

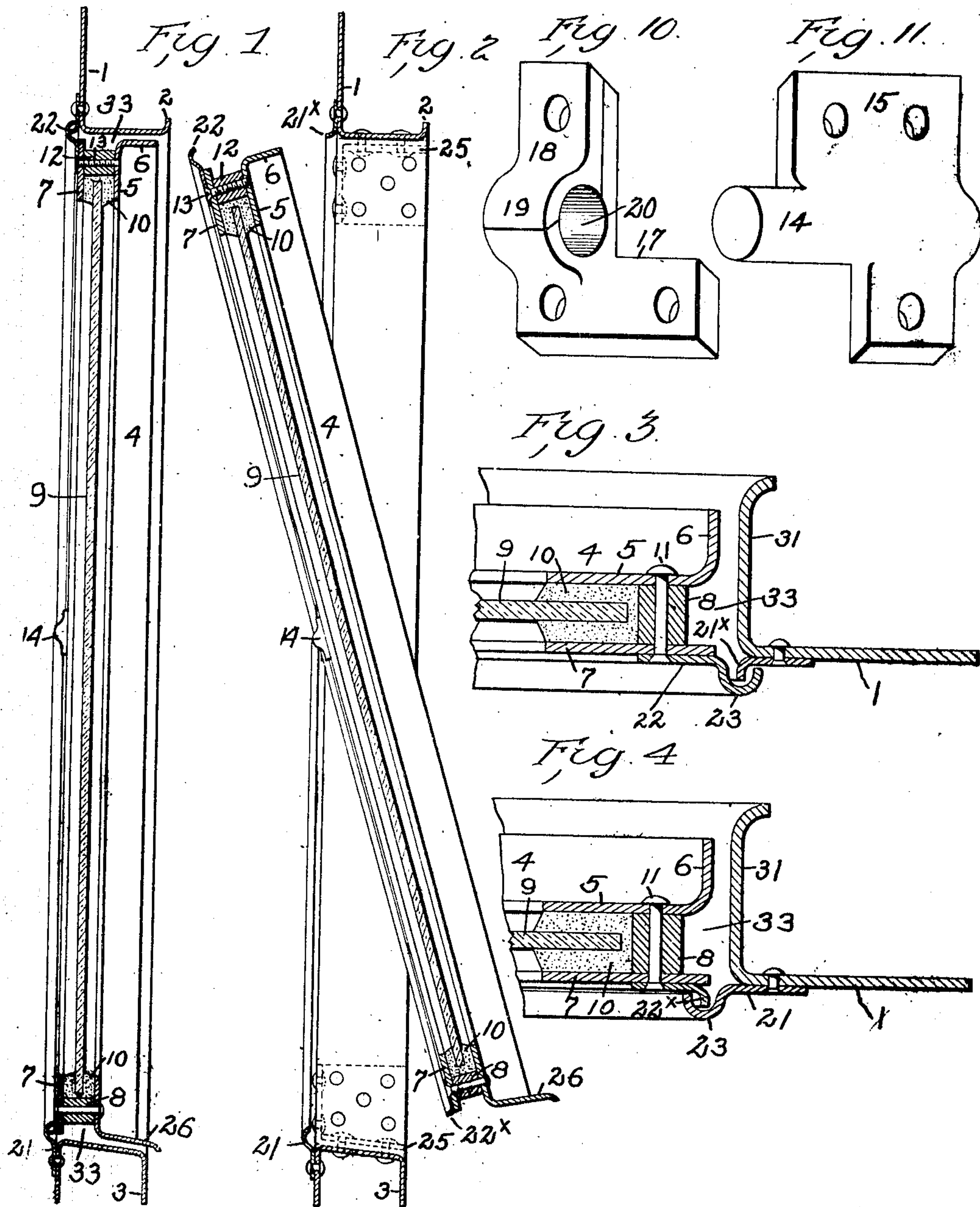
No. 871,715.

PATENTED NOV. 19, 1907.

E. H. LUNKEN & C. M. CONKLIN.
METALLIC WINDOW CONSTRUCTION.

APPLICATION FILED OCT. 30, 1906.

3 SHEETS—SHEET 1.



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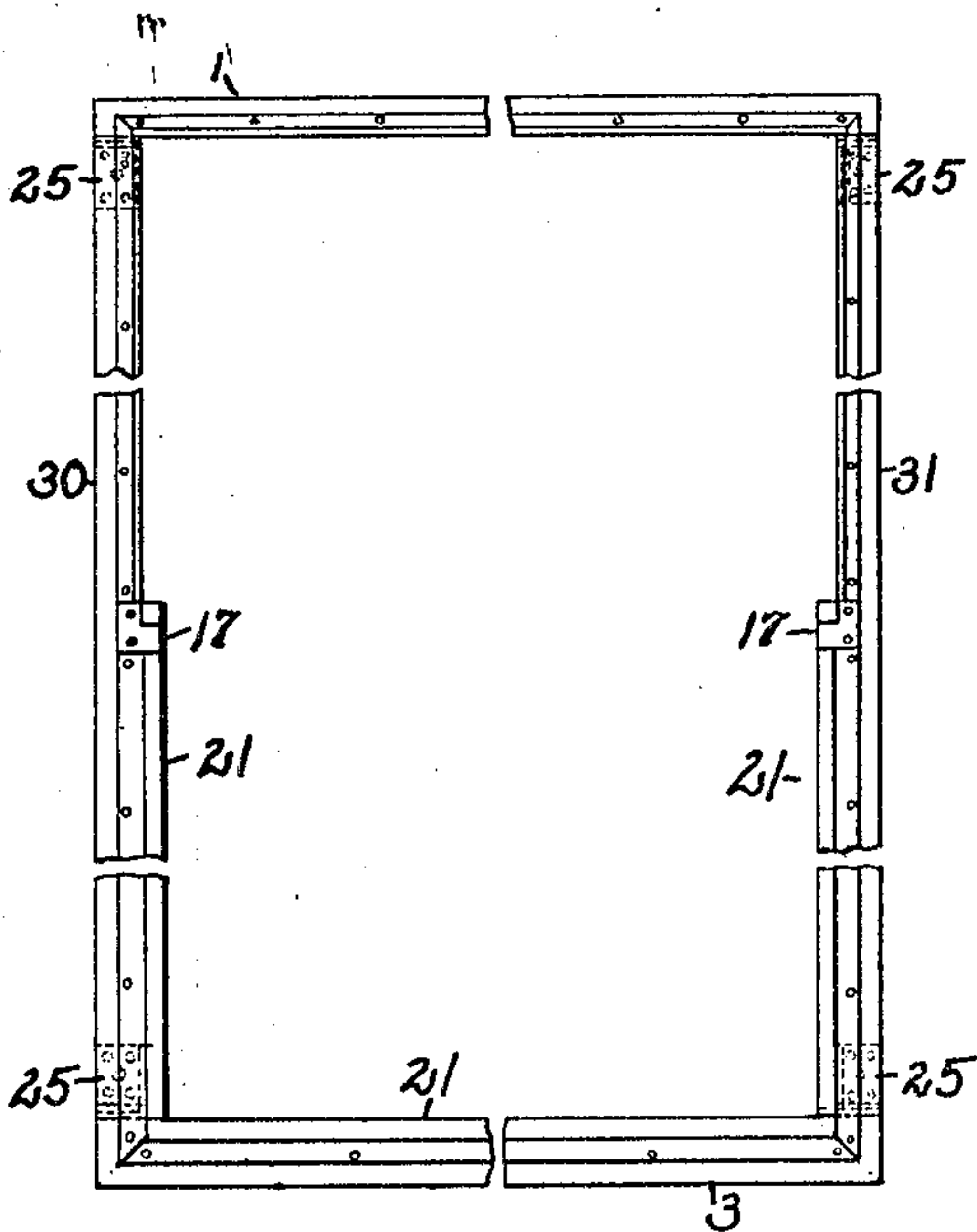


Fig. 5.

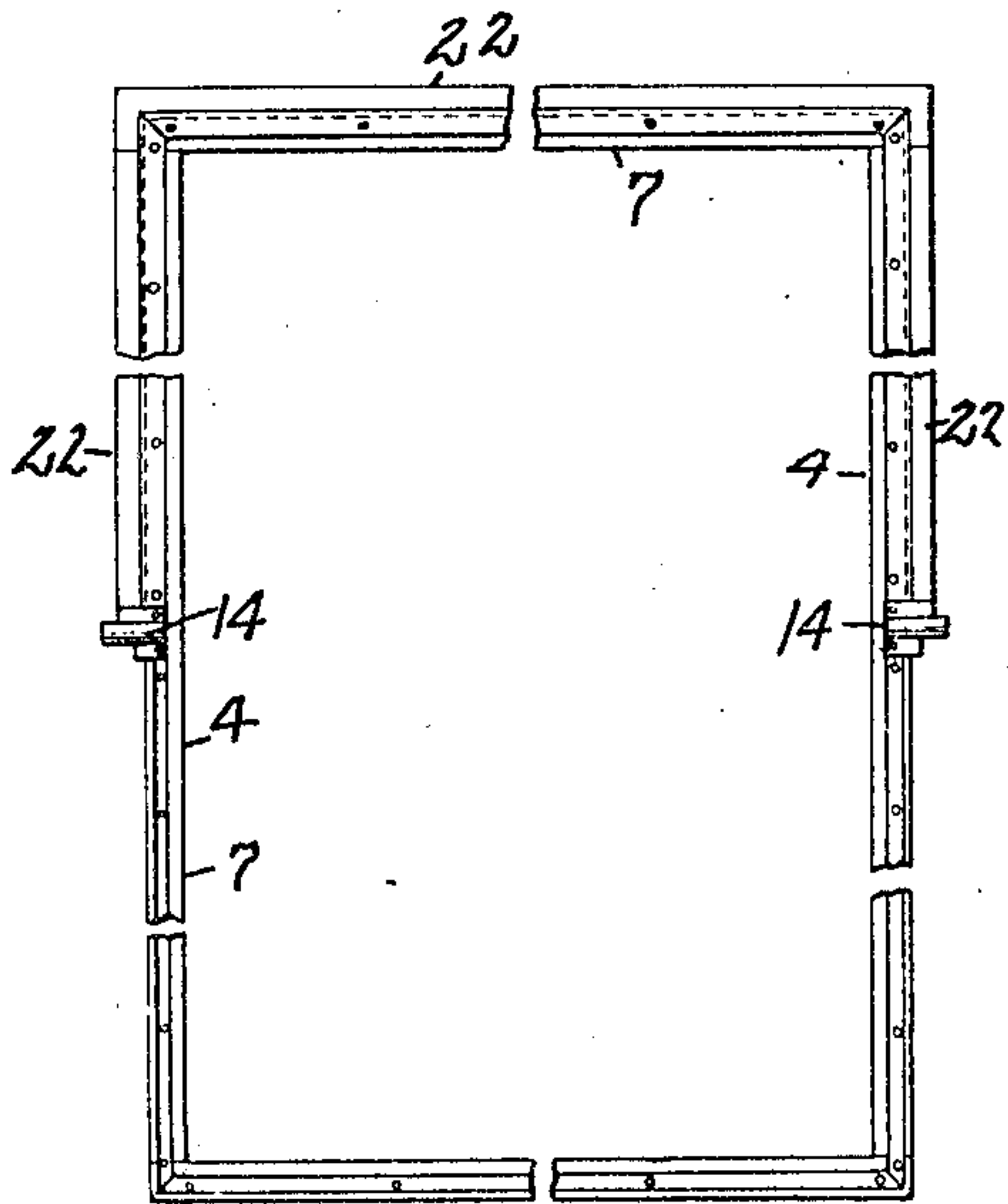
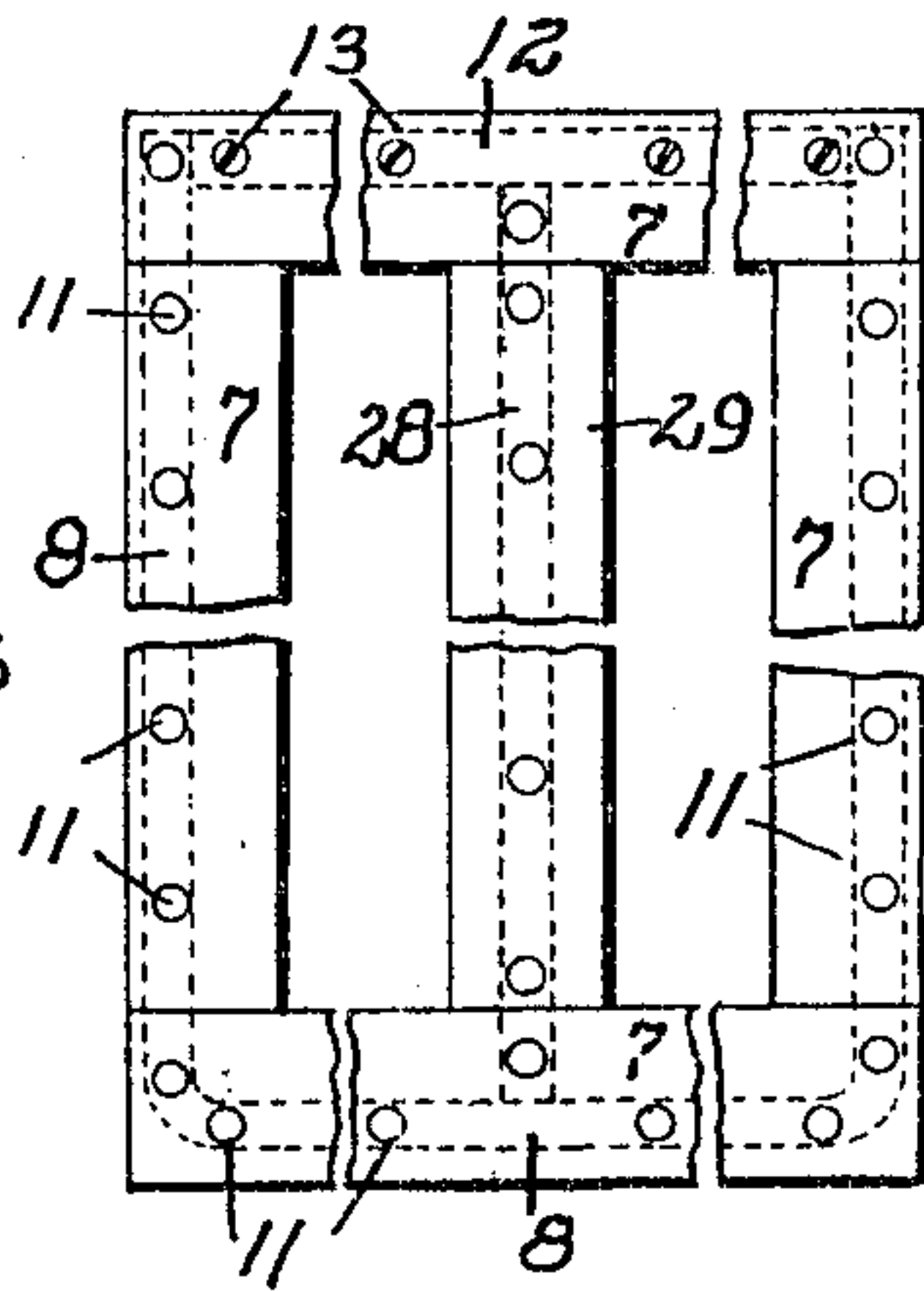
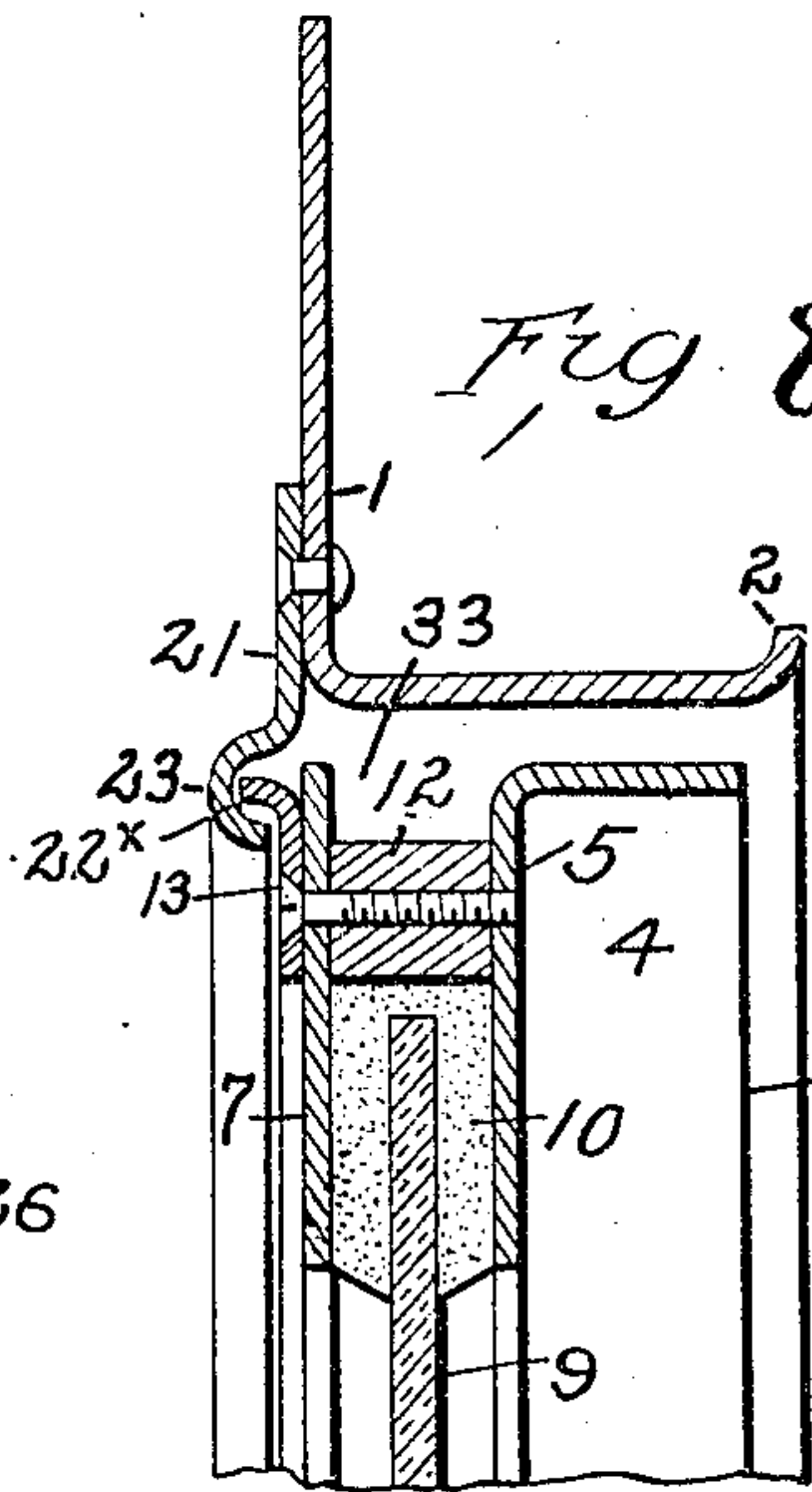
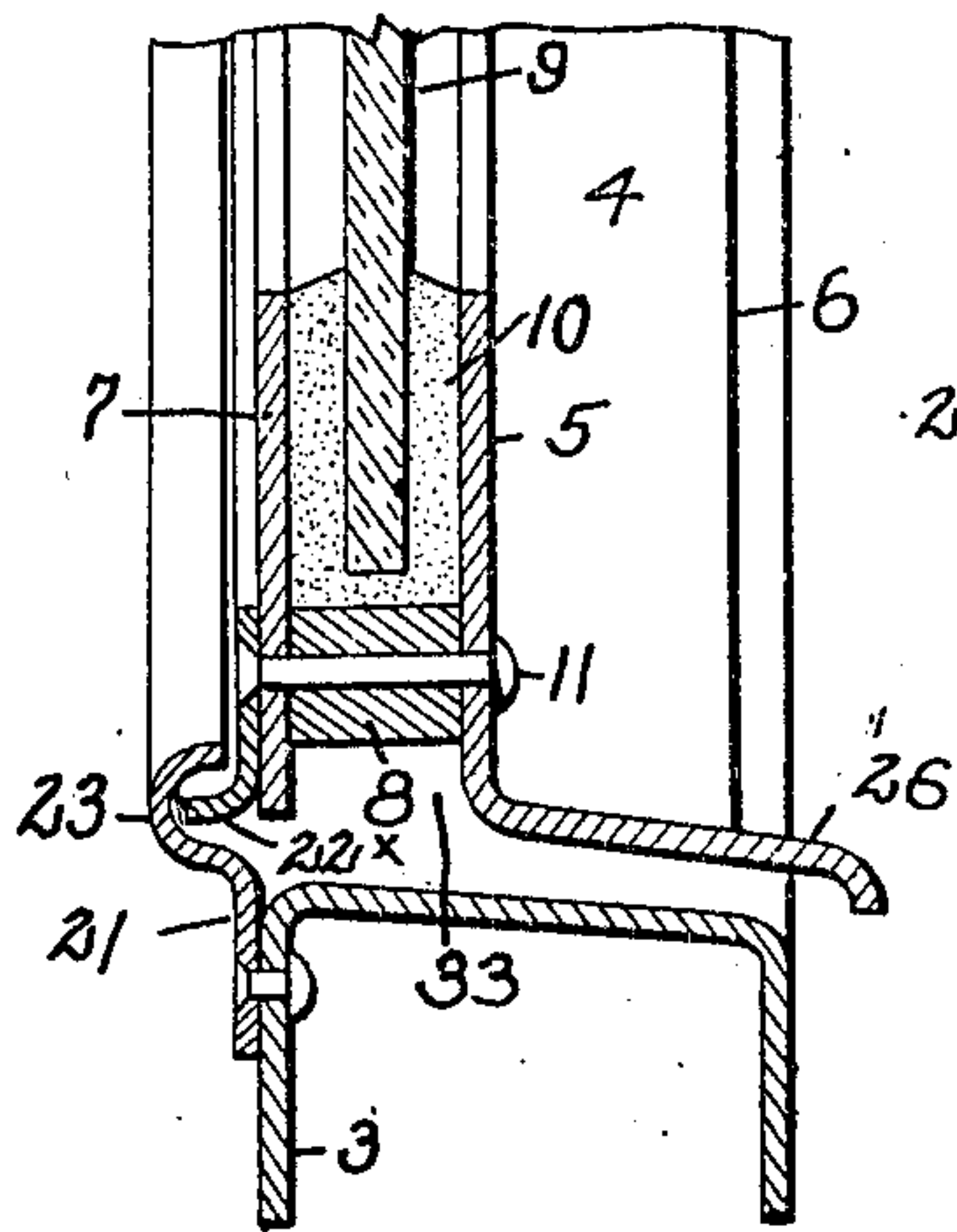
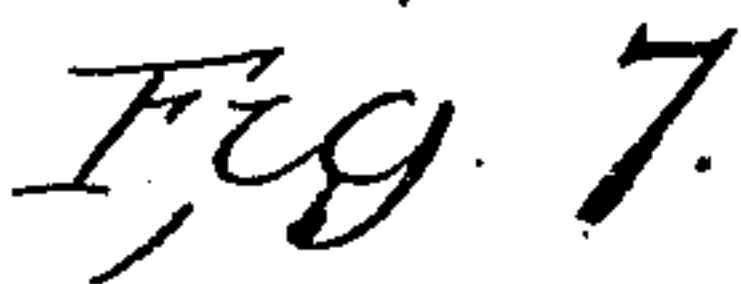


Fig. 6



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Trivertor

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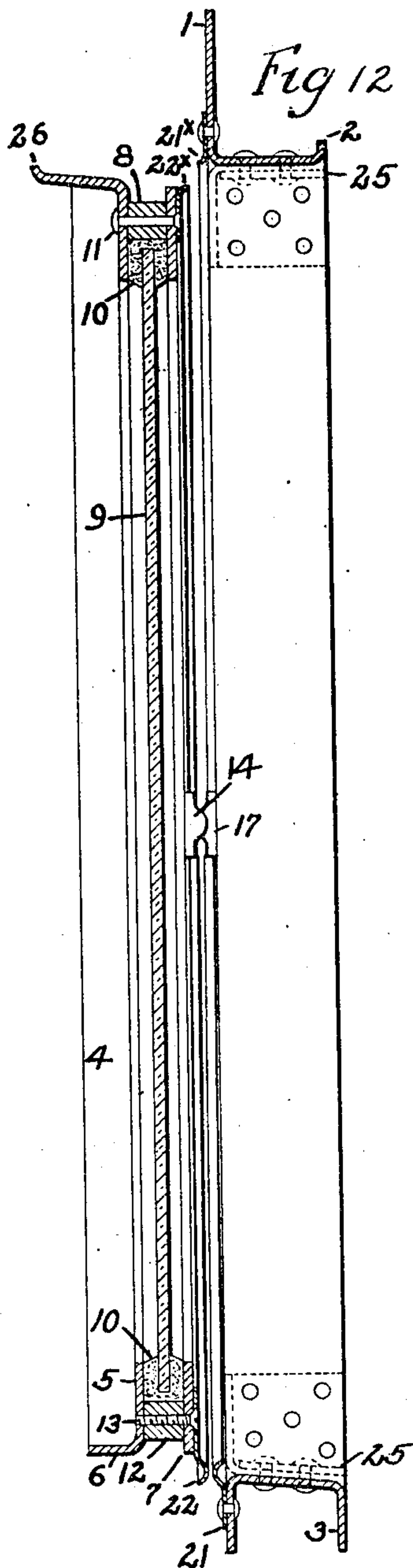
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

EDMUND H. LUNKEN AND CHARLES M. CONKLIN, OF CINCINNATI, OHIO, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE LUNKEN STEEL WINDOW CO., A CORPORATION OF OHIO.

METALLIC WINDOW CONSTRUCTION.

No. 371,715.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed October 30, 1906. Serial No. 341,237.

To all whom it may concern:

Be it known that we, EDMUND H. LUNKEN and CHARLES M. CONKLIN, citizens of the United States, residing at Cincinnati, Ohio, have invented certain new and useful Improvements in Metallic Window Construction, of which the following is a specification.

The invention relates to improvements in metallic windows, and a primary object of the invention is to provide a swinging glass carrying frame which may be completely reversed, one which will be self-closing, when, for instance, it is released by the fusing of the connection employed to hold it open; one which may be hung or unhung while in its reversed position and lying wholly within the room, one in which the stops strips are located on the side of the window towards the interior of the room, one in which the glass may be readily renewed, and one which is fire and weather proof.

The principal object of the invention is the simplicity of the construction, and the small cost necessary to manufacture them.

In the accompanying drawings, Figure 1 is a central vertical section of a window built in accordance with our invention. Fig. 2 is a similar view with the swinging frame slightly tilted from its upright position. Fig. 3 is a horizontal sectional view through one side of the frame at a point above the pivot. Fig. 4 is a similar view to Fig. 3, but taken at a point below the pivot of the swinging frame. Fig. 5 is a front or interior face view of the main stationary frame. Fig. 6 is a similar view to Fig. 5 of the swinging frame. Fig. 7 is an enlarged detail sectional view of the lower part of the main and swinging frames. Fig. 8 is a view similar to Fig. 7 of the upper part of the frames. Fig. 9 is an enlarged interior face view of the swinging glass carrying frame without the stop strip or pintles. Fig. 10 is a perspective view of the pintle bearing for the swinging frame. Fig. 11 represents said pintle. Fig. 12 is a central vertical section with the swinging frame entirely reversed.

The frames are preferably made up of heavy sheet steel pressed to the desired shape necessary to secure strength, durability, lightness and fire-proof qualities.

The main frame is preferably of substantially right angular shape at its upper part 1,

with the edge turned up at 2, while the lower part of said main frame is of channel form at 3, adapted to rest upon the wall of the building, and forms the sill of the window. The side portions 30 and 31, of the main frame, are identically the same form in cross section as the top 1, as clearly shown in Figs. 3 and 4. The top piece 1 is secured into the wall, flanges 2 acting as a shoulder or brick line. Secured to the top piece 1 and the sill 3, are corner or uniting pieces 25. These corner pieces are preferably riveted to the bottom of the upper piece and the top of the sill 3, and are of such shape as to readily conform to the inner shape of the side frames 30 and 31. These side frames are preferably removably secured to the corner pieces by means of screws or bolts, thereby enabling the shipping of the frames in a knock down condition. By this construction, they can be quickly assembled, and when assembled, form a strong and rigid frame.

The swinging glass carrying frame is similar in construction to the glass carrying sliding sashes described in the application filed of even date with this, and comprises a pressed steel portion 4 providing a vertical flange or rim 5, and an outwardly extending flange 6. At the bottom, the outwardly extending flange 26 projects beyond the sill of the main frame and acts as a shield or drip. The inner part of the swinging frame, or that which faces the interior of the building, is made up of flat bars 7. They are spaced apart from the outer portion 4, of the swinging frame, and located between them is the U-shaped frame 8 which receives within it the glass 9, which is held centrally by cement, putty or other suitable means 10. This U-shaped frame, and the inner and outer parts of the swinging frame are all united by rivets 11, as clearly shown in Fig. 9. The glass is inserted by simply sliding it through the top of the swinging frame, after having removed the retaining strip 12. When the glass is in position, the retaining strip is replaced and renewably held by screws 13. By simply removing this cross bar, the glass can be removed and renewed without taking apart the swinging frame. As shown in Fig. 9, the swinging frame can be provided with muntins where it is desired to have a number of glass sections. The mun-

tin consists of bar 28, with flat bars 29 riveted or secured to opposite sides thereof, with the ends of 28 projecting beyond flat bars 29, between plates 4 and 7, to which they are riveted or otherwise secured. These flat bars 29 extend over the bar 28, and form a groove to receive the glass. The glass is inserted as heretofore described, by simply removing the top bar 12. When the window is in closed position, as in Fig. 1, the interior faces of the main and swinging frame will lie in the same vertical plane, and the parts of the swinging frame lying within the main frame will have their surfaces parallel with the adjacent surfaces of the main frame.

The pivot or hinge connection between the swinging frame and the main frame, is arranged about centrally between the top and bottom edges or faces of the swinging frame, while as regards its horizontal position, in relation to the swinging and main frame, it is arranged as shown in Fig. 1, at the extreme inner side of the window opening,—that is to say, it is arranged in the plane of the inner wall of the room. This leaves the entire thickness of the swinging frame lying at a point outside of the pivots or hinges, and the relation of the said pivots to the center of gravity is such, that when the swinging frame is tilted, such, for instance, to the position shown in Fig. 2, it will automatically swing back to the vertical position of Fig. 1, thus providing an automatic or self-closing window. To secure the swinging frame when closed, any suitable lock can be provided.

As above stated, the pivots or hinges are arranged at about the vertical center of the swinging frame, and this construction permits the swinging frame to be completely reversed without striking any part of the main frame. The swinging frame, when in reversed position, lies completely to the inner side of the window opening, and entirely to the inner side of the main frame, where it is accessible for cleaning, removal, or where it may be readily replaced. By means of locating the pivot at the inner side of the swinging frame, the automatic action is secured without requiring any special construction of the swinging frame, such as would be necessary, for instance, to provide a preponderance of weight at the lower part of the said frame. The hinge comprises pintles 14, carried by blocks or brackets, secured to the swinging frame, which pintles are adapted to rest in sockets 20, formed in brackets or blocks 17, secured to the inner face of the main frame bars. The pintles are held in place in these sockets by caps 18, secured by screws to the blocks or brackets 17, the said caps having semi-cylindrical portions 19, which complete the bearings for the pintles by forming the cylindrical sockets 20.

In order to remove the swinging frame, it

is simply necessary to swing it into the reversed position and take off the caps 18, and lift the swinging frame so that its pintles will be lifted out of the bearing sockets.

Of course, the swinging frame may be readily replaced in position, by lifting it so as to place the pintles in the sockets, and then apply and secure the caps 18. The removal of the swinging frame does not require the services of a skilled person, as will be evident from the above description.

We have simplified the construction and arrangement of the stop strips, and in the present instance, these strips consist in the main of flat bars, those marked 21 being secured to the main frame, and those marked 22 being secured to the swinging frame. These bars are preferably secured to the swinging frame at the sides, by means of the same rivets that unite the pieces 4, 7 and 8, while the stop strip 22 is riveted to the strip 7.

It will be observed that we construct the side cover plates so that there are no projecting guides or ribs, as is customary with the present forms of wood and metal window frames, our frames presenting substantially plain flat faces. The sashes being guided in the V shaped grooves which extend inwardly from the flat faces of the cover plates, there is nothing to detract from the finished appearance of the frame.

By reference to Figs. 4 and 5, it will be seen that the stop strips 21 project inwardly from the edge of the main frame, and extend from the hinge socket at one side around the lower part of the frame, to the hinge socket at the opposite side. The stop strip of the swinging frame projects outwardly from the edge of the same, as shown in Figs. 3 and 6, and extends from the pintle bearing on one side of the said frame, to the pintle bearing on the opposite side.

The stop strips only serve to limit the swinging movement of the glass carrying frame, but we have formed them as to exclude the weather, for which purpose each stop strip 21, 22, is formed at its inner edge with a turned or channel portion 23, with the channel facing outwardly, and these channel portions cooperate with the strips 21^x, 22^x, secured to the swinging frame and main frame respectively. These strips are provided with edges turned towards the interior of the room, to enter the outwardly directed channel portions of the stop strips. These stop strips are riveted in place.

From the above, it will be seen that we provide a swinging frame capable of being completely reversed, and having also the quality of self-closing, and further, that the stop strips are all located on the interior side of the frame.

For a fire-proof construction, it is necessary that air space be provided within the frame. In our construction, this air space is

provided at 33, between the main and swinging frames on all four sides, and can be made of any desired area, by regulating the distance of the center piece 8 from the edge of the swinging frame.

The features above described are also applicable to the form of a window in which the swinging frame turns about vertically disposed pivots. Where we employ the term "interior", we mean the side of the frame facing the interior of the building.

One of the principal objects of our invention is to overcome the objections to the present methods of constructing metallic windows. These defects lie in the complicated design and large proportions of the frames and sash, which necessitates the use of very thin sheet metal.

Our improved and simple method of construction permits the use of very thick sheet metal, thereby enabling the production of a more inexpensive, compact and stronger device than has heretofore been attempted.

We claim:—

1. In fire-proof window construction, the combination of a main frame, a swinging frame centrally pivoted thereto, said pivots being located to one side and inwardly toward the interior of the building, and stop strips fitting against and secured to the interior face of one frame and overlying that of the other, the arrangement of the whole permitting of a complete half-revolution of the swinging frame, substantially as described.

2. In fire-proof window construction, the combination of a main frame, a swinging frame pivoted therein centrally of its height, said pivots being located to one side and inwardly toward the interior of the building, stop strips fitting against and secured to the interior face projecting inwardly in respect to the window opening, and secured to the lower half of the main frame, and stop strips fitting against and secured to the interior face projecting outwardly in respect to the window opening, and secured to the upper half of the swinging frame, the arrangement of the whole permitting of a complete half-revolution of the swinging frame, substantially as described.

3. In combination, in fire-proof windows, a main frame, a swinging frame, a pivotal connection between them, comprising a pintle secured to the interior face of one frame and lying in a socket secured to the interior face of the other frame, a removable cap piece for holding the pintle in the socket, a stop strip fitting against and secured to the interior face of one member of the frame and overlying that of the other substantially as described.

4. In combination in fire-proof windows, a main frame, a swinging frame, a pivotal connection between them located centrally of the window opening and comprising a pintle

secured to the interior face of the swinging frame, and lying in the socket secured to the interior face of the main frame, a removable cap piece for holding the pintle in the socket, whereby, when the swinging frame is completely reversed, it may be removed or replaced entirely within the room, a stop strip fitting against and secured to the interior face of one member of the frames, and overlying that of the other, substantially as described.

5. In fire-proof windows, a main frame, a swinging frame, stop strips fitting against and extending from the interior face of one frame across the crevice between the frames, said stop strip being channeled, and a strip fitting against the interior face of the opposing frame having its edge arranged to engage said channel, substantially as described.

6. In fire-proof window construction, a main frame, a swinging frame, composed of inner and outer portions with a space between them, a frame in said space and a glass held by said frame, said frame comprising a removable portion to permit the glass to be renewed, substantially as described.

7. In a fire-proof window, a main frame, a swinging frame comprising the two portions, with a frame between them consisting of the U-shaped portion and the removable cross piece, and a glass carried by said U-shaped frame, substantially as described.

8. In a fire-proof window, a swinging frame comprising inner and outer glass retaining strips, U-shaped portion between them formed of one piece and embracing three edges of the glass, a removable strip for the insertion of the glass, and a muntin consisting of a center piece secured at either end to the inner and outer glass retaining strips, said muntin center piece having inner and outer glass retaining strips secured thereto.

9. In a fire-proof window construction, the combination of a main frame, a swinging frame pivoted therein, said main frame consisting of top, bottom and two side members, corner pieces permanently secured to the top and bottom members, and removably secured to the side members, whereby the frame can readily be assembled or taken apart.

10. In a fire-proof window, the combination of a main frame, a swinging frame pivoted therein, said swinging frame comprising inner and outer glass retaining strips, with a glass carrying strip interposed between them, said glass carrying strip removed inwardly from the outer edges of the strips, thereby forming an air space between the main and swinging frames, substantially as described.

11. In combination, in fire-proof windows, a main frame, a swinging frame, a pivotal connection between them, located centrally in relation to the height of the frames, com-

prising a pintle and socket secured to the interior faces of the frames, whereby, when the swinging frame is completely reversed, it may be removed when entirely within the room, a stop strip secured to the interior face of one member of the frame and overlying that of the other, substantially as described.

12. In fire-proof window construction, the combination of a main frame, a swinging frame pivoted therein, said pivots being located to one side and inwardly toward the interior of the building, and stop strips secured to the interior face of one frame, and overlying those of the other frame, said stop strips having their tongued and grooved ends lying wholly within the room on the inside faces of the frames, and covering the crevice between the frames, substantially as described.

13. In fire-proof window construction, the combination of a main frame, a swinging frame pivoted therein centrally of its height, said pivots being located to one side and inwardly towards the interior of the building and stop strips on the main and swinging frames respectively each extending at a right angle to the window opening and substantially in the plane of the interior faces of said frames, and overlapping, the said swinging frame being capable of making a complete half revolution.

14. In a fire-proof window construction, a main frame, swinging frame composed of in-

ner and outer members with a spacing member between and a glass held within the spacing member and between the said inner and outer members, substantially as described.

15. A fire-proof window construction having a swinging frame comprising inner and outer members and a spacing member between them with a space or channel between said inner and outer members for the edges of the glass and the cement and the glass arranged in said channel, substantially as described.

16. In fire-proof window construction, the combination of a main frame, a swinging frame pivoted therein, stop strips fitting against and riveted to the interior face of the swinging frame projecting outwardly in respect to the window opening and secured to one-half thereof, said swinging frame comprising inner and outer glass retaining strips with a glass carrying strip interposed between them, the stop strips of the sash being secured thereto by the same rivets that secure the inner and outer glass retaining strips to the glass carrying strip, substantially as described.

In testimony whereof, we affix our signatures in presence of two witnesses.

EDMUND H. LUNKEN.
CHARLES M. CONKLIN.

Witnesses:

WM. H. BURTNER, Jr.,
B.-J. HANSFELD.