

M. G. HILPERT.
STEEL BARGE.

APPLICATION FILED JAN. 6, 1905.

6 SHEETS—SHEET 1.

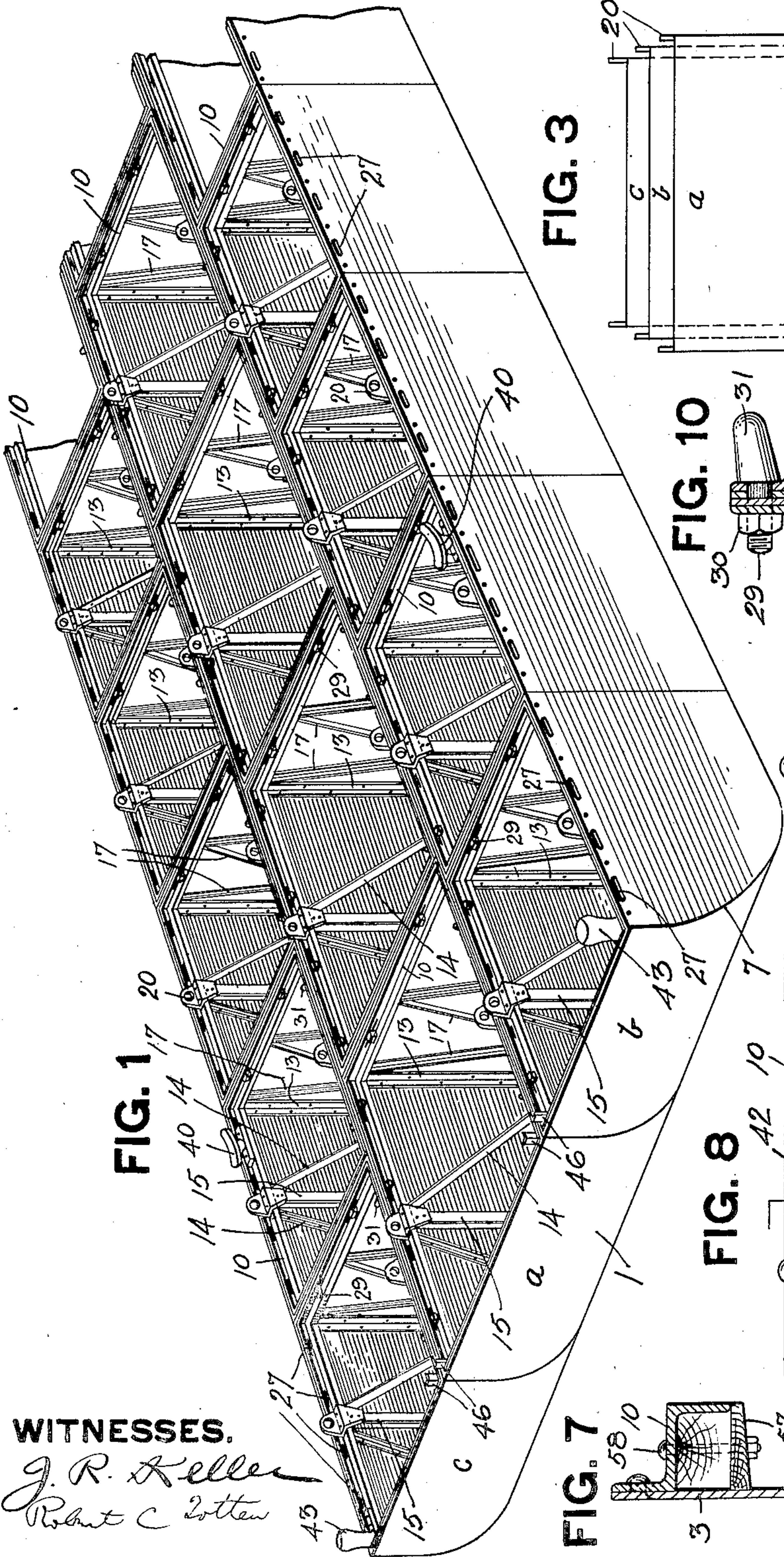


FIG. 1

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FIG. 3

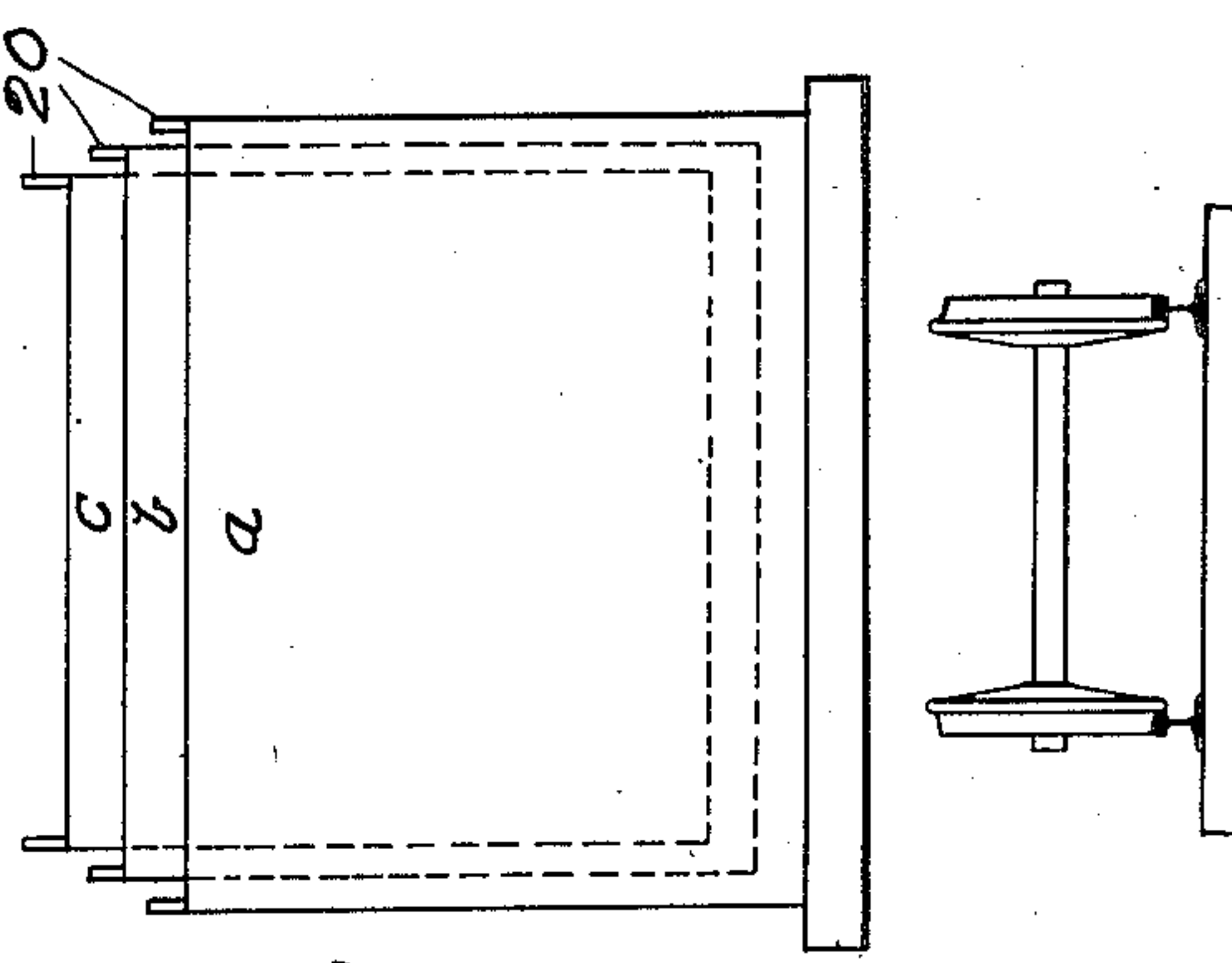


FIG. 10

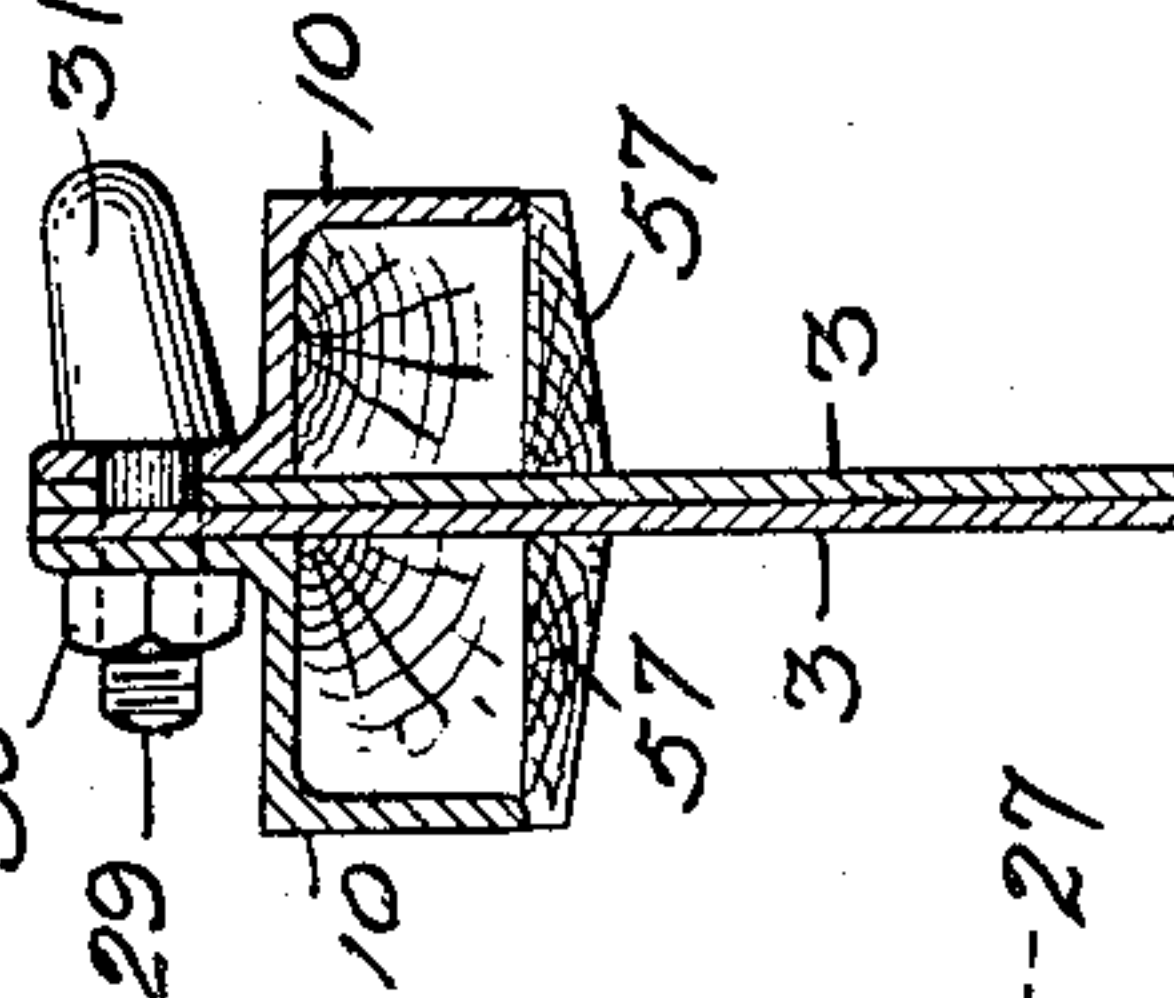


FIG. 9

FIG. 8

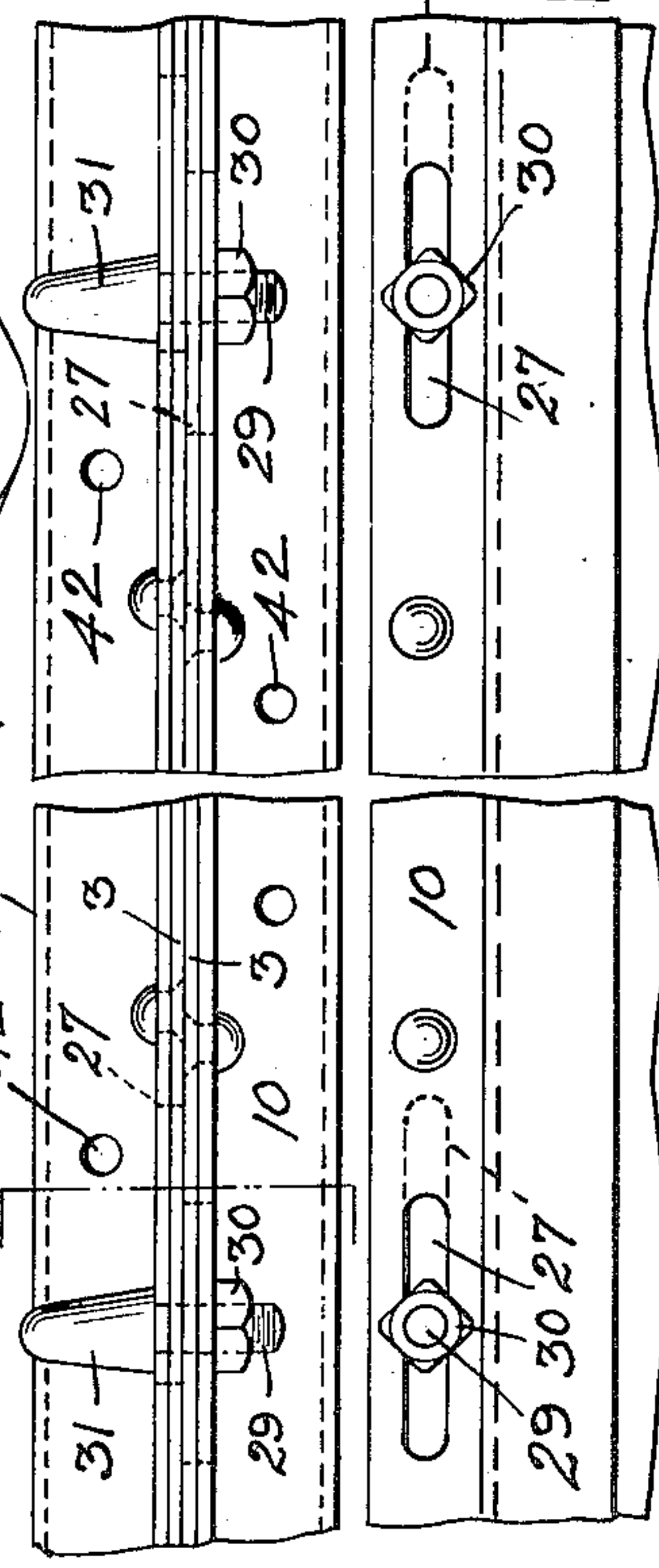
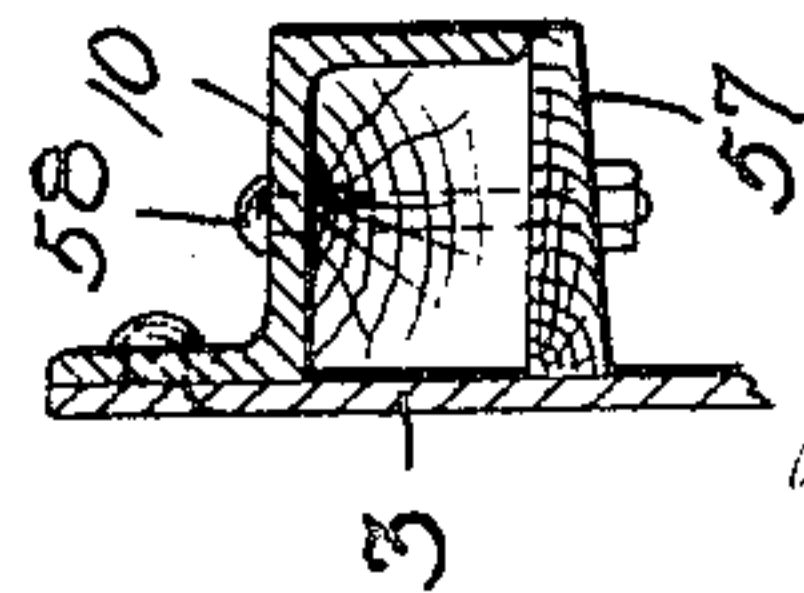


FIG. 7



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No. 820,974.

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6 SHEETS—SHEET 2.

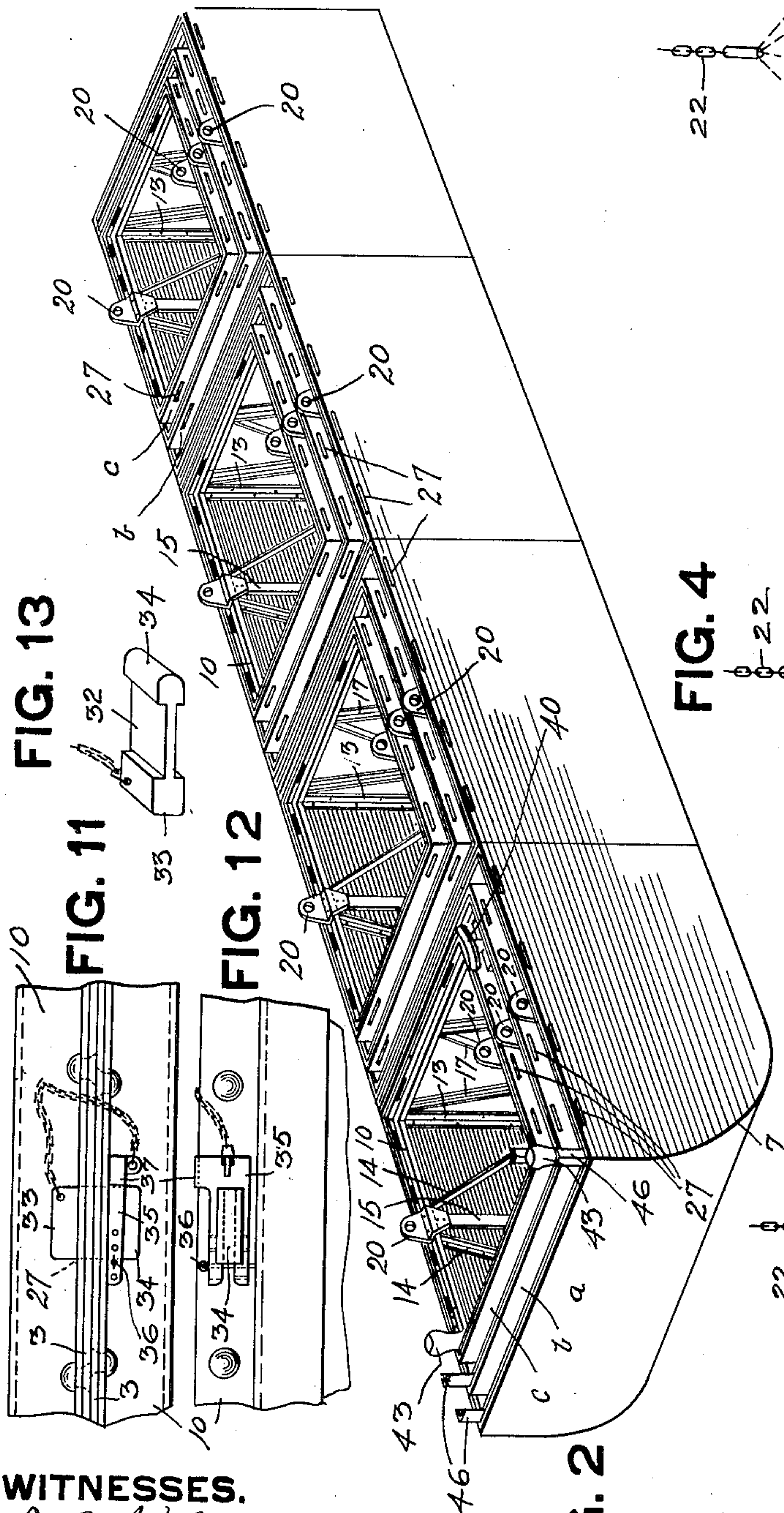


FIG. 2

FIG. 13

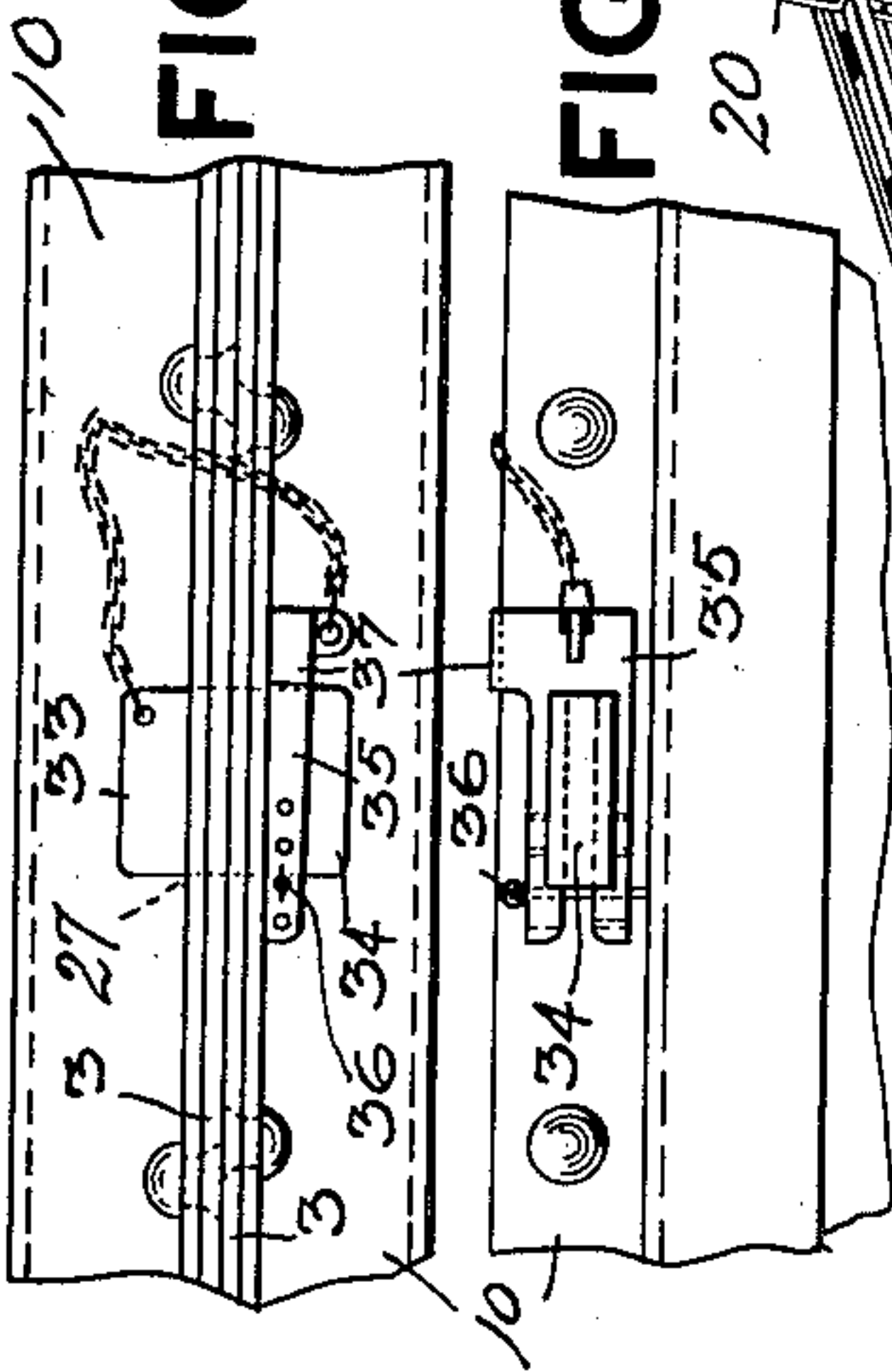


FIG. 11

FIG. 12

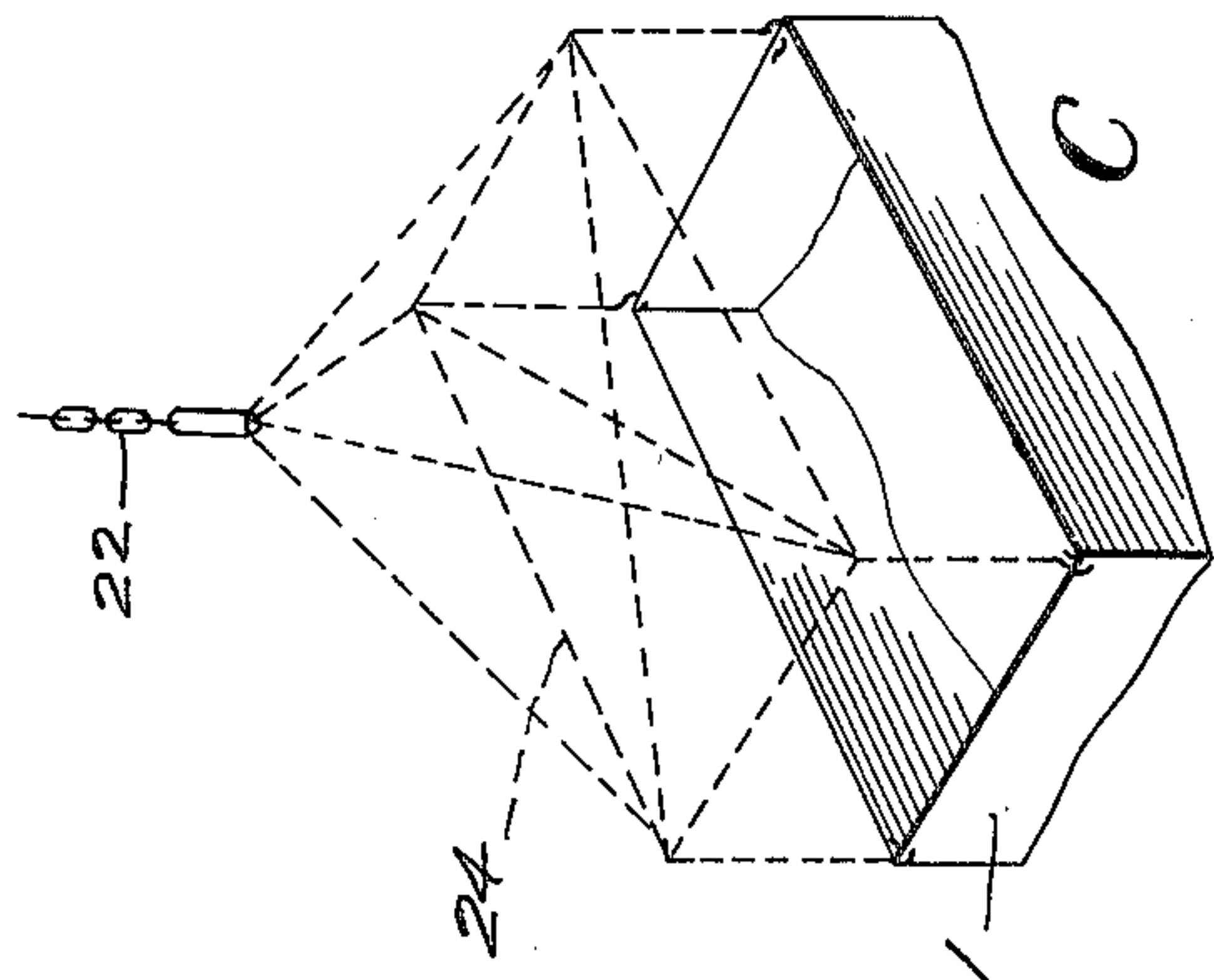
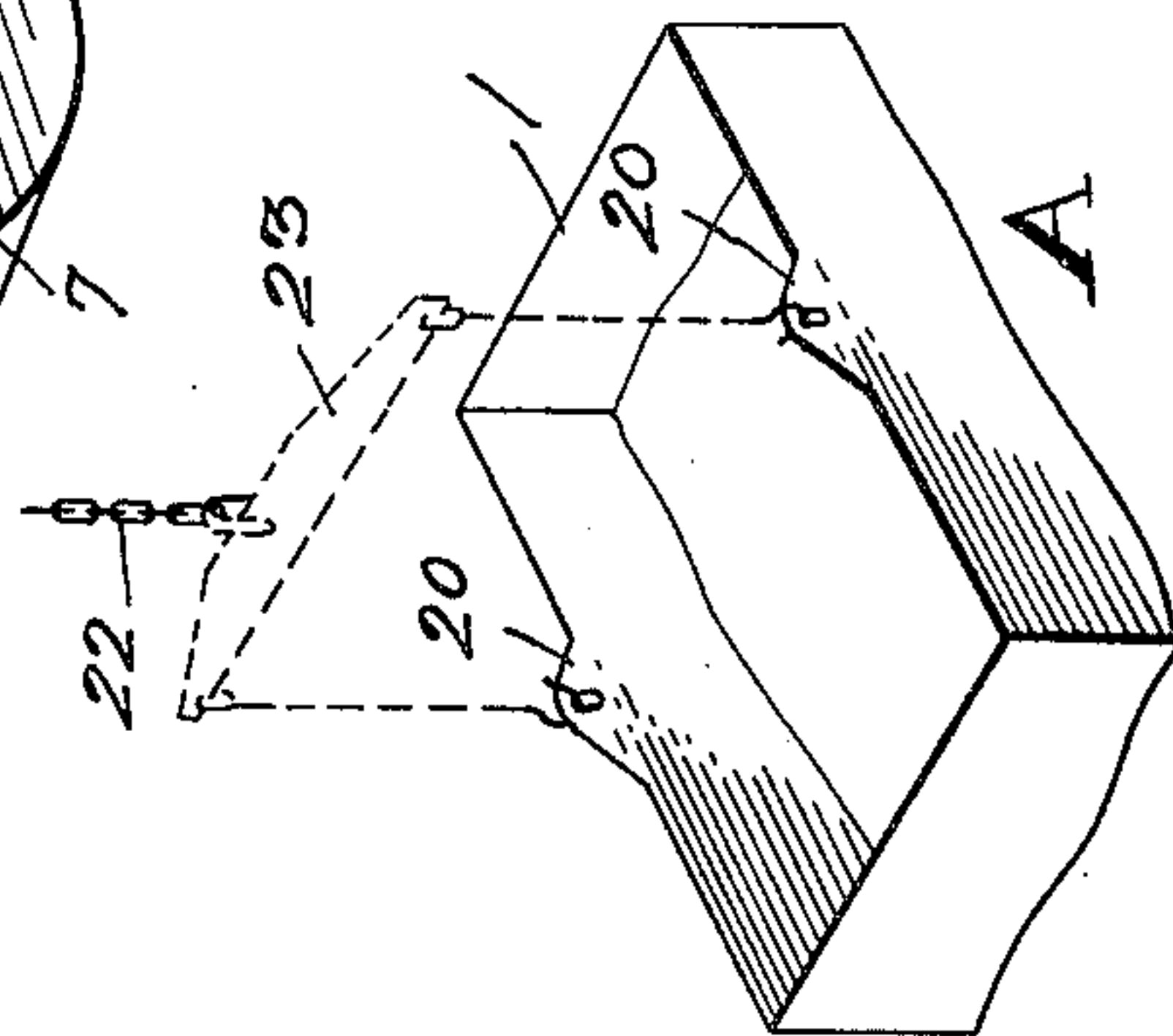
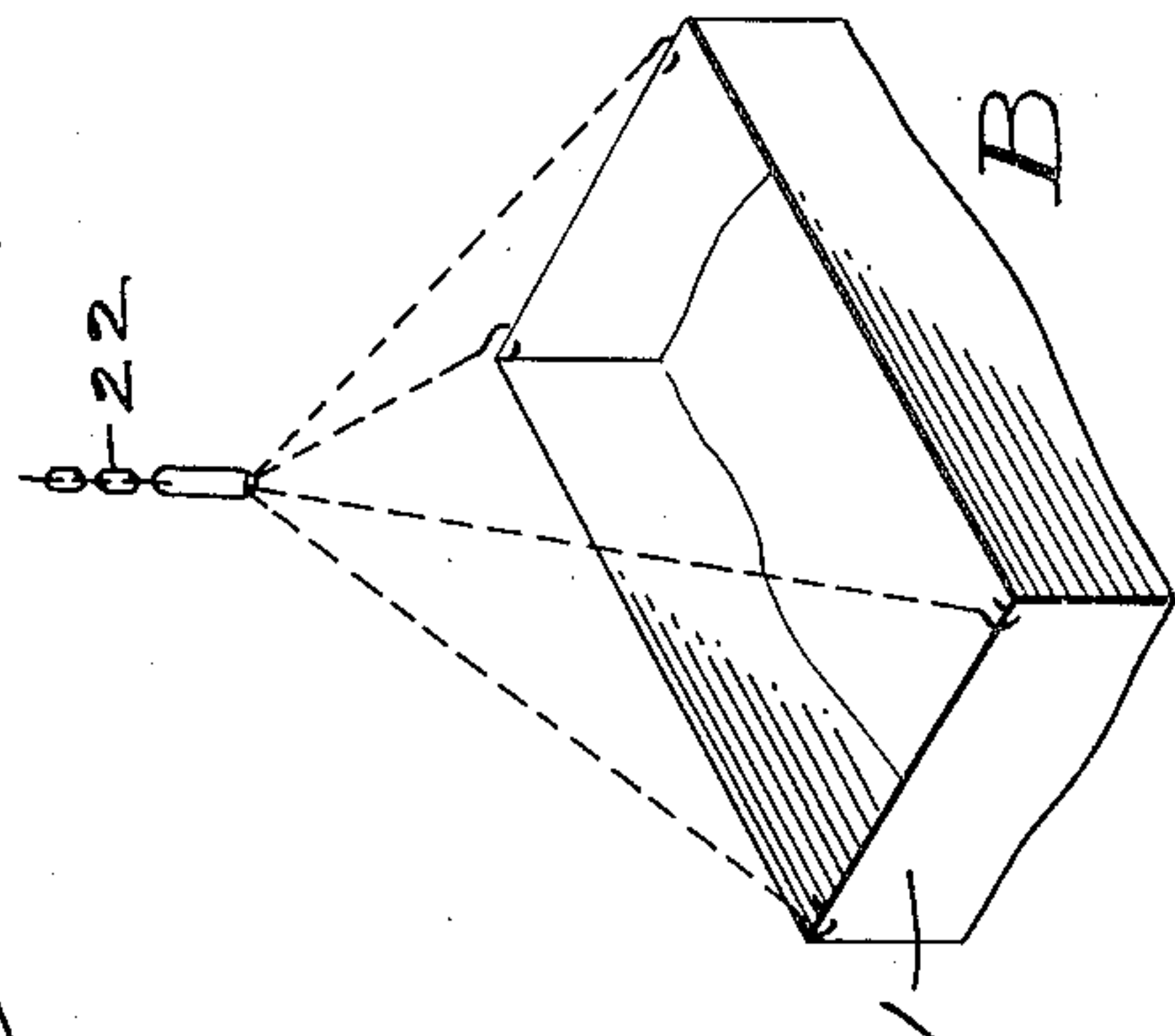


FIG. 4



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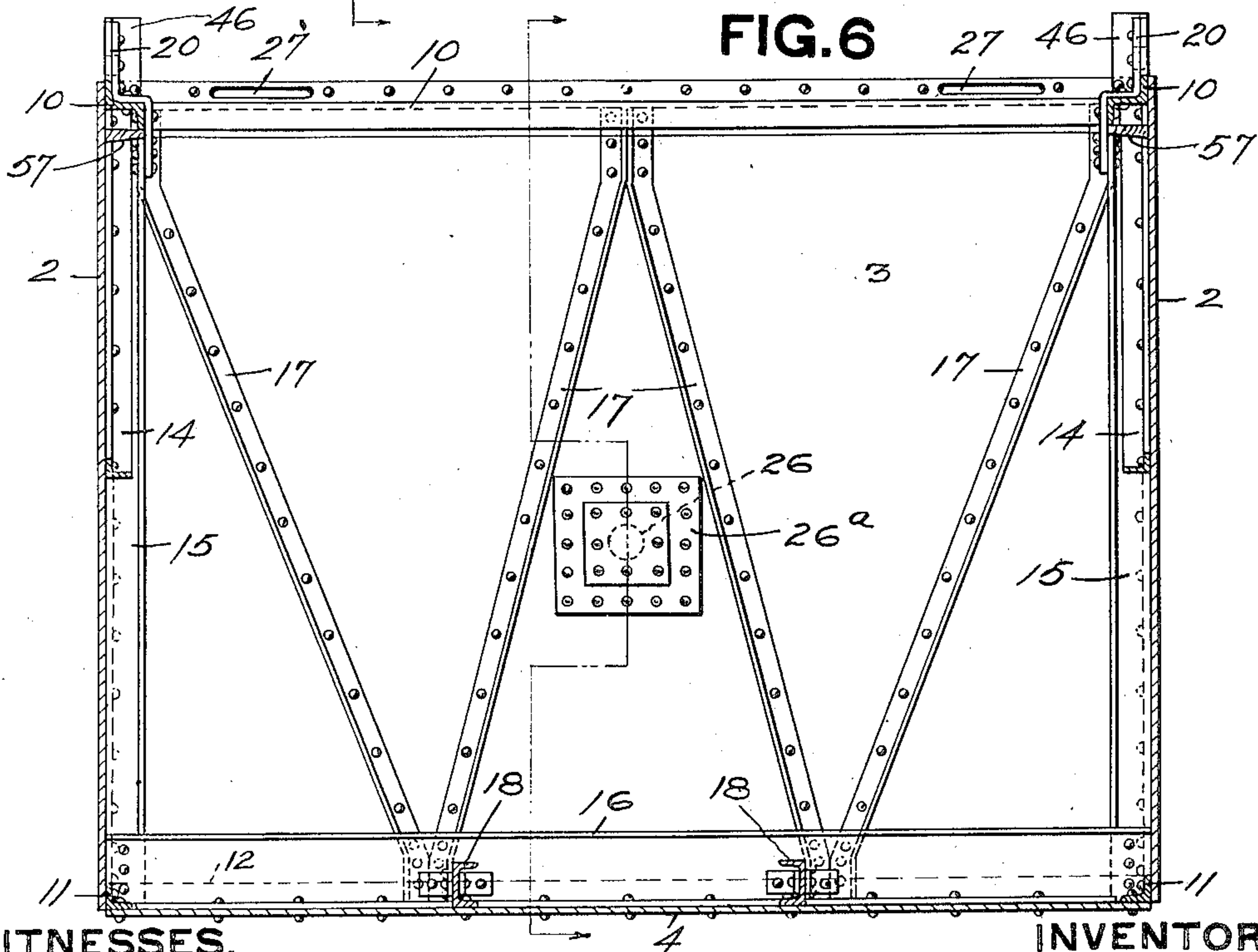
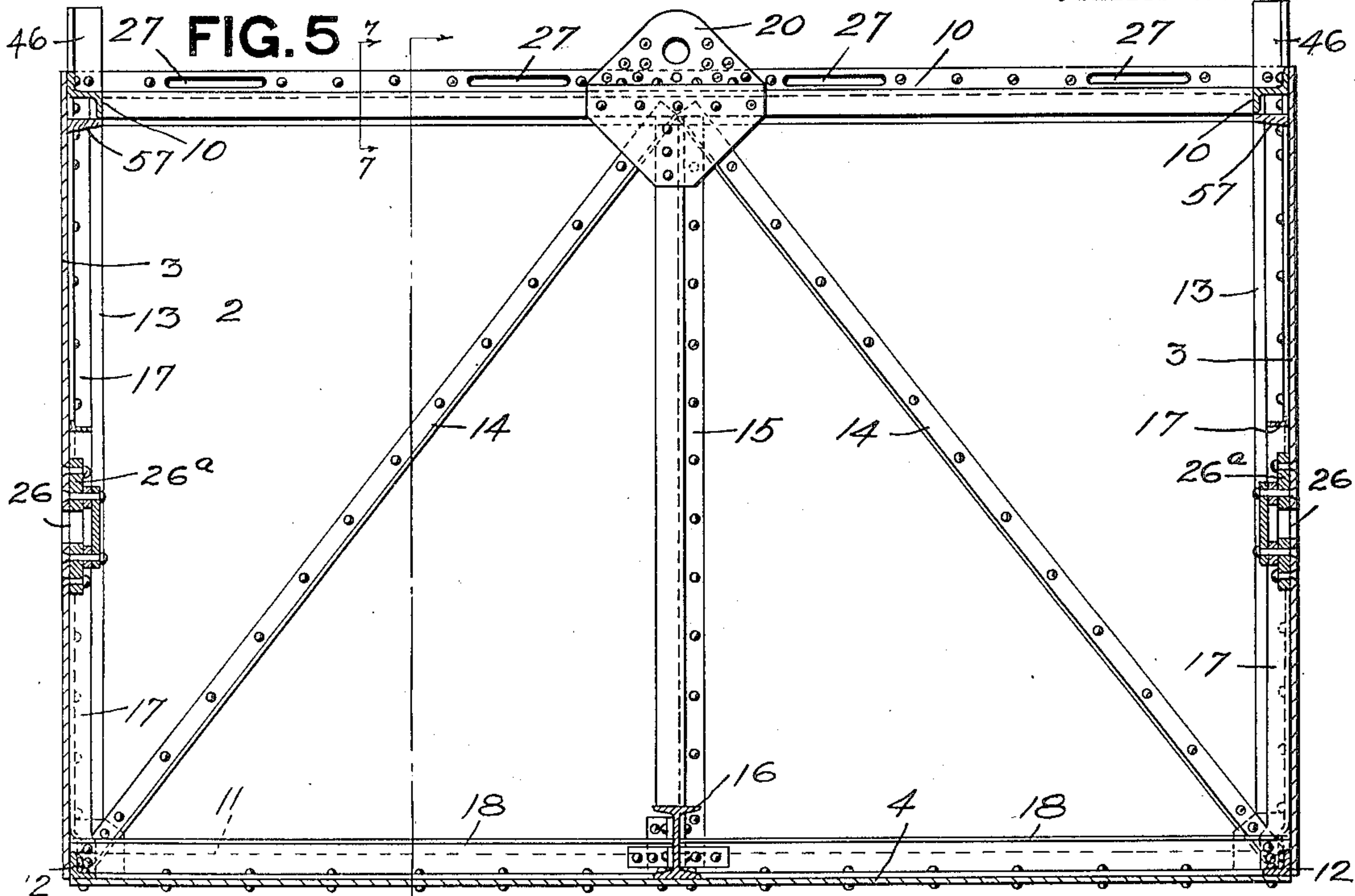
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6 SHEETS—SHEET 3.



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6 SHEETS—SHEET 4.

FIG. 15

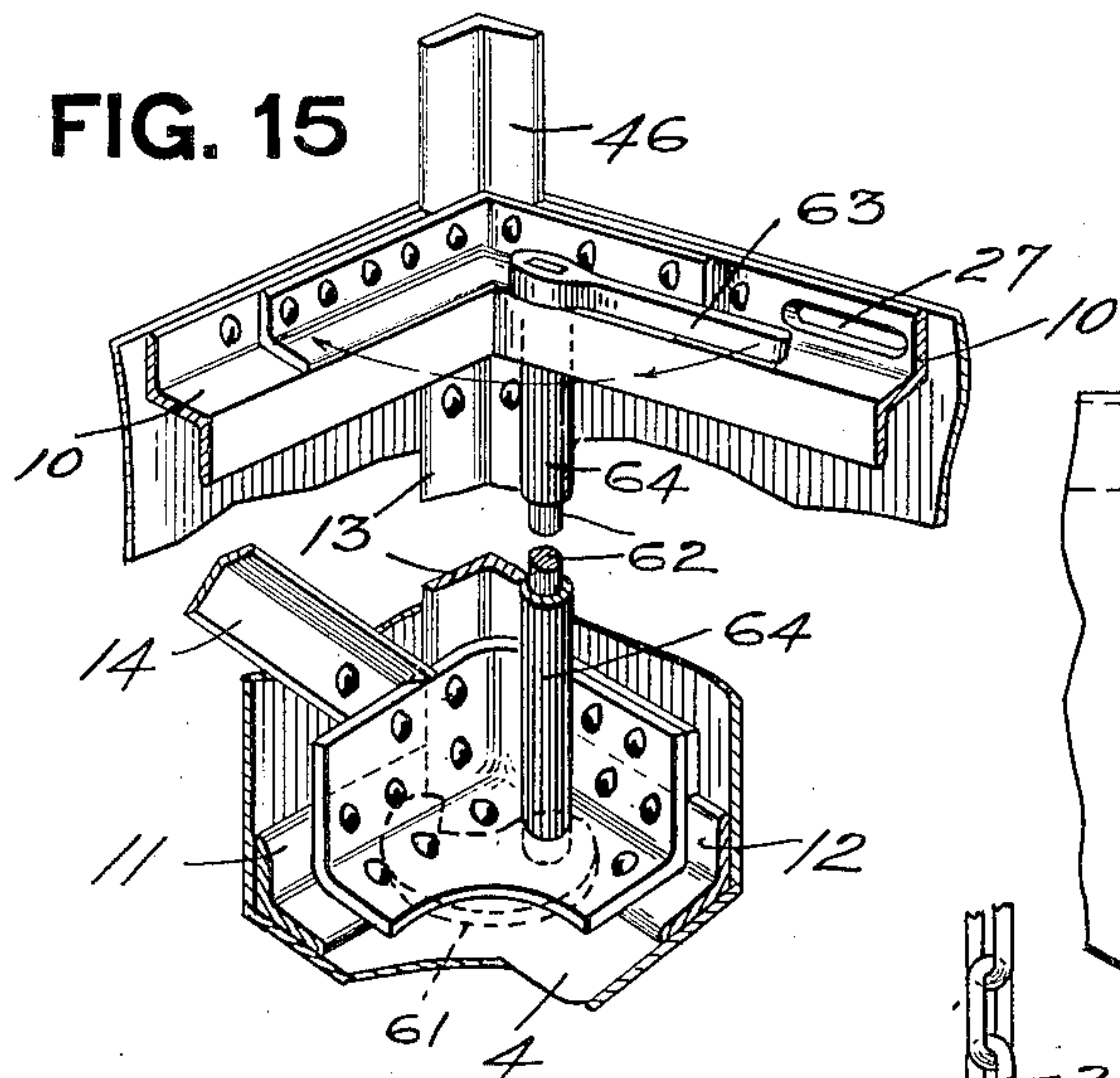


FIG. 16

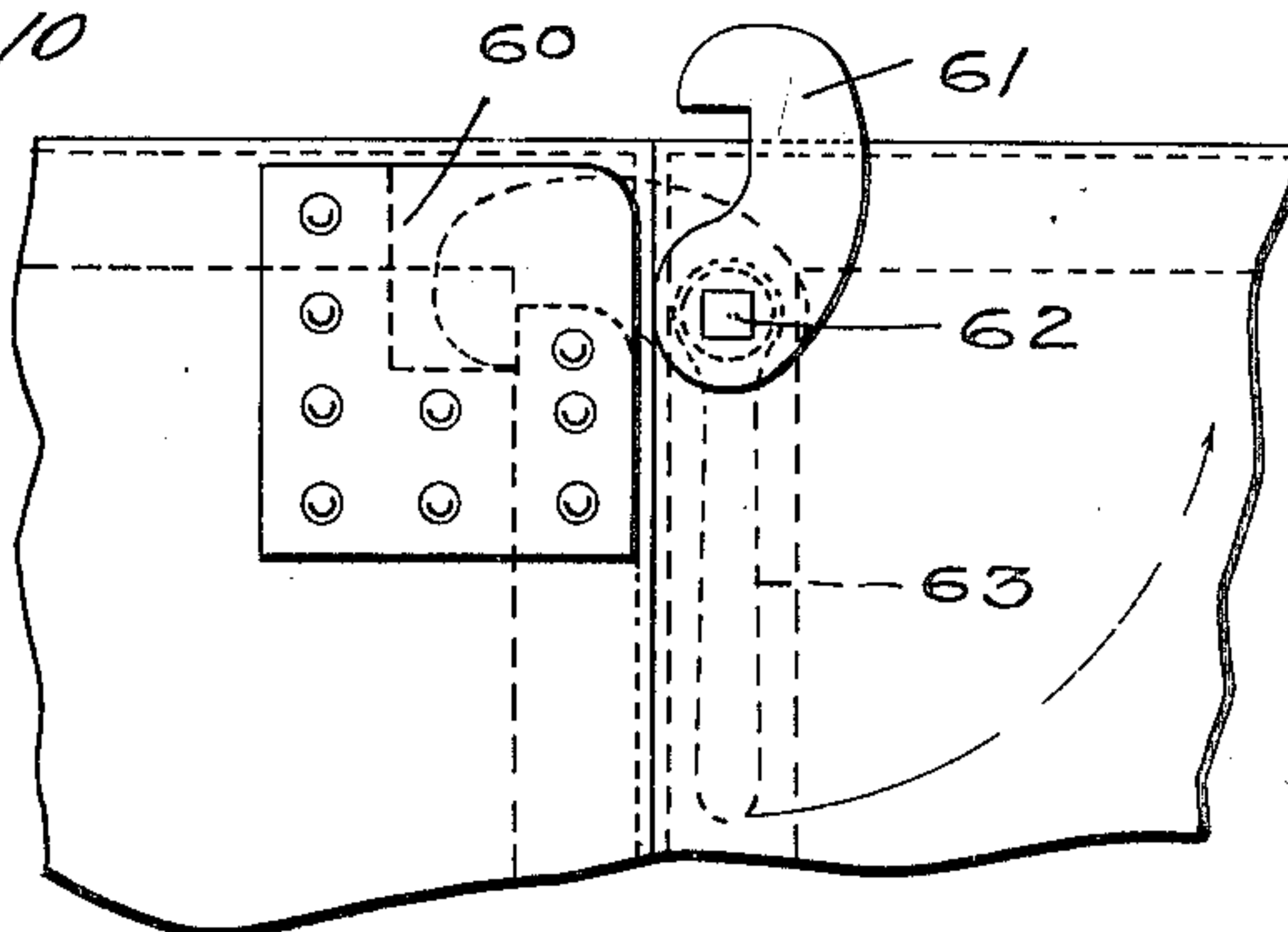
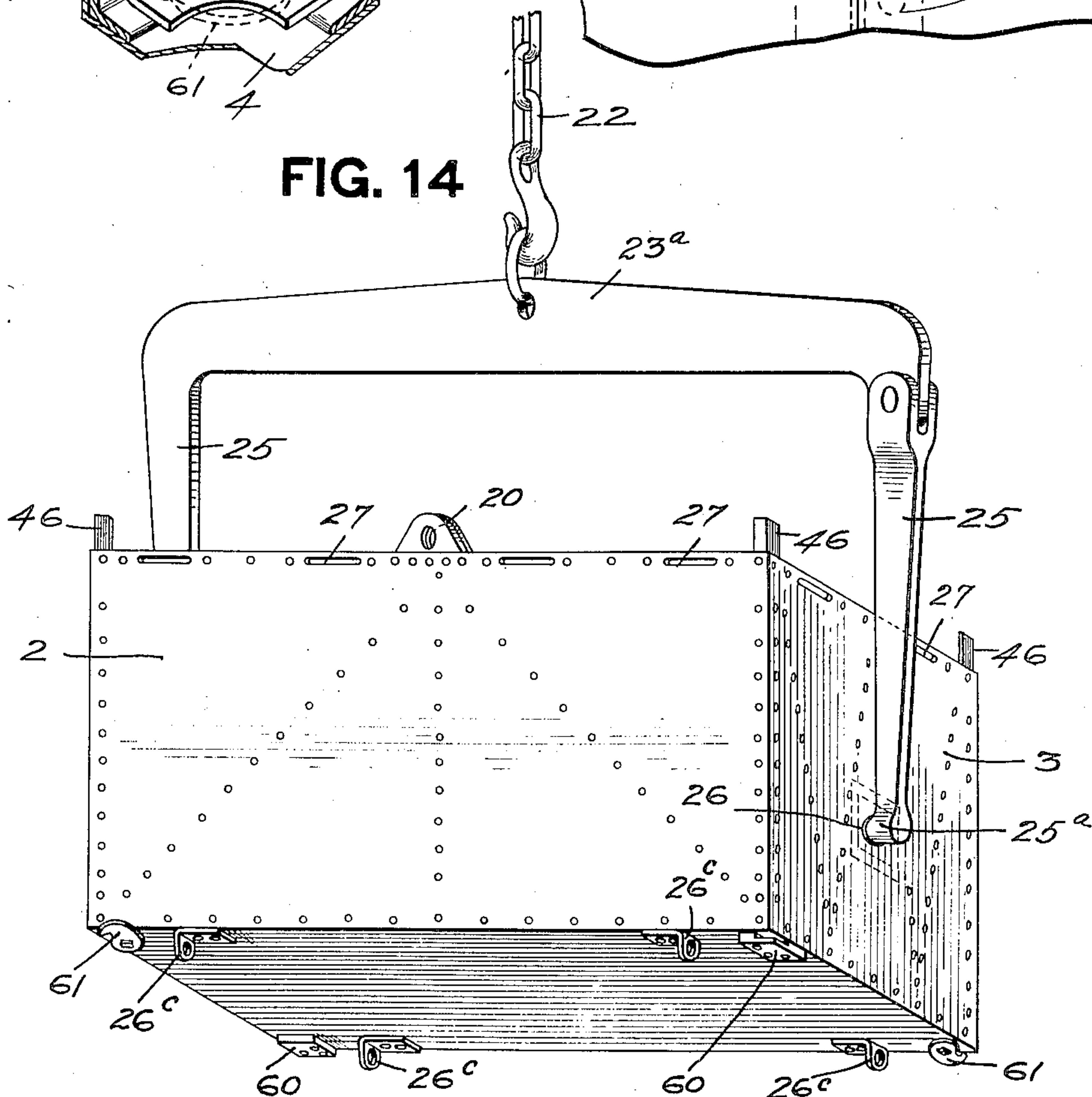


FIG. 14



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6 SHEETS—SHEET 5.

FIG. 17

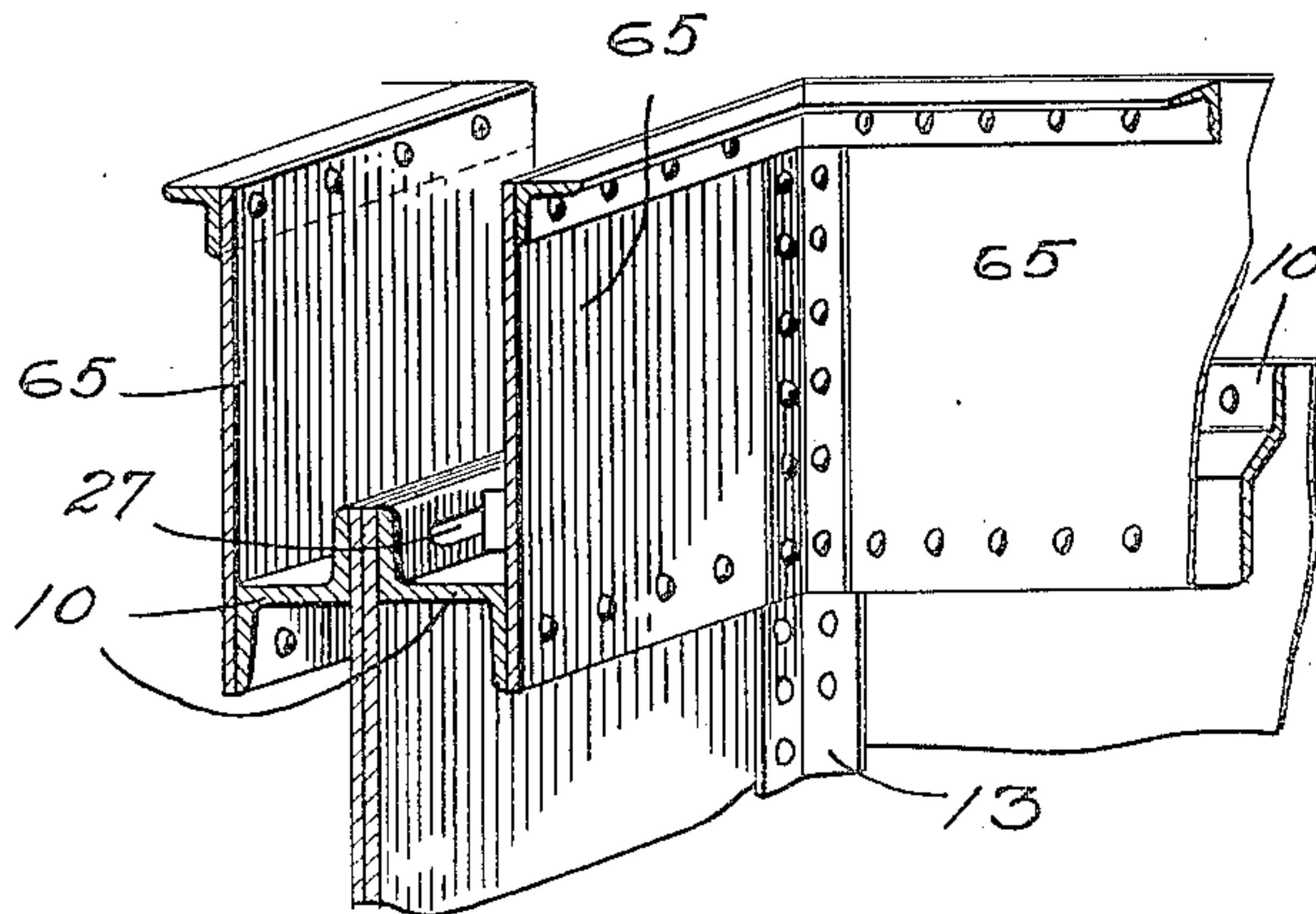


FIG. 20

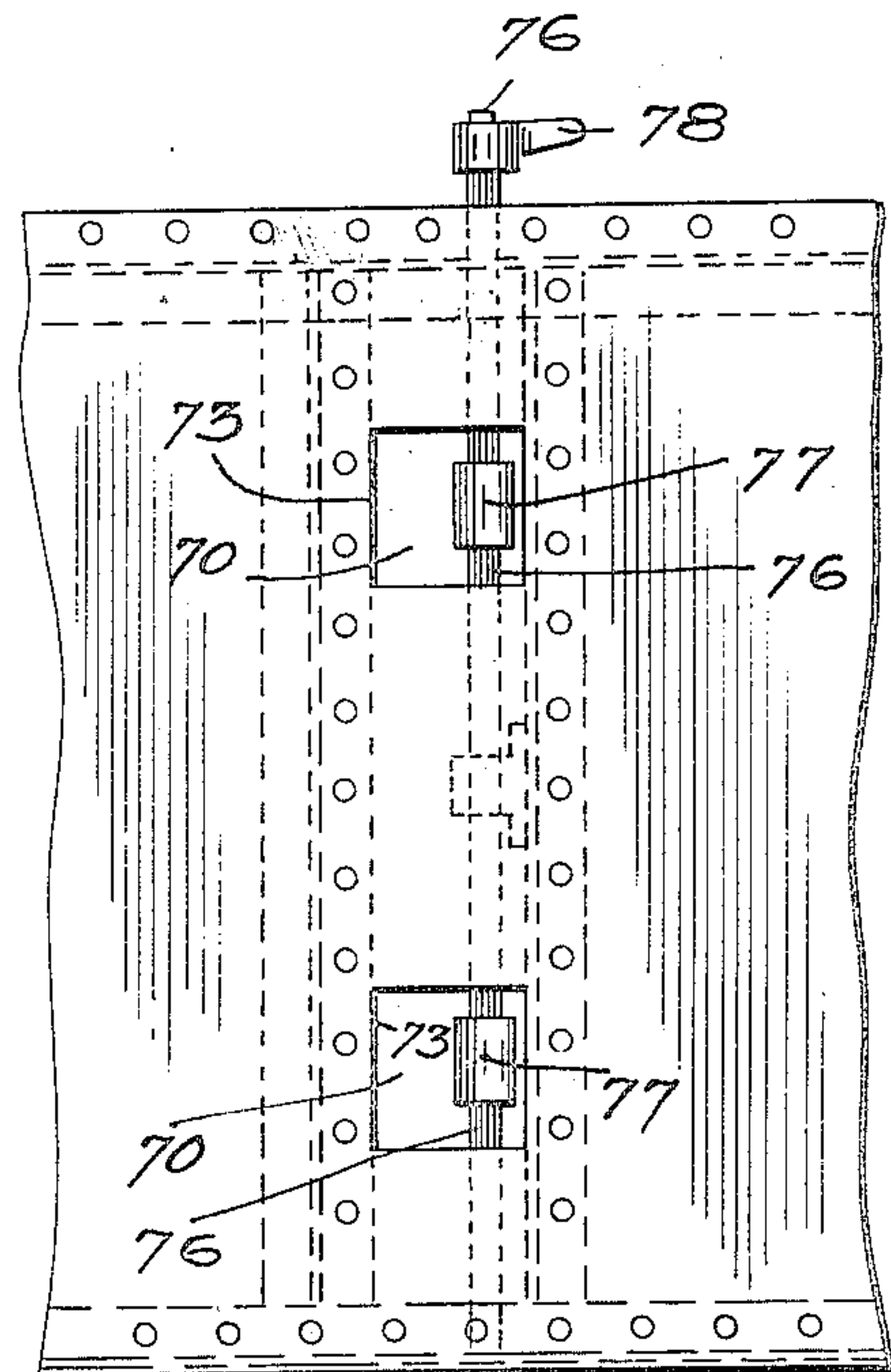
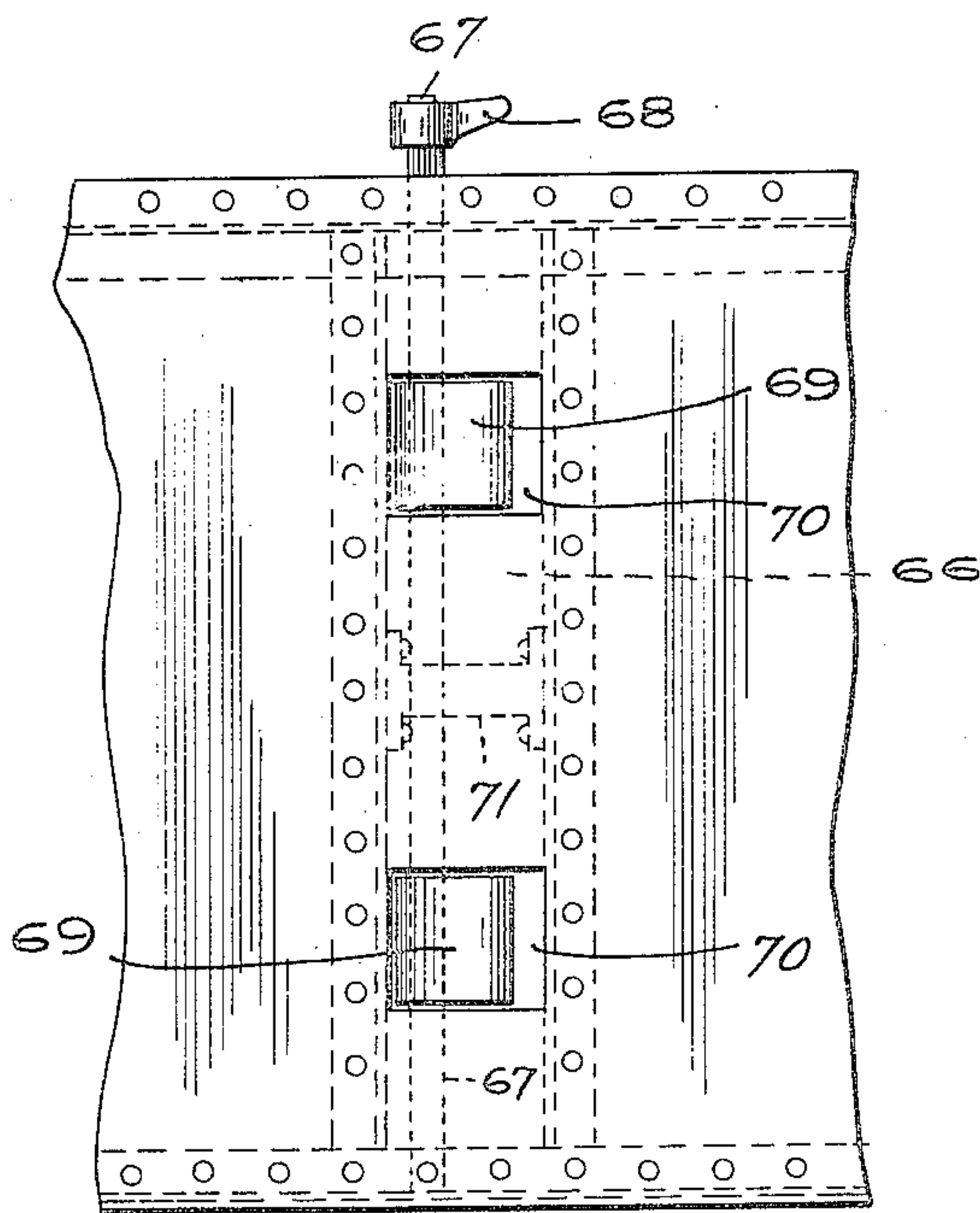
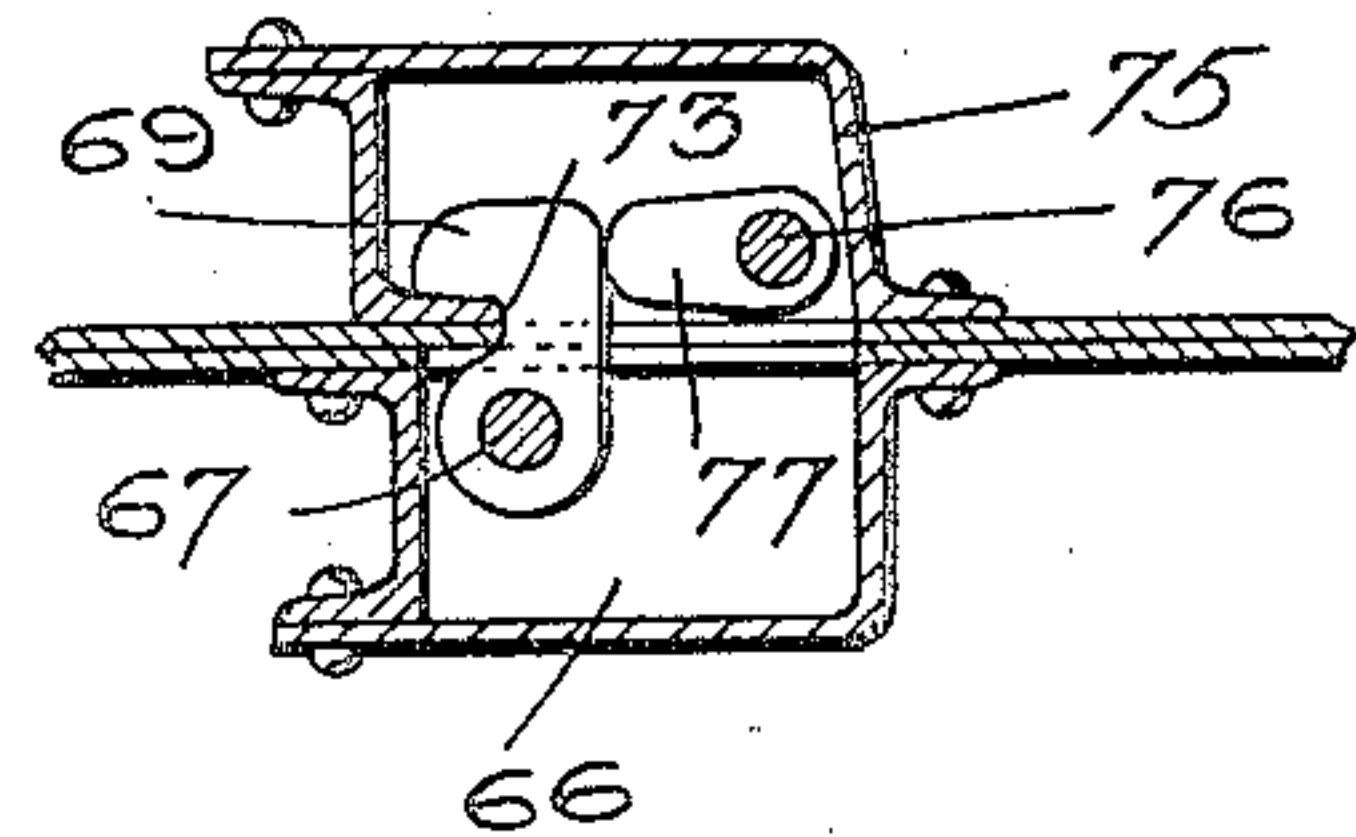


FIG. 18

FIG. 19

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6 SHEETS—SHEET 6.

FIG. 26

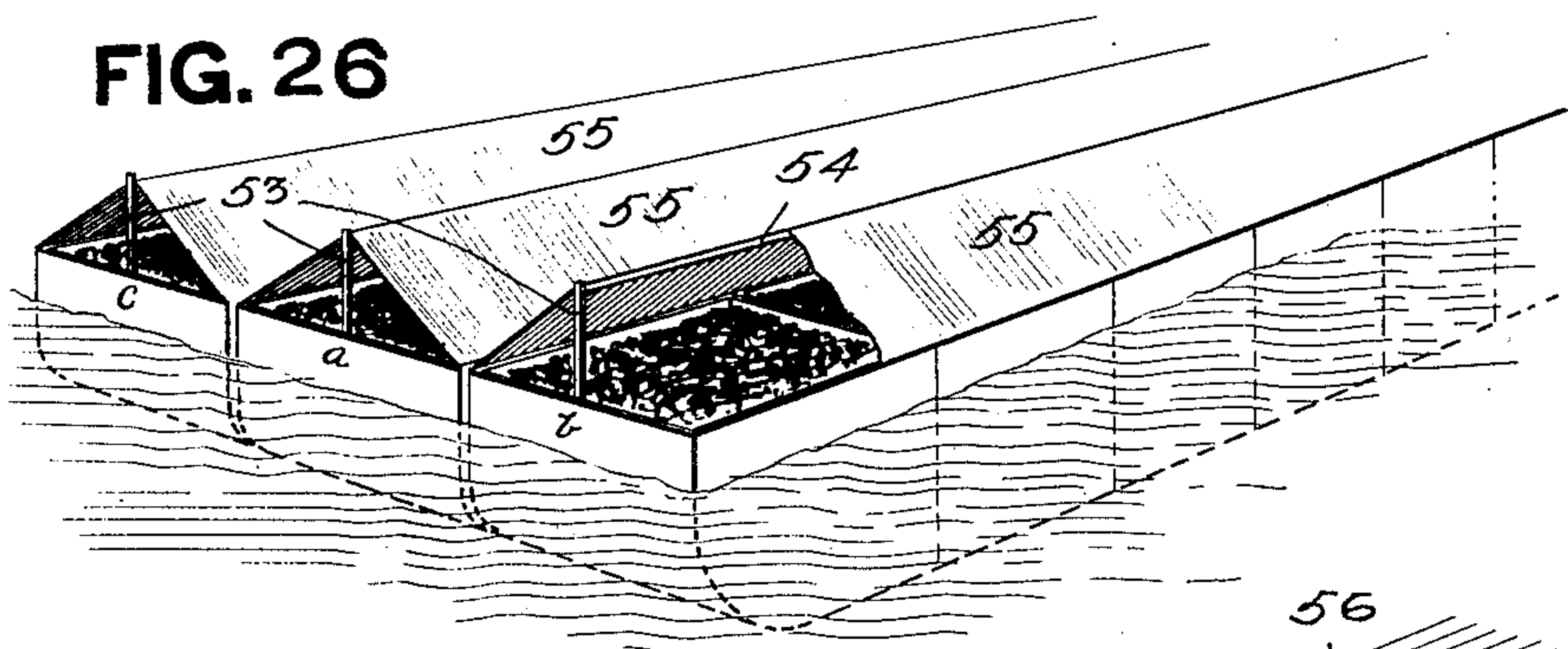


FIG. 27

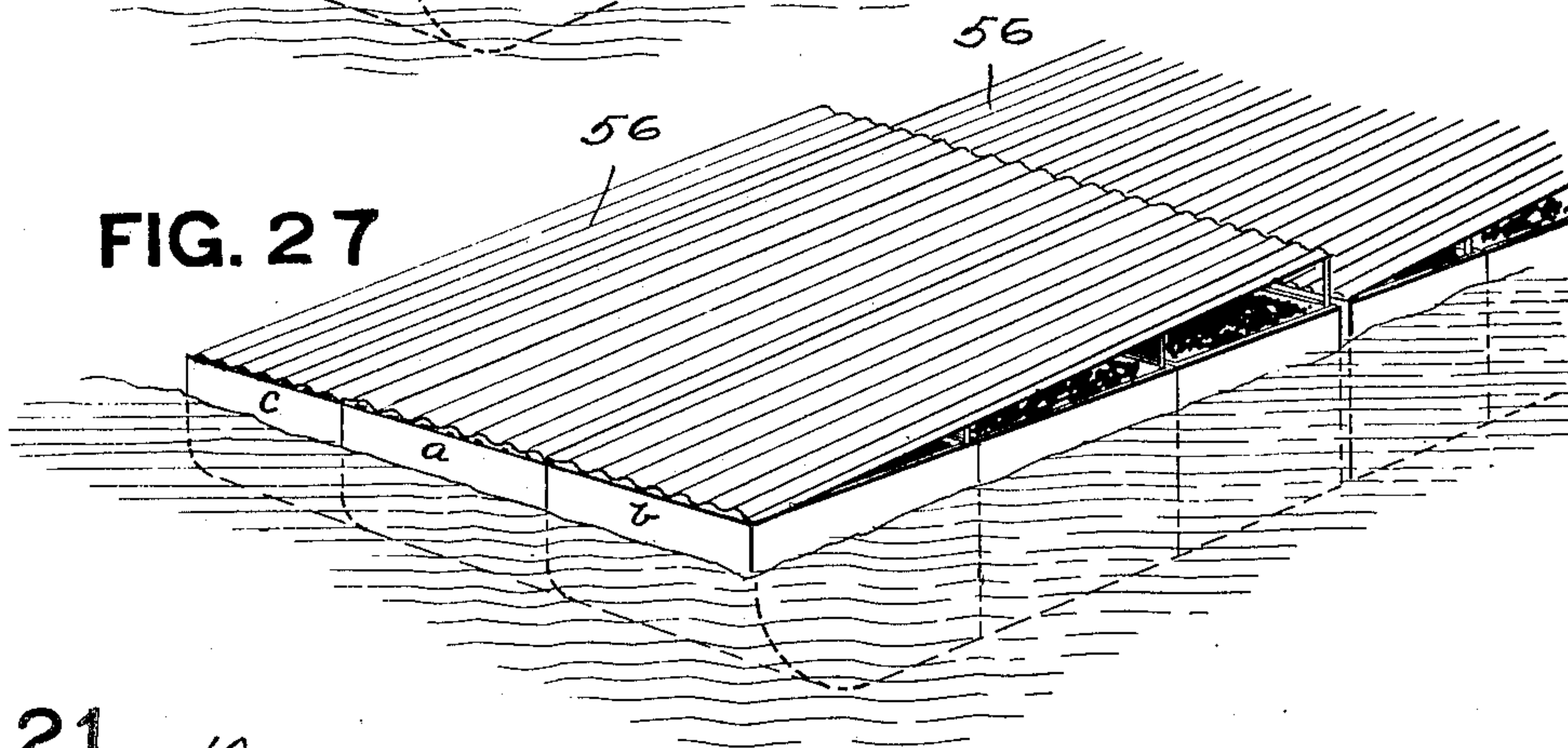


FIG. 21

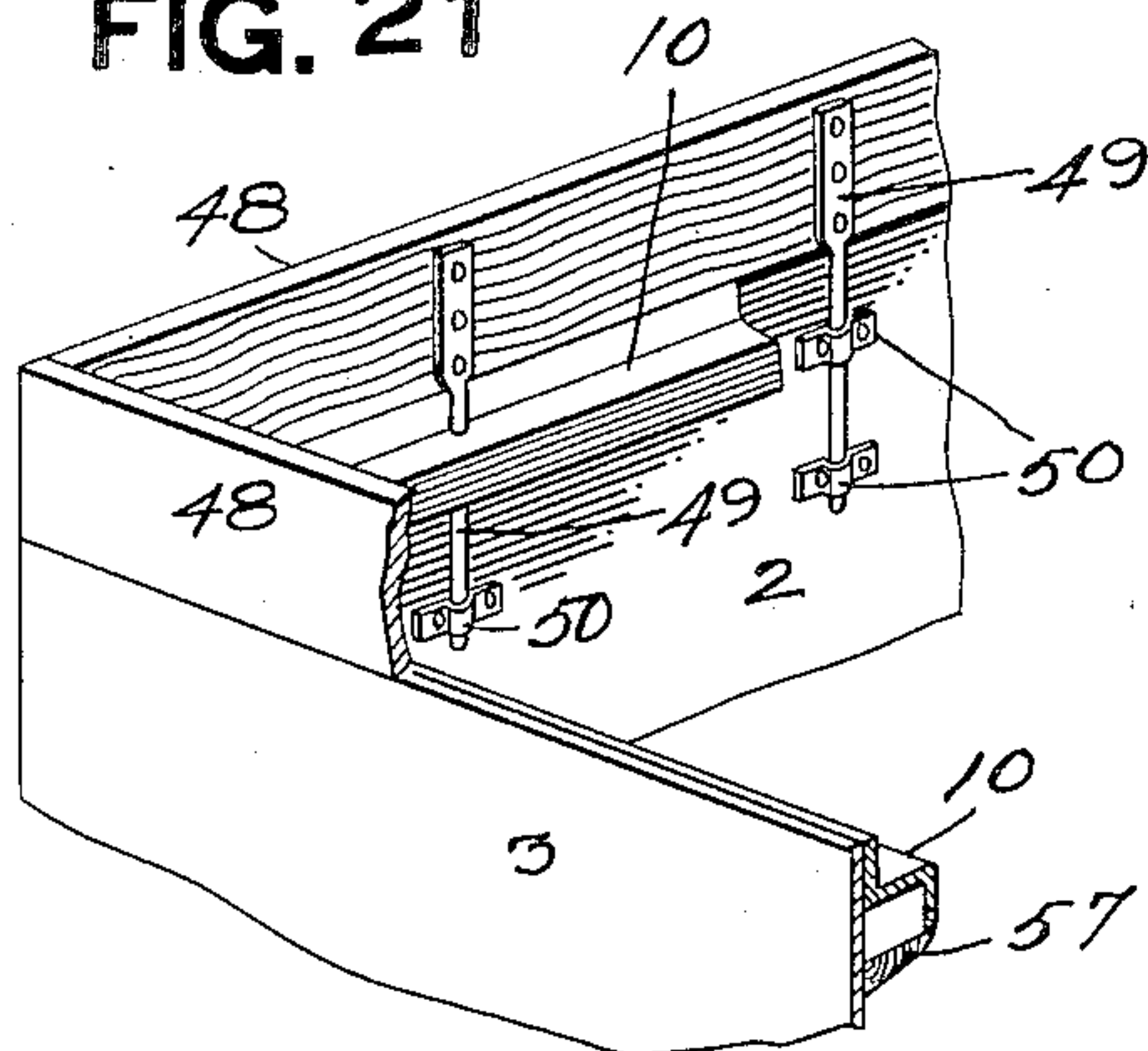


FIG. 22

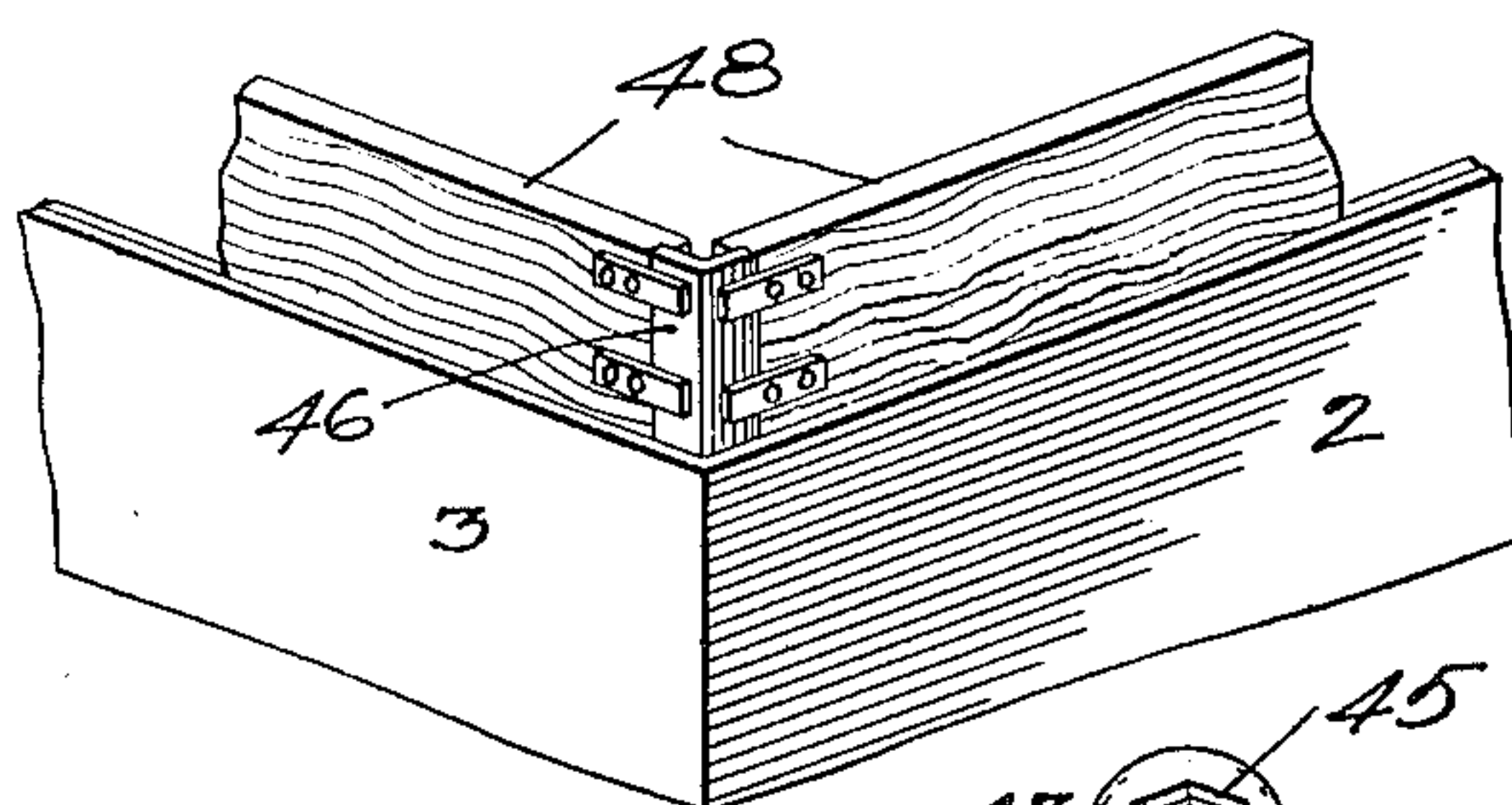


FIG. 23

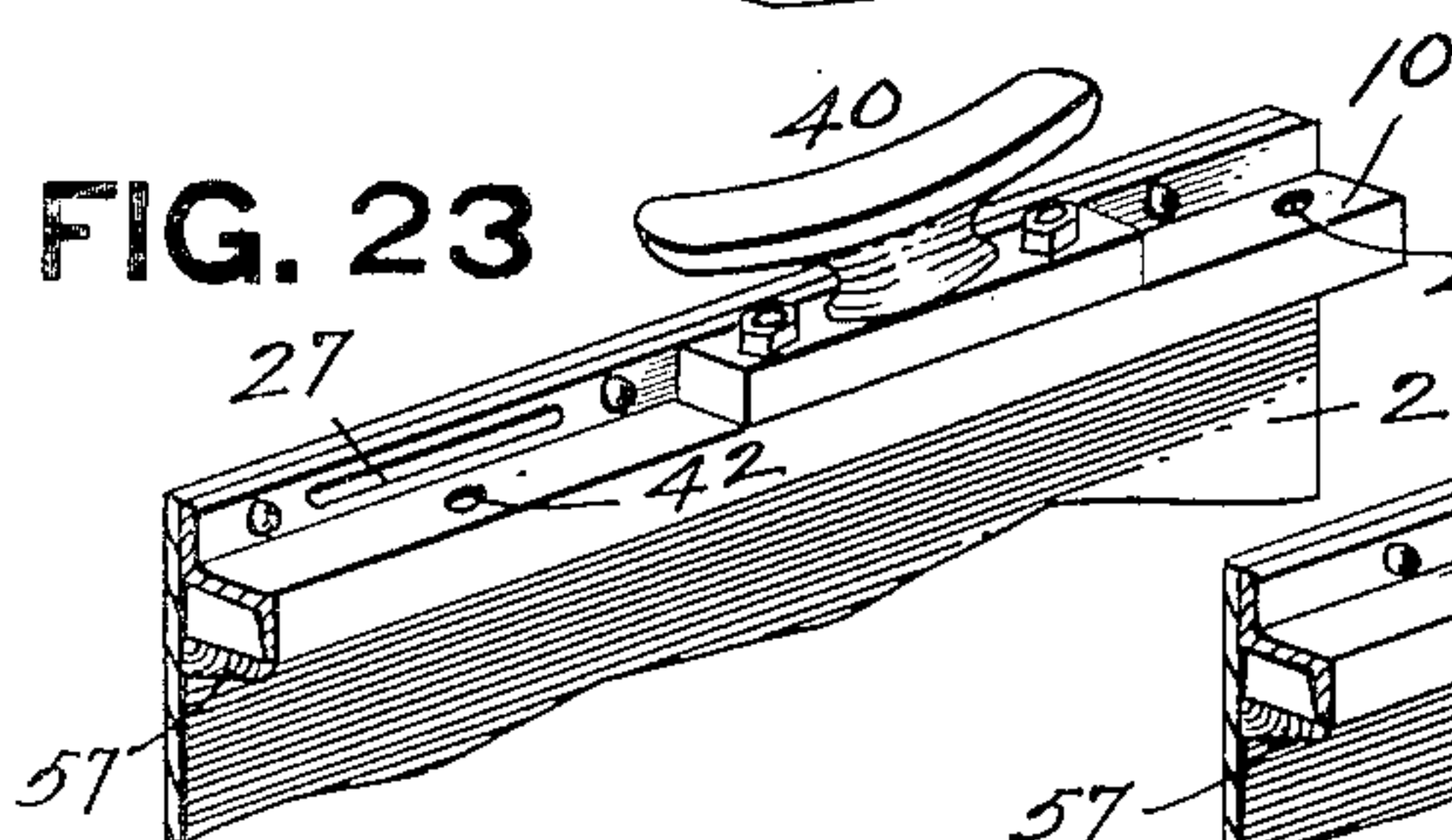
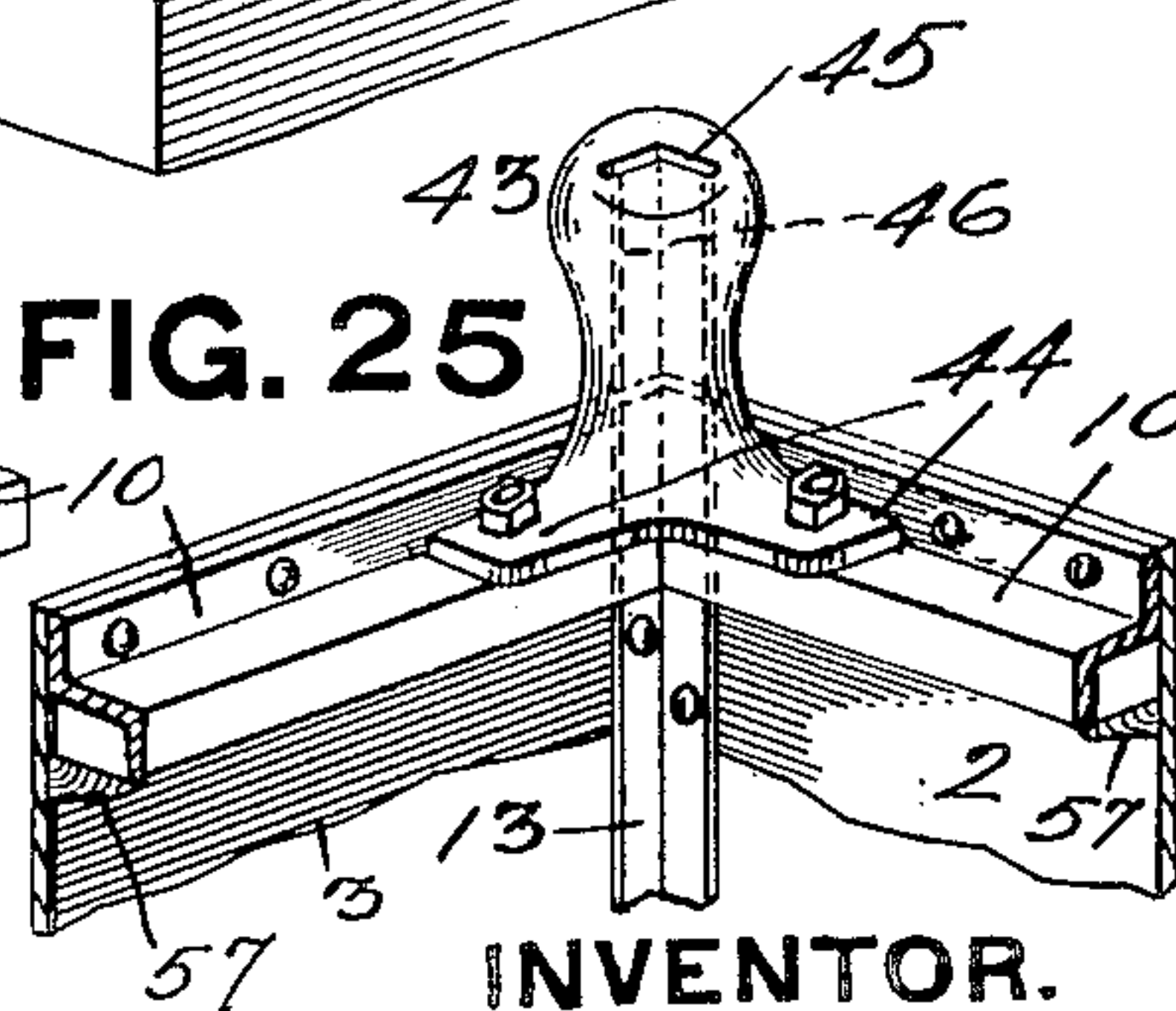


FIG. 25



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UNITED STATES PATENT OFFICE.

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STEEL BARGE.

No. 820,974.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed January 6, 1905. Serial No. 239,885.

To all whom it may concern:

Be it known that I, MEIER G. HILPERT, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Steel Barges; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to boats or barges, and more especially to barges for transporting coal, coke, sand, grain, or other commodities which are usually handled in bulk.

The object of my invention is to provide a construction of barge or boat by means of which the coal or other material may be floated, loaded rapidly, and by apparatus of least cost, by means of which the coal or other material may be unloaded by dumping, so as to dispense with the elaborate unloading appliances at present required and enabling the barges to be unloaded at very much less cost and in less time than with existing barges; which adapts itself to a cheap steel or other metal construction; which adapts itself to transportation by land as well as by water; which is so constructed that the empty barge may be collapsed, thus occupying only a fractional part of its original cubical contents and greatly facilitating and cheapening the return of the empty barge either by land or water; which adapts itself to a perfect interchangeability of parts, and hence makes it possible to utilize all useful parts; which in the case of wrecks makes it possible to salvage a much greater portion of the cargo than is possible with present barge constructions and practically all of the barge itself, and by which in case of total or partial destruction the scrap value of the barge will be large.

The transportation of coal and similar material by water, and especially on rivers and lakes, is at present done by means of large open barges in which the coal is loaded and transported to the point of destination. These barges until recently have been built of wood; but by reason of the increasing scarcity of lumber the cost of such barges has become very great, and as a consequence many are of a very light and flimsy construction, so that they are not worth returning to the point of loading. The increasing cost of lumber has led in recent years to the construction of steel barges; but the latter have in all cases been built as close as possible on the lines of the old wooden barge, being of very large dimen-

sions both as to breadth and length and in all essentials being like their wooden predecessors.

The present type of barge possesses many disadvantages, among which are the slowness and cost of unloading the same, it requiring either special unloading-cranes with dredging-buckets or other appliances or else slow and expensive hand-unloading. Also the return of these empty barges to the point of loading is slow and expensive, due to the fact that the cubical contents and wetted surface of the barge is practically the same when empty as when loaded, also to the great loss both of cargo and barge itself in case of total or partial wrecks, it being possible to salvage only a small percentage of the cargo and generally no portion of the barge itself, this being due to the fact that such barges, and especially the wooden ones, break apart and spill the cargo into the mud at the bottom of the river, thus making it impossible to recover a large portion of the cargo, and the very large size of the barges themselves allows the current to easily erode the cargo and makes it practically impossible to raise the barges even though they are not broken apart.

The object of my invention is to provide a barge construction in which all of the foregoing difficulties are avoided and the several advantages heretofore pointed out are secured.

To this end the invention consists, generally stated, in constructing the barge of a number of separate sections or compartments, each of which preferably is a self-contained unit both as to stability and flotation, and which sections are constructed to be attached one to another, so as to build up the complete barge or fleet, which are constructed of sizes so that when empty a plurality thereof can be nested together, thus reducing the cubical contents and wetted surface and both expediting and rendering more cheap the return of the empty barges, which are of such a size that they can be lifted by suitable hoisting apparatus and unloaded by merely dumping the same, thus greatly expediting and cheapening the unloading thereof, which are of such a size that they can be transported by land as well as by water either on ordinary flat-cars, by telpherage system, or as desired, and which possess many other special features of construction and advantages, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a barge embodying my invention. Fig. 2 is a similar view showing the same in a collapsed condition. Fig. 3 is an elevation of the collapsed sections, showing the adaptability thereof for transportation by land. Fig. 4 illustrates three different methods of lifting the barge-sections. Fig. 5 is a longitudinal vertical section of a barge-section, showing the details of construction. Fig. 6 is a transverse vertical section thereof. Fig. 7 is a section on the line 7 7, Fig. 5. Fig. 8 is a plan view illustrating one means for connecting the sections to each other at their tops. Fig. 9 is a side view of the same. Fig. 10 is a cross-section thereof. Figs. 11, 12, and 13 are views showing another form of connecting means at the tops of the sections. Fig. 14 is a perspective view illustrating another manner of lifting the sections and also the connecting means at the bottom of the sections. Fig. 15 is a perspective view of one corner of a section, showing the bottom connecting means. Fig. 16 is a bottom view of the same. Fig. 17 is a perspective sectional detail illustrating connecting means for the sections intermediate their tops and bottoms. Fig. 18 is an elevation of a portion of a section, showing connecting means on the sides of the sections. Fig. 19 is a similar view of the cooperating connecting means. Fig. 20 is a horizontal sectional view illustrating this connecting means. Fig. 21 and 22 are perspective views illustrating the manner of attaching the splash-boards. Fig. 23 is a perspective view showing one of the cavels. Figs. 24 and 25 are perspective views of the check-posts, and Figs. 26 and 27 are perspective views illustrating the application of a roof or covering to the barge.

The essential feature of my invention consists in building up the barge of a number of separate sections 1, each of which is, or is not, as desired, a unit both as to stability and flotation either when loaded or unloaded. These sections are, in effect, bins or compartments and comprise the sides 2, ends 3, and bottom 4, together with suitable connecting means. Preferably they will be open at the top. I prefer to make these sections rectangular in plan, as thereby they can be more compactly assembled, but wish it understood that the invention is not limited to this shape, as they may be of any desired shape. These sections will preferably be of a depth less than their dimension in either length or width, so that they will be perfectly stable either when loaded or unloaded. The size preferably will be such as to adapt them most conveniently for land as well as for water transportation, and preferably so that they can be loaded on ordinary flat-cars, as shown in Fig. 3, or be conveyed by a telpherage system, or other adaptable method. These several sections will be constructed

preferably in groups, the individuals of which will be of different sizes. The number of individuals in each group may vary, being either two or more. In the drawings I have illustrated an arrangement wherein there are three individuals in each group, these individuals being marked *a*, *b*, and *c*, respectively. These sections will preferably all be of the same depth; but in length and width the section *a* will be the largest, the section *c* the smallest, and the section *b* intermediate the two, so that the several sections when empty can be nested or placed one within the other, as shown in Figs. 2 and 3, so as to expedite and cheapen the return of the barge. Obviously the group may consist of only two sections *a* and *b* or of any number of sections within reasonable limits greater than three.

Preferably the sections which are to form the ends of the barge, both front and rear, will be provided with a rake, as indicated at 7, Figs. 1 and 2. This rake may be of any preferred form, either beveled or curved from the bottom entirely to the top or only partially to the top, as shown in Figs. 1 and 2. These several sections will preferably be constructed of sufficient strength to withstand the lifting or handling thereof when loaded. When they float in the water the pressure of the material inside is largely counterbalanced by the pressure of the water on the outside, and hence for mere flotation a very simple and light construction might be used. When, however, they are adapted for land transportation and for lifting out of the water in order to dump the contents the construction must be considerably stronger, so as to withstand the stresses of the load contained therein. The details of construction for this purpose may vary within wide limits. In Figs. 5, 6, and 7 I have illustrated the details of one form of construction, but wish it understood that this is largely illustrative and not to be exhaustive of the different manners in which the sections may be built up.

As shown in Figs. 5 to 7, each section is provided at its upper edges with a suitable flanged rail or gunwale 10, which preferably is a Z-bar, as shown, although it may be of any other shape, whether standard or special, and either rolled, cast, or pressed. I prefer, however, to build up the sections of standard commercial shapes, as these can be easily and cheaply obtained on the market. These top rails, in effect, form the gunwales of the section and give strength where the stresses are probably the greatest. A Z-bar is especially adapted for this purpose, as it will effectively resist horizontal as well as vertical stresses. The side and bottom plates are connected by angle-sections 11, the end and bottom plates by similar angle sections 12, and the side and end plates by the corner-connecting angles 13. Riveted to each of the side plates are a pair of diagonal mem-

bers, preferably angles 14, which extend either from the lower corners thereof up to the middle, from the upper corners thereof down to the middle, depending upon whether the section is to be lifted at its middle, as shown, or at the corners, or other good and economical girder construction. Also riveted to the side plates centrally thereof are the vertical flanged members 15, preferably Z-bars, running from the top to the bottom and connected at their lower ends to the cross-beam 16, which preferably will be an I-beam, as shown. The end plates 3 are stiffened by a number of diagonal braces 17, to be economically arranged, and the floor is strengthened by longitudinal supports 18, which may be either angles, but preferably channels, and which extend from the ends to the cross-girder 16. The diagonal braces 14 on the side plates and the bottom-connecting angle 11 and vertical Z-bar 15 form, in effect, a truss, and this is strengthened or stiffened by the side plates 2, which are riveted thereto. So, too, the end plates 3, with their stiffening members 17, are, in effect, plate-girders. As a consequence the load on the bottom is transferred, by means of the floor-supports 18, out to the plate-girder ends, and as the latter at the corners are connected to the trussed sides all stresses are well taken care of. These sections may be lifted in any suitable way. Fig. 4 illustrates three different methods of lifting same. At A the section is lifted by ears 20 on the top edges of the sides between their ends. These ears are directly above the cross-beam 16, and consequently the load will be transferred directly to these ears from said cross-beam and also from other portions of the floor through the plate-girder ends and trussed sides. At B and C, I have illustrated the lifting of these sections at their corners. When this occurs, the stiffening-angles 14 on the side plates will preferably run from the ends of the cross-beam 16 upwardly to the upper corners of the section. The lifting may be done by having crane-hooks or other device engaging either at the corners or with ears at the middle and connected directly to the lifting-chain 22, as shown at B. Preferably, however, these hooks will be connected to a balance-beam 23, as at A, which in turn is connected to the lifting-chain or will be attached to the corners of a spreading frame 24, as shown at C, so that the lifting stresses on the section will be vertical instead of converging inwardly, as at B, the latter having a tendency to collapse the section.

In Fig. 14 is illustrated another method of lifting the sections, this showing a balance-beam 23^a, provided with arms 25, having inwardly-projecting trunnions 25^a for engaging suitable sockets 26, ears, or the like secured to the ends or sides of the sections. This arrangement has an advantage in dumping

the contents of the section, as it is practically trunnioned at approximately its center of gravity. The sockets 26 may be formed in any suitable way, either by riveting pieces to the outside of the section, but preferably by perforating the side plates and securing to the inner faces thereof castings or other members 26^a, having openings for receiving the ends of the trunnions 25^a. These sockets may be placed either at the ends or sides of the sections, as desired. Preferably, also, the sections will be provided with some means whereby they can be engaged by a rod or hook so as to tip the same in dumping. In the drawings I have shown for this purpose ears 26^c, riveted to the bottoms of the sections. Obviously this detail may be varied within wide limits. If desired, a socket somewhat as shown at 26 may be employed for this purpose, said socket, as well as the ears illustrated, serving as a means for catching the end of a hook or the like, whereby the section can be tipped in order to dump the contents. The several sections comprising the barge will be connected to one another by any suitable means. In the drawings I have shown several forms of means for connecting the same; but obviously this is a detail which can be modified within very wide limits. The means shown are intended merely as illustrative and not to indicate all practical means for accomplishing this result. The connecting means shown in the drawings at the tops of the sections comprise the formation of slots 27 in the gunwales of the sections. These slots will be laid out on the principle of a vernier, so that sections of different sizes may be readily connected one to another. Passing through these slots will be suitable connecting bolts or keys which will receive shear and tension, but only slight bending strains, and which not only connect the sections at their tops, but also prevent individual vertical movement of the sections.

Figs. 8 to 10 show as a connecting means a bolt 29, having a nut 30 and being provided at one end with a long head or extension 31. This is for the purpose of permitting the quick removal of said coupling member whenever necessary, as in case of emergency. When one or more of the sections meet with an accident and begin to sink, they should be quickly detached from the remainder of the barge, so as to prevent drawing other sections down with them. The projecting head 31 of the bolt offers a means for quick disconnection, it merely being necessary to take a sledge, and by a sharp blow on said head the bolt can be broken, thus effecting the disconnection of said sections.

Figs. 11, 12, and 13 show a modification in which the coupling member 32 is provided on one end with a large head 33 and on the opposite end with a head 34, which is suffi-

ciently small to readily pass through the slots 27 in the gunwales. A tapering forked key or wedge 35 is driven between the gunwale and the head 34, thus serving as the locking means. To prevent accidental displacement of this key, a light cotter-pin or locking-key 36 is passed through openings in the legs of the forked key. This key is provided with a toe or extension 37, so that a sharp blow with a hammer or sledge will drive said key out of place and permit the disconnection of the barge-sections. While connecting means at the top alone will be sufficient in many cases, it is desirable to also connect the sections at their bottoms. This may also be accomplished in various ways. In the drawings only one has been illustrated, this being shown in Figs. 14, 15, and 16. Each section is provided at or near its bottom with a suitable stop, socket, ear, or the like 60, which is adapted to be engaged by a hook 61 or the like, pivoted on the adjacent section. This hook can be operated in any suitable way—such, for instance, as connecting the same to the lower end of the shaft 62, rotatably mounted in the barge-section and extending up through the gunwale, where it is provided with a handle 63 or other operating means. The operating-shaft 62 will preferably be inclosed in a well, so as to prevent the water which will leak in around the lower end of said shaft from entering the barge. This well may be either a simple tube, such as shown at 64, having water-tight connection at the bottom of the barge and extending up to the gunwale, as by screwing the same into the bottom plates and gunwale, or may be a pressed plate U-shaped or otherwise in cross-section and riveted to the side plates of the barge.

Fig. 17 shows an arrangement whereby connecting means similar to that shown in Figs. 8 to 13 is located intermediate the bottom and top edges of the sections, so that in practice it will be below the water-line and nearer the center of gravity of the sections. With this arrangement the sections need not be connected at their bottoms. In this case the gunwales proper, 10, are located at the point of connecting the sections, while the extension sides 65 are, in effect, splash-boards; but they are formed of metal and riveted water-tight to the gunwales and to each other at the corners so as to make a water-tight connection and permit the submersion of the sections below the gunwales.

In Figs. 18, 19, and 20 is illustrated means suitable for connecting the sections along their sides. This consists in providing one of the sections with a well 66, formed in any suitable way and having rotatably mounted therein a shaft 67, provided at its upper end with a handle 68 or other suitable operating means and carrying one or more coupling members or hooks 69, which is or are adapted

to project out through openings 70, formed in the end or side plates. In order to stiffen the shaft 67, it is passed through openings in one or more diaphragms 71, extending across the well. The adjacent section is provided with suitable coupling means for cooperating with the hooks 67, this being shown as the projecting edge 73 at the side of openings cut in the end or side plates of said section. A well-casing 75 is provided to prevent the entrance of water into the body of the barge. In this well is rotatably mounted a shaft 76, having one or more locking-dogs 77 adapted to be swung behind the hook or hooks 67 and hold the same in locked position, as shown in Fig. 20. The shaft 76 is provided at its upper end with a handle 78 or other suitable operating means.

Obviously many other forms of connecting means for the sections will suggest themselves to those engaged in their manufacture and use. Preferably the connecting means should be such as to prevent independent vertical movements in the sections, take the tension as necessary and allow of rapid disconnecting, and also should not project inside of the several sections beyond the gunwales, so as not to interfere with the nesting of the several sections. It will be observed that the gunwales, braces, and other strengthening members for the side, end, and bottom plates are all located inside of the sections, thus leaving the outside thereof perfectly smooth, so as to offer the least resistance or friction in the water.

The outer sections making up the barge or fleet will be provided with suitable means for attaching snubbing ropes or lines for the purpose of tying the barges one to another or to a dock or other places. These attaching means may be of any suitable construction either in the form of a kevel or cleat, as shown at 40, Fig. 23, or a check-post, such as shown at 41, Fig. 24. The kevels or check-posts will be attached to the gunwales by means of bolts passing through suitable holes or openings 42 in the gunwale and similar openings in the kevel or check-post. The gunwales of all sections will be provided with holes 42 at intervals, and each fleet or tow boat will carry with it a number of check-posts or kevels, which can be attached by means of bolts to the gunwales on the outer edges of the fleet or barges, as required. When these check-posts or kevels are placed at the corners of the barge, they will be formed as shown at 43, Fig. 25, having attaching bases or feet 44 at an angle to each other and preferably being provided with an angular opening 45 for receiving an upwardly-extending portion 46 of the corner-connecting angle 13. These corner-connecting angles 13 will preferably be allowed to extend above the gunwales in all cases, as they may serve not only for attachment of the check-posts 43, but

also as a convenient means for attaching splash-boards 48, as shown in Fig. 22. These splash-boards may, however, be attached by other convenient detachable means, such as the straps 49, engaging loops 50 on the side or end plates, as indicated in Fig. 21.

The sections comprising the barge will be made water-tight, thus not only increasing the buoyancy thereof, but also enabling the transportation of materials which must be kept dry. In such cases provision will also be made for covering the barges. This covering may be provided in a great variety of ways either by the use of canvas, wood, or metal coverings. In Figs. 26 and 27 I have illustrated two methods of covering the barges. In Fig. 26 the barge-sections are provided with standards 53, having connected thereto a ridge-pole 54. The roofing 55 may be either wood, metal, or canvas and will extend from the ridge-pole down to the gunwales. In Fig. 20 simple sloped roofs 56 are shown, these being shown as of corrugated metal; but obviously they may be of other material.

When roofs are applied, the sections composing the barge may be slightly spaced apart at the points where the roof-eaves meet the gunwales, so as to permit the drippings to pass down between the sections and not into the same, or the drippings may be taken care of by other desirable means. This spacing apart of the sections may be conveniently accomplished by placing spacing-blocks between the several sections.

In order to prevent the material transported from lodging in the space between the side plates and the depending flanges of the Z-shaped gunwales when dumping the load, said gunwales will be closed on their lower sides by means of a suitable strip 57, of wood or other material, secured in place by bolts 58 or other suitable fastening means.

Many modifications in details of construction may be made in the barge shown and described. The essential feature of the invention is a barge construction composed of a plurality of sections preferably arranged in groups, the individuals of which are of different sizes, so as to permit the nesting of the same when emptied. Preferably these sections are each a complete unit as to flotation and stability. This sectional construction adapts itself to very cheap and quick unloading thereof, it merely being necessary to lift the same by means of a suitable crane or other hoisting device and dump the same. Furthermore, it adapts the barge to land transportation either by flat cars, by telpherage, or other means. As a consequence the several sections may be filled at the mines, thus doing away with the tipples, and being weighed there can be transported either by flat cars, telpherage, or other means to the water and deposited therein. They will then be

connected together and taken to the point of destination. Here they can be unloaded by merely lifting and dumping the same, or if the coal is to go inland the sections can be detached and transported to the several destinations by rail. The empty sections can be nested one within the other and returned when time is an essential by rail by merely loading on flat cars. Even when returned by water the nested sections occupy so much less wetted surface that they can be returned with less power and at a greater speed than with non-collapsible barges.

While in Fig. 1 I have shown the barge made up of three different sizes of sections arranged uniformly, so as to give straight side and end edges to the barge, it will be understood that this is not absolutely necessary, as it may frequently happen that there will not be equal numbers of all the different sizes of sections. They may, nevertheless, be readily connected together by means of the vernier connection described and may be readily transported, even though the side and front and rear edges should not be straight lines. It will also be understood that the size of the barge may be varied within wide limits, as obviously any number of such sections may be connected. The fleet can be made up by connecting together the requisite number of sections.

What I claim is—

1. A barge or boat comprising a series of sections open at the top and of several different sizes whereby they may be nested in groups, and means for connecting said sections together.

2. A barge or boat comprising a series of sections open at the top and of several different sizes whereby they may be nested in groups, each section being a unit as to stability and flotation, and means for connecting said sections together.

3. A barge or boat comprising a series of sections each having sides, ends and bottom, and being of several different sizes whereby they may be nested in groups, and means for connecting said sections together.

4. A barge or boat comprising a series of sections open at the top and being of the same shape but of several different sizes, whereby they may be nested in groups, and means for connecting said sections together.

5. A barge or boat comprising a series of sections having sides, ends and bottom and being of the same shape but of several different sizes whereby they may be nested in groups, and means for connecting said sections together.

6. A barge or boat comprising a series of rectangular sections open at the top and of several different sizes, whereby they may be nested in groups, and means for connecting said sections together.

7. A barge or boat comprising a series of

rectangular sections having metallic sides, ends and bottom, and being open at the top and of several different sizes whereby they may be nested in groups, and means for connecting said sections together.

8. A barge or boat comprising a series of sections having metallic sides, ends and bottom and being open at the top and of several different sizes whereby they may be nested in groups, each section being a unit as to stability and flotation, and means for connecting said sections together.

9. A barge or boat comprising a series of sections open at the top and of different sizes whereby they may be nested in interchangeable groups, and means for connecting said sections together.

10. A barge or boat comprising a series of sections open at the top and of several different sizes whereby they may be nested in interchangeable groups, each section being a unit as to stability and flotation, and means for connecting said sections together.

11. A barge, boat or body of floating compartments comprising a plurality of interchangeable sections provided with means for the attachment of lifting mechanism, and means for connecting said sections together.

12. A barge or boat comprising a plurality of interchangeable metallic sections each being a unit as to stability and flotation and each provided with means for the attachment of lifting mechanism, and means for connecting said sections together.

13. A barge or boat comprising a plurality of rectangular sections having metallic sides, ends and bottoms, and each being provided with means for the attachment of lifting mechanism, and means for connecting said sections together.

14. A barge or boat comprising a plurality of sections each provided with means for the attachment of lifting mechanism, and means for connecting said sections together.

15. A barge or boat comprising a plurality of sections each being a unit as to stability and flotation, said sections being arranged for the attachment of lifting means, and means for connecting said sections to each other.

16. A barge or boat comprising a plurality of sections each of which is provided with sockets for the attachment of lifting means, and means for connecting said sections together.

17. A barge or boat comprising a plurality of sections each of which is a unit as to stability and flotation, ears on each of said sections for the attachment of lifting means, and suitable means for connecting said sections to each other.

18. A barge-section comprising metallic side, end and bottom plates, a lifting attachment on the sides, and a cross-beam on the bottom in line with said lifting attachment.

19. A barge-section comprising metallic side, end and bottom plates, lifting attachments on the upper edges of said section, trusses for strengthening the side and end plates, and a bottom supported from said trusses.

20. A barge-section comprising metallic side, bottom and end plates, trusses for strengthening the side plates and end plates, floor-supports connected to the side and end plates, and lifting means at the upper edges of said section.

21. A barge-section comprising side, end and bottom plates, trusses for strengthening the side plates and end plates, lifting attachments on the side plates intermediate their ends, a cross beam or beams attached to the floor and in line with said lifting means, and floor-supports extending from said cross beam or beams to the end plates.

22. A boat or barge comprising a plurality of sections, means on said sections for attaching lifting mechanism and swiveling the same thereon, and means for connecting said sections together.

23. A barge or boat comprising a plurality of sections each being provided with means for the attachment of lifting mechanism and with means for connecting thereto a dumping hook or rod, and means for connecting said sections together.

24. A boat or barge comprising a plurality of sections each provided with sockets for having swiveled thereto a lifting mechanism and with an attachment for connecting thereto a dumping rod or hook, and means for connecting said sections together.

25. A barge or boat comprising a series of sections open at the top and of several different sizes whereby they may be nested in groups, and means arranged for easy disconnection and serving to connect said sections together.

26. A barge or boat comprising a series of sections each being a unit as to stability and flotation and being open at the top, said sections being of several different sizes whereby they may be nested in groups, and means arranged to permit of easy disconnection and serving to connect said sections together.

27. A barge or boat comprising a series of interchangeable sections open at the top and of several different sizes whereby they may be nested in groups, said sections being provided with openings in their top edges, and detachable connecting means passing through said openings.

28. A barge or boat comprising a series of sections open at the top and of several different sizes whereby they may be nested in groups, and provided at their top edges with a series of slots laid out on the Vernier or other scale, and detachable connecting means passing through said slots.

29. A barge or boat comprising a series of

sections open at the top and of several different sizes whereby they may be nested in groups, metallic gunwales connected to the top edges of said sections, and connecting means attached to said gunwales.

30. A barge or boat comprising a series of metallic sections open at the top and of several different sizes whereby they may be nested in groups, metallic flanged gunwales on said sections, and connecting means attached to said gunwales.

31. A barge or boat comprising a plurality of interchangeable sections of several different sizes and being open at their tops whereby they may be nested in groups, means for connecting said sections to each other at their tops, and means for connecting the same together at their bottoms.

32. A barge or boat comprising a plurality of sections open at the top and of several different sizes, coupling-hooks swiveled to some of said sections and arranged to engage adjacent sections, and operating means connected to each of said hooks.

33. A barge or boat comprising a plurality of sections, a coupling-hook mounted thereon and arranged to engage a stop on the adjacent section, and an operating-shaft connected to said coupling-hook and extending to the top of the section.

34. A barge or boat comprising a plurality of sections each provided with a well, an operating-shaft in said well, and a coupling-hook on said shaft and arranged to engage a cooperating coupling member on the adjacent section.

35. A barge-section comprising metallic side, end and bottom plates, gunwales attached to the upper edges thereof, corner-connecting angles and strengthening members attached to said plates, said gunwales connecting-angles and strengthening members being on the inside of said section, and means attached to the side plates and serving for the attachment of lifting mechanism.

36. A barge or boat comprising a series of groups of sections each group being composed of a plurality of sections of different sizes whereby they may be nested when empty, and means for connecting said sections together.

37. A barge or boat comprising a series of groups of sections, each group being composed of a plurality of sections open at the top and of different sizes, whereby they may be nested when empty, and means for connecting said sections together.

38. A barge or boat comprising a series of groups of sections, each group being composed of a plurality of sections of metallic construction open on their tops and of different sizes, whereby they may be nested when empty, and means for connecting said sections directly to each other.

39. A barge or boat comprising a plurality

of sections open at the top and of different sizes, each of said sections being provided with suitable means for the attachment of lifting means, and means for connecting said sections together.

40. A barge or boat comprising a plurality of sections each being open at its top, means for connecting said sections together, and rigid side extensions or spray-boards detachably secured to the outer edges of the edge sections.

41. A barge or boat comprising a plurality of sections each being a unit as to stability and flotation and being open on its top, means for connecting said sections together, and rigid side extensions or spray-boards detachably secured to the outer edges of the edge sections.

42. A barge or boat comprising a series of metallic sections comprising side, end and bottom plates, corner-connecting angles for uniting said plates, said corner-connecting angles projecting above the tops thereof, and spray-boards attached to said projecting angles.

43. A barge or boat comprising a plurality of metallic sections provided with gunwales, means secured to said gunwales for connecting said sections together, and metallic spray-boards connected water-tight to said gunwales and to each other, thereby to bring the connecting means nearer the center of gravity of the sections.

44. A boat or barge comprising a series of sections each comprising a unit as to stability and flotation, means for connecting said sections together, and line-attaching means detachably connected to the outer sections of said barge.

45. A barge or boat comprising a series of metallic sections, metallic gunwales attached to said sections, means for connecting said sections together, and line-attaching means detachably secured to the gunwales of the outer sections of said barge.

46. A barge or boat comprising a series of metallic sections, flanged bars forming the gunwales thereof and provided with holes, means for connecting said sections together, line-attaching means, and bolts for attaching the same to the gunwales of said sections.

47. A barge or boat comprising a series of metallic sections having side, end and bottom plates, corner-connecting angles for said plates, said corner-connecting angles projecting above the top edges of said sections, means for connecting said sections together, and a check-post having an opening and adapted to pass over the projecting angle at the corners of the barge, and be attached to the gunwale thereof.

48. A barge comprising a series of sections open at the top and of several different sizes whereby they may be nested in groups, some of said sections being provided with a rake,

and means for connecting said sections together.

49. A barge or boat comprising a plurality of sections, wells in said sections, and connecting means for said sections operable through said wells.

50. A barge or boat comprising a plurality of metallic sections, wells on said sections adjacent to the side or end walls, and connect-

ing means for said sections operable through said wells.

In testimony whereof I, the said MEIER G. HILPERT, have hereunto set my hand.

MEIER G. HILPERT.

Witnesses:

F. W. WINTER,

ROBERT C. TOTTEN.