

Sept. 1, 1953

W. T. GEYER ET AL

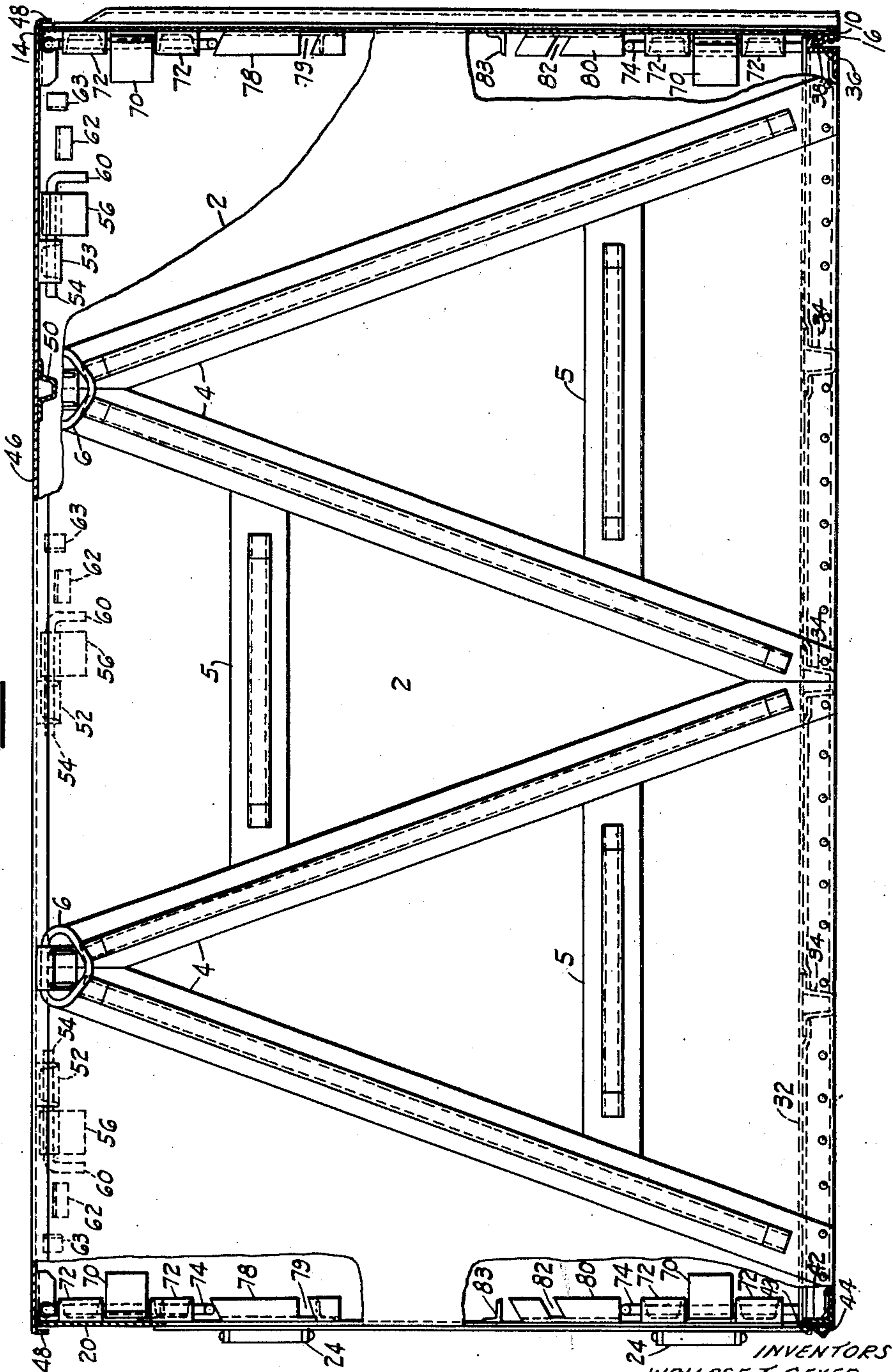
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KNOCKDOWN SHIPPING CONTAINER

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6 Sheets-Sheet 1

Fig. 1



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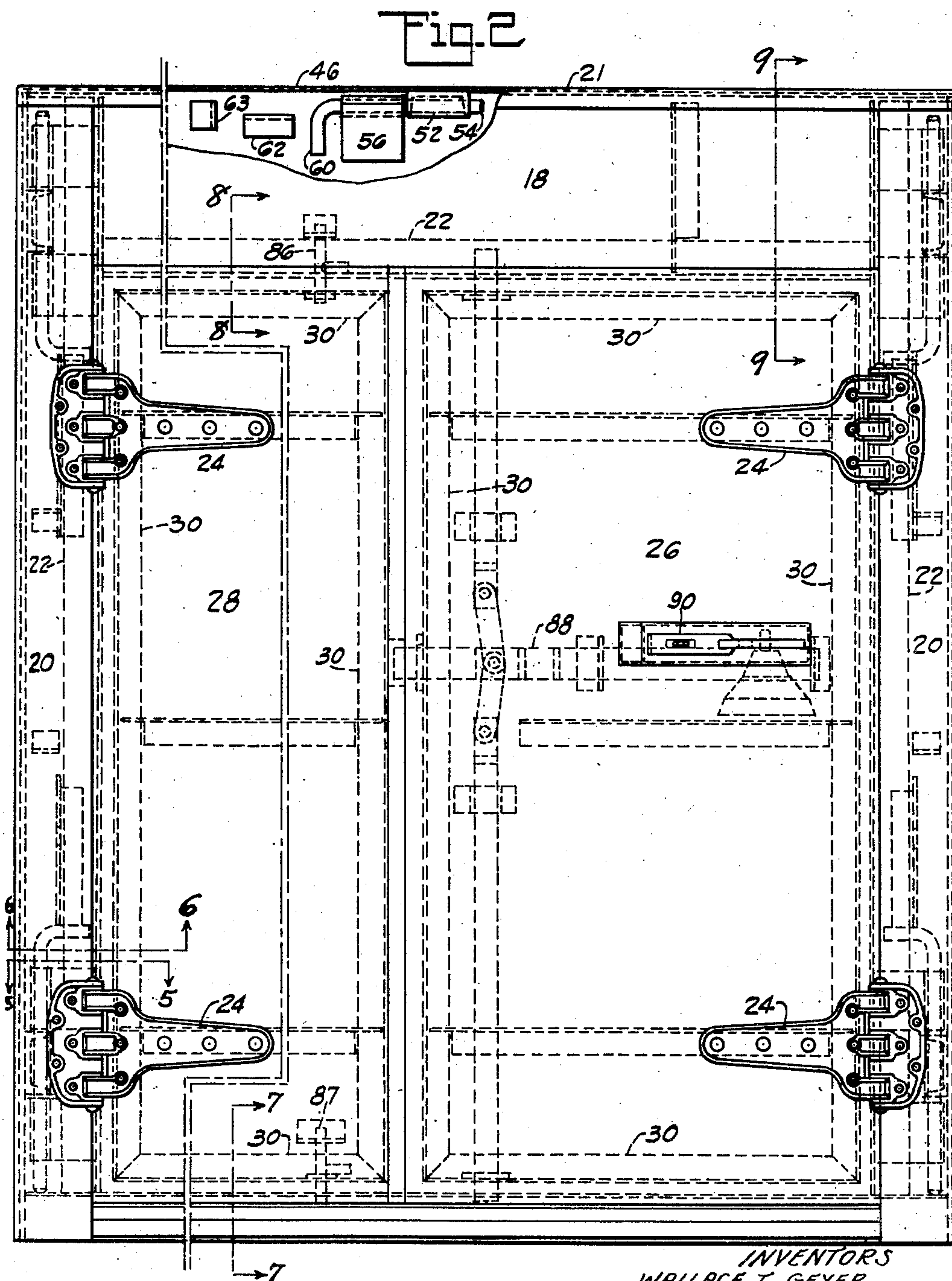
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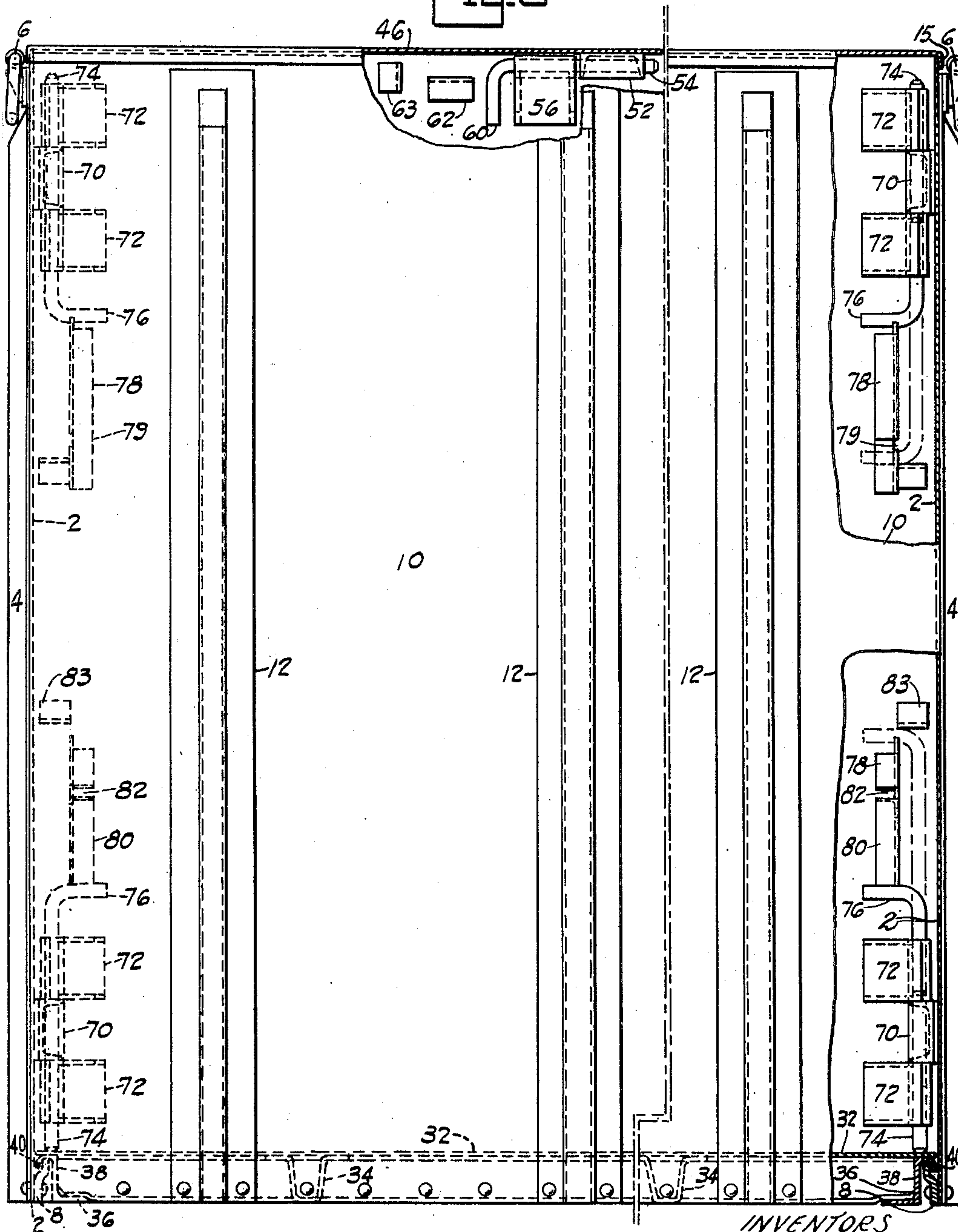
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Fig. 3



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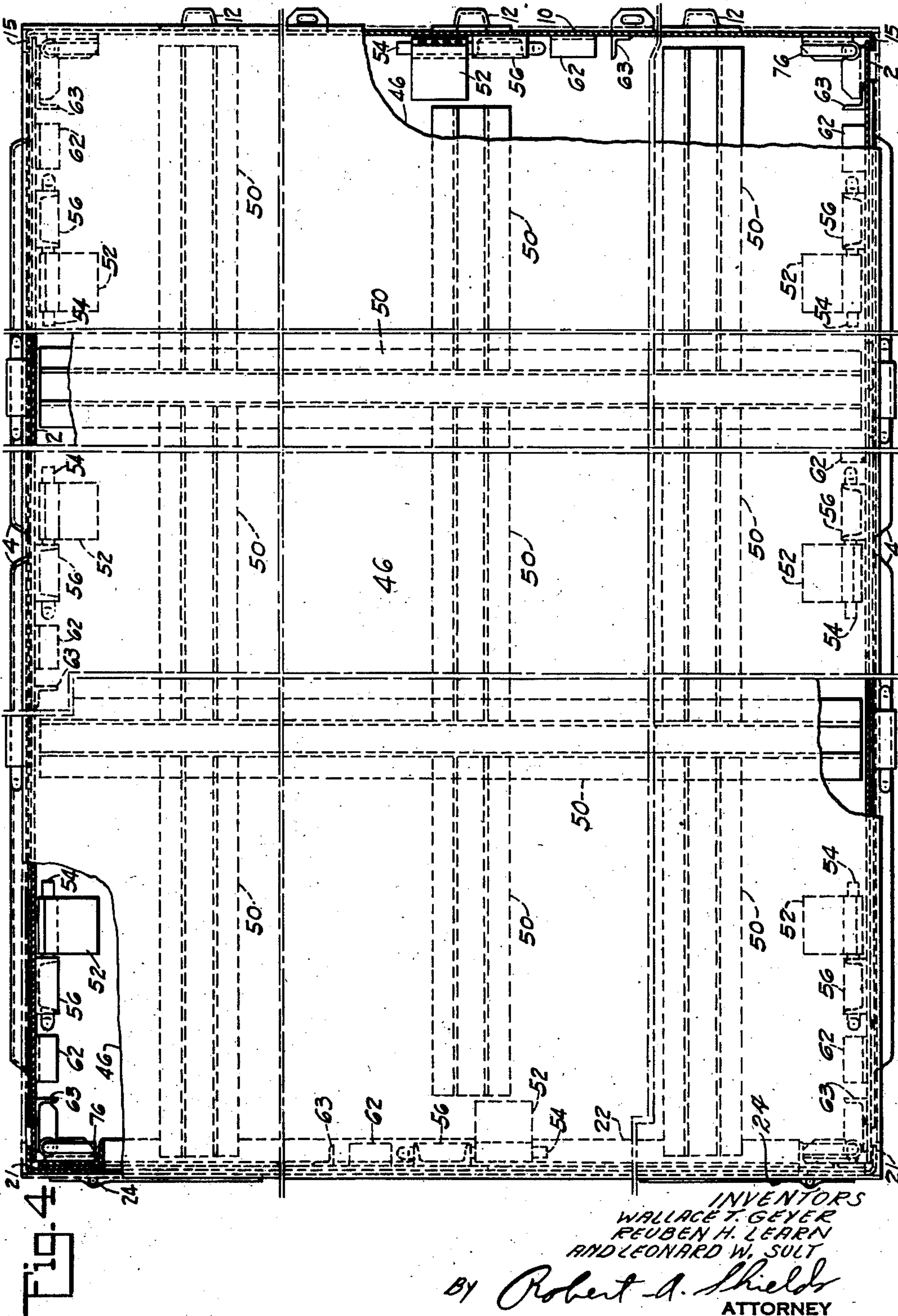
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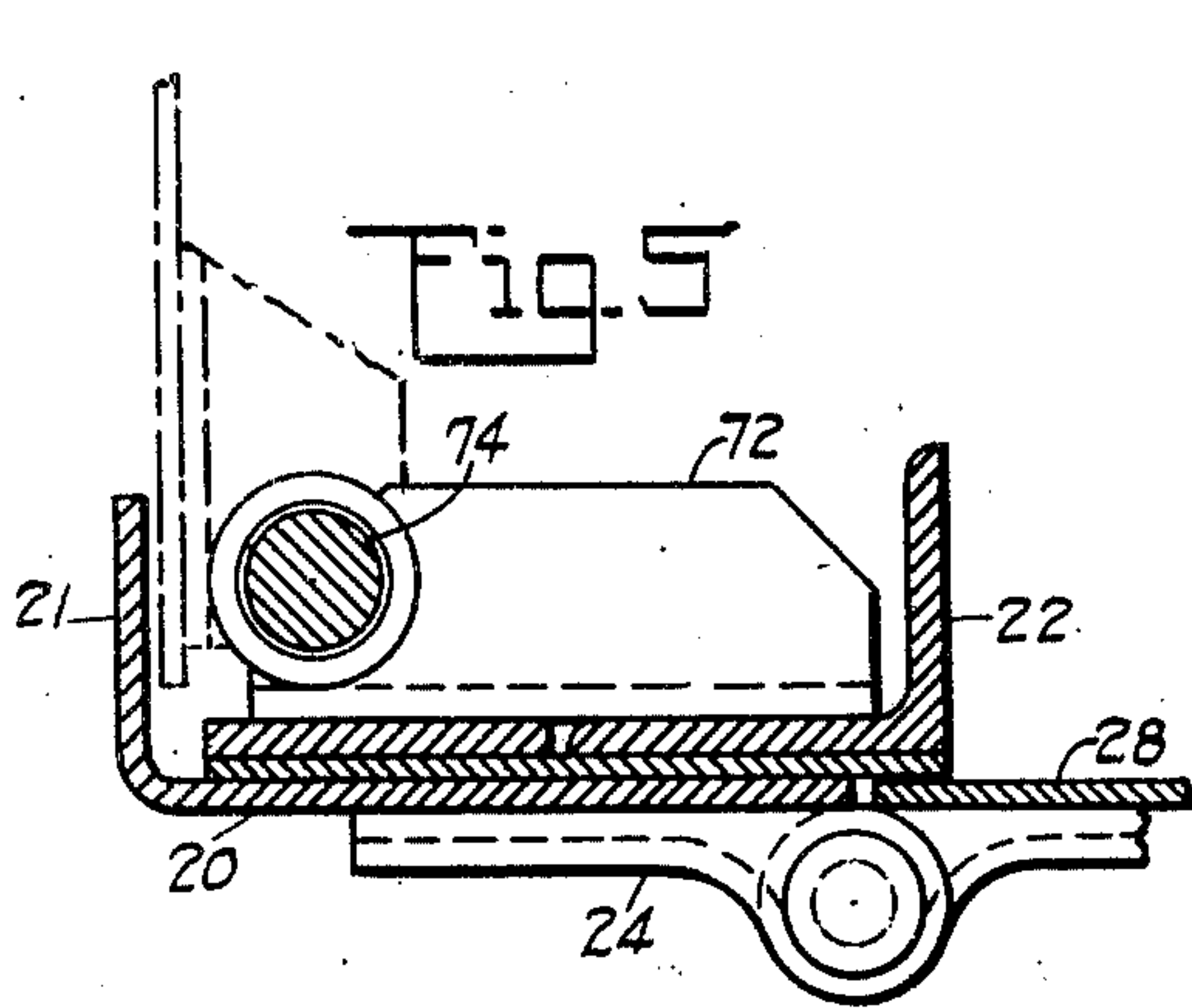
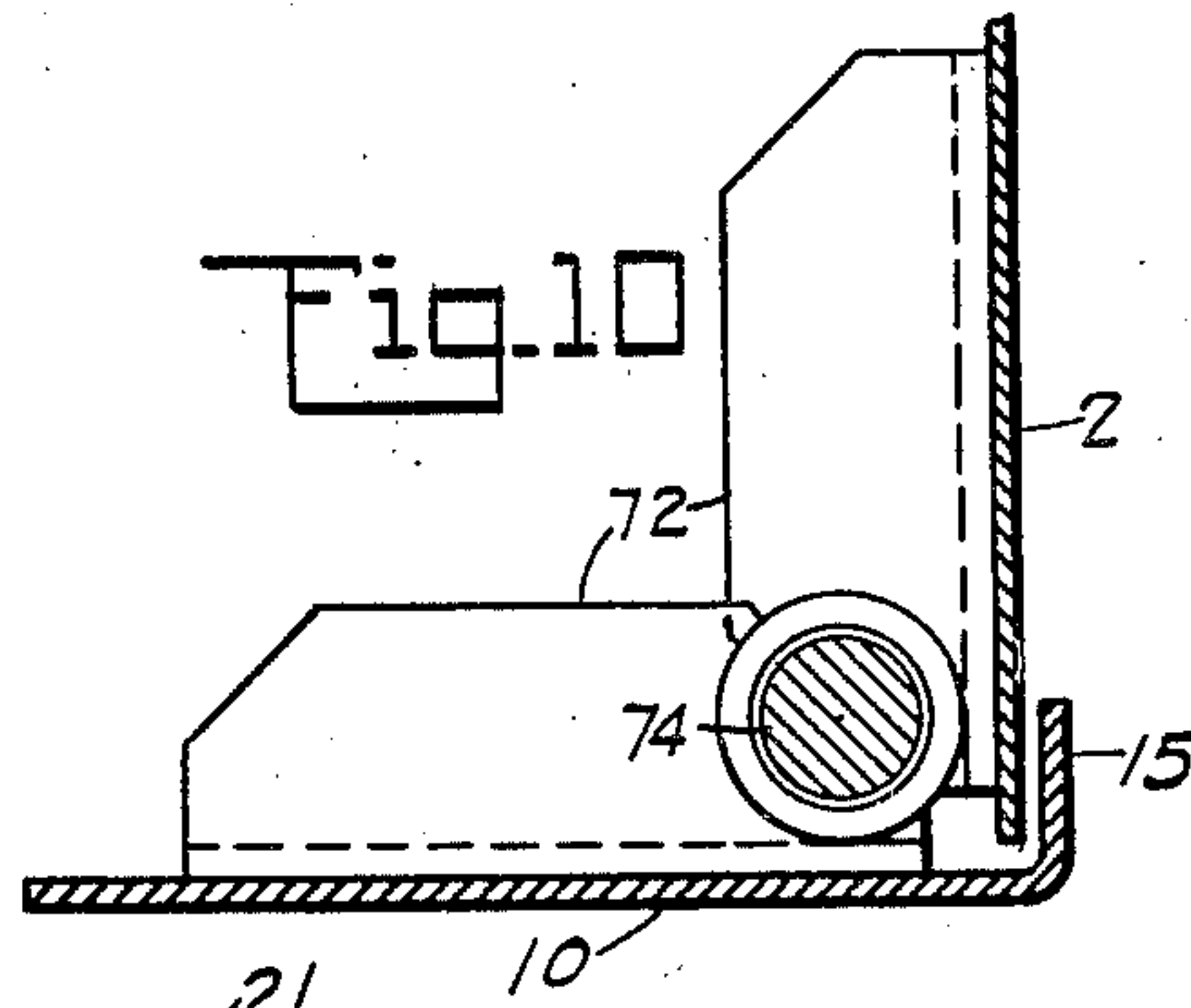
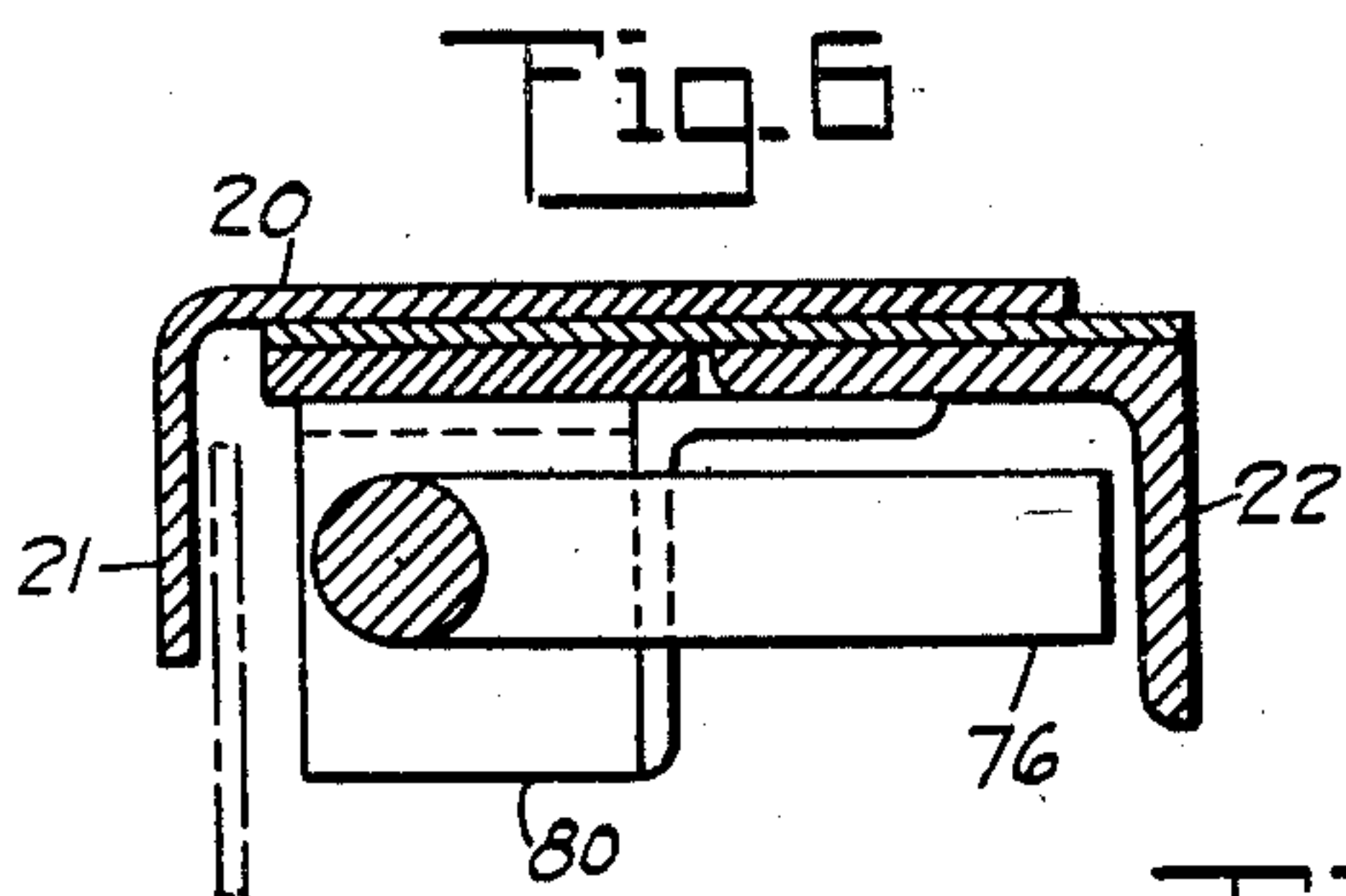
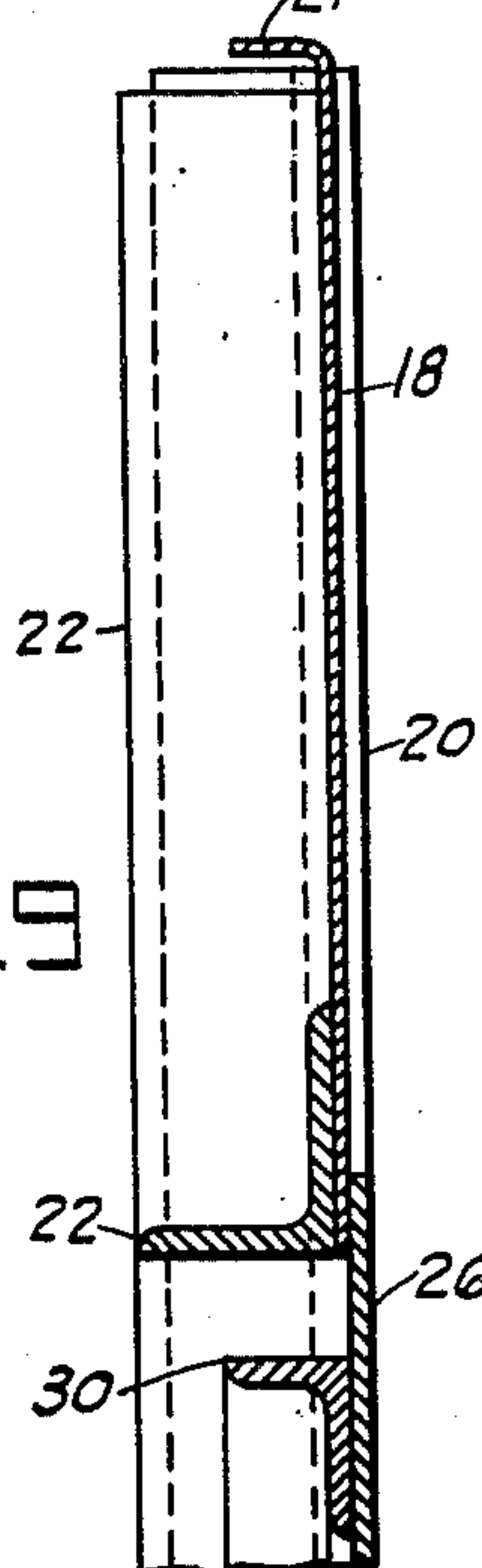
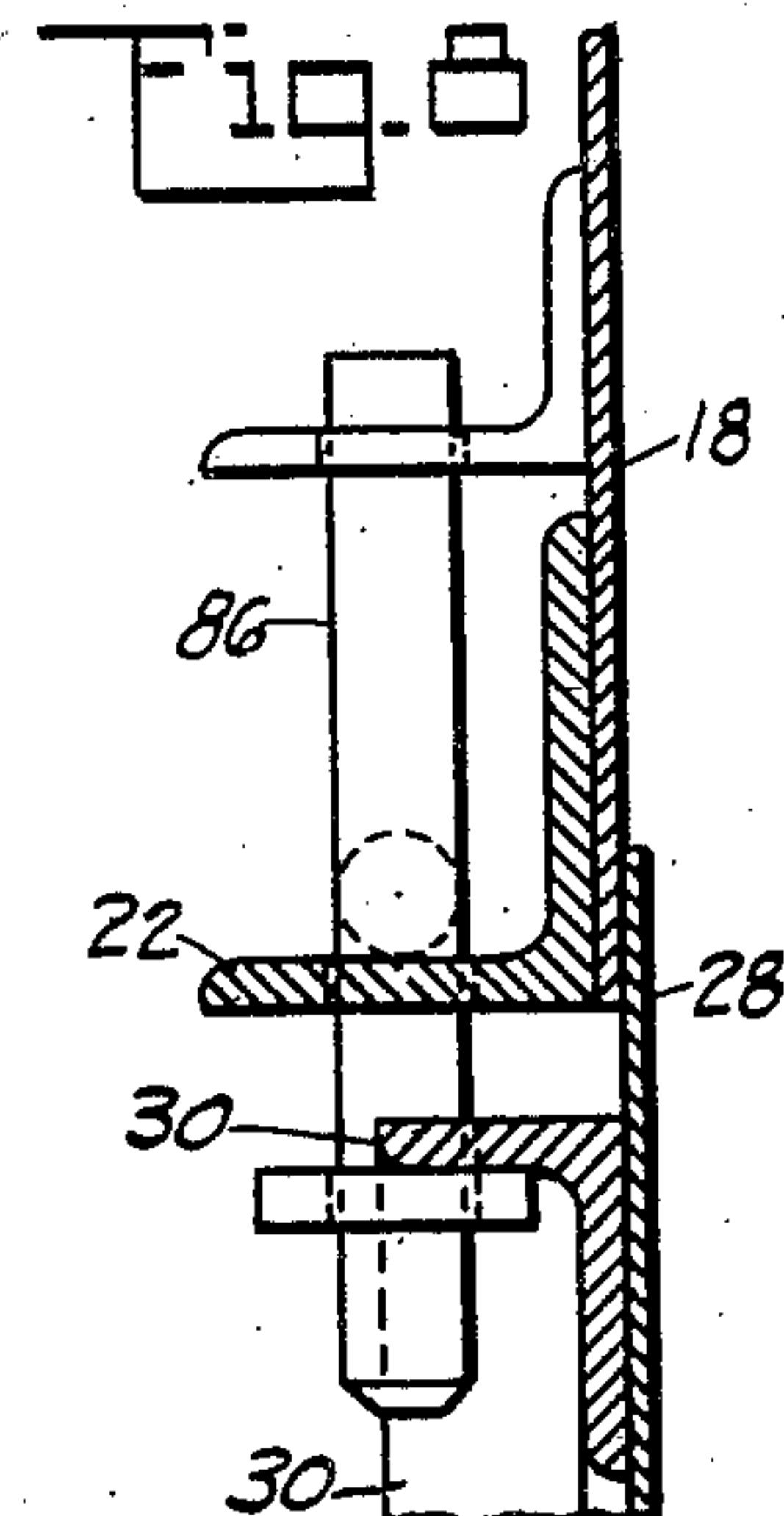
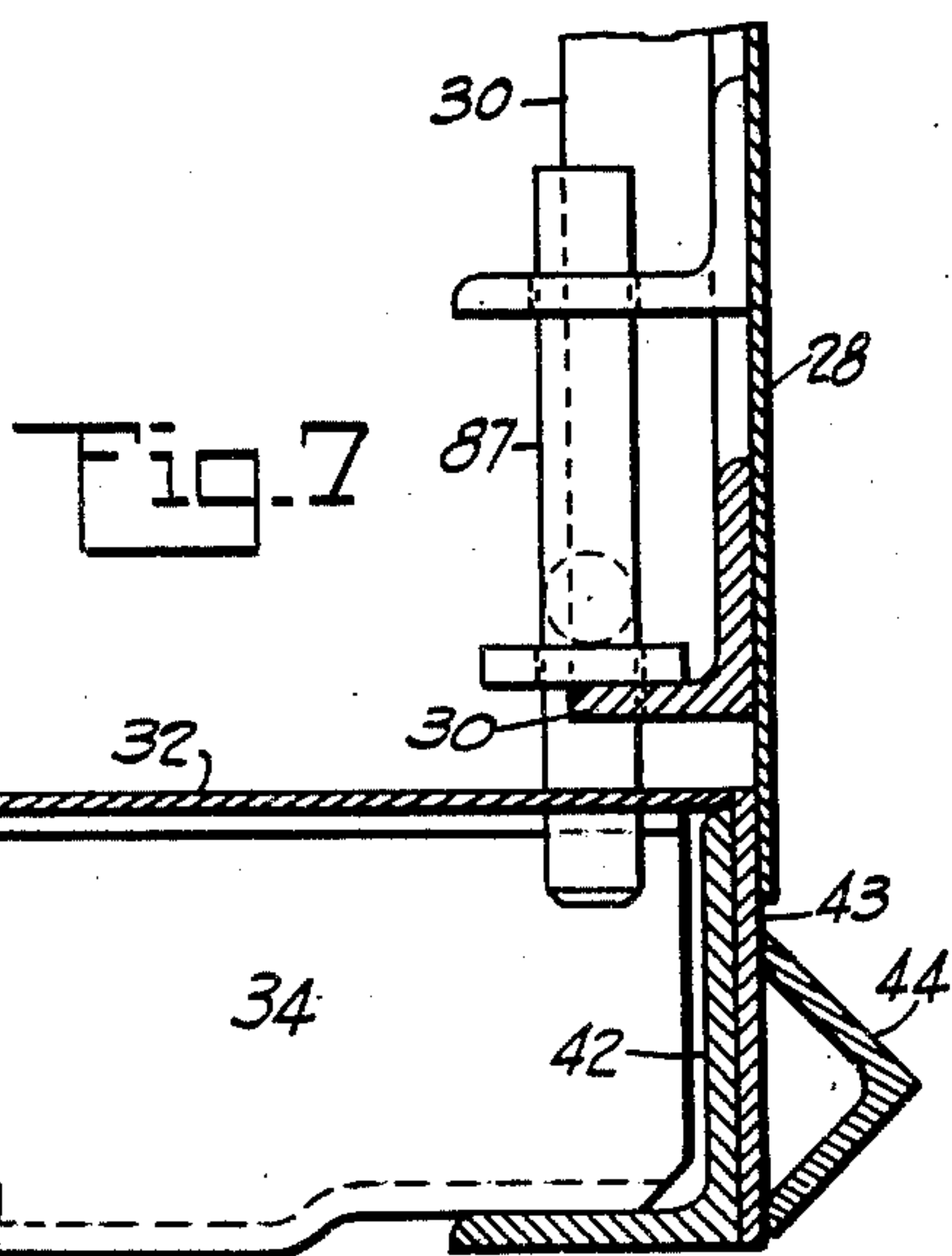
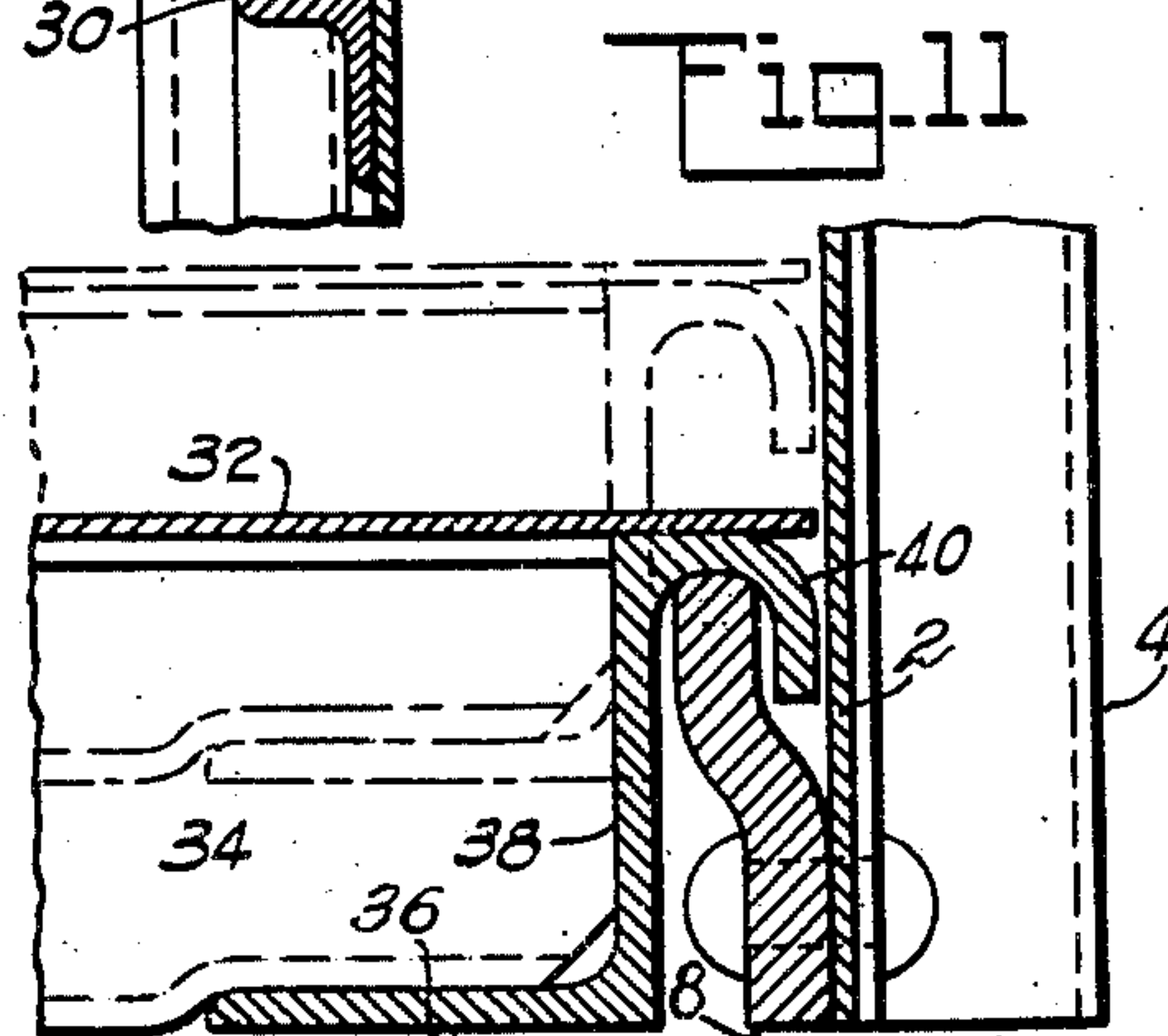


Fig. 9



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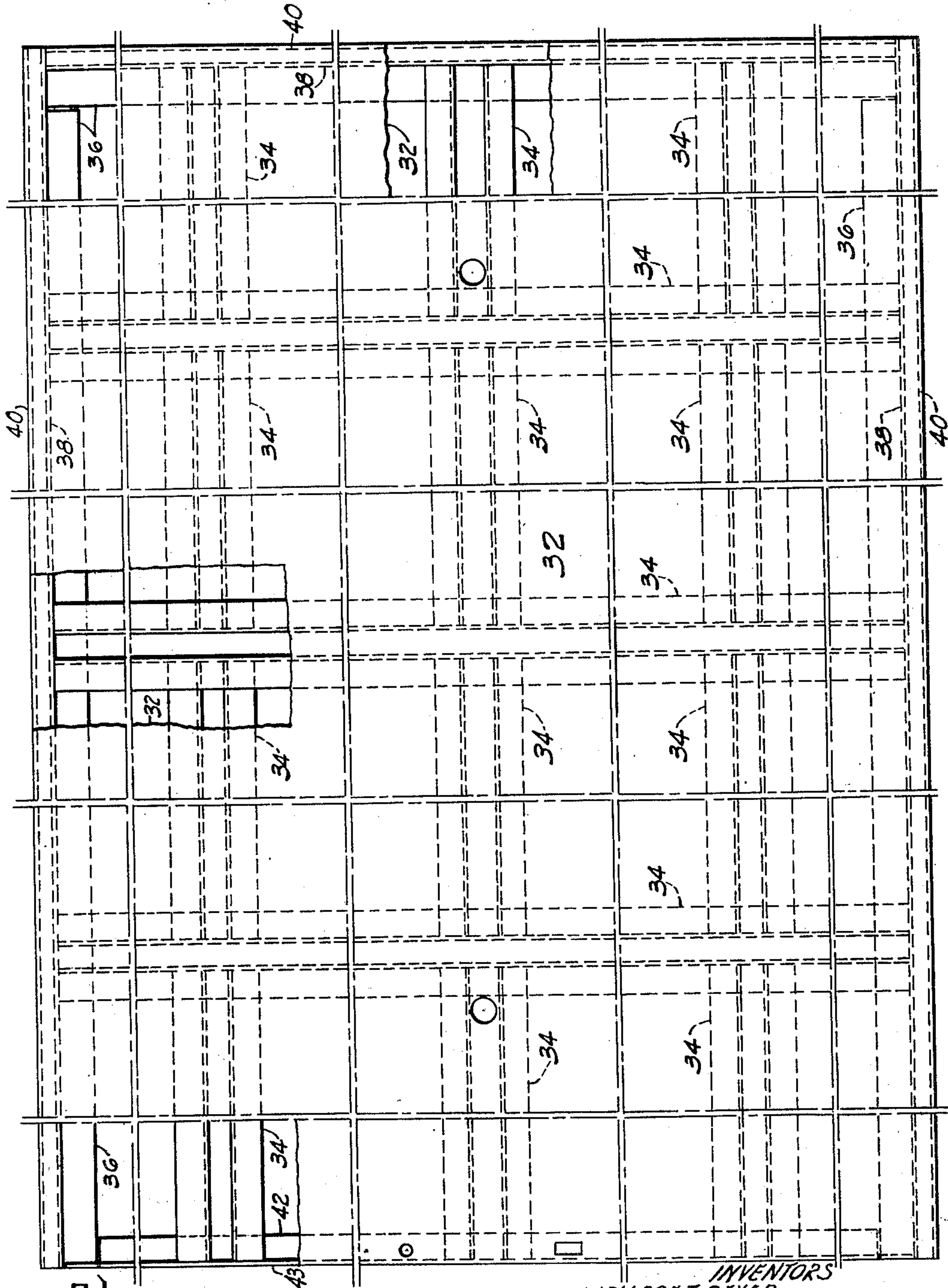


Fig. 12

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UNITED STATES PATENT OFFICE

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KNOCKDOWN SHIPPING CONTAINER

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4 Claims. (Cl. 220-4)

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This invention relates to shipping containers in general and in particular to shipping containers which may be knocked down to save shipping space when being moved in an empty condition.

Large quantities of materials are transported in containers having capacities approximately one-sixth that of a standard railway car. Such containers are moved by truck, rail and ship and frequently must be returned to their destination in an empty condition since it is hard to locate return pay loads. This is particularly true of shipments of diplomatic and military material shipped over seas. Frequently also in domestic service containers must be returned without pay load and without waiting for the movement of a special container car. It is an object, therefore, of the present invention to provide a shipping container which may be readily knocked down for return shipment and which will occupy a minimum of shipping space and will not require special shipping container cars.

A further object of the invention is the provision of a shipping container which may be readily knocked down or assembled and when in the assembled condition may be handled in the same manner as present permanently assembled containers.

A still further object of the invention is the provision of a knock-down container in which the floor will be suspended from at least three of the sides during lifting of the container.

A yet further object of the invention is the provision of a knock-down container having the parts rigidly held in assembled condition by means of sliding bolts.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawings, in which:

Fig. 1 is a side elevational view with portions broken away to better disclose the construction;

Fig. 2 is a front elevational view of the container;

Fig. 3 is a rear elevational view also with parts broken away to better disclose the construction;

Fig. 4 is a top plan view of the container;

Figs. 5, 6, 7, 8 and 9 are enlarged sectional views taken substantially on corresponding section lines of Fig. 2;

Fig. 10 is a sectional view similar to Fig. 5 but showing the connection between a side and a rear wall;

Fig. 11 is an enlarged sectional view showing the connection between the side wall and floor, and

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Fig. 12 is a top plan view of the floor unit.

Referring now to the drawings in detail it will be seen, particularly from Fig. 1, that the longitudinal side walls are made of sheet metal plate 2, stiffened on its outer surface by means of two A-shaped braces 4 suitably spot welded or otherwise secured to the plate and additionally braced by a longitudinal tie 5. The upper ends of the A bracing members are provided with an eye in which is fastened a lifting loop 6 by means of which the container may be lifted during transport. As clearly shown, the braces are of flanged channel formation so as to give maximum rigidity with minimum weight. Along the bottom edges of each side wall is riveted or otherwise attached an offset plate 8 (Figs. 3 and 11), which offset plate has the lower portion in direct contact with the side wall sheet 2 and the upper portion offset inwardly therefrom.

The back wall, particularly as shown in Fig. 3, is formed of metal plate 10 stiffened by flanged channel stiffeners 12 extending vertically of the plate and spot welded or otherwise secured thereto. The top and side edges of the end wall plate 10 are flanged inwardly as at 14 and 15 respectively. The top flanges are adapted to support and be overlapped by the roof later to be described, while the side flanges 15 are adapted to overlap the side walls 2. Attached along the bottom edge of the end wall is an offset plate 16 similar in construction to the offset plates 8 attached to the side walls.

The front end wall, as best shown in Fig. 2, is formed by a top plate 18 and two vertically extending side plates 20 together defining a door opening. The plates 18 and 20 have their upper and side edges flanged inwardly as at 21 so as to overlap the side walls and be overlapped by the roof in exactly the same manner as the flanges 14 and 15 of the end wall. Plates 18 and 20 have angles 22 attached thereto adjacent their inner edges, which angles stiffen the plate and define the door opening. Hinges 24 are secured to plates 20 and angles 22 and carry a large door 26 and a small door 28. These doors are preferably built of flat metal plate stiffened internally by angles 30.

The floor of the container, as best shown in Fig. 12, is formed of a top plate 32 resting upon and spot welded or otherwise secured to longitudinally and transversely extending flanged channel stiffeners 34, all suitably connected together by welding or other securing means and attached at their outer ends to angular framing members. The framing members extending along the longitu-

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dinal sides and rear end are of deformed Z bar shape having a bottom flange 36, vertical web 38 and an outwardly and downwardly turned outer flange 40, which outwardly and downwardly turned flanges are adapted to overlap and interlock with the distorted plates 8 and 16 of the side and end walls respectively. Thus it will be seen that during lifting the side and rear edges of the floor will be carried by and supported along their entire length by the side and rear end walls of the assembled container. The front edge of the floor frame is formed by an angle 42 (Fig. 7) to which is attached a flat plate 43 and stiffening angle 44, which latter will also serve as a protection plate during loading of the container.

The container roof, as best shown in Figs. 1 and 4, is formed of a metal plate 45 having the side edges thereof turned downwardly as at 48 with the downturned edges overlapping the side and end walls of the container. The roof is internally stiffened by transversely and longitudinally extending flanged channel stiffeners 50 suitably attached to each other and to the roof plate 46.

In order to secure the roof to the various side and end walls bolt keepers 52 are attached to the roof on the inner surface thereof and these keepers are preferably formed of short channel members to which are welded or otherwise secured tubular portions adapted to receive the free end of bolts 54 slideably carried in similarly formed bolt carriers 55 welded or otherwise secured to the side and end walls. The downturned ends 60 of the bolts 54 will be held in their roof-locking position by angle retainers 62, which retainers will also hold the bolts in their retracted position with loss of the bolts out of their carriers being prevented by small angle clips 63. Thus it will be seen that when the bolts are in their locked position their accidental unlocking will be prevented by clips 62 and when in their unlocked position their locking or loss will be prevented by clips 62 and 63.

In each corner formed by the side walls and adjacent the upper and lower edges thereof keepers 70 of a form similar to keepers 52 are securely welded or otherwise secured to the side walls 2. Immediately above and below these keepers 70 are spaced bolt slides 72 which are securely welded or otherwise secured to the rear and front wall plates 10 and 20 respectively. Slideably mounted in slides 72 and movable through keepers 70 are bolts 74 having a turned end 75. The right angle bend or handle portions 76 of the upper bolts are adapted to be held in position by the upper inclined edge of angle shaped retainers 78 when the bolts are in the locked position. When in the lowered or retracted position the handles 76 are adapted to fit within a slot 79 of the angle clips to thereby retain the bolt in its lower or retracted position. The lower bolts 74 are held in their locked position by means of the lower edges of angle clips 80, which clips are provided intermediate their ends with a slot 82 adapted to receive the handle portion 76 and retain the bolt in an intermediate position to assist in insertion and removal of the floor unit. When in the fully retracted position the handles 76 of the lower bolts are adapted to rest on the upper edge of retaining clips 80 with loss of the bolt being prevented by angle members 83.

Thus it will be seen that when the bolts 74 are in their fully locked position the side and end walls are securely held together at a plurality of

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points. It will also be seen that the floor is securely held in its position with the lips 40 in engagement with distorted plates 8 and 16 by means of the lower ends of the lower bolts 74.

Upward motion of the lower bolts 74 is, as pointed out above, prevented through contact of handle 76 with the lower end of angle clips 80. When it is desired to remove the floor this can be done by lifting the lower bolts into slots 82 and lifting and sliding the floor out of position.

The door 28 is securely locked in its closed position by means of upper and lower slide bolts 86 and 87 respectively, which bolts lock the door to the frame as clearly shown in Figs. 2, 7 and 8. The door 26 is effectively locked to the door 28 and to the door frame angles by means of slides 88 suitably operated by a handle 90 which may be sealed against unauthorized tampering.

From the preceding it will be seen that with the container in the fully assembled condition none of the securing means can be reached by any persons except by first entering the container through door 26. When it is desired to dismantle the container bolts 54 will be moved to their retracted position between clips 62 and 63, after which the roof may be lifted free. Following this the bolts 74 adjacent the front of the container will be moved to their fully retracted position and the front wall with its attached doors removed, then the lower rear bolts 74 may be lifted into slots 82 and the floor unit removed. Following this the bolts 74 carried by the rear end walls will be moved to their fully retracted position and the container will then be fully disassembled. In reassembling the container the reverse operations may be followed, or the side and rear walls may be laid flat and the floor laid in position partially overlapping the lower edges thereof. Rotation of the sides and rear end wall to the vertical position will cause engagement between the lips 40 and strips 8 and 16. In any event, whether the floor be placed in by this manner or lowered into position, the downturned lips will draw the side and rear end wall into proper position for movement of the bolts 74 into their fully locked condition. It will also be obvious that seals of either the resilient or spring metal type may be provided at all joints. It will likewise be obvious that various modifications and rearrangements of parts may be made without departing from the scope of the invention as defined by the following claims.

What is claimed is:

1. A knockdown container comprising, side walls and end walls, sliding bolts located adjacent the vertical edges of said walls and slidable vertically to removably lock said walls together, a roof resting on said walls and formed with downturned flanges overlapping the walls, sliding bolts located adjacent the upper edges of said walls and horizontally slidable to removably lock said roof and walls together, a base fitting within the walls adjacent the lower edges thereof, said base and walls having interengaging flanges supporting the base on the walls and preventing spreading of the walls and being held in position by certain of said vertically slidable bolts engaging the base to prevent upward movement thereof, and means engaging certain of said bolts to prevent vertical sliding movement thereof when in locked position.

2. A knock-down container comprising, side walls, end walls, a roof and a base, vertically slidable bolts carried by said end walls adjacent

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the vertical edges thereof, keepers carried by said side walls adjacent the vertical edges thereof and in position to be engaged by said vertically slidable bolts to removably lock said walls together, horizontally slidable bolts carried by said end and side walls adjacent the upper edges thereof, keepers carried by said roof adjacent the side edges thereof and in position to be engaged by said horizontally slidable bolts to removably lock said roof and walls together, and interengaging flanges on said walls and base whereby said base is supported on the side walls and the side walls are held against bulging, said base being retained in supported position by certain of said vertically slidable bolts acting to prevent upward movement of the base when said vertically slidable bolts are in wall locking position.

3. A knock-down container comprising, a base including a floor plate, side walls, end walls and a roof, means removably securing said side walls, end walls and roof together, upwardly and inwardly offset plates secured to the lower edges of certain of said side and end walls and extending above the lower edges thereof, and rolled members of Z form secured to certain of the side edges of said base, said Z form members having one flange thereof outstanding and turned downwardly to interengage with said offset plates to thereby support the base on said certain walls and prevent bulging thereof, and said one flange being connected to the under side of the floor plate inwardly of the edge whereby the floor plate overlaps the interengagement between the offset plates and Z form members.

4. A knock-down container comprising, side walls, end walls, a roof and a base, vertically slidable bolts carried by said end walls adjacent the vertical edges thereof, keepers carried by said side walls adjacent the vertical edges thereof and in position to be engaged by said vertically slida-

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ble bolts to removably lock said walls together, horizontally slidable bolts carried by said end and side walls adjacent the upper edges thereof, keepers carried by said roof adjacent the side edges thereof and in position to be engaged by said horizontally slidable bolts to removably lock said roof and walls together, and interengaging flanges on said walls and base whereby said base is supported on the side walls and the side walls are held against bulging, angle clips secured to certain of said walls to lock certain of said vertically slidable bolts in lower position, said last named bolts engaging the upper surface of said base to prevent upward movement thereof when said bolts are in locked position beneath said clips.

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