Jan. 23, 1951 J. F. KERBAUGH 2,538,749

METALLIC WINDOW

Filed Aug. 9, 1945 3 Sheets-Sheet 1

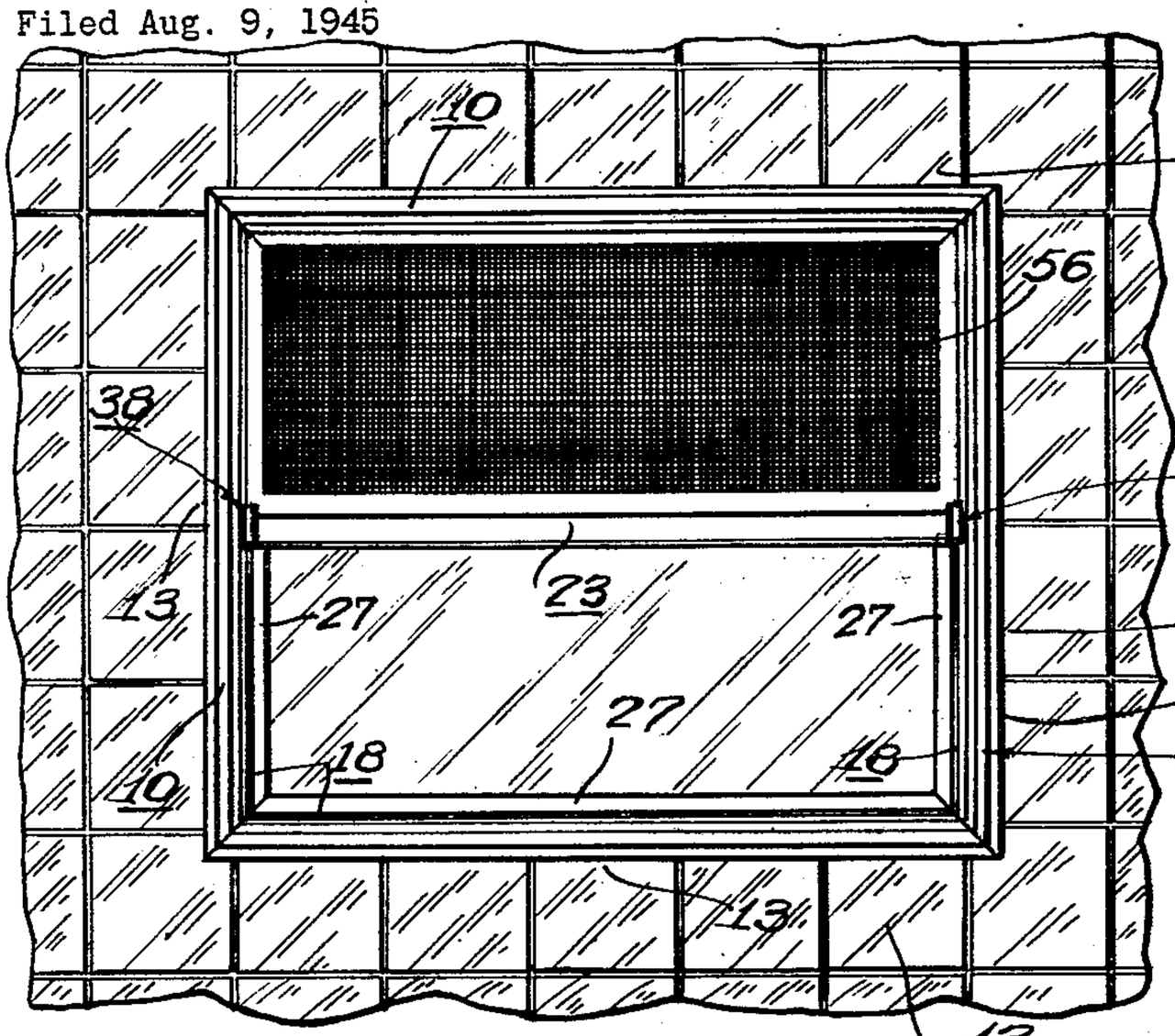


Fig. 1.

Fig. 9.

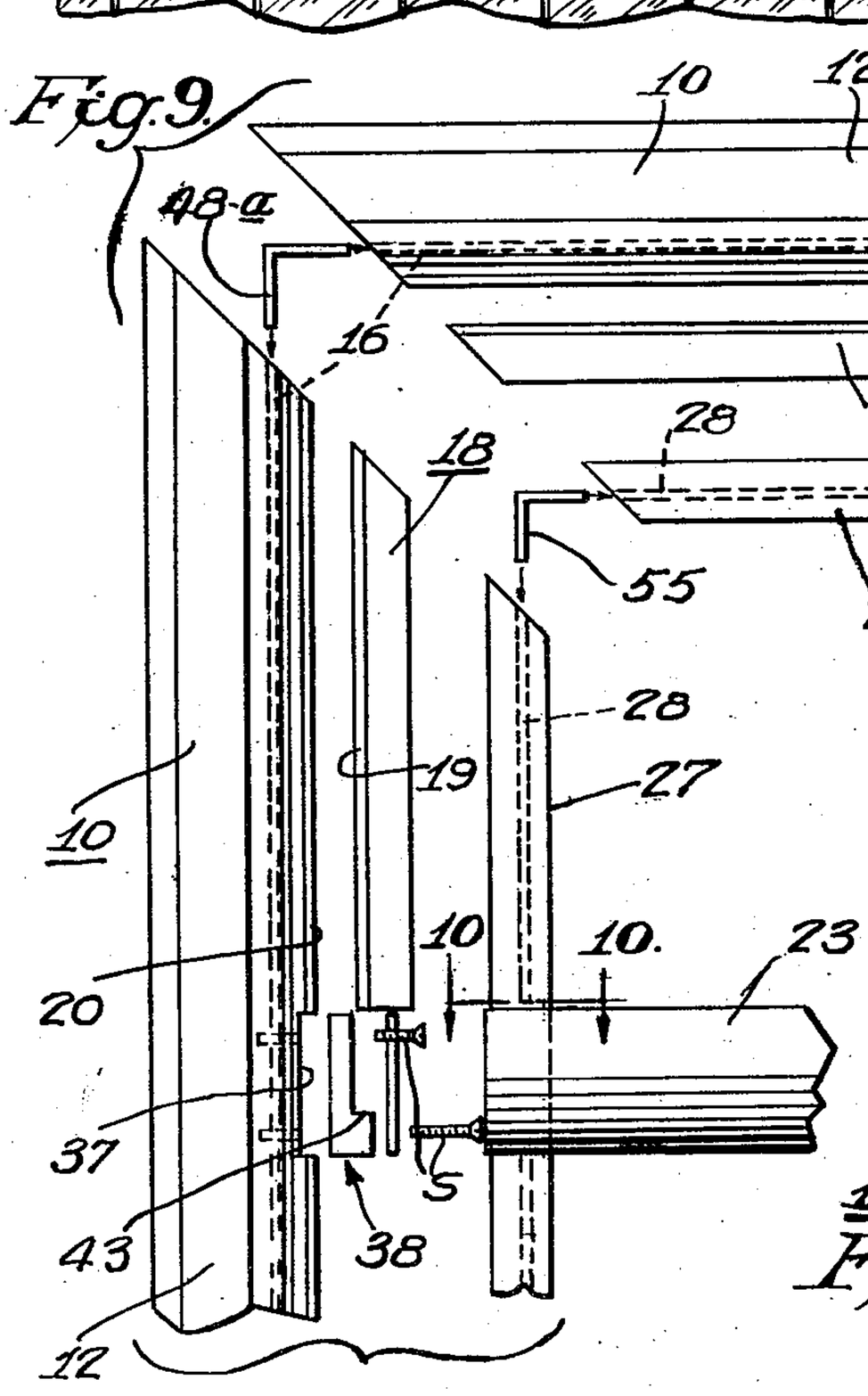
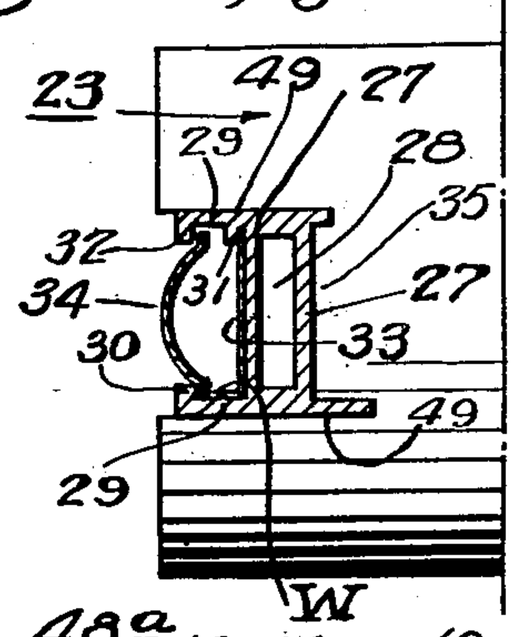


Fig. 10.



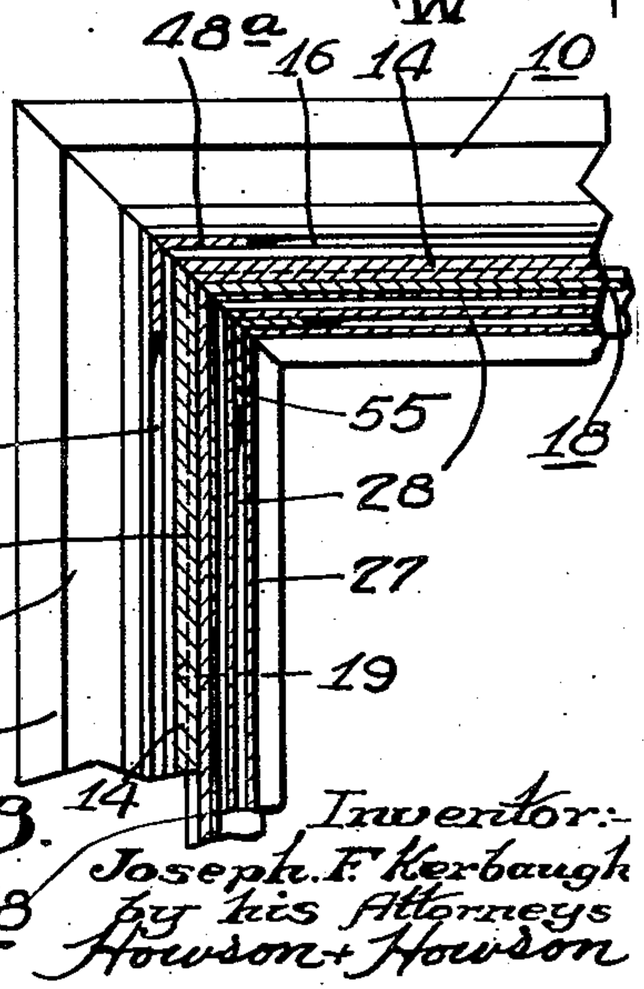


Fig. 8.

Inventor:-
Joseph. F. Kerbaugh
by his Attorneys
Howson + Howson

Jan. 23, 1951 J. F. KERBAUGH 2,538,749

METALLIC WINDOW

Filed Aug. 9, 1945 3 Sheets-Sheet 2

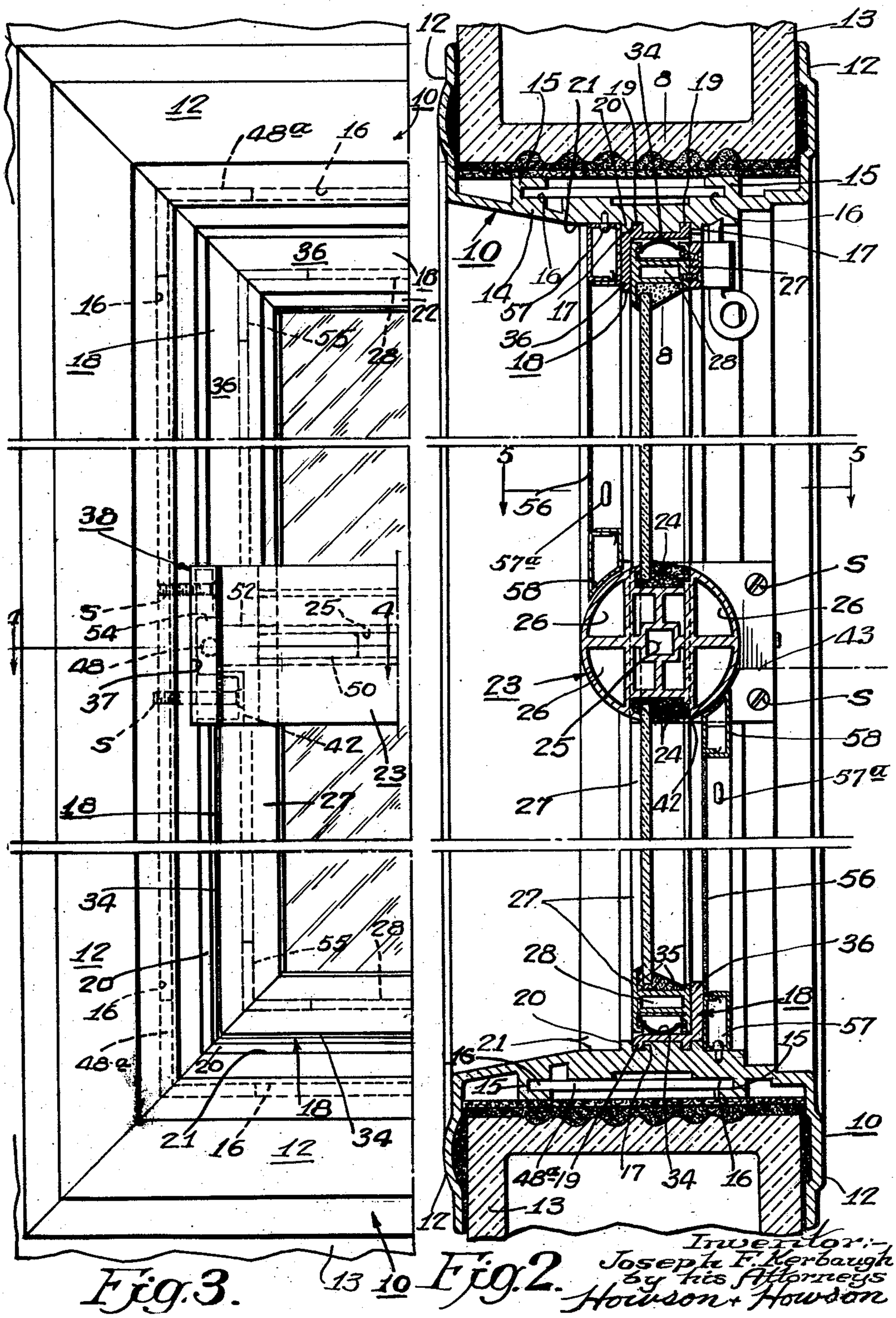


Fig. 3. Fig. 2.

Inventor:-
Joseph F. Kerbaugh
by his Attorneys
Howson & Howson

Jan. 23, 1951 J. F. KERBAUGH 2,538,749

METALLIC WINDOW

Filed Aug. 9, 1945 3 Sheets-Sheet 3

Fig. 4.

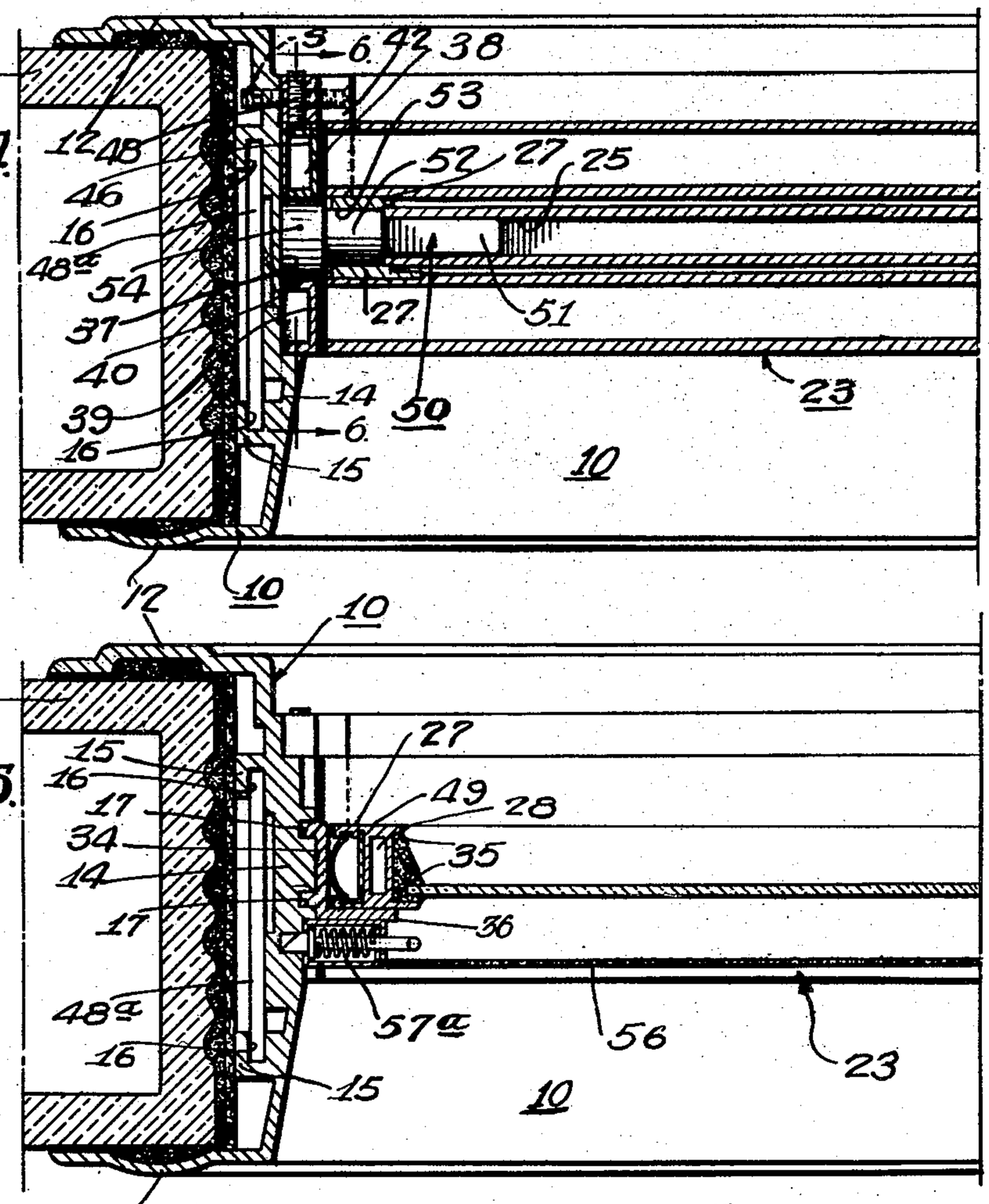


Fig. 5.

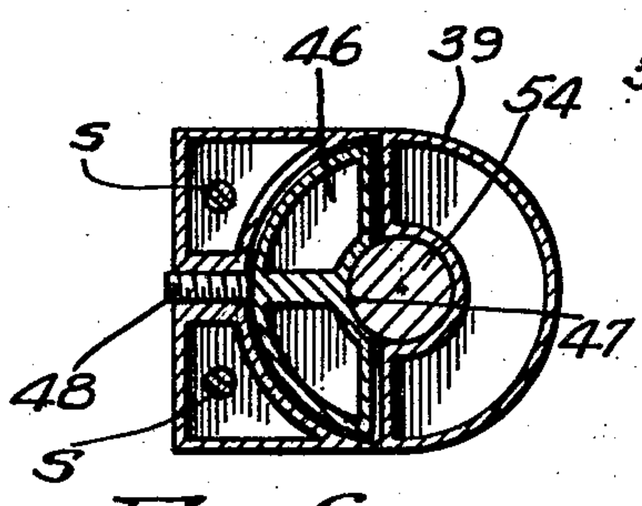


Fig. 6.

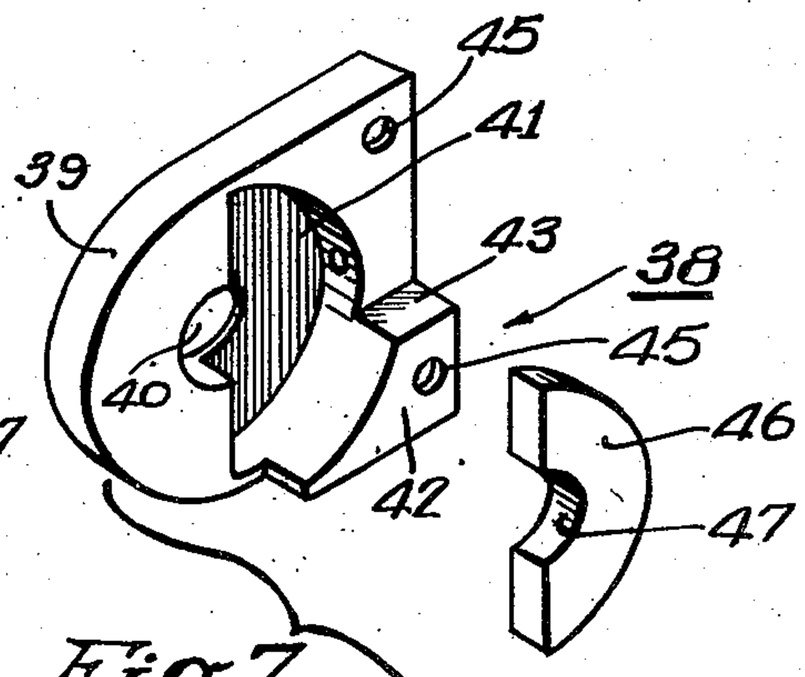


Fig. 7.

Inventor:—
Joseph F. Kerbaugh
by his Attorneys
Howson & Howson

Patented Jan. 23, 1951 2,538,749

UNITED STATES PATENT OFFICE

2,538,749

METALLIC WINDOW

Joseph F. Kerbaugh, Bryn Mawr, Pa.

Application August 9, 1945, Serial No. 609,746

7 Claims. (Cl. 189—69)

1

This invention relates to metallic windows and more particularly to the construction of the swinging type of window ordinarily employed in factories.

An important object of the invention is the provision of a structure which lends itself readily to mass production and in which the component parts may be produced in the form of extended strips which are subsequently divided and assembled to form windows of the desired size and form.

Another and importan+ object of the invention is the provision of a window composed of elements which may be produced from certain metals such as aluminum by extrusion methods and which, accordingly, may be very cheaply manufactured.

Another object of the invention is the provision of a construction enabling a cheap and efficient screening of the window.

Another object of the invention is the provision of a window which may be very readily installed in or removed from its frame.

Another object of the invention is the provision of a structure which readily lends itself to weather stripping.

These and other objects I attain by the construction shown in the accompanying drawings wherein for the purpose of illustration I have shown a preferred embodiment of my invention and wherein:

Fig. 1 is an elevation of a completed window constructed in accordance with my invention;

Fig. 2 is an enlarged vertical sectional viey therethrough;

Fig. 3 is an enlarged fragmentary elevation thereof, the outer screen unit being removed;

Fig. 4 is a section on line 4—4 of Fig. 3;

Fig. 5 is a section on line 5—5 of Fig. 2;

Fig. 6 is a section on line 6—6 of Fig. 4;

Fig. 7 is a combined perspective view of the hinge mounting and brake;

Fig. 8 is a section on line 8—8 of Fig. 2;

Fig. 9 is an exploded view showing the various elements of the window prior to assembly thereof; and

Fig. 10 is a section on line 10—10 of Fig. 9.

Referring now more particularly to the drawings, the numeral 10 generally designates a main frame member substantially U-shaped in cross section and adapted to receive between the flanges 12 thereof the wall elements 13 of the wall in which it is mounted. The outer face of the base 14 of the U has spaced ribs 15, adjacent faces of which have opposed longitudinal slots 16, the

2

purpose of which will presently appear. The inner face of the base of the U is grooved as at 17 for the reception of auxiliary frame elements or stop strips 18. Stop strips 18 are substantially L-shaped in cross section, the outer face of one arm of the L being longitudinally ribbed as at 19 with ribs adapted for press fitting into the grooves 17 of the main frame 10. The grooves 17 of member 10 are preferably formed in a ridge element 20 arising from an otherwise flat ledge 21.

The sash 22 comprises a transverse member or parting bar 23 circular in cross section and having diametrically opposed glazing grooves 24. This member further has a polygonal axial opening 25 extending entirely therethrough and may, as shown, be provided with longitudinal voids 26 to further reduce the weight thereof. The sash frame members 27 each comprise a longitudinally cavital bar, the cavity of which is designated at 28 and serves both to lighten the bar and to provide for the reception of means for maintaining the bars in assembled relation as will hereinafter more fully appear. The outer faces of these bars are provided with opposed flanges 29, one of which has at its inner face a rib 30 and the other of which has at its inner face a pair of ribs 31 and 32. The rib 30 is well spaced from the bar 27 proper and confined between this rib and the bar is the base W of a U-shaped weather strip, the inner arm 33 of which has its free end confined between the rib 31 and the bar and the other arm 34 of which is flexed outwardly so that it projects beyond the outer ribs 29. The free end of this arm is disposed between ribs 31 and 32 which are spaced to permit a free flexing of said arm. The weather strip is composed of any suitable spring material, such for example as spring bronze, and in common with the remaining elements previously described is formed as a continuous strip. The inner faces of bars 27 are provided with a glazing groove 35.

It will be obvious that each of the elements hereinbefore described is capable of mass production by either an extrusion process as in the case of the main and auxiliary frame members 10 and 18, the parting strip 23 and the sash frame bars 27, or by rolling as in the case of the weather stripping. In the construction of a sash from these elements, the frame is assembled by combining the main and auxiliary frame elements forcing the ribs 19 of the auxiliary elements into the grooves 17 of the inner face of the main elements. In the construction of a window of the type illustrated in the present drawings, assembly of these elements for formation of the top and

bottom rails of the frame may be made for the full length of the strips as produced and the strips subsequently divided into sections of desired length. In constructing the side rails, two sections of the auxiliary strip are assembled upon a section of the main sash member, these sections being reversed with relation to one another so that the stop flanges **36** are arranged at opposite sides of the centers thereof. The main strip is then milled out as at **37** for the reception of a combined pivot bearing and brake element **38**. This element preferably comprises a die casting **39** having a pivot-receiving opening **40** formed therein and having a segmental recess **41**, the outer wall of which is concentric with the opening **40**. It is further provided with a stop lug **42** having a face **43** to engage and check movement of the sash at fully open position. This lug and openings **45** for the reception of securing elements for attaching the casting to the frame is preferably formed on an extension to that side of opening **40** having the recess and the casting is attached to the frame with this side thereof arranged at what is to be the inner side of the window when placed in position. Arranged within the recess **41** is a segmental brake block **46**, the central portion of which is notched at **47** to fit the pivot hereinafter to be described and the periphery of which is engaged by a set screw **48** serving as a means to regulate the flexible engagement between the block and pivot. The said extension of the casting **39** is made such that the securing elements S are accessible when the window is in closed position.

Assembly of the top and side elements of the frame is effected by means of angle brackets **48***a* which have a driving fit in the slots **16**. A very secure connection of these elements and proper alignment thereof is thus provided particularly where the metals employed in the construction of the frame elements and of the angle members **48***a* are dissimilar metals having, in engagement with one another, a high friction ratio. In the assembly of the sash, a section of the parting bar **23** of proper length is provided and the ends of this section are diametrically slotted as at **49** to receive the side sash frame members **27**. These side frame members are secured in position in the slots by pivot elements **50**, more particularly shown in Fig. 4. Each pivot element comprises a tang **51** of a size to have a driving fit in the axial cavity **25** of parting bar **23**, an enlarged portion **52** to have a driving fit in a bore **53** formed in the side members of the sash frame and a further enlarged pivot head **54** adapted to engage in the pivot opening **40** of bearing casting **39** and to be engaged by the brake segment **46**. Assembly of the side and end members of the sash frame is accomplished by angle brackets **55** which are constructed to fit in the cavities **28** of the sash frame bars.

It will be obvious that insertion and removal of the sash in a window of this construction is an extremely simple operation. In inserting the sash, for example, the bearing castings may be placed upon the pivots **54** and through the set screws **48** frictionally engaged therewith to an extent sufficient to hold them in a desired position. The sash with these castings thereon may then be placed in the frame rotated to its closed position and the securing elements S for the bearing castings placed in position. It will also be obvious that a construction of this character readily lends itself to screening. As at present shown, upper and lower screen sections **56** are

secured against the stop flanges **36** by pins **57** and releasable spring snaps **57***a*. The adjacent ends of the screen sections have their framing elements **58** shaped to conform to the circular body of the parting bar and will accordingly provide a substantial closure with the parting bar in all positions of the window. It will thus be obvious that the structure may be very readily and cheaply manufactured and installed and will, at the same time, provide a window having all of the advantages now in common use.

Since the specific formation of the various elements as illustrated is obviously capable of considerable modification without departing from the spirit of my invention, I do not wish to limit myself thereto except as hereinafter claimed.

I claim:

1. A metallic sash of the pivoted type comprising a dividing bar, a frame, the ends of the dividing bar being slotted to receive opposed members of the frame and pivots for the sash press-fitted in aligned openings of the dividing bar and members and holding said frame and dividing bar in assembled relation.

2. A metallic sash of the pivoted type comprising a dividing bar, a frame, the ends of the dividing bar being slotted to receive opposed members of the frame and pivots for the sash press-fitted in aligned openings of the dividing bar and members and holding said frame and dividing bar in assembled relation, said frame consisting of sections of a longitudinally cavital member of uniform cross section, said sections being bevel fitted at meeting ends thereof and being maintained in assembled relation by angle members press-fitted in the cavities thereof at said meeting ends.

3. In a metallic window, a frame, a sash centrally pivoted in the frame, pivot sockets detachably secured to the frame and receiving pivots on the sash, the structure of said sockets comprising portions projecting beyond the plane of one of the faces of the sash when the latter is in the closed position, and the securing means for said sockets being located in said projecting portions so as to be accessible for release while the sash is closed, whereby when the sash is subsequently moved to open position, the sash and sockets may be removed as a unit from the frame.

4. A metallic sash of the pivoted type comprising a dividing bar of uniform cross section providing an axial bore, a frame, the ends of the dividing bar being slotted to receive opposed members of the frame and pivots for the sash press-fitted in openings in said members and in the bore of the dividing bar and holding said frame and dividing bar in assembled relation, said frame consisting of sections of a longitudinally cavital member of uniform cross section, said sections fitting at meeting ends thereof and being maintained in assembled relation by angle members press-fitted in the cavities thereof at said meeting ends.

5. A metallic sash of the pivoted type comprising a dividing bar having polygonal openings in its ends, a frame, the ends of the dividing bar being slotted to receive opposed members of the frame and pivots for the sash press-fitted in the openings of the dividing bar and alined openings in said members and holding said frame and dividing bar in assembled relation.

6. A metallic sash of the pivoted type comprising a dividing bar, a frame, the ends of the dividing bar being slotted to receive opposed members of the frame, pivots for the sash press-fitted in

aligned openings of the dividing bar and members and holding said frame and dividing bar in assembled relation, said frame consisting of sections of a longitudinally cavital member of uniform cross section, said sections fitting at meeting ends thereof and being maintained in assembled relation by angle members press-fitted in the cavities thereof at said meeting ends, the outer faces of said sections having opposed flanges and flexible weather strips mounted between said flanges.

7. In a metallic window, a frame, a sash centrally pivoted in the frame, pivot sockets detachably secured to the frame and receiving pivots on the sash, said sockets seating in transverse slots in said frame and said slots being open at one end so as to permit the said sockets being slid into and out of the slots, the structure of said sockets comprising portions projecting beyond the plane of one of the faces of the sash when the latter is in the closed position, and the securing means for said sockets being located in said projecting portions so as to be accessible for release while the sash is closed whereby, when the sash is subsequently moved to the open position, the sash and sockets may be removed as a unit from the frame.

JOSEPH F. KERBAUGH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
749,201	Knisely	Jan. 12, 1904
1,297,786	Boller	Mar. 18, 1919
1,650,640	Michaels	Nov. 29, 1927
1,663,134	Lane	Mar. 20, 1928
2,060,525	Peremi	Nov. 10, 1936
2,101,349	Sharp	Dec. 7, 1937
2,263,796	Bayley	Nov. 25, 1941

FOREIGN PATENTS

Number	Country	Date
481,975	Great Britain	Mar. 22, 1938