

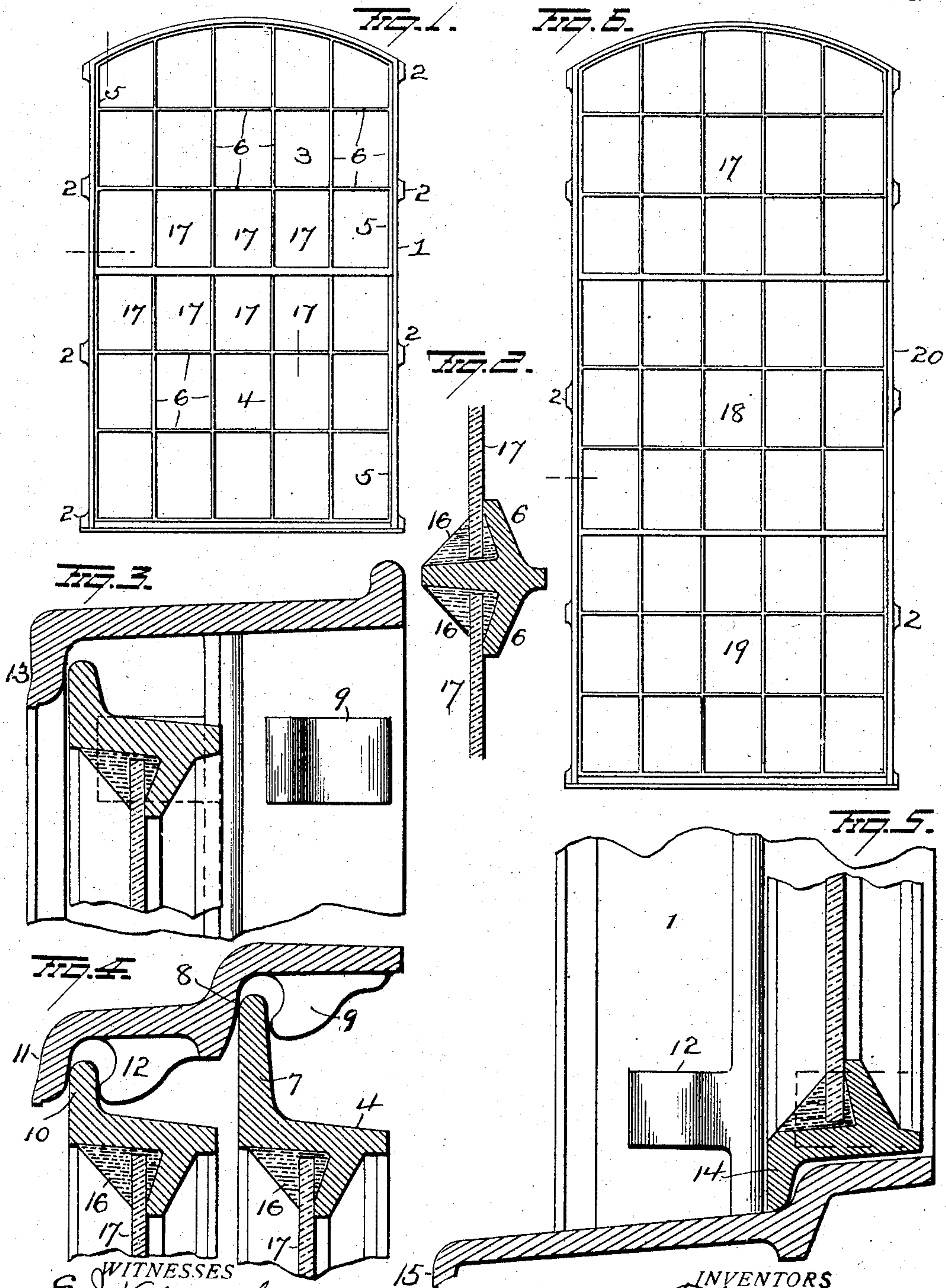
No. 780,605.

PATENTED JAN. 24, 1905.

F. FELKEL & W. LANGER.
WINDOW.

APPLICATION FILED NOV. 10, 1903.

4 SHEETS—SHEET 1.



WITNESSES
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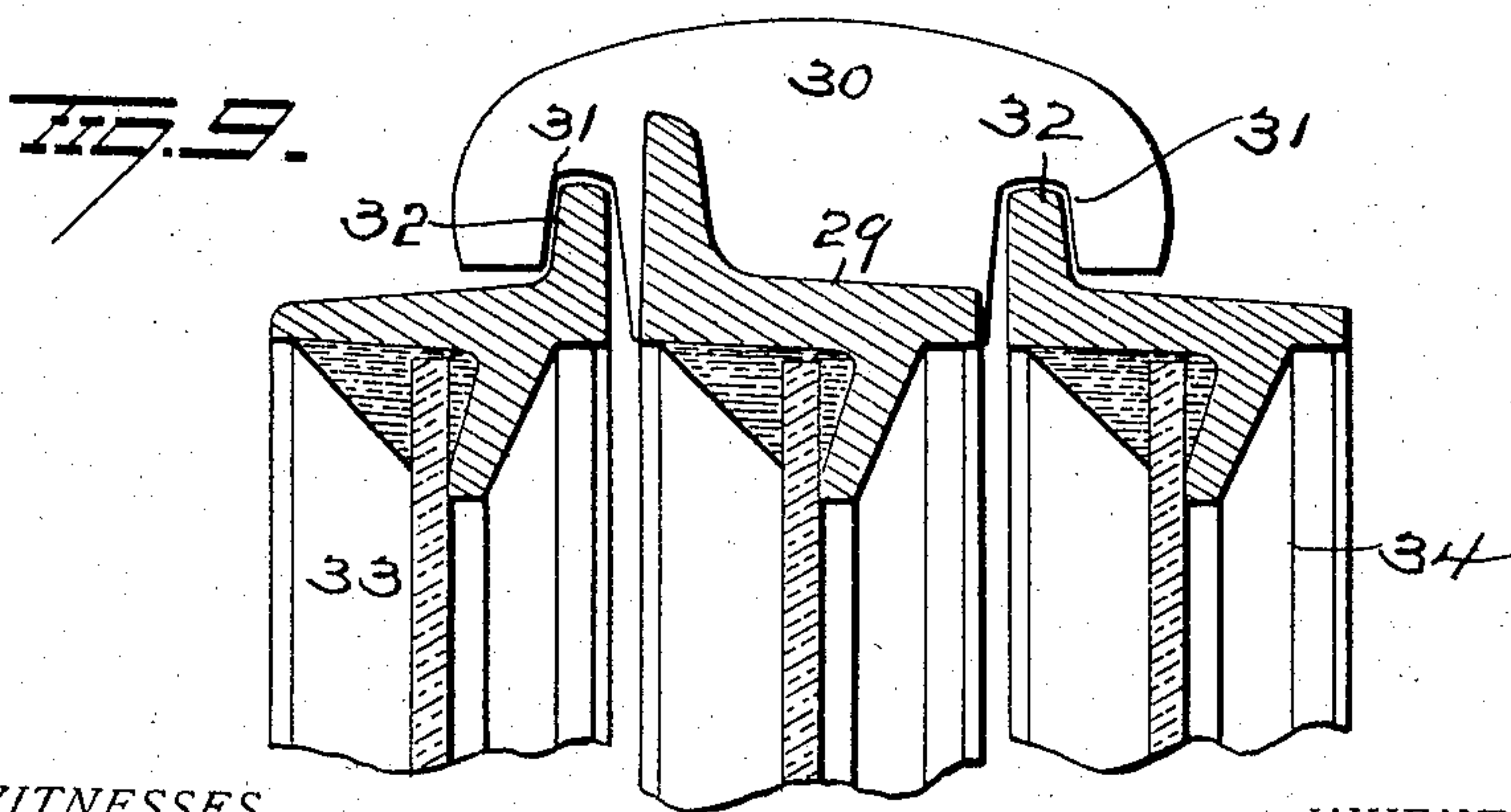
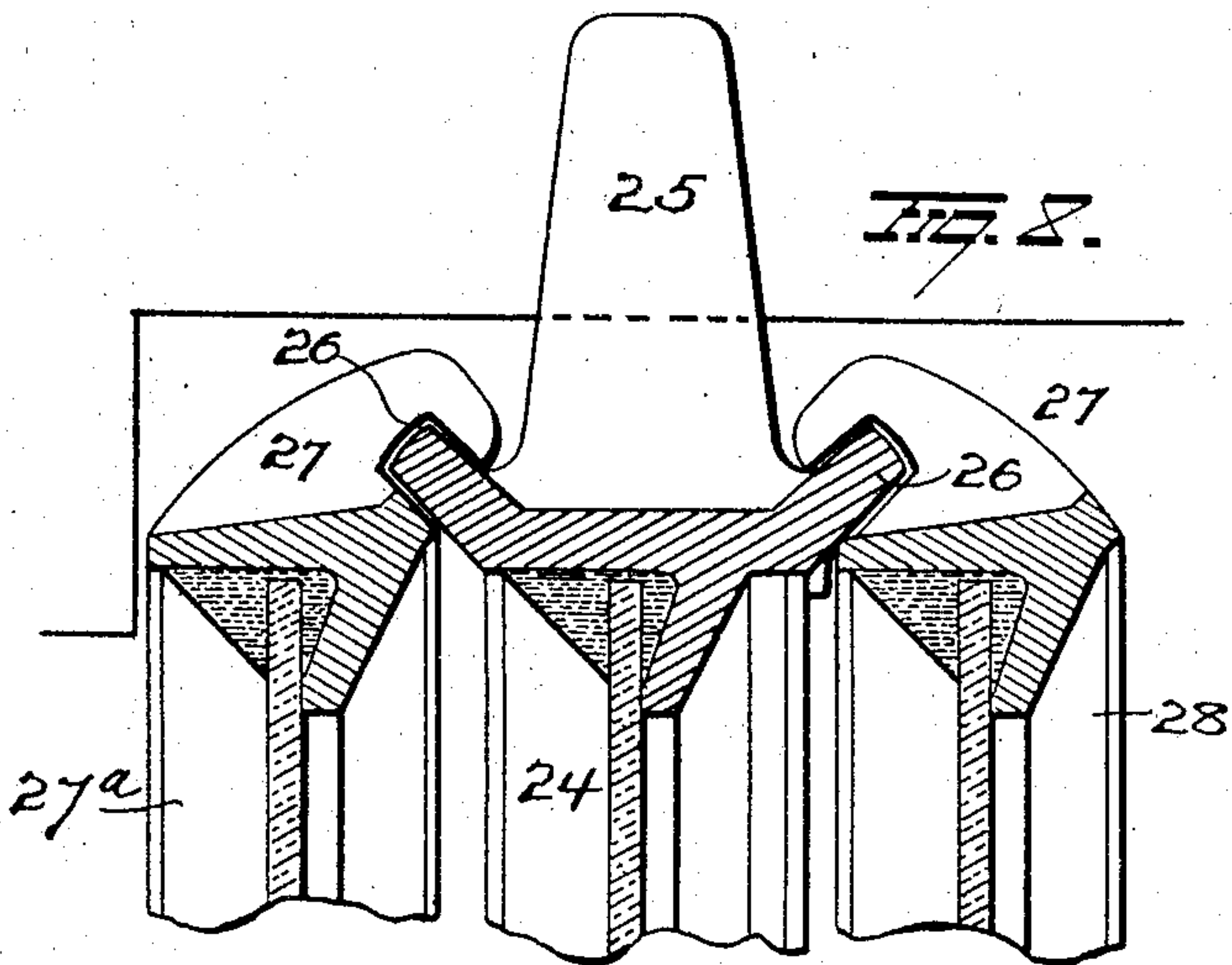
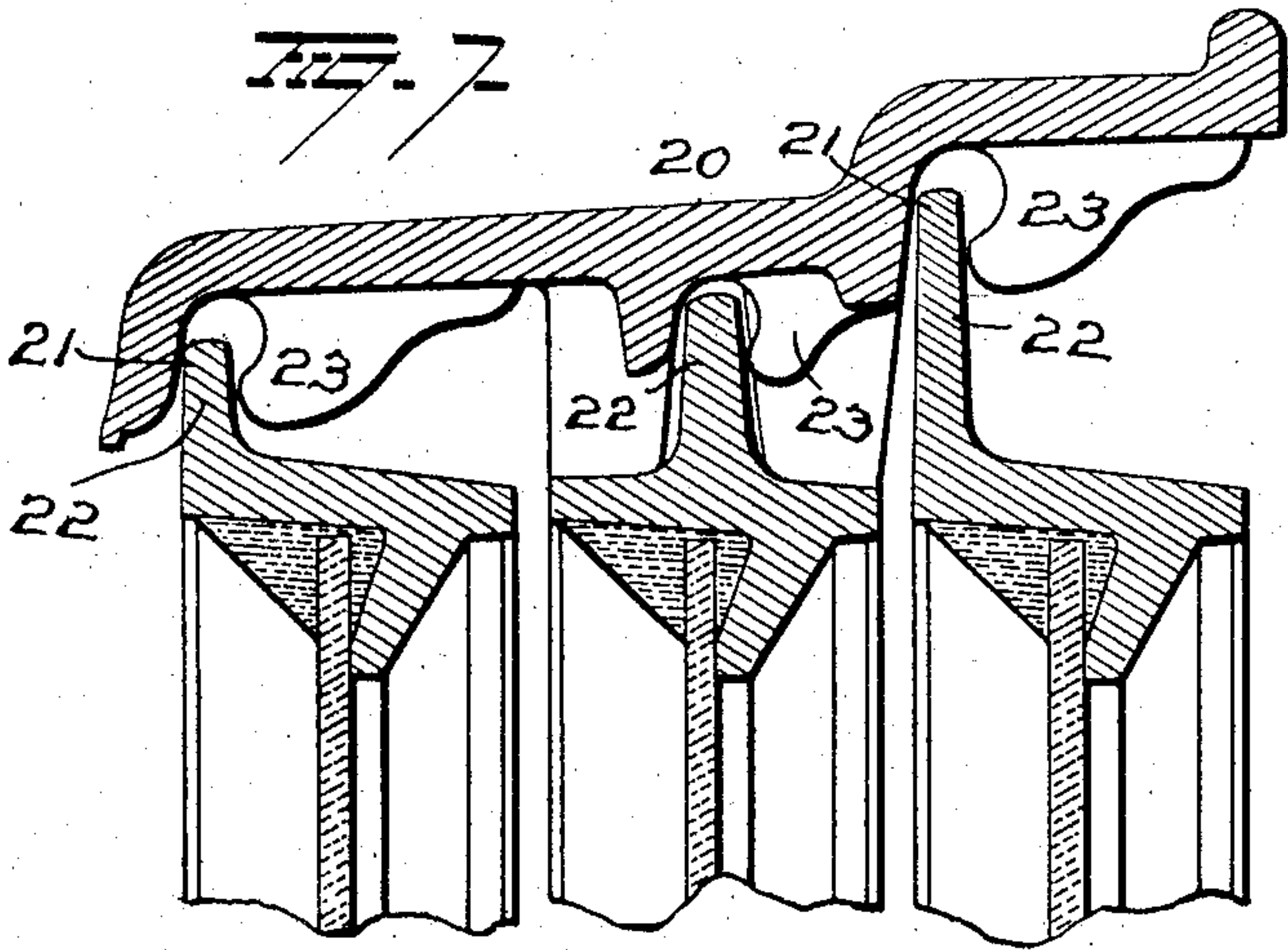
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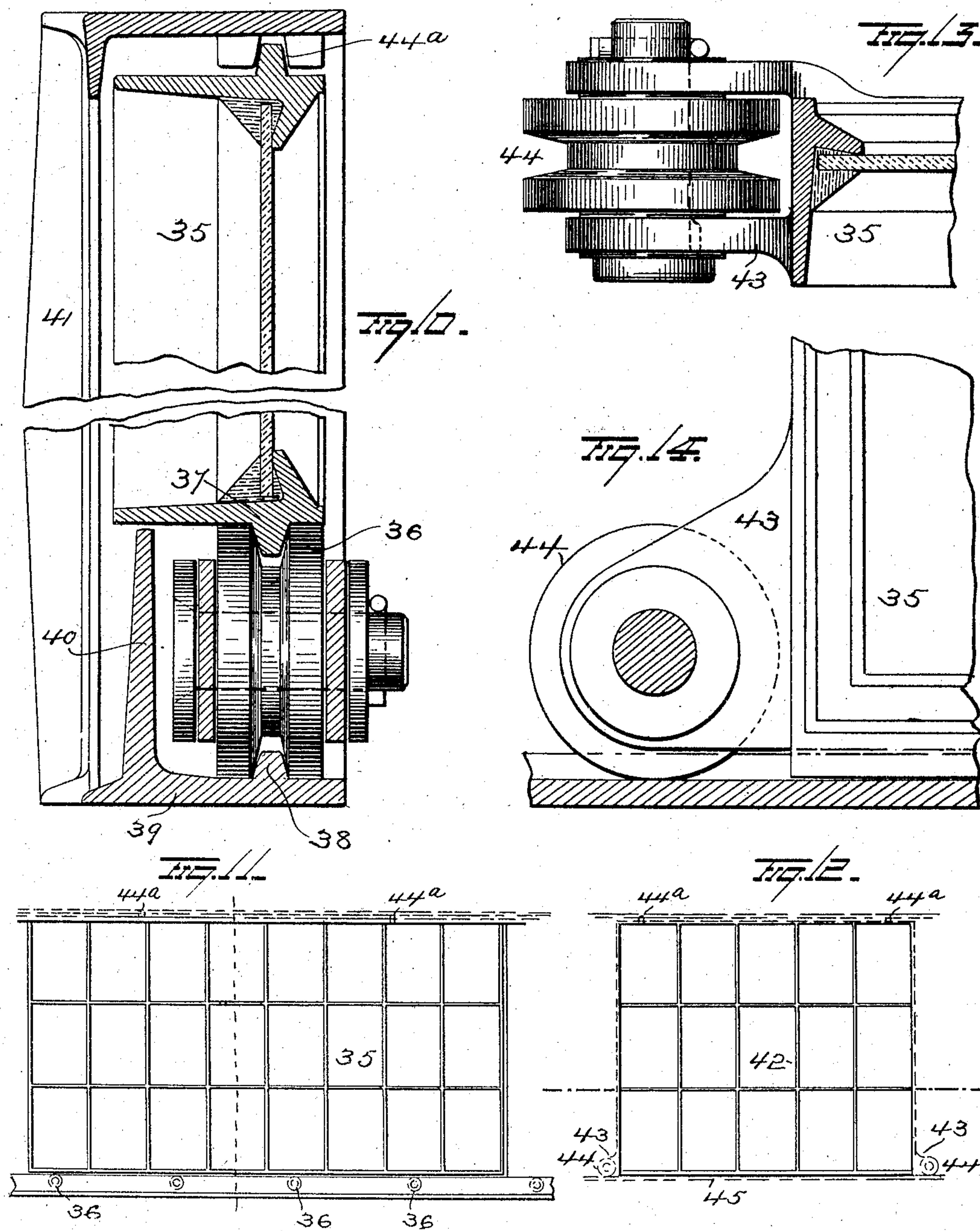
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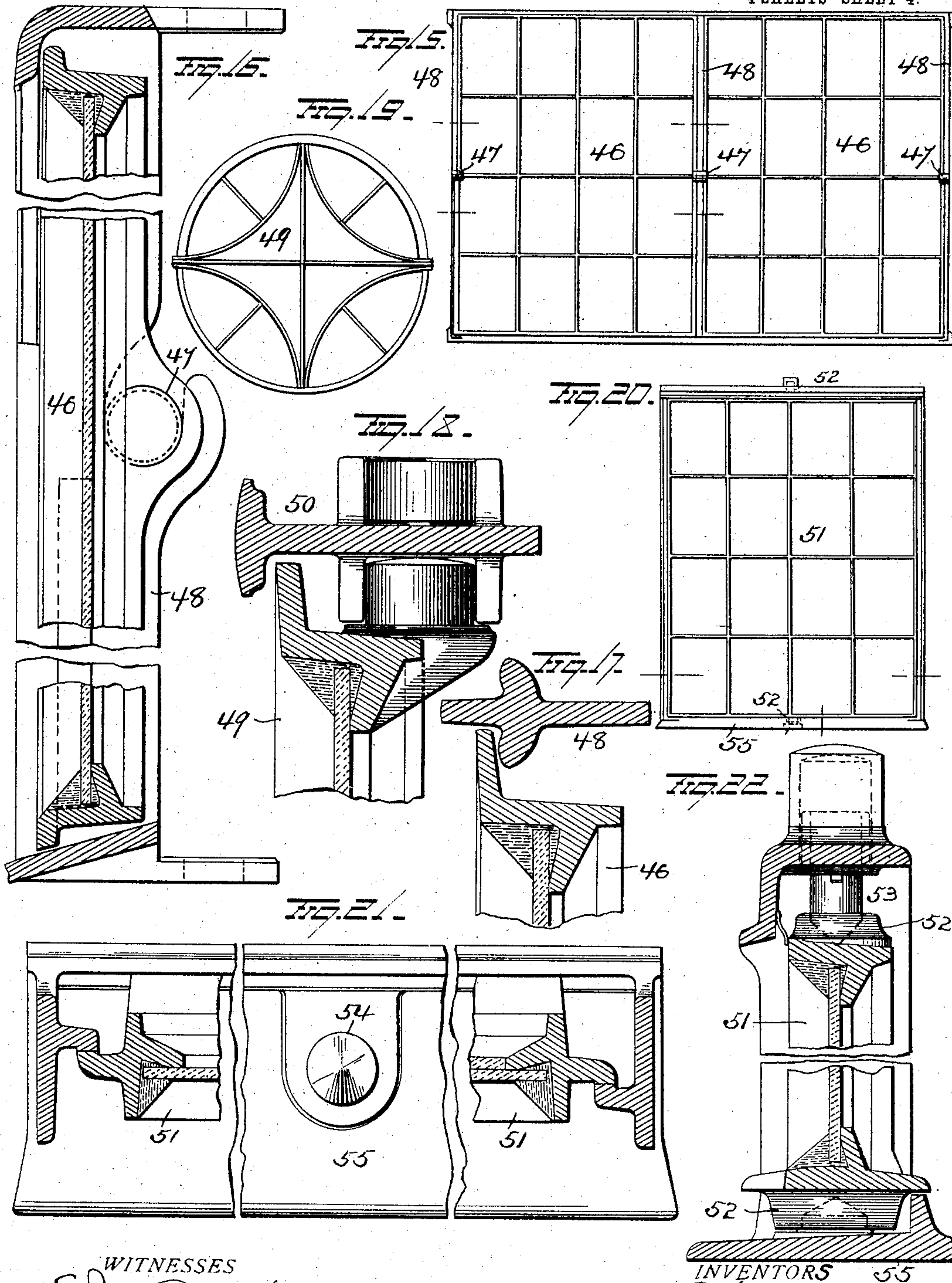
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4 SHEETS—SHEET 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

FRANK FELKEL AND WILLIAM LANGER, OF PITTSBURG, PENNSYLVANIA.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 780,605, dated January 24, 1905.

Application filed November 10, 1903. Serial No. 180,608.

To all whom it may concern:

Be it known that we, FRANK FELKEL and WILLIAM LANGER, residents of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Windows; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to an improvement in metal windows, the object of the invention being to construct window-sashes and frames therefor each of integral castings; and it consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation, illustrating one form of our improvements. Fig. 2 is a view in section on the line *a a* of Fig. 1. Fig. 3 is a view in section on the line *b b* of Fig. 1. Fig. 4 is a view in section on the line *c c* of Fig. 1. Fig. 5 is a view in section on the line *d d* of Fig. 1. Fig. 6 is a view in elevation of another form of window embodying our invention. Fig. 7 is a view in section on the line *e e* thereof. Figs. 8 and 9 are similar views in section, illustrating modifications; and Figs. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 are views illustrating details of construction of various other modified forms of our invention.

Referring now to Figs. 1, 2, 3, 4, 5, and 6, 1 represents a metal frame comprising one integral casting provided on its outer edge at intervals with lugs or anchors 2 to key the frame in a wall. 3 and 4, respectively, indicate the upper and lower window-sashes, each having its sash-bars 5 and light-bars 6 all cast integral. The lower sash 4 is made with side flanges 7, mounted to slide against a longitudinal shoulder 8, formed by contracting longitudinally the outer half of the frame and held against said shoulder by lugs 9, cast integral with frame 1. The upper sash 3 has side flanges 10, mounted to slide against inwardly-projecting flanges 11 on the outer edges of the sides of frame 1 and held thereagainst

by lugs 12 on the frame, and the upper end of said frame has a downwardly-turned protecting-lip 13 at its outer edge, and the lower bar, forming the sill, is shaped to form a depression behind which a flange 14 on the lower bar of sash 4 is adapted to project when drawn down, and the inclined outer portion of the sill has a depending lip 15 to deflect the water away from and protect the subsill (not shown) beneath. The sash-bars and light-bars of both sashes are made with grooves or recesses, each having its walls disposed at such an angle to each other that the glass light will lie at an acute angle to one wall of the groove, said groove or recess being intended to receive putty or other like material 16 to effectually hold the glass panes 17 in position. By forming the grooves as above explained the edges of the glass lights will be embedded in the putty, the latter being located against the rear face as well as the front face of the glass and filling the groove.

In the construction disclosed in Figs. 6 and 7 three sashes 17, 18, and 19 are mounted in a frame 20, which latter is made with guide shoulders or flanges 21 on the side bars of the frames, against which side flanges 22 on the sashes are mounted to slide and held thereagainst by lugs 23. The frame 20 and sashes 17, 18, and 19 each comprise one integral casting, and the details of construction of the sash-bars and light-bars are practically like the sashes 3 and 4, and we would have it understood that the general construction of all the sashes hereinafter described are like sashes 3 and 4, with the exception of certain details which will be pointed out.

In Fig. 8 we show another construction in section corresponding to Fig. 7 and in which no frame is employed. In this construction the middle sash 24 is cast with lugs 25 on its side bars for anchorage in the wall, and said side bars are made channel shape, forming guide-strips 26, extending from top to bottom of the window-opening, and on said flanges notched lugs 27 on the upper sash 27^a and lower sash 28 are mounted to slide and be guided thereby. The upper and lower ends of the channel-iron side bars of sash 24 have

preferably cast thereon projecting plates, (not shown,) forming, in effect, the depending lips 13 and 15, as shown in Figs. 3 and 5.

In Fig. 9 a construction is disclosed operating like that shown in Fig. 8, the middle sash 29 having angle-bars extending throughout the window-opening and made with wide lugs or plates 30, anchored in the wall and having notches 31 to receive and guide flanges 32 on the side bars of the upper and lower sashes 33 and 34.

In Figs. 10 and 11 is shown our improved sash 35, mounted to slide horizontally on a roller-chain, the rollers 36 of which being annularly grooved to receive ribs or tracks 37 and 38 on the sash 35 and sill 39, respectively. The sill 39 has an upwardly-projecting web or flange 40 to protect the chain and frame 41, of which the sill is a part, has side and top projecting flanges, as shown clearly in Fig. 10.

In Fig. 12 a sash 42 is shown, having brackets 43 cast integral therewith at the lower end or upper ends, or both, of its side bars and supporting grooved rollers 44, mounted to run on a track or web 45 of the frame and permit the sash to slide horizontally, the details of said brackets and rollers being shown in Figs. 13 and 14. There are also guide lugs or rollers 44^a at the top or bottom to suit the position of the carrying-rollers.

In Figs. 15, 16, and 17 pivoted sashes 46 are disclosed, having trunnions 47 near the center of their sides, mounted in hook-shaped bearings in the side and center bar of the frame 48, and said frame is suitably flanged or webbed to keep out the weather and limit the pivotal movement of the sashes.

Figs. 18 and 19 disclose a circular window-sash 49, mounted to turn in a frame 50, and Figs. 20, 21, and 22 disclose a vertically-pivoted sash 51, having central sockets 52 on its top and bottom sash-bars to receive bearing or hinge pins 53 and 54 on the frame 55, the upper pin 53 being movable to permit the removal of the sash when desired, and said sash and frame are made with suitable flanges or webs, as shown, to keep out the weather and restrict the movement of the sash.

All of the window-sashes above described comprise outside bars and light-bars all cast integral and grooved to receive putty or like material to hold the window-panes.

A great many other changes might be made in the general form and arrangement of the parts described without departing from our invention, and hence we would have it understood that we do not restrict ourselves to the precise details set forth, but consider ourselves at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of our invention.

Having fully described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. A sash consisting of a metal frame and integral light-bars, each having a substantially rectangular rabbet for the reception of holding material and so disposed that the light may rest upon the wall of the rabbet at its margin and beyond said margin upon the holding material.

2. A window-sash, comprising side, top, bottom and light bars, all cast integral and each having a substantially rectangular rabbet for the reception of holding material and so disposed that the light may rest upon the wall of the rabbet at its margin and beyond said margin upon the holding material.

3. The combination with a fixed metal frame, of a metal sash having its frame and light-bars made integral and provided with undercut putty-grooves, and means for guiding the movements of the sash within the fixed frame, said undercut grooves, each forming a substantially rectangular rabbet in which the putty is located and said rabbet so disposed that the light may rest upon the wall thereof at its margin and beyond said margin upon the holding material.

4. The combination with a fixed metal frame and a metal sash comprising a frame and light-bars made in a single piece and provided with substantially rectangular rabbets for the reception of holding material and so disposed that the lights may rest upon the walls of the rabbets at their margins and beyond said margins upon the holding material, of means for supporting said sash and guiding the movements thereof within the fixed frame.

5. The combination with a cast-metal frame, of sashes comprising side, top and bottom bars all cast integral, flanges on the side bars of the sashes movable against elongated shoulders on the frames, and lugs on the frames holding the sash-flanges against said shoulders.

6. The combination with a cast-metal frame, of sashes comprising side, top and bottom bars all cast integral, flanges on the side bars of the sashes movable against elongated shoulders on the frames, and lugs on the frames holding the sash-flanges against said shoulders, inwardly-projecting flanges on the top and sides of the frame at its outer edge, and a depending subsill-protecting lip on the bottom or sill bar of the frame.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

FRANK FELKEL.
WILLIAM LANGER.

Witnesses:

C. E. McCARGO,
A. O. FORDING.