sashes, the said drawing and locking device and the said wedges on closing and locking the sashes coacting to form tight joints between the stiles of the sashes with the side parting strips, to form a tight joint between the bottom rail of the lower sash with the said raised joint member, to form a tight joint between the top rail of the upper sash and the top parting strip and to form a tight joint between the meeting rails, at the same time moving the said interlocking members of the meeting rails out of engagement with each other.

7. In a window, a window frame and a lower sash, the window frame having a sill provided with a raised portion, said sill being depressed from the top of said raised portion further on the outside than on the inside, said raised portion being tapered on the outer side, said frame having an inverted substantially U shaped bottom rail positioned to straddle said raised member and adapted to have one of its legs striking the inside part of said sill without the other leg coming in contact with the outside part of said sill, said last mentioned leg forming a tight joint with the beveled side of said raised portion, and at the same time providing a water drip on the sash.

8. In a window, a window-frame provided at the bottom with a raised joint, a lower sash mounted to slide up and down said window-frame, said lower sash having an inverted substantially U-shaped bottom rail, the legs of which are tapered inwardly adjacent their edges, said raised joint having a beveled side and a substantially straight side, said U-shaped bottom rail straddling said raised joint when said sash occupies its lowermost position, and said tapering ends of said rail pinching both sides of said raised joint by reason of the tapering of the respective ends, thereby forming a tight joint between the said rail and said raised joint.

9. A window comprising a window-frame provided with a pair of guide-ways at each side thereof and grooves at the top between said guide-ways, suspended sashes sliding in said guide-ways, the upper rail of one of said sashes when closed fitting in one of said grooves, an integral raised joint at the bottom of said frame for the lower end of the other sash, the lower ends of the inner walls of the inner guide-ways and the upper ends of the outer walls of the outer guide-ways being wedge-shaped and directed toward their respective opposite walls whereby to cause the lower end of the lower sash to move against the inner face of said raised joint, and the upper end of the other sash to move against the outer face of the wall separating said upper grooves, thereby forming a tight joint at the bottom and at the top of the frame when said sashes are closed.

10. A window comprising a window-frame provided with a pair of guide-ways at each side thereof and grooves between said guide-ways at the top, said frame at the bottom being formed with a raised joint extending from one side to the other and in line with the inner guide-ways, an upper and a lower sash sliding in said guide-ways, the lower ends of the inner walls of the inner guide-ways being wedge-shaped to force the lower end of the lower sash against said raised joint, the outer wall of the outer guideways at the top being wedge-shaped to force the upper end of the upper sash toward the opposite wall of the groove, and means at the lower end of the upper sash and at the upper end of the lower sash for drawing said ends toward each other when said sashes are closed, thereby forming a tight joint between said sashes and said window-frame and between the lower sash and the upper sash.

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