

No. 820,218.

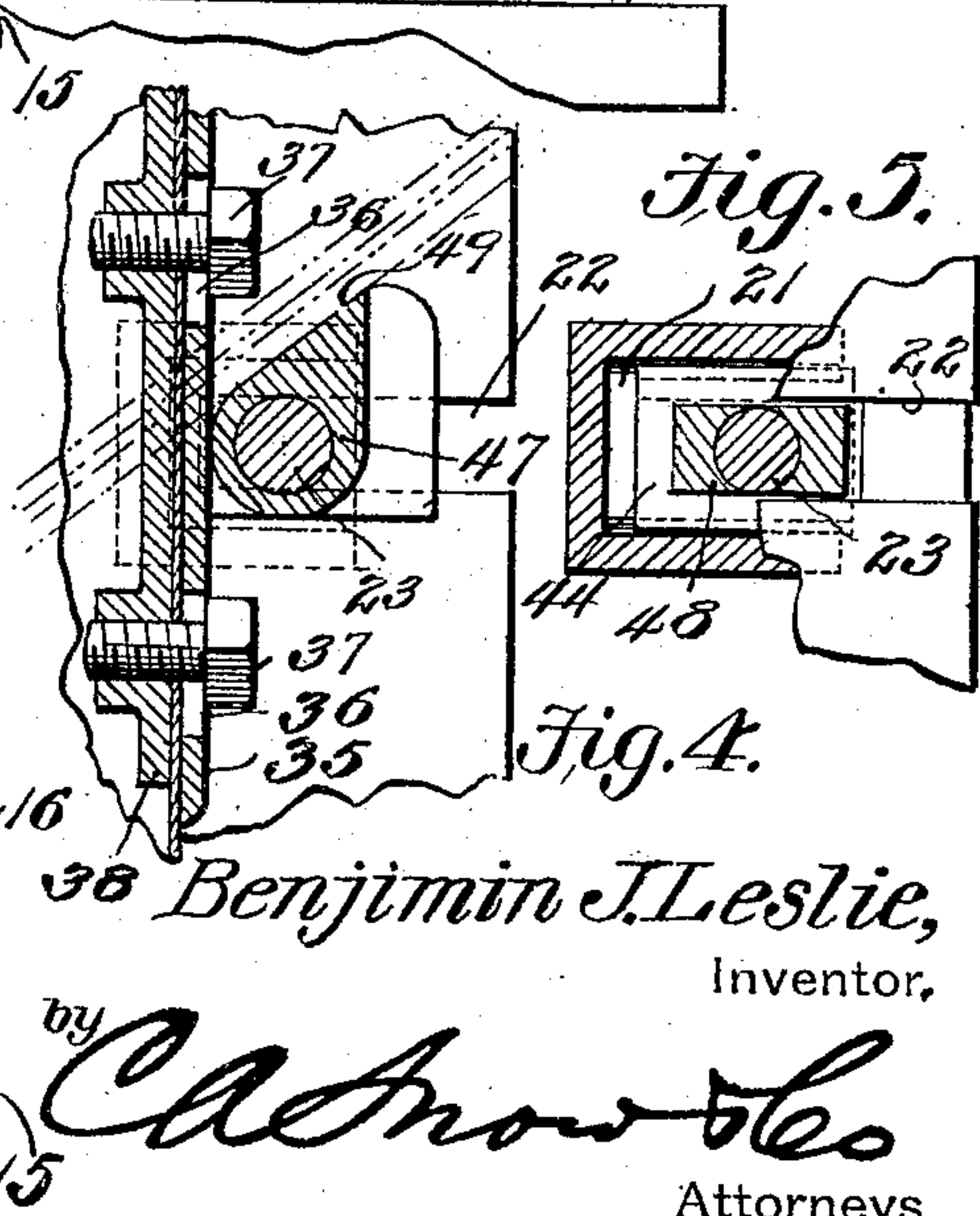
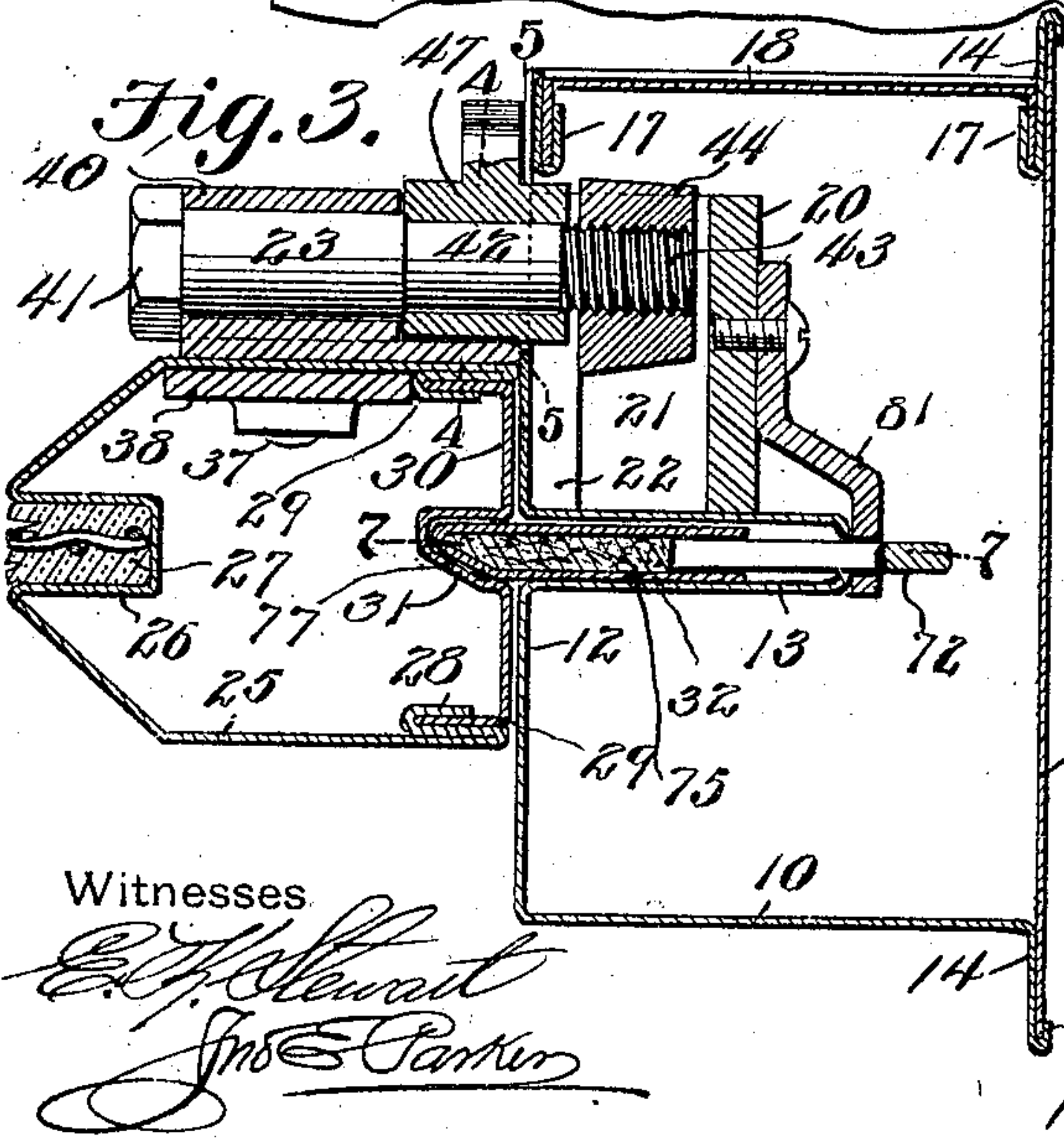
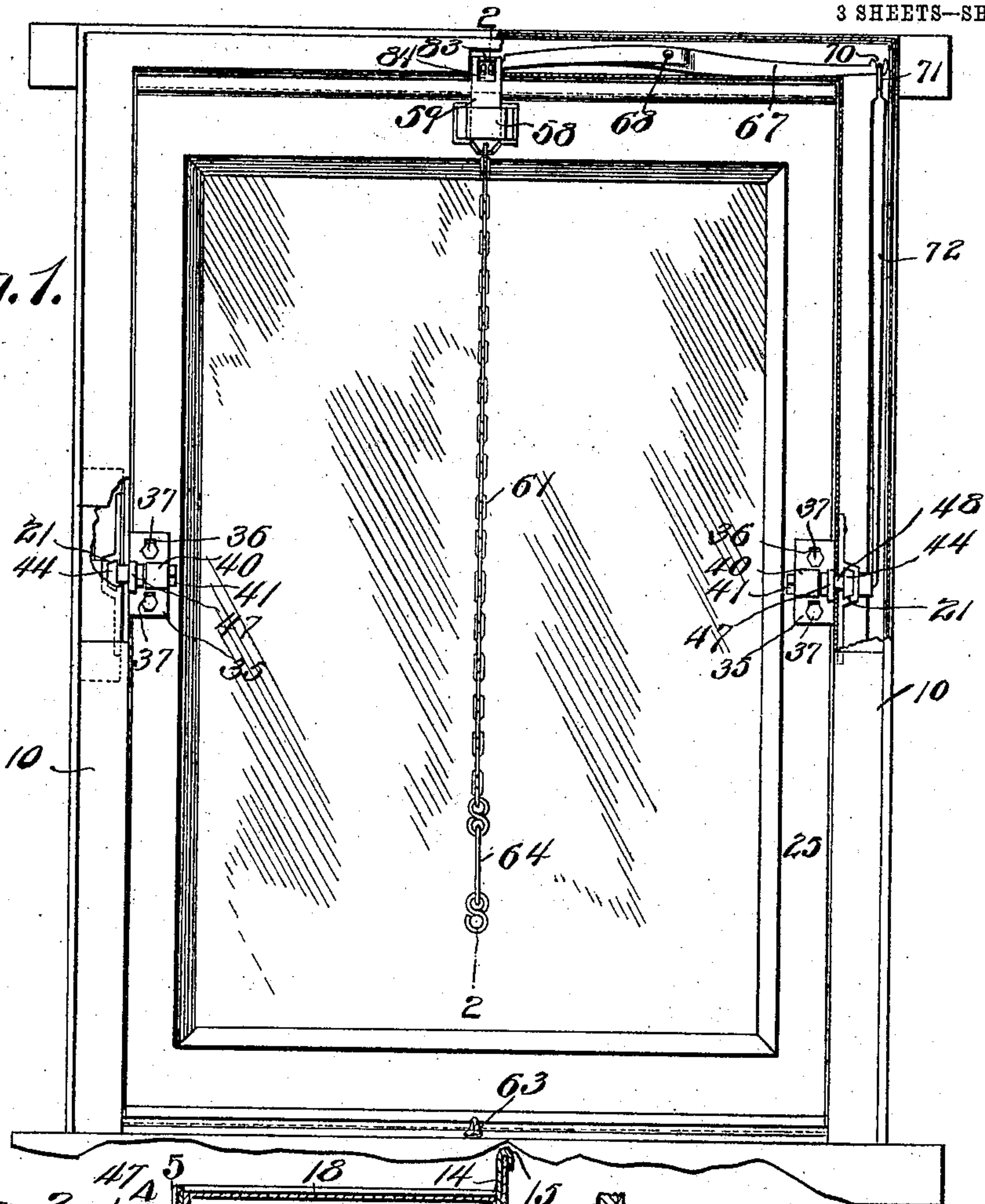
PATENTED MAY 8, 1906.

B. J. LESLIE.
WINDOW.

APPLICATION FILED OCT. 11, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

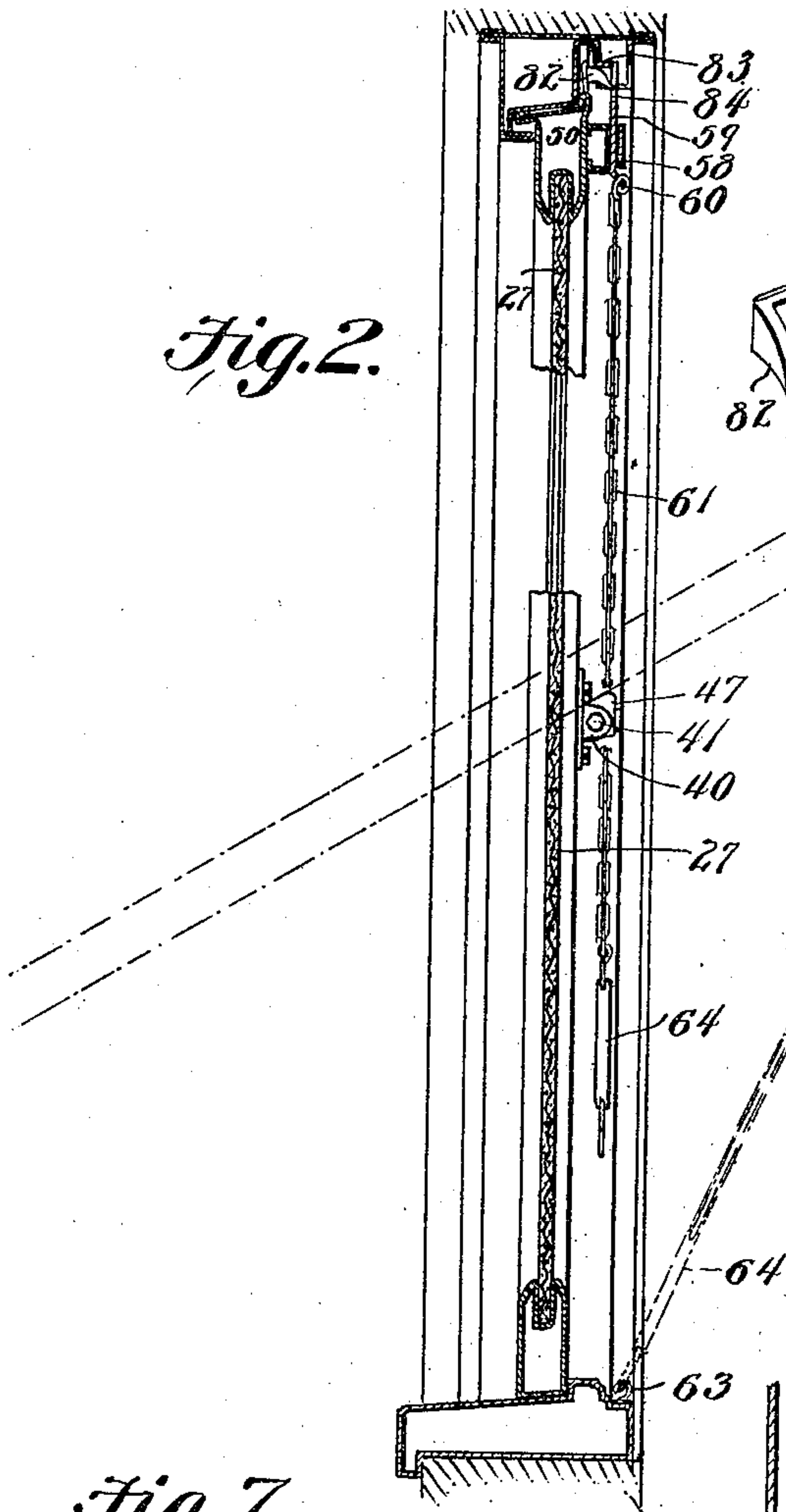


Fig. 8.

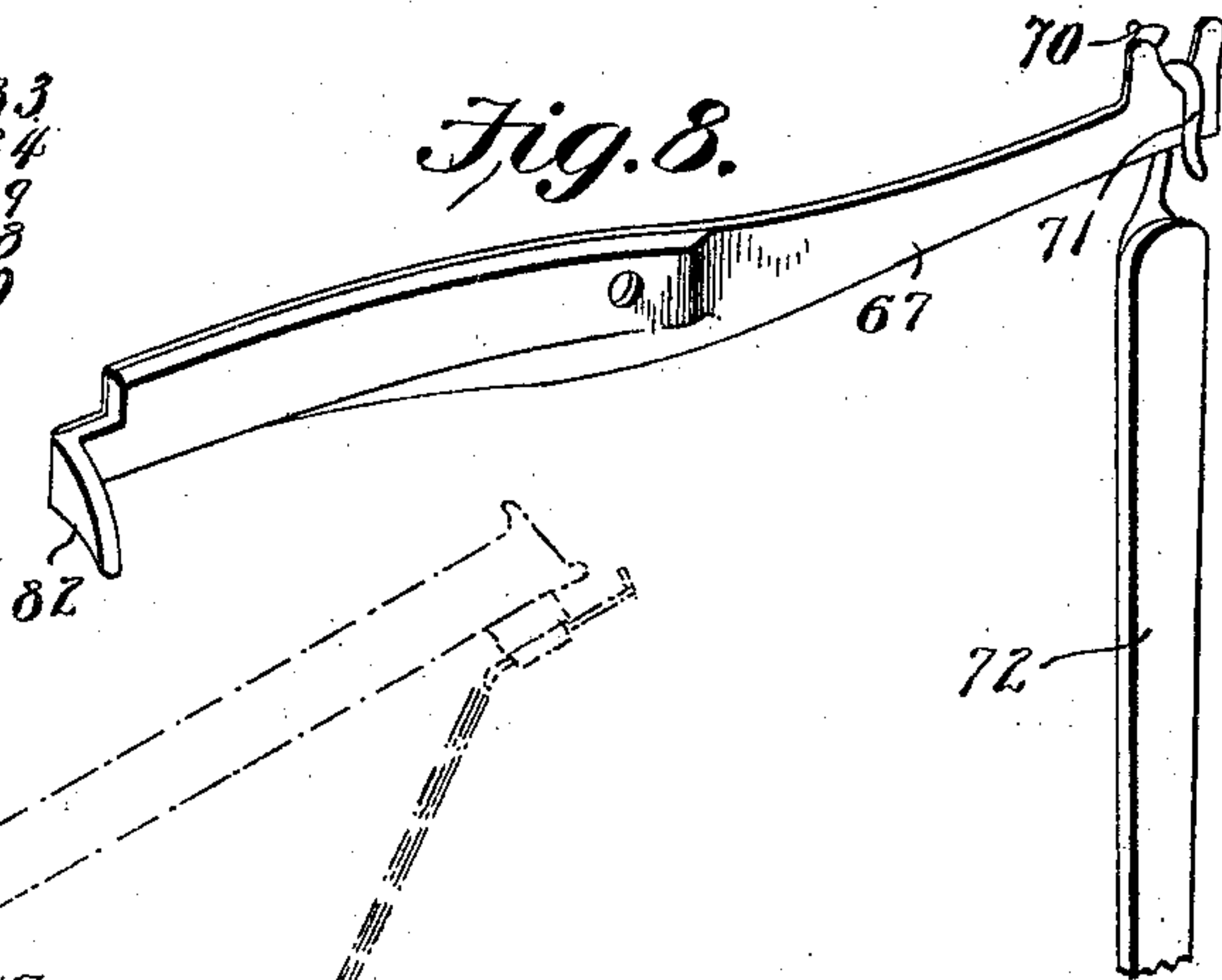


Fig. 6.

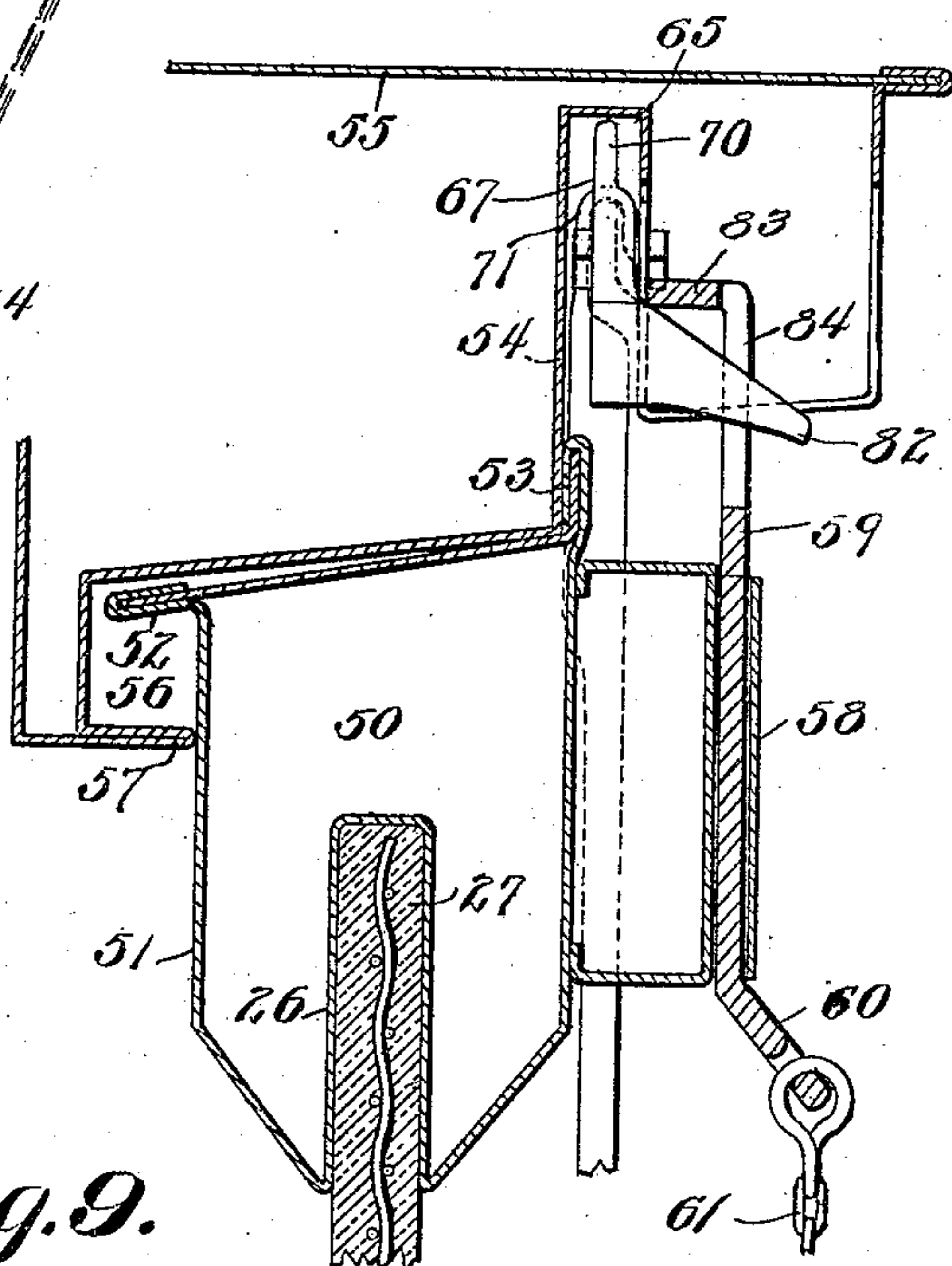
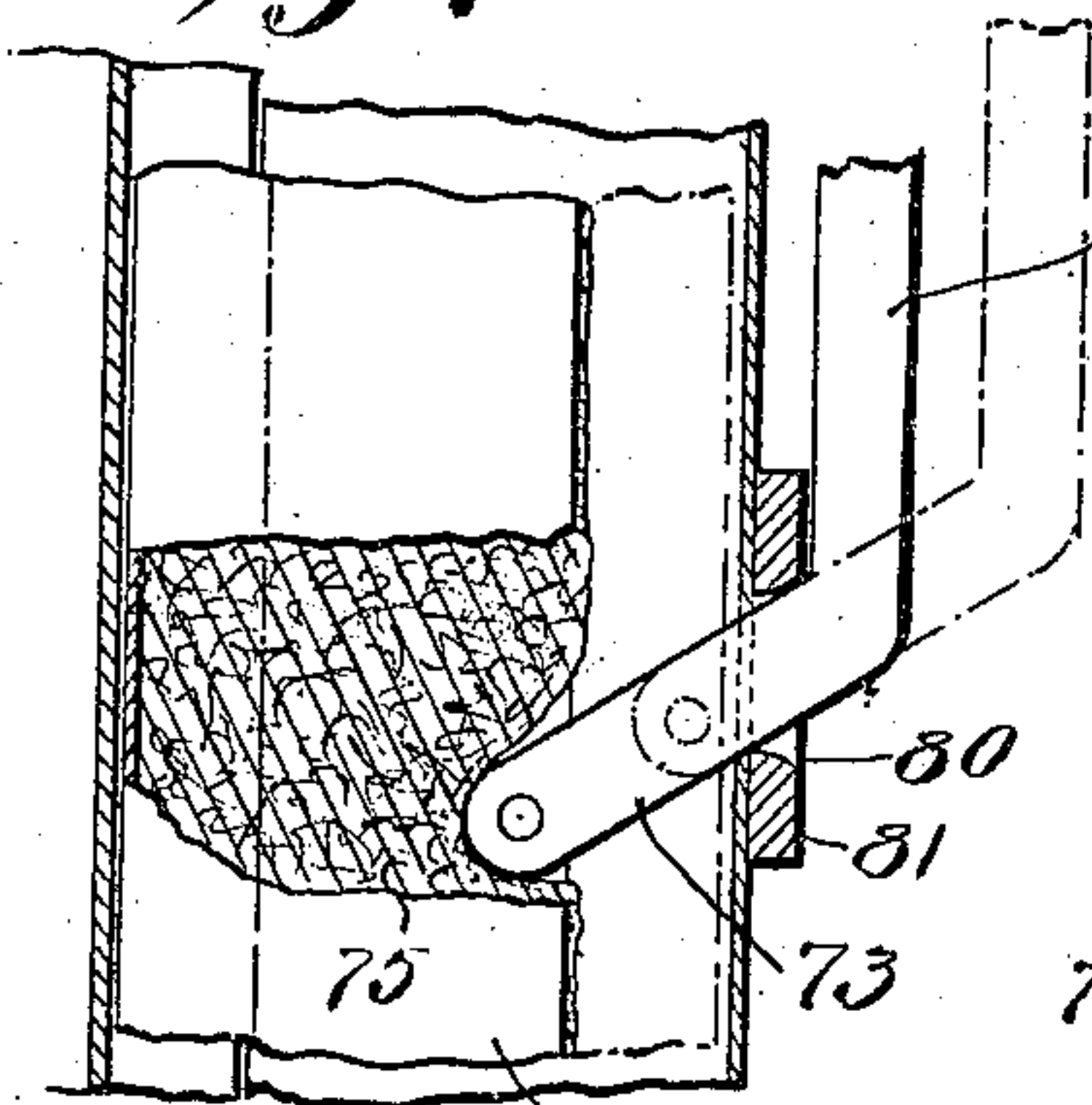


Fig. 7.



Witnesses 32

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Fig. 9.



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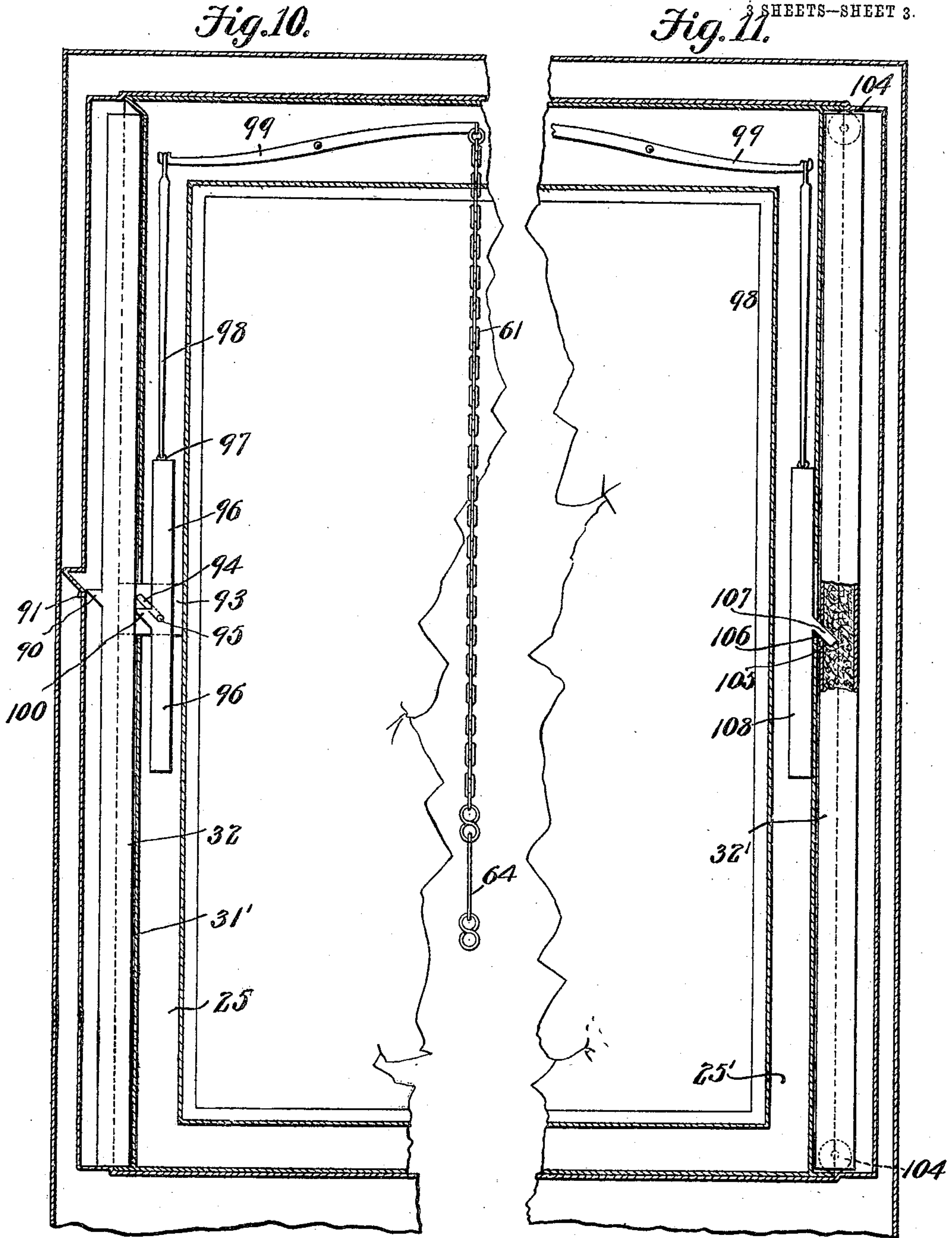
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

BENJIMIN J. LESLIE, OF CHICAGO, ILLINOIS.

WINDOW.

No. 820,218.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed October 11, 1905. Serial No. 282,337.

To all whom it may concern:

Be it known that I, BENJIMIN J. LESLIE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Window, of which the following is a specification.

This invention relates to the construction of windows, and has for one of its objects to provide a window frame and sash of all-metal construction with a view of resisting fire.

A further object of the invention is to provide a window of the swing-sash type in which provision is made for insuring the closing of the window automatically when the temperature to which the window is exposed reaches a dangerous point owing to fire inside or outside the building.

A still further object of the invention is to provide a window having an automatically-closing sash in which provision is made for the insertion of packing-strips between the frame and sash in order to prevent draft.

A still further object of the invention is to provide a window frame and sash so arranged and connected as to permit accurate adjustment and insure a close fitting of the parts.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in the novel construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is an elevation of a window frame and sash constructed in accordance with the invention, a portion of the frame being broken away in order to more clearly illustrate the construction. Fig. 2 is a vertical section of the same on the line 2 2 of Fig. 1. Fig. 3 is a sectional plan view of one of the stiles of the frame and one of the stiles of the sash-rails with the view drawn to an enlarged scale. Fig. 4 is a vertical section of the same on the line 4 4 of Fig. 5. Fig. 5 is a similar view on the line 5 5 of Fig. 3. Fig. 6 is a vertical section through the center of the lintel and upper rail of the sash. Fig. 7 is a detail sectional view on the line 7 7 of Fig. 3, illustrating particularly the construction of one of the packing-strips. Fig. 8 is a detail perspective view of one of the packing-

strip-operating bars. Fig. 9 is a sectional elevation of a portion of a sash and frame, illustrating a modification of the invention. Fig. 10 is a similar view illustrating a still further modification of the invention.

Similar characters of reference indicate corresponding parts in each of the several figures of the drawings.

In carrying out the present invention the window-sash and window-frame are formed wholly of metal, and the window-sash is preferably provided with a sheet or sheets of wire-glass in order that the structure may be rendered fireproof.

Each of the stiles 10 is formed of thin sheet metal, preferably galvanized iron, the metal being preferably bent into shape by suitable dies. Each stile is preferably rectangular in a sectional plan and is formed of two sheets of metal, the larger sheet being bent to form the inner and outer vertical walls, as well as the wall 12, which faces the side of the sash, and the center of the wall 12 is bent inward to form a narrow vertically-extending recess 13. The opposite ends of the larger sheet are provided with end flanges 14, the ends of which are bent to form grooves 15 for the reception of a metallic sheet 16, that constitutes the frame-wall adjacent to the masonry. At one point near the center of the wall of each stile is arranged an opening the walls of which are flanged, as indicated at 17, for the reception of the edge flanges of a removable cover-plate 18, this plate being detached when the sash is being fitted in place.

Within each of the stiles is secured a metal casting 20, at the central portion of which is arranged a nut-receiving recess 21, which communicates with a slot 22, formed in the wall 12 of the stile, this slot being horizontal and arranged to permit of adjustment in a horizontal direction of the pivot-bolt 23, on which the sash is supported.

The vertical rails or stiles 25 of the sash are also formed of sheet metal, preferably of galvanized iron. Each of these vertical rails or stiles comprises a main plate 25, the inner face of which is bent to form a recess 26 for the reception of a sheet of wire-glass 27, and the ends of the plate 25 are provided with flanges 28, bent to form grooves for the reception of the end flanges 29 of the secondary plate or member 30 of the rail or stile. This plate 30 is bent to form a vertical recess 31, which when the sash is closed is in alinement with the recess 13 and is arranged to receive

a packing-strip 32, that normally lies within the recess 13, this strip serving to prevent draft between the sash and frame.

To the inner face of each of the vertical rails or stiles of the sash is secured a plate 35, said plate being provided with slots 36 for the passage of securing-bolts 37, that extend through enlarged openings formed in the sheet-metal rail, and the inner threaded ends of the bolts fit in threaded openings formed in a back plate 38. The construction of the plates is such that by loosening the bolts the outer plate 35 may be moved both vertically and horizontally, this being necessary in order to secure accurate adjustment of the sash with respect to the frame. The outer face of the plate 35 is provided with an enlarged boss 40, having an opening for the reception of the unthreaded portion of the sash pivot-bolt 23, the outer end of which has a hexagon or square head 41 to be engaged by a wrench or similar tool. The inner end of the bolt is reduced in diameter and is provided with an unthreaded portion 42 and a threaded portion 43, the latter receiving a nut 44, that is adjustably mounted within the recess 21, the nut being movable in a horizontal plane to effect a corresponding adjustment of the sash. On the unthreaded portion 42 of the bolt is mounted a stop-block 47, from the inner edge of which projects a rectangular lug 48, that fits in the slot 22 and prevents revoluble movement of the block, while permitting the horizontal adjustment of said block as the latter moves within the nut and sash. The upper rear face of the block is beveled, as indicated at 49, in order to form a stop for limiting opening movement of the sash, the angular position of the latter when full open being indicated by dotted lines in Fig. 2.

The top rail 50 of the sash is formed of two pieces of sheet metal, the main sheet 51 being bent to form a recess for the reception of the sheet of wire-glass and the opposite edges of the sheet are bent to form two flanges 52 and 53, the latter being approximately vertical and arranged to seat against a vertical wall 54, formed in the lintel 55, while the flange 52 is slightly inclined and is arranged to enter a recess 56, formed by the intumed lower flange 57 of the lintel. On the outer face of the top rail 50 is arranged a vertical guide 58, that also is formed of sheet metal. This guide receives a slidable dog 59, the lower end of which is turned to form an ear 60, having a suitable opening for the reception of the upper link of a sash-opening chain 61. By pulling on this chain the dog 59 is drawn down slightly, and on further movement the sash may be swung to the open position, (indicated in dotted lines in Fig. 2,) the lower end of the chain being placed over a suitable hook 63 on or near the sill of the sash-frame. This chain contains a section

or link 64, that is formed of a destructible material—for instance, a two-part link or bar, the members of which are united by a solder that will fuse when exposed to comparatively high temperature, so that in case of fire the chain will part and the sash will automatically close, the lower portion of the sash being heavier than the upper portion, so that the closing may be effected by gravity.

The upper member or lintel 55 of the sash-frame is also formed of sheet metal, and the wall 54, previously referred to, forms one wall of a vertical recess 65, that is arranged for the reception of a pair of levers 67, that are pivoted on studs 68, carried by the lintel, the studs being arranged approximately midway of the length of said levers. The inner ends of the levers are counterweighted and will descend if the levers are free. The outer ends of the levers are provided with notches 70 for the reception of hooks 71, that are arranged at the upper ends of vertically-disposed bars 72, that extend down through the stiles of the frame, the lower ends of said bars having inwardly-extending cam-arms 73, that are pivotally connected to the packing-strips 32. These strips 32 are formed of sheet metal and have a filling 75 of asbestos or similar fire-resisting material. The point of connection between the arms 73 and the strips is approximately midway of the vertical height of the strip, so that the latter may freely move against the edge of the sash and form a close joint therewith in case the sash is not fully closed. When fully closed, the recesses 13 and 37 are in alinement with each other, and the packing-strip will pass from the recess 13 into the recess 31 and effectually cut off the draft between the sash and frame. One face of the strip is preferably beveled, as indicated at 77, to facilitate its entrance into the recess 31, and the adjacent wall of said recess 31 is also inclined, so that a tight joint may be formed and the passage of air prevented. The cam-arms 73 pass through openings 80, that are formed in metallic arms 81, carried by the blocks 20, and when an upward pull is exerted on the bars 72 these cam-arms in riding through the openings 80 will draw the packing-strips inward into the recesses 18. When the strips are left free, they will descend by gravity and will enter the recesses 31 of the sash.

The inner ends of the levers 67 are arranged close together, and each is provided with an outwardly-extending cam-shaped lug 82, the upper inclined face of which receives the inwardly-bent end 83 of the dog 59, and said dog has a slot 84, through which the outer end portions of the lug 82 may pass.

When the sash is closed, the arm 83 rests on top of the lugs 82, the latter serving as supports for the dog 59 and the chain. The packing-strips are much heavier than the

dog and chain and move to positions within the recesses 31 when the sash is closed. When the sash is to be opened, downward stress on the chain will be transmitted to the dog 59 and the arm 83 will ride against the lugs 82, thus raising the outer ends of the levers 67 and pulling the strips upward. The arms 73, riding through the openings 80, Fig. 7, will pull the strips inward, and when the edges of the strips have cleared the sash and stress is still exerted on the chain the sash may be moved to open position, the lower end of the chain being hooked at 63. The packing-strips will then raise by gravity against the sides of the vertical rails of the sash, while the counterweighted inner ends of the lever 67 will move the inner ends of said levers down and the outer ends will move upward, so that the hooks 71 will be retained within the notches 70.

With a window of the construction described the frame may be readily placed in position and the sash may be accurately adjusted with respect to the frame by loosening the bolts 23 and 37 and adjusting the sash to its proper position, after which the tightening of these bolts will hold the sash and the latter may be freely opened and closed without binding at any point.

In the modified construction (illustrated in Fig. 9) the operating devices for the packing-strips are arranged in the sash instead of in the frame. In this case the frame is provided with a groove for the reception of the packing-strip 32, and the rear edge of said strip is provided with a cam-shaped lug 90, that is arranged to enter a recess formed in the rear wall of the groove, a small cross-bar 91 forming a support against which the cam rides, and said strip is so arranged that if left free it will move down by gravity, and in moving downward the cam 90 will force the strip outward into the groove 31' of the sash-rail 25'.

Arranged in the sash-rail is a pair of spaced plates 93, having grooves 94, the walls of said grooves being obliquely disposed and arranged for the reception of a pin 95, that projects from a weight 96. This weight is arranged within an opening formed within the sash at a point to the rear of the groove 31', and at its upper end is an eye 97, which is connected by a link 98 to a lever 99 at the top of the sash, said lever being so arranged that when downward stress is exerted by the opening chain or cord the weight will be elevated, and when this stress is relieved the weight will move down by gravity, and the pin 95 being in the cam-groove 94 the weight will be moved inward or in the direction away from the packing-strip 32. Projecting from the outer edge of the weight is a cam-lug 100, the extreme outer end of which is arranged to engage with the edge of the packing-strip and hold the latter in the position shown in Fig.

9. When the weight moves down and inward, this lug also moves inward and allows the packing-strip to descend by gravity into the groove 31'.

In the construction shown in Fig. 10 the packing-strip 32' is provided at its opposite ends with antifriction-rollers 104 to permit greater freedom of movement. In the outer edge of the strip is formed an opening 105, the lower wall of which is bent outward, forming a small flange 106 for engagement with a cam-lug 107, that projects from the outer edge of a vertically-movable weight 108, guided by the sash. When this weight is lowered, the lug 107 enters the opening 105 and draws the packing-strip into the receiving-groove of the sash, and when the weight is raised the upper face of the cam or lug forces the packing-strip backward into the groove of the frame in order to permit the sash to swing to the open position.

The all-metal construction of the frame and sash is of considerable value in fireproof construction, and when the open sash is exposed to heat from a fire inside or outside the building the sash is instantly moved to closed position, and the packing-strips fall into place, thus effectually cutting off all draft and preventing the spread of the fire.

Having thus described the invention, what is claimed is—

1. The combination with a window-frame and a swinging sash, the adjacent faces of the sash and frame being grooved, of packing-strips normally held within one set of grooves and movable into the other set of grooves when the sash is closed, and means connected to both strips for simultaneously moving them to sash-releasing position.

2. The combination with a window-frame and a swinging sash, both of which are provided with grooves in their adjacent faces, of vertically and laterally movable packing-strips normally retained within the grooves of the frame and movable into the grooves of the sash when the latter is closed, and packing-strip supports arranged to permit free movement of the strips in the direction of the sash.

3. The combination with a window-frame and a swinging sash, both of which are provided with grooves in their adjacent faces, of packing-strips arranged in one set of grooves and movable automatically into a second set of grooves when the sash is closed, one edge of each of the packing-strips being beveled to facilitate its entrance into its receiving-groove.

4. The combination with a window frame and sash, both of which are provided with grooves in their adjacent faces, of packing-strips movable into both grooves to close the spaces between the sash and frame, said strips being formed of sheet metal having a filling of asbestos.

5. The combination with a window frame and sash, of packing-strips for closing the spaces between the sash and frame, and supporting members pivotally connected to the strips at points about midway of the length of the latter to permit close contact between the strip and sash.
6. The combination with a window frame and sash, the adjacent faces of both being grooved, of packing-strips normally held within the grooves of the frame, strip-sustaining bars having cam-shaped end portions to which the strips are pivoted, guiding members having openings for the passage of such cam-shaped end portions, and means for operating said sustaining members to withdraw the strips from engagement with the sash.
7. The combination with a window-frame and a swinging sash, of packing-strips, and a sash-opening means connected to and arranged to move the strips from the sash in advance of the opening movement of the latter.
8. The combination with a window-frame and a swinging sash, of packing-strips for closing the spaces between the sash and frame, a sash-opening means, and mechanism for operatively connecting the same to the strips, whereby said strips may be moved from the sash in advance of the opening movement of the latter.
9. The combination with a window-frame, of a swinging sash, packing-strips carried by the frame and arranged to engage the sash, levers carried by the frame-lintel, and means for connecting the outer ends of the levers to the strips, and a sash-opening means arranged to engage the inner ends of said levers to effect movement of the levers and strips in advance of the opening movement of the sash.
10. The combination with a window frame and sash, of packing-strips carried by the frame, levers pivoted to the frame-lintel, suspension-bars connecting the outer ends of said levers to the strips, cam-shaped lugs projecting from the inner ends of said levers, a slidable dog carried by the sash and arranged to engage said lugs, and means for moving said dog during opening movement of the sash to effect movement of the strips in advance of the opening movement of the sash.
11. The combination with a window-frame, of a pivoted sash, packing-strips supported by the frame, levers pivoted to the frame-lintel, the outer ends of said levers being notched, strip-suspension bars having hooked upper ends entering said notches, cam-shaped lugs projecting from the inner ends of said levers, a slidable dog carried by said sash and having an inbent arm arranged to engage said lugs, whereby on downward movement of said dog the strips will be moved in advance of the opening movement of the sash.
12. The combination with a window frame and sash, of packing-strips carried by the frame and arranged to engage the sash, levers pivoted to the frame-lintel and counterweighted at their inner ends, the outer ends of said levers being notched, suspension-bars hooked at their upper ends and engaging said notches, the lower ends of said bars being pivotally connected to the strips, lugs projecting from the inner ends of the levers, a slidable dog carried by the sash and provided with an opening for the passage of said lugs, and an arm projecting from said dog and arranged to engage with said lugs to effect movement of the strips in advance of opening movement of the sash.
13. The combination with a window-frame having a slotted block, of a swinging sash, a plate carried thereby, a pivot-pin supported by said plate and having a threaded inner end, and a nut arranged on the threaded end of the pin and entering said slotted block to permit adjustment of the sash with respect to the frame, and the locking of the pin in adjusted position.
14. The combination with a window-frame, of a slotted block carried thereby, a swinging sash, a plate carried thereby, a pivot-pin carried by said plate, a stop-block carried by the pivot-pin, and a nut mounted on the threaded inner end of the pin and entering the slotted block to permit adjustment of the sash with respect to the frame, and the locking of the pivot-pin in adjusted position.
15. The combination with a frame, of a slotted block carried by the frame, a swinging sash, a plate carried thereby, a pivot-pin supported by the plate and having a threaded inner end, a nut carried by the threaded inner end of the pin and arranged to enter said slotted block, and a stop-block also supported by the pin and serving in connection with the nut to clamp said pin in adjusted position.
16. The combination with a metallic window-frame having a slotted inner face, of a slotted block arranged within the frame, a swinging sash, a plate secured thereto, a pivot-pin carried by said plate and having a threaded inner end, a nut mounted on the threaded end of the pin and entering said slotted block, a sash stop-block also carried by the pin and having a rectangular end entering the slotted frame, said block being held from rotative movement by the walls of the slot and serving, in connection with the nut, to clamp the pin in adjusted position.
17. The combination with a metallic window-frame having a slotted inner face, of a slotted block arranged within the frame, a swinging sash, a plate adjustably secured to the sash, a pivot-pin supported by said plate and having a threaded inner end, a nut mounted on the threaded end of the pin and entering said slotted block, and a sash stop-

block arranged to be engaged by the plate,
said block being mounted on the pin and hav-
ing a projecting rectangular portion entering
the frame-slot, and serving in connection
5 with the nut to clamp the pivot-pin in ad-
justed position.

In testimony that I claim the foregoing as

my own I have hereto affixed my signature in
the presence of two witnesses.

BENJIMIN J. LESLIE.

Witnesses:

JOHN A. LALLEY,
ADELPH SECKEL.