

**Oct. 25, 1949.**

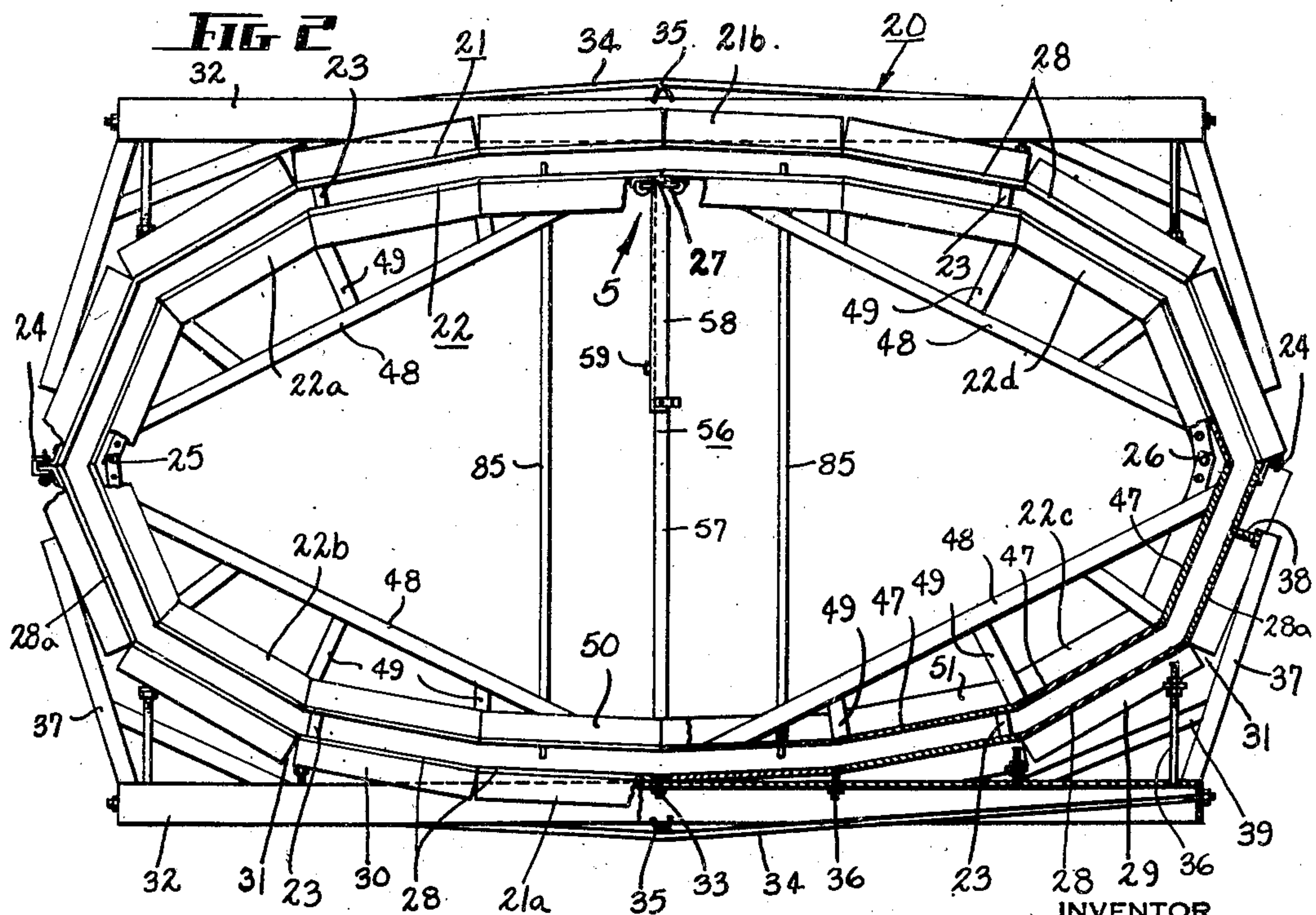
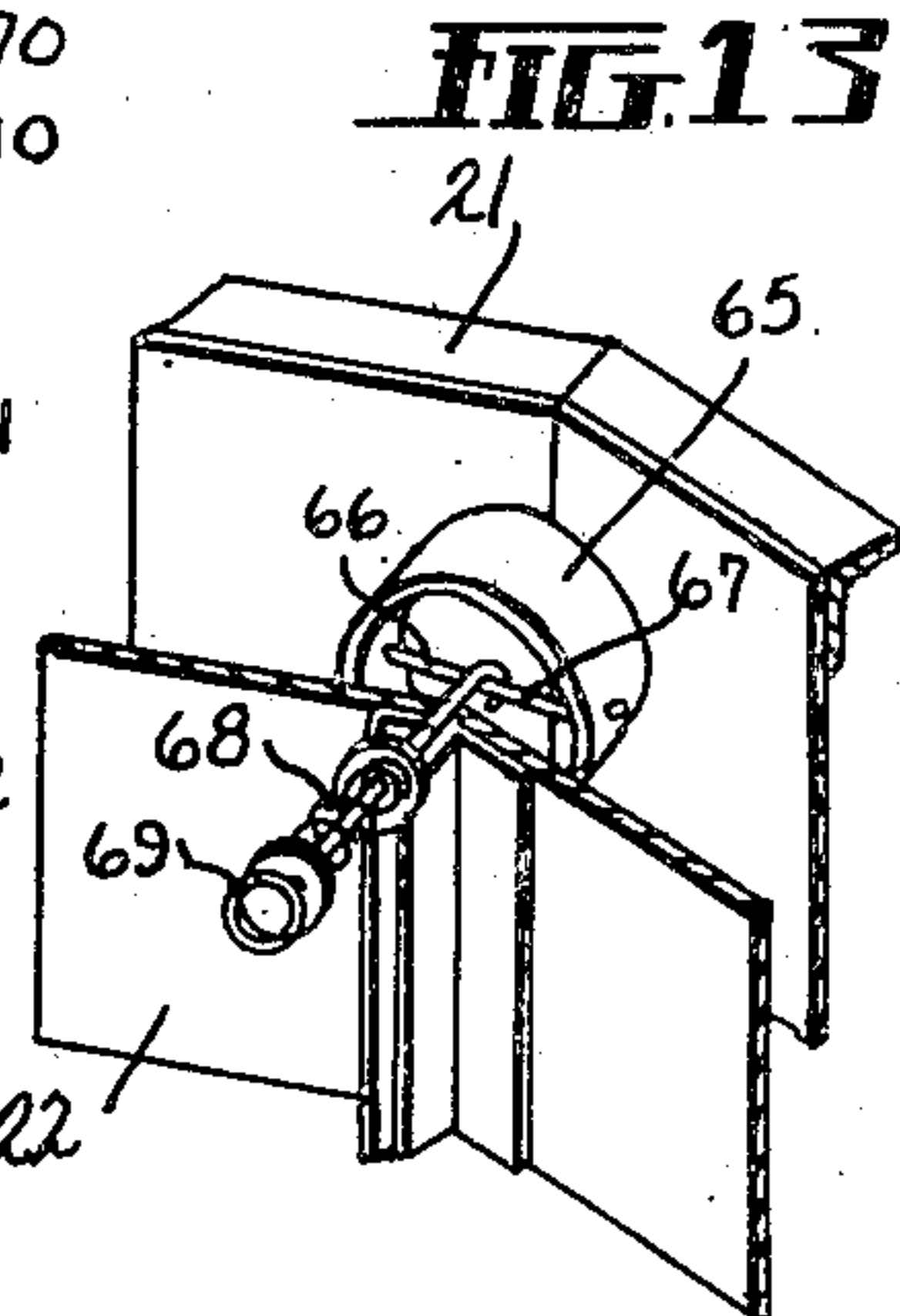
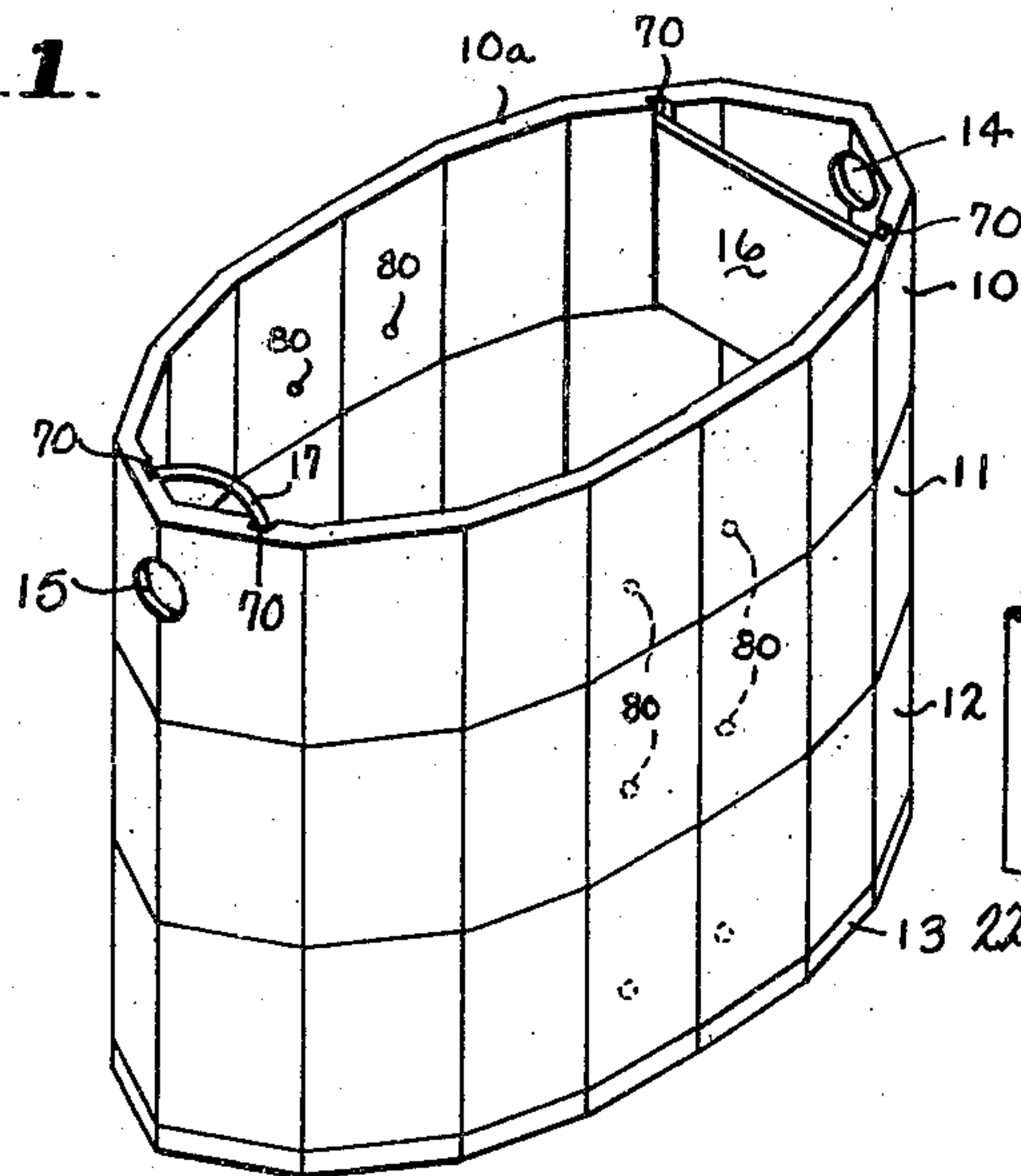
**P. N. SITTON**

**2,485,850**

# FORM FOR BUILDING SEPTIC TANKS

Filed Jan. 1, 1945

3 Sheets-Sheet 1



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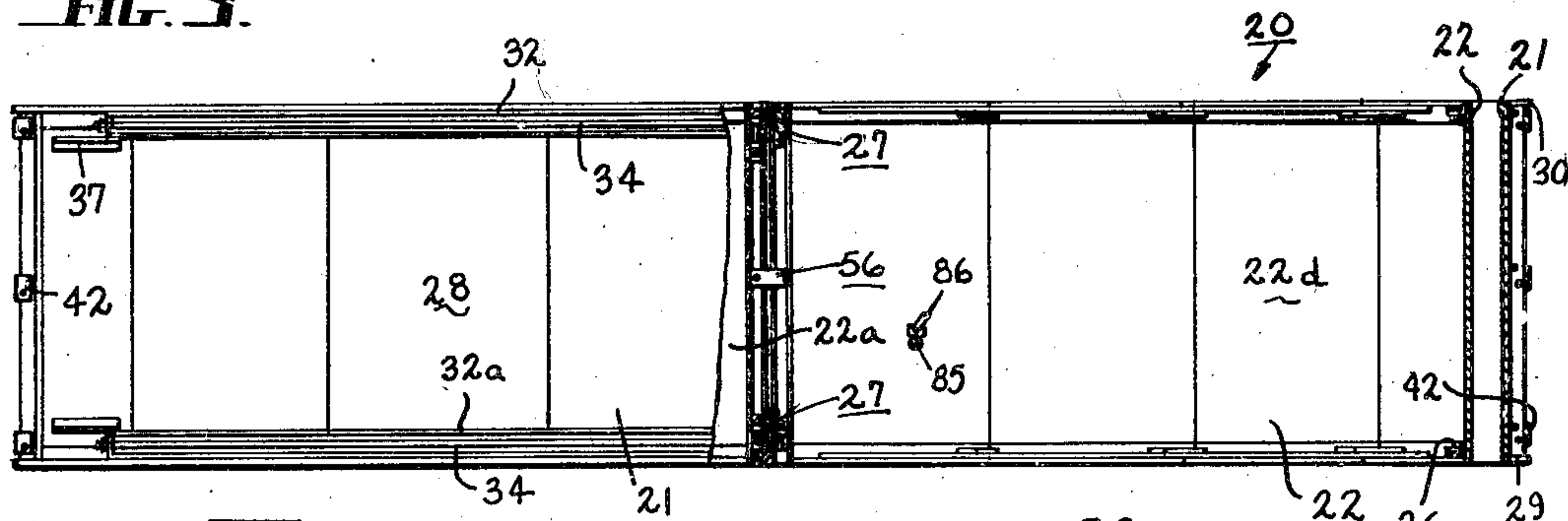
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FORM FOR BUILDING SEPTIC TANKS

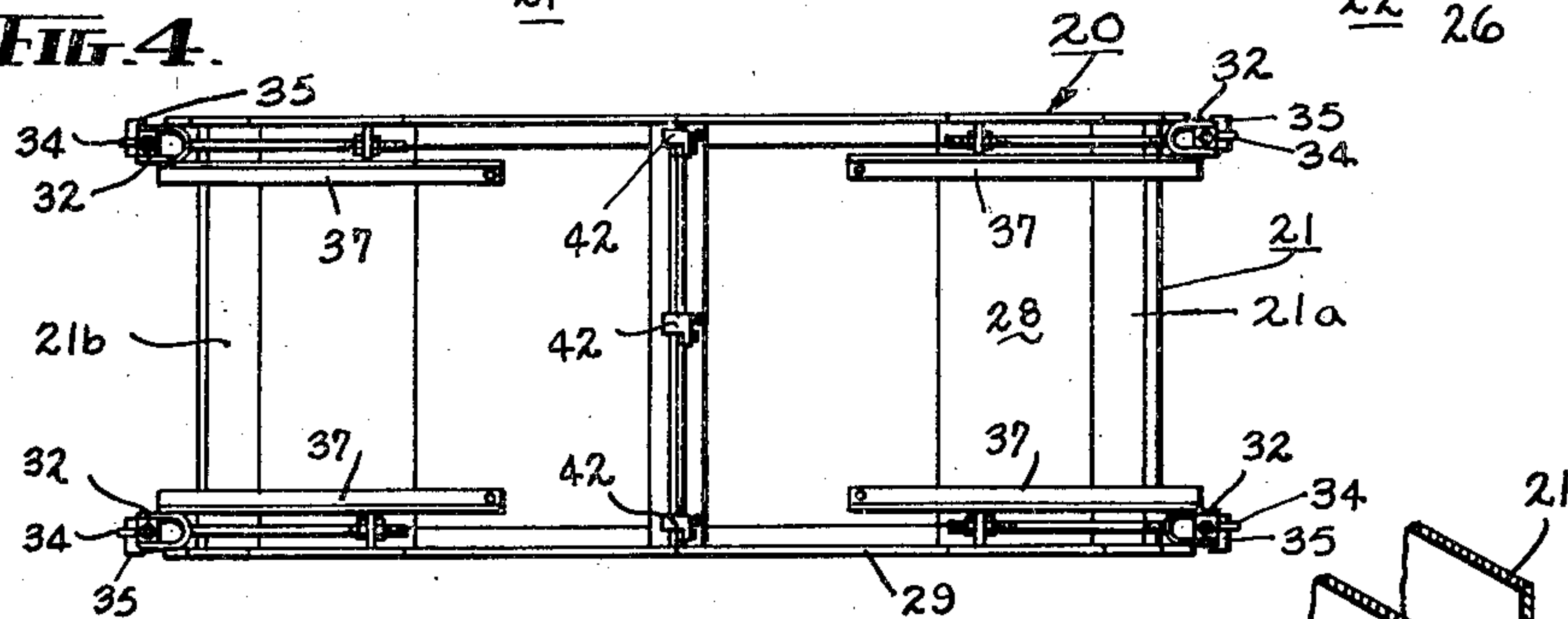
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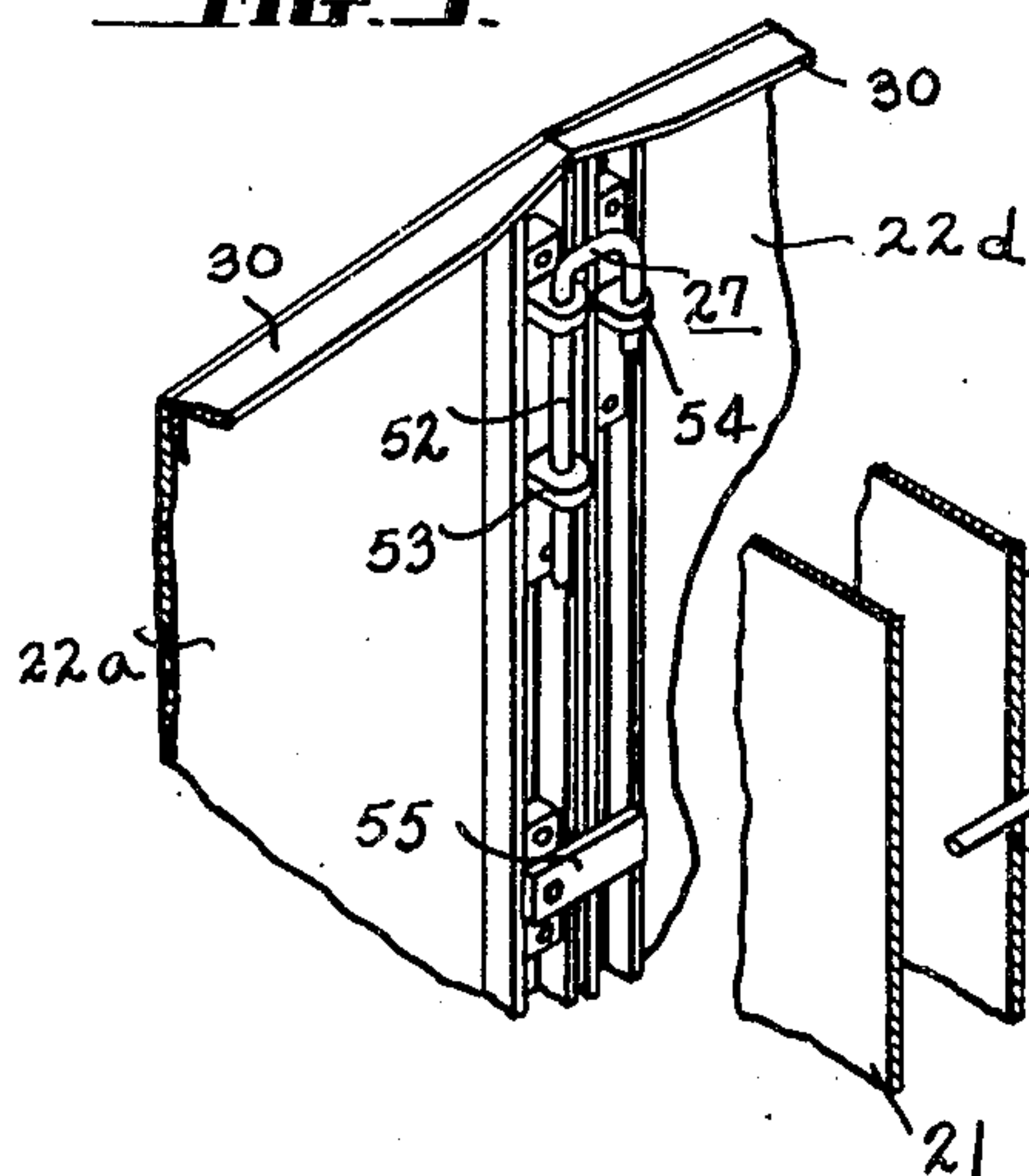
**FIG. 3.**



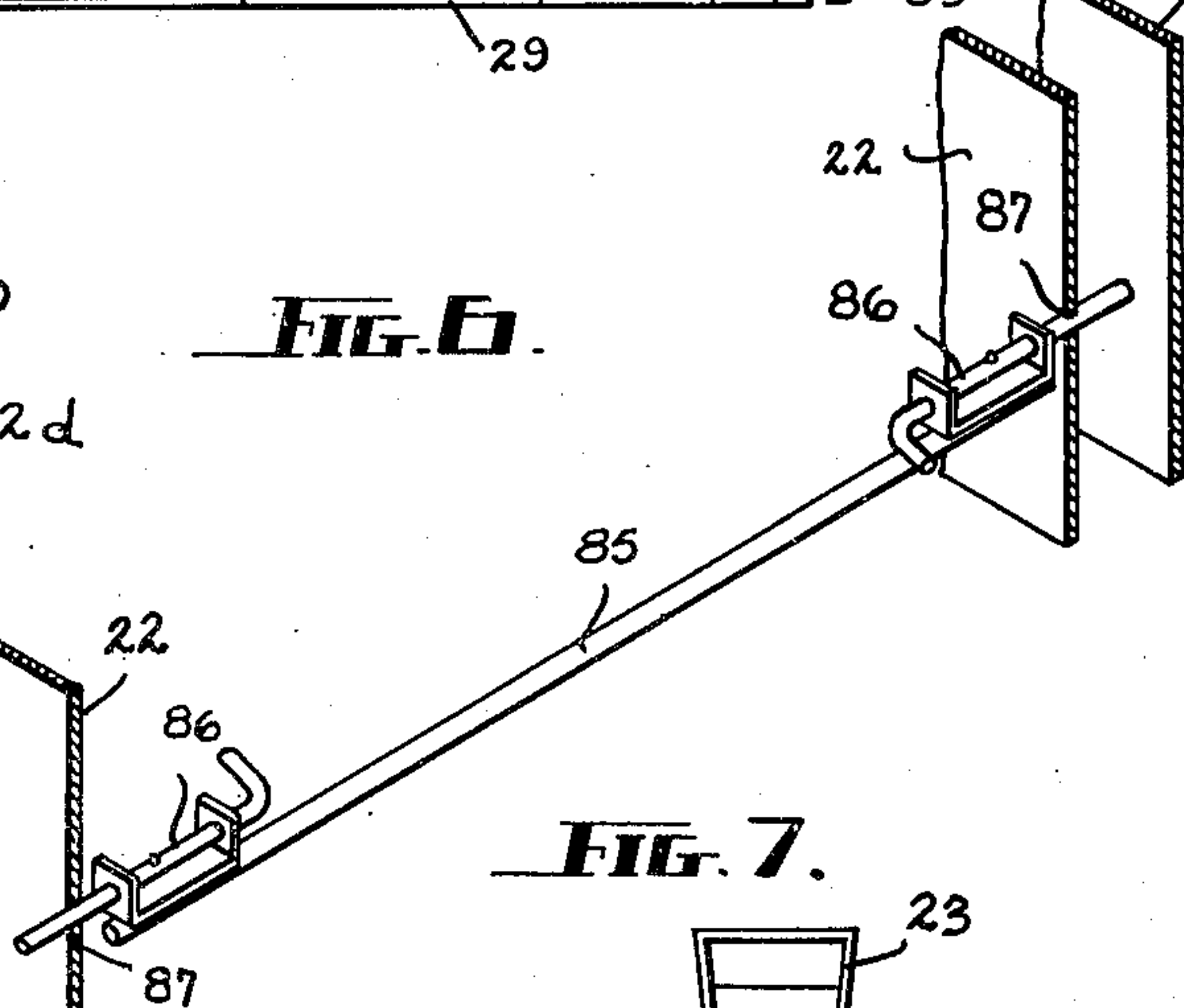
**FIG. 4.**



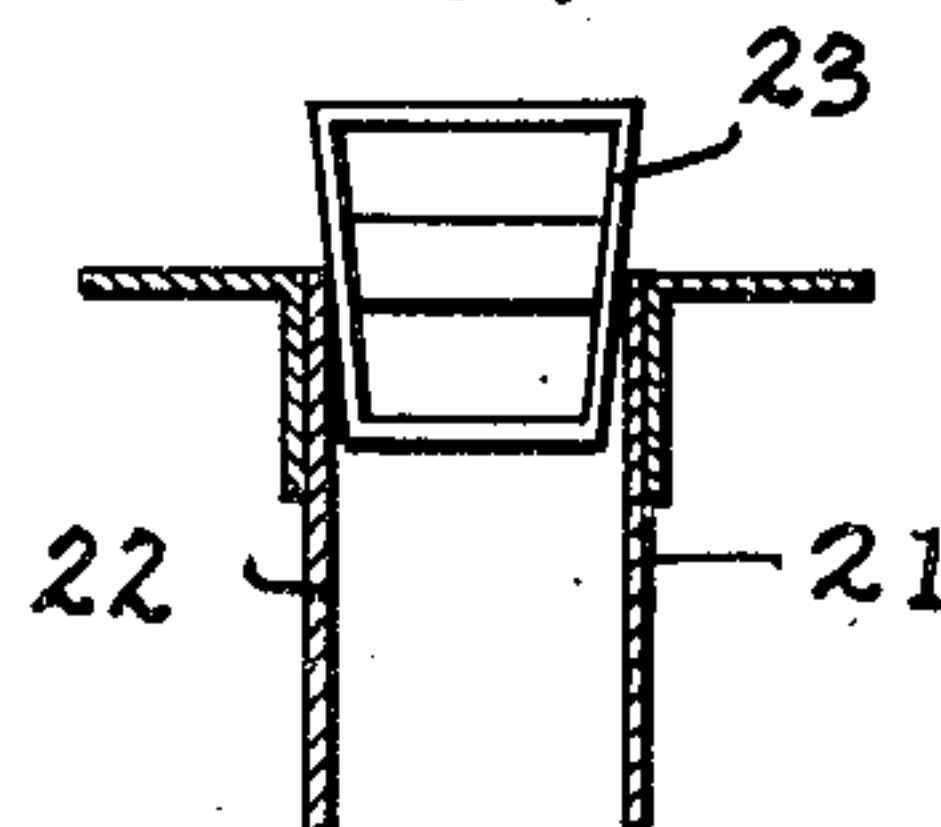
**FIG. 5.**



**FIG. 6.**



**FIG. 7.**



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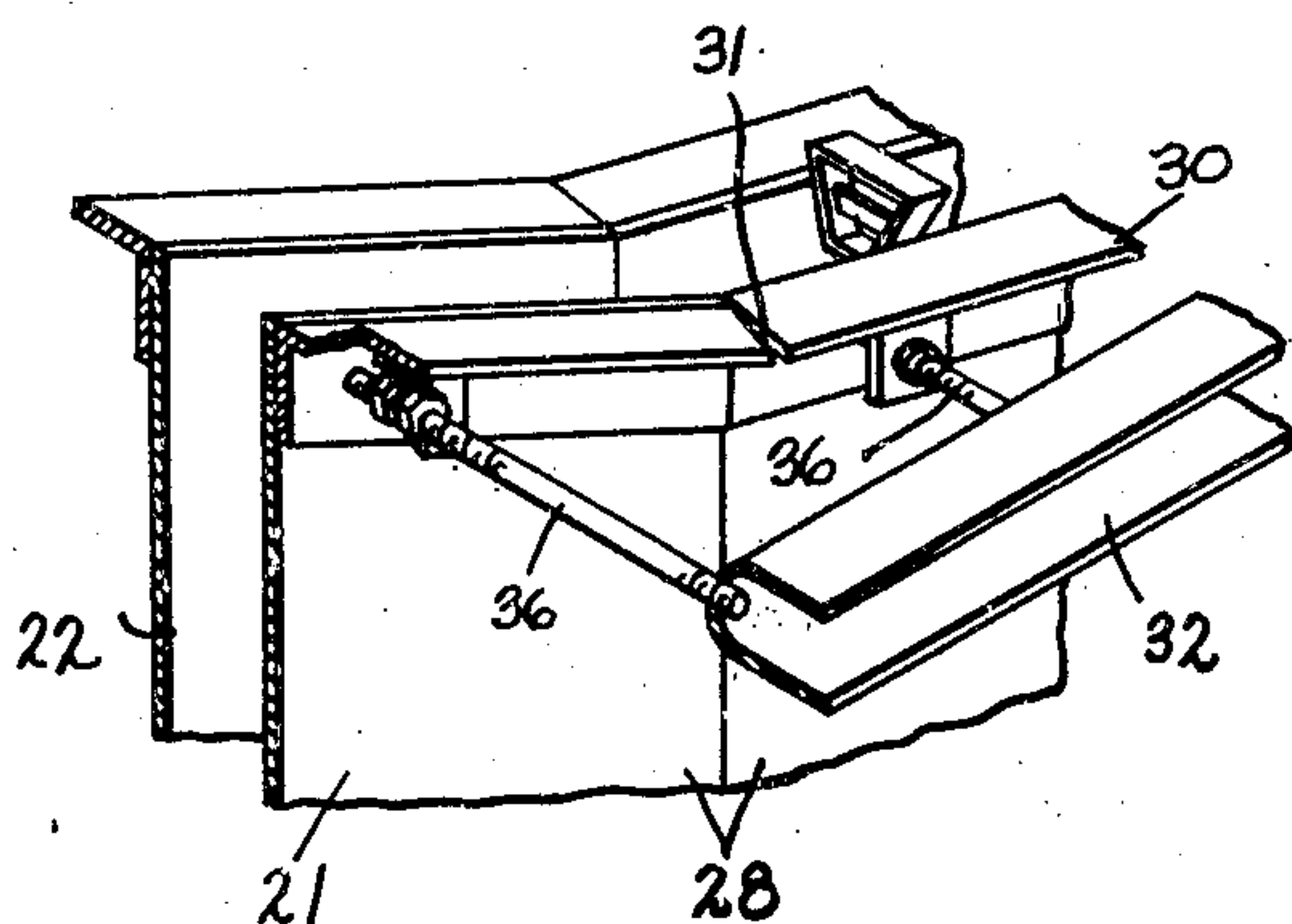
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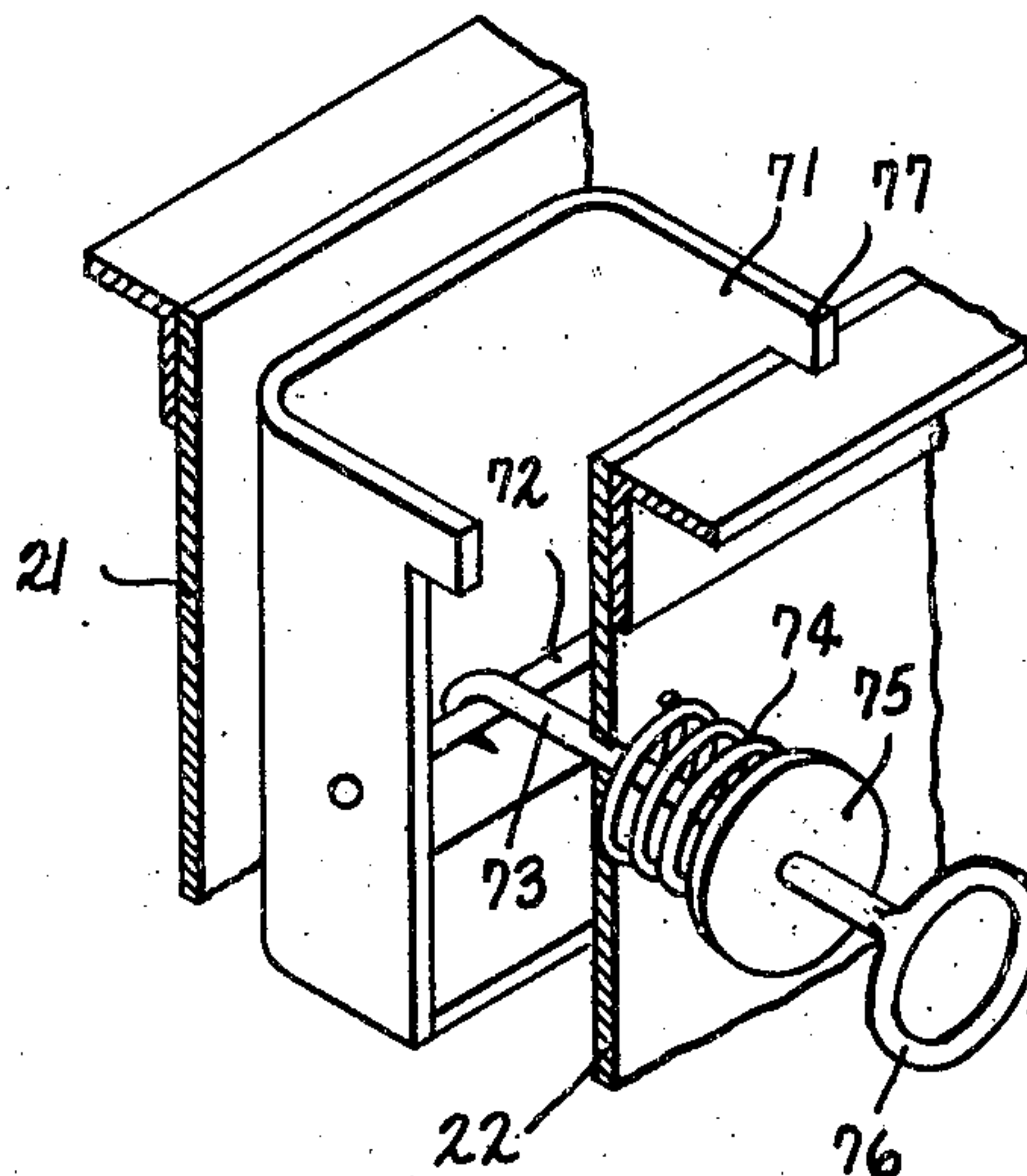
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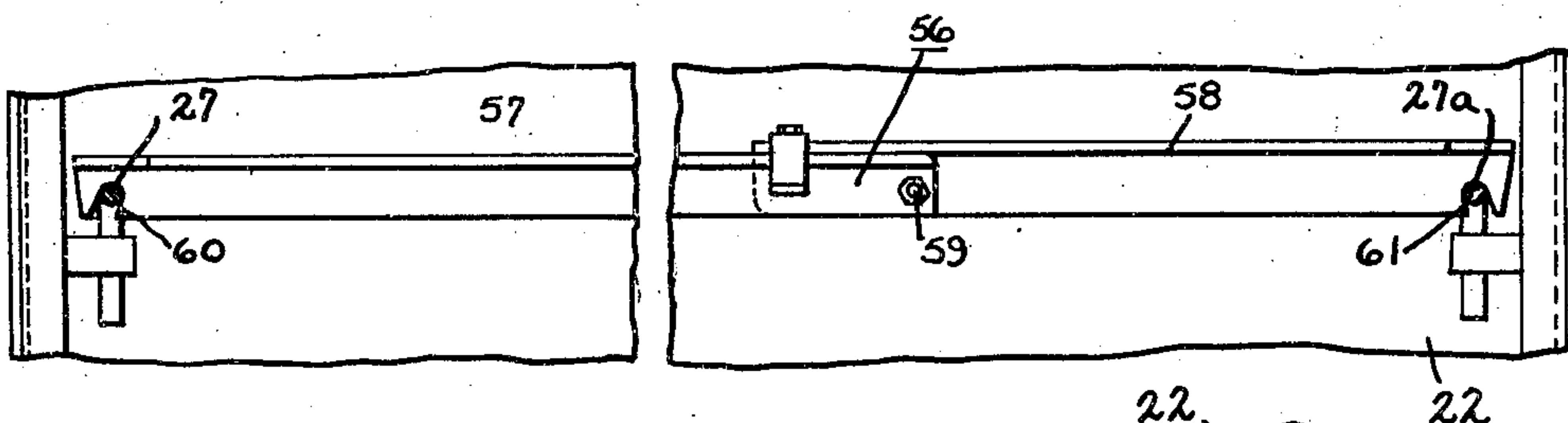
**FIG. 8.**



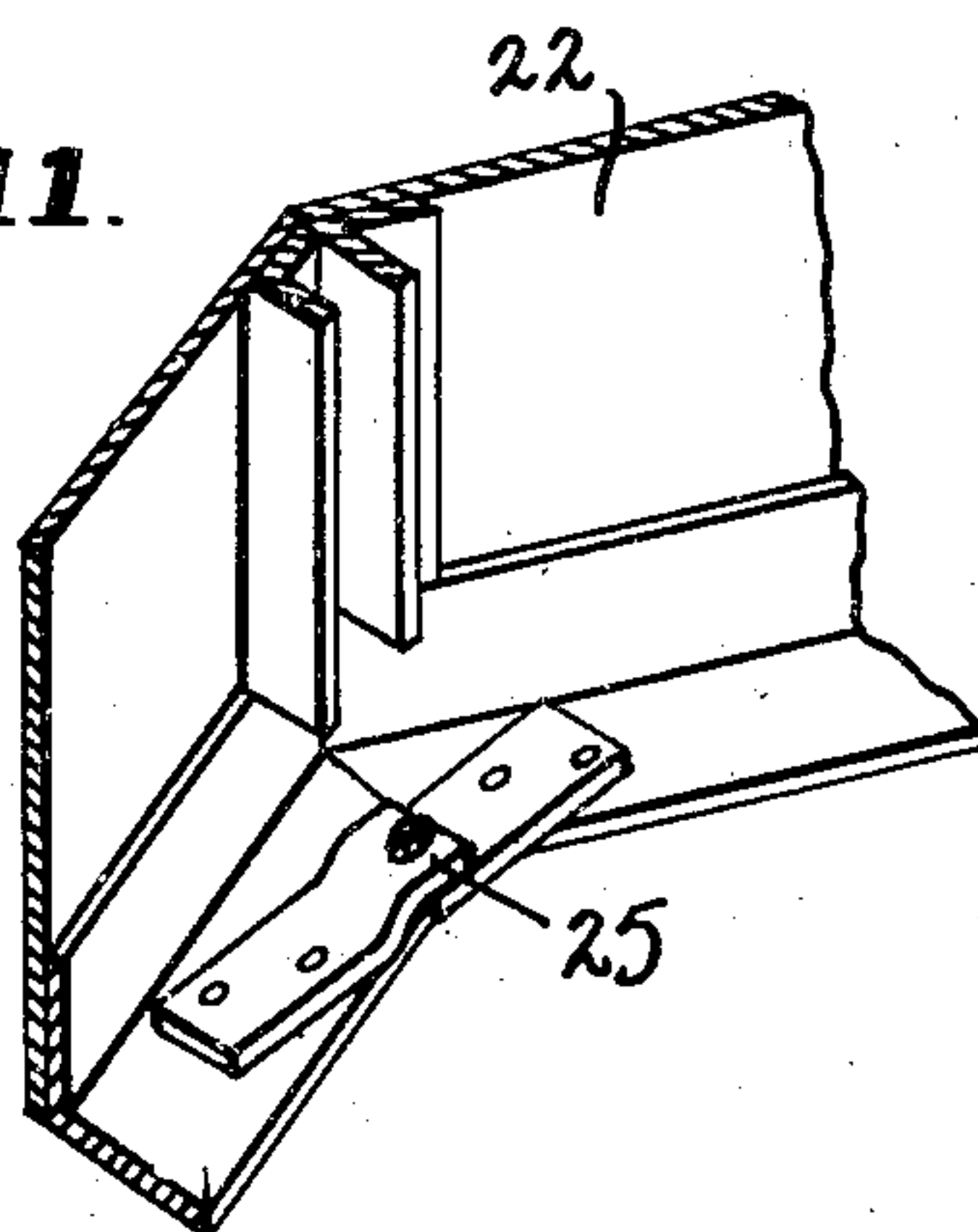
**FIG. 12.**



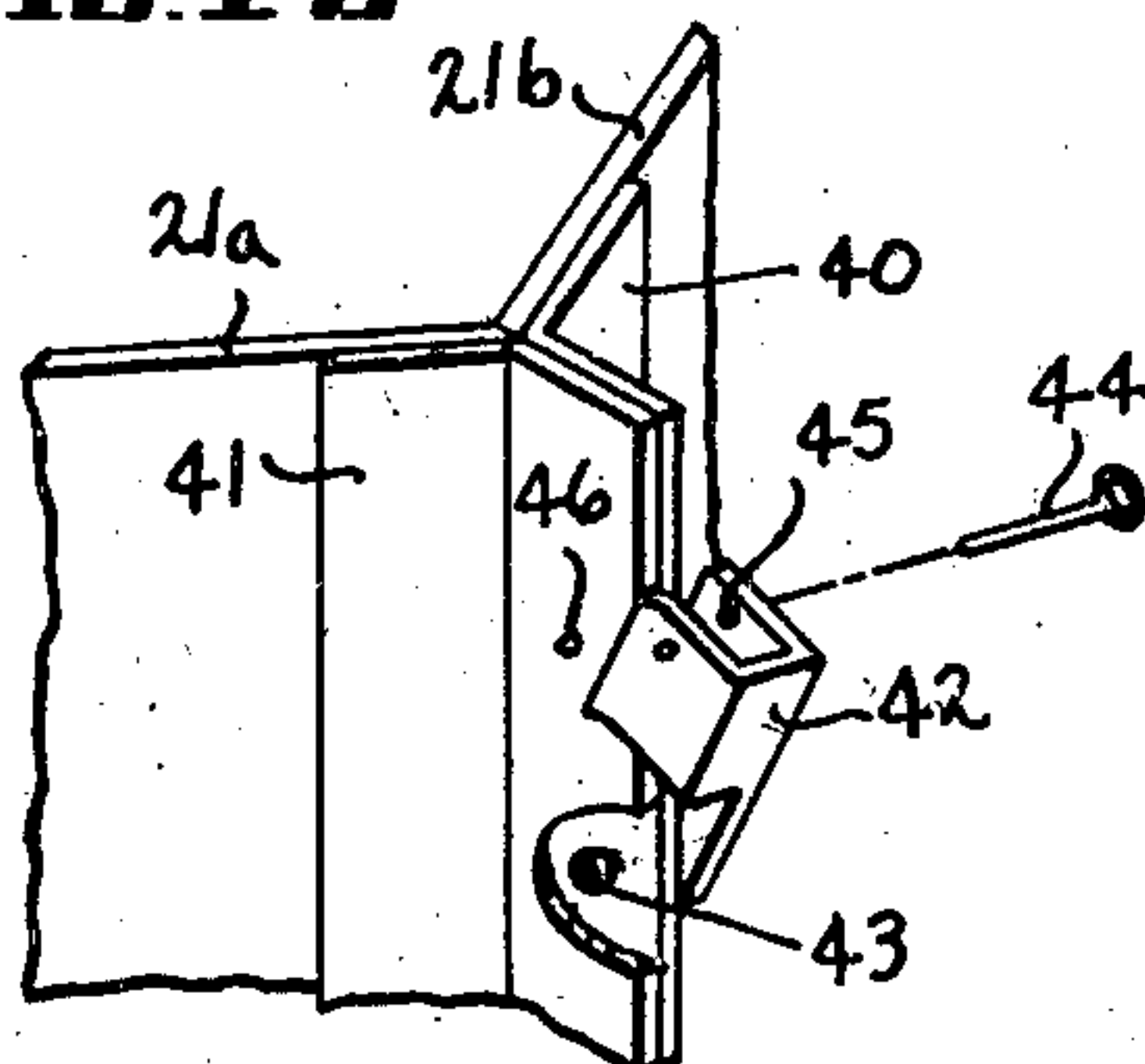
**FIG. 9.**



**FIG. 11.**



**FIG. 10.**



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2,485,850

## FORM FOR BUILDING SEPTIC TANKS

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Application January 1, 1945, Serial No. 570,856

8 Claims. (Cl. 25—130)

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This invention relates to a collapsible form for use in the manufacture of septic tanks.

An object of the invention is to provide a collapsible form that may be used in the manufacture of concrete septic tanks to permit the form to be readily removed from the cast concrete septic tank and be reused in producing other tanks.

Still another object of the invention is to provide a form in which concrete septic tank sections can be produced, and which form is removable from the tank section while the concrete is still green.

Still another object of the invention is to provide a form that is constructed in sections adapted to be positioned in a predetermined relationship with another for providing a space therebetween in which concrete can be poured for thereby producing a cast section of a septic tank, and which form is removable in sections from the cast concrete section.

Still another object of the invention is to provide a form for casting substantially elliptical sections of a septic tank wherein the form is removable in sections from the cast section of the septic tank.

Still another object of the invention is to provide a form for casting concrete septic tanks in accordance with any of the foregoing objects wherein the vertical sidewalls of the septic tank are composed of flat sections arranged in a substantially elliptical arrangement.

Still another object of the invention is to provide a form for manufacturing cast concrete septic tanks wherein at least some of the walls of the form are adjustable to provide for a uniform cross-section in the wall of the septic tank being cast.

Further objects and advantages will become apparent from the drawings and the following description.

In the drawings:

Figure 1 is a perspective elevational view of a concrete septic tank constructed by the use of the form of this invention.

Figure 2 is a plan view of the assembled form of this invention, showing a part thereof in cross-section to illustrate the detail construction of the form.

Figure 3 is a side elevational view of the form illustrated in Figure 2, but with a portion of the sidewall thereof broken away to illustrate the details of construction.

Figure 4 is an end elevational view of the form illustrated in Figure 2.

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Figure 5 is a perspective elevational view of the locking mechanism for holding the inside walls of the form together, as taken in the direction of the arrow 5 on Figure 2.

Figure 6 is a perspective elevational view of a part of the form illustrating the manner in which certain holes are provided in the cast sections of the septic tank.

Figure 7 is a cross-sectional view of a part of the form illustrating the wedge spacing members positioned between the inner and outer walls of the form.

Figure 8 is a perspective elevational view of a part of the form illustrating the adjustments for the walls of the same.

Figure 9 is an elevational view of a latch bar that extends between the inner walls of the form to hold the locking mechanisms illustrated in Figure 5 in their proper positions.

Figure 10 is a perspective elevational view of a part of the form illustrating the manner in which the outer end walls of the form are held together.

Figure 11 is a perspective elevational view of the hinge joint between the inner walls of the form.

Figure 12 is a perspective view of an insert adapted to be used with the form for providing slots in certain portions of the concrete septic tank.

Figure 13 is a perspective view of an insert used between the inner and outer walls of the form for providing the inlet and outlet openings in the septic tank.

This invention relates to a knock-down form of what may be termed a permanent type in which substantially elliptical sections of a concrete septic tank may be produced. The form disclosed in this invention is adapted for the manufacture of concrete septic tanks such as that disclosed in Figure 1, and more completely disclosed and described in my co-pending patent application, Serial No. 570,858, filed January 1, 1945, now Patent No. 2,440,762.

In general, the septic tank that can be manufactured in the form of this invention consists of three cast sections 10, 11 and 12 that are positioned above one another, and are adapted to rest upon a concrete base 13. The cast sections 10, 11 and 12 are formed generally in the arrangement of an ellipse, but the wall portions of the cast sections are arranged as flat sections, such as the sections 10a, rather than in the form of a continuous arc of an ellipse to increase the strength of the wall of the septic tank to support



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ground pressure applied upon the wall. The section 10 of the septic tank is provided with an inlet opening 14 and an outlet opening 15. A baffle plate 16 is positioned adjacent the inlet opening 14 to deflect incoming material downwardly into the tank, and a baffle plate 17 is provided adjacent the outlet opening 15 to prevent any direct flow of materials from the septic tank into the outlet opening.

The form for producing the septic tank illustrated in Figure 1 is adapted to produce one of the sections 10, 11 or 12 upon each casting operation. Suitable inserts are provided for forming the inlet and outlet openings 14 and 15 together with any other recesses that may be required in the construction of the septic tank in any one of the sections, such as the section 10.

The form 20 of this invention consists generally of an outer wall 21 and an inner wall 22 that are positioned in spaced relationship by means of the spacer members 23. The outer and inner walls 21 and 22 are arranged generally in the form of an ellipse, but the elliptical shape of the walls is composed of a plurality of straight sidewall sections joined together at their ends to form continuous inner and outer wall surfaces. The adjacent sidewall sections are arranged substantially in parallel arrangement to provide a uniform cross-section in the cast concrete section that is cast between the inner and outer walls 21 and 22.

The outer wall 21 is arranged in two halves, 21a and 21b that are joined together at the ends of the generally arranged elliptical shape thereof by means of the lock members 24. Thus, the two halves, 21a and 21b of the outer wall 21 can be removed from a concrete cast section that is formed between the inner and outer walls 21 and 22 of the form 20 without disturbing the surface of the cast concrete article.

The inner wall 22 of the form 20 is formed of four quarter-sections 22a, 22b, 22c and 22d. The sections 22a and 22b are hinged together at the top and bottom of each of these sections by the hinge members 25, while the sections 22c and 22d are similarly hinged together by the hinge members 26. The wall sections 22a and 22b are thus movable toward one another, as are the wall sections 22c and 22d to allow them to be moved inwardly toward the center of the form and thus withdrawn from the surface of the article being cast between the inner and outer walls of the form 20 and be removed therefrom without damage to the cast concrete walls of the article.

The inner wall sections 22a and 22d are, when in position for producing a cast article, locked together by means of the locking device 27, and the sections 22b and 22c are similarly locked together, as will be more specifically hereinafter described.

The outer wall half-sections 21a and 21b are constructed in identical manner so that a description of one of the sections will suffice for the other. The outer wall section 21a consists of a plurality of flat wall sections 28 that are joined together along their vertical edges and are arranged generally in the form of one-half of an ellipse, the flat wall sections forming the general elliptical shape. While in the construction of the device under consideration the flat wall sections 28 are manufactured from individual plates welded together along their vertical edges, yet it will be understood that a single metal plate could be used and bent to the proper shape as that illustrated in Figure 2. The wall sections 28 are

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braced along their top and bottom edges by means of the angle members 29 and 30. The angle members 30, positioned around the upper edge of the wall sections 28 as well as the angle members 29 positioned around the lower edge of the wall sections 28 have the open joints 31 therebetween so as to allow relative movement between the sections 28 in a manner hereinafter described.

A channel member 32 is attached to the outer wall section 21a substantially at the center point thereof as by means of the bolt 33. A brace-rod 34 extends between opposite ends of the channel 32 and passes over a support member 35 to brace the channel member 32 lengthwise. Adjustable bolt means 36 are provided between each of the panel sections 28 forming the outer wall 21 of the form and the channel bar 32 to change the angular relationship between the panel wall sections 28, and thus adjust and correct the parallel relationship between the outer wall sections 21 and the inner wall sections 22 of the form 20. A brace member 37 extends from each end of the channel bar 32 for carrying the adjusting bolt 38 for the end-most panel wall section 28a. The brace member 37 has a brace 39 extending between the same and the channel bar 32 to increase the rigidity of the brace member 37.

While only one channel bar, and the adjustable connections between it and the panel wall sections 28 have been described, yet there is a channel bar 32 provided along the upper edge of the outer wall sections 21a and 21b and a similar channel bar 32a provided along the lower edge of the outer wall sections 21a and 21b to provide for adjustment of the panel wall sections 28 and to place them in parallel relationship relative to the inner wall sections of the form.

The outer wall sections 21a and 21b are locked together at their end extremities by means of the lock illustrated in Figure 10 wherein the channel member 40 is attached to the wall section 21b and the channel member 41 is attached to the wall section 21a, the flanges of the two channel sections being positioned in a back-to-back relationship as illustrated in Figure 10.

The U-shaped lock member 42 is pivotally mounted upon the channel member 40 by means of the pivot-pin 43, and is adapted to be swung into position to close over the channel members 40 and 41 and have a pin 44 passed through the lock 42 and the flanges of the channel members 40 and 41 through the openings 45 in the lock 42 and the opening 46 in the channel members 40 and 41. Three such lock members 42 are provided at each end of the end walls, as illustrated in Figure 4.

The inner wall sections 22a, 22b, 22c and 22d are constructed in identical manner so that a description of one of the sections will suffice for all. The inner wall section 22c is composed of a plurality of straight sidewall sections 47 that are joined together along their vertical edges, and like the outer wall may either be made of individual plates or from a single sheet bent to the desired form. The panel sections 47 forming the inner wall surface, are braced in their relative angular positions by means of the angle members 48 and the angle members 49 extending between the angle members 48 and the wall sections 47. These angle members are suitably welded to the wall sections to hold them in their proper angular position relative to one another.

As hertofore described, the inner wall sections 22c and 22d are hinged together adjacent their top and bottom edges by means of the hinge members 26. Also, the panel sections 47 of the



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inner wall are braced along their top and bottom edges by means of the angle members 50.

The cooperating inner wall sections 22a and 22b and the cooperating wall sections 22c and 22d are adapted to be positioned within the outer wall sections 21a and 21b, and when in position the inner wall section 22a is locked to the inner wall section 22d by means of the lock member 27, and the wall section 22b is similarly locked to the inner wall section 22c. The wedge spacing members 23, more specifically illustrated in Figure 7, space the inner and outer wall sections relative to one another.

The lock members 27, more specifically illustrated in Figures 5 and 9 consist of a U-shaped bar 52 slidable in the guides 53 that are mounted on the inner wall section 22a. The U-shaped bar 52 is adapted to be swung into position to have the opposite end thereof placed into a bracket 54 carried upon the adjacent edge of the inner wall section 22d. A lock of this type is provided adjacent both the top and bottom edges of the inner wall sections. To properly align the inner wall surfaces of the inner wall sections 21a and 22d, there is provided a plate 55 that engages the inner surfaces of the wall sections and thereby aligns the outer surfaces thereof.

To lock the U-shaped members 52 of the lock 27 in position and prevent any relative movement between the inner wall sections 22a and 22d or between the inner wall sections 22b and 22c, a jack-knife bar 56, see Figure 9, is positioned between the lock 27 and the lock 27a. This jack-knife bar merely consists of two angle bars 57 and 58 pivoted on a pin 59, and having slots 60 and 61 in the ends thereof that engage the U-shaped members of the locks 27 and 27a, respectively. When the jack-knife bar 56 is in position, as illustrated in Figure 9, the U-shaped members of the locks 27 and 27a are prevented from movement, and the plates 55 are held in position to locate the wall sections in proper alignment. One of the jack-knife bars 56 is provided for each of the locks positioned adjacent the upper and lower edges of the wall sections as illustrated in Figure 3.

The form just described constitutes the basic elements of the form for producing any one of the cast concrete sections 10, 11 and 12 of the septic tank having the form of a polygon of conic section illustrated in Figure 1 since all of the sections are identical in their cross-sectional shape. The section 10 of the septic tank does have certain recesses and openings provided in the same, but the elements for producing these recesses and openings are removable from the basic elements of the form so that the lower sections 11 and 12 can be produced by the use of only the basic elements of the form.

With the elements of the form just described as illustrated in Figure 2, and with the members locked together with the spacing members 23 in position to provide a uniform spacing between the inner and outer wall members of the form 20, it will be apparent that by pouring a suitable amount of concrete in the space between the inner and outer wall sections 21 and 22, that a substantially elliptical cast concrete section of the septic tank will be produced. If for any reason the parallel relationship between the inner wall 22 and the outer wall 21 should be changed, such as by a springing of the form, the outer wall panel sections 23 can be adjusted relative to the inner wall panel sections 47 by the adjusting bolts 36 to change the angular relationship between the

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outer wall panel sections 23 and thus correct the parallel relationship between the outer wall sections 23 and the inner wall sections 47. It is essential that this parallel relationship be retained between these wall sections to obtain a uniform cross-section in the cast wall of the section of the septic tank to produce a tank section that has a uniform strength throughout its entire cross-section.

In order to form the inlet opening 14 and the outlet opening 15 in any cast section, it is only necessary to insert a removable sleeve 65, see Figure 13, between the inner wall 22 and the outer wall 21 in the end extremities of the form. The sleeve 65 will, of course, be shaped to fit closely against the inner and outer wall surfaces when in position between the same.

The sleeve 65 may be retained in position between the inner and outer wall sections by means of a hook 66 that extends through the inner wall section and hooks over a rod 67 extending across the sleeve 65. A spring 68 holds the hook against the rod 67, and a handle 69 is provided for loosening the hook 66 from the rod 67 when the walls of the form are to be parted during removal of the walls from a cast concrete section. After the walls are removed, the sleeve may be pushed outwardly from the hole thus formed in the cast concrete section.

In order to provide slots or grooves 70 in the walls of the cast section 10 to support the baffle plates 14 and 15, a rectangular cup-shaped member 71 is adapted to be positioned between the inner and outer wall sections in the proper location. The cup members 71 are of a desired shape and size to fill a part of the space between the inner and outer wall members and thus prevent concrete from setting in that space to thus produce a groove or slot when the cup-shaped members 71 are removed from between the inner and outer wall members.

The cup-shaped members may be provided with a rod 72 extending across the same, that are adapted to be engaged by a hook 73 that extends inwardly into the inside of the form. A spring 74 is positioned between the inner wall section 21 and a washer 75 on the hook 73 tending to urge the hook 73 into engagement with the rod 72 and thus hold the cup-shaped member 71 in position. A handle 76 is provided on the hook 73 to release the same from the rod 72 when the inner wall members are to be removed from the cast concrete section. Flanges 77 are provided on the upper edge of the cup-shaped member 71 to locate the members at the proper depth in the space between the inner and outer walls to form a groove 70 of a proper depth in the cast concrete section.

In order to provide means for carrying the cast concrete sections of the septic tank to the place at which they will be installed, and to move them about the factory or at the place of installation, holes 80 are provided in opposite sidewalls of the cast concrete sections 10, 11 and 12. To provide these holes during the casting of the sections, a rod 85 is provided for extending between the opposite inner walls of the form. The rod 85 carries the extending rod members 86 on opposite ends thereof that are placed in holes 87 in the inner wall sections 22 of the form. When the rods 86 are withdrawn, after setting of the concrete in the form, the holes 80 will remain. Two prods 85 are illustrated in Figure 2 for forming the four holes 80 illustrated in Figure 1 in which suitable lifting bars or hooks can be



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placed for carrying the concrete sections 10, 11 and 12.

While the apparatus disclosed and described herein constitutes a preferred form of the invention, yet it will be understood that the device is capable of mechanical alteration without departing from the spirit of the invention, and that all modifications that fall within the scope of the appended claims are intended to be included herein.

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

1. A mold wall for forming cast concrete bodies that consist of, a mold wall in the form of a polygon which is substantially elliptical in general transverse cross-section, said mold wall having the faces thereof forming the polygon adjustable relative to one another, and means carried by said mold wall for adjusting said faces relative to one another to change the angular relationship therebetween.

2. A mold wall for forming cast concrete bodies that consist of, a mold wall in the form of a polygon which is substantially elliptical in general transverse cross-section, bar means extending along opposite sides of said wall, and means extending between said bar means and said wall for adjusting the angular relationship between the wall portions of the polygonal figure formed by said wall.

3. A mold wall for forming cast concrete bodies that consist of, a mold wall in the form of a polygon which is substantially elliptical in general transverse cross-section, bar means extending along opposite sides of said wall, and means extending between said bar means and said wall and connecting with said wall adjacent the obtuse angles thereof for adjusting said wall sections relative to one another.

4. A mold wall for forming cast concrete bodies that consist of, a mold wall in the form of a polygon which is substantially elliptical in general transverse cross-section, bar means extending along opposite sides of said wall, means extending between said bar means and said wall and connecting with said wall adjacent the obtuse angles thereof for adjusting said wall sections relative to one another, said wall being constructed in two halves, and means for detachably connecting said halves together.

5. A mold outer wall for forming cast concrete bodies that consist of, a mold wall in the form of a polygon which is substantially elliptical in general transverse cross section, said mold wall having the faces thereof forming the polygon adjustable relative to one another, and means carried by said mold wall for adjusting said faces

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relative to one another to change the angular relationship therebetween, whereby to adjust said faces relative to the faces of an inner polygonal wall to thereby maintain the faces of both walls in parallelism with each other.

6. A mold outer wall for forming cast concrete bodies that consist of, a mold wall in the form of a polygon which is substantially elliptical in general transverse cross section, bar means extending along opposite sides of said wall, and means extending between said bar means and said wall for adjusting the angular relationship between the wall portions of the polygon figure formed by said wall, whereby to adjust said faces relative to the faces of an inner polygonal wall to thereby maintain the faces of both walls in parallelism with each other.

7. A mold outer wall for forming cast concrete bodies that consist of, a mold wall in the form of a polygon which is substantially elliptical in general transverse cross section, bar means extending along opposite sides of said wall, and means extending between said bar means and said wall and connecting with said wall adjacent the obtuse angles thereof for adjusting said wall sections relative to one another, whereby to adjust said faces relative to the faces of an inner polygonal wall to thereby maintain the faces of both walls in parallelism with each other.

8. A mold outer wall for forming cast concrete bodies that consist of, a mold wall in the form of a polygon which is substantially elliptical in general transverse cross section, bar means extending along opposite sides of said wall, means extending between said bar means and said wall and connecting with said wall adjacent the obtuse angles thereof for adjusting said wall sections relative to one another, said wall being constructed in two halves, and means for detachably connecting said halves together, whereby to adjust said faces relative to the faces of an inner polygonal wall to thereby maintain the faces of both walls in parallelism with each other.

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