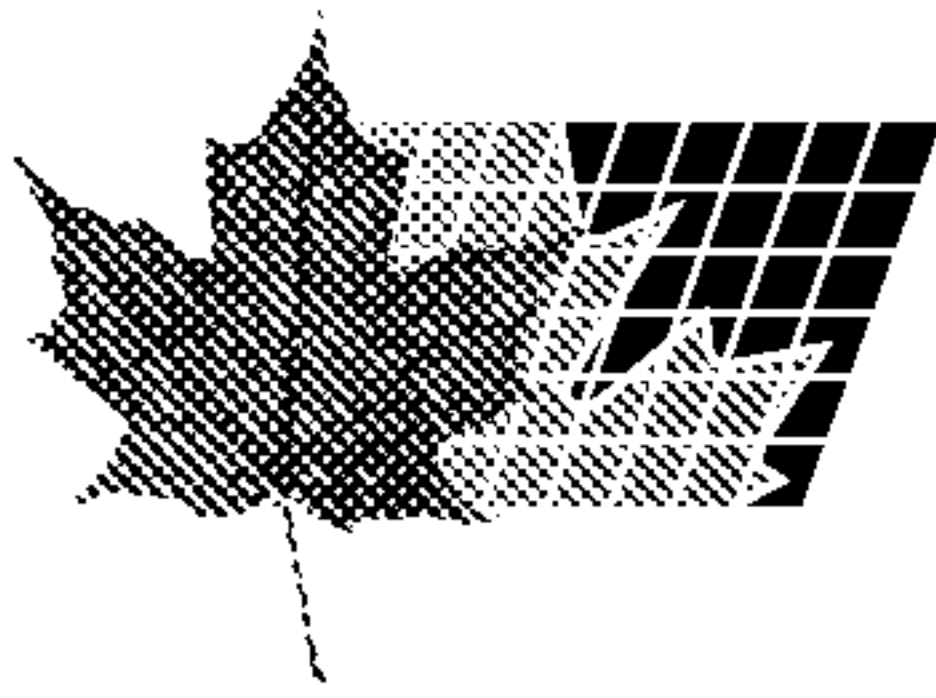
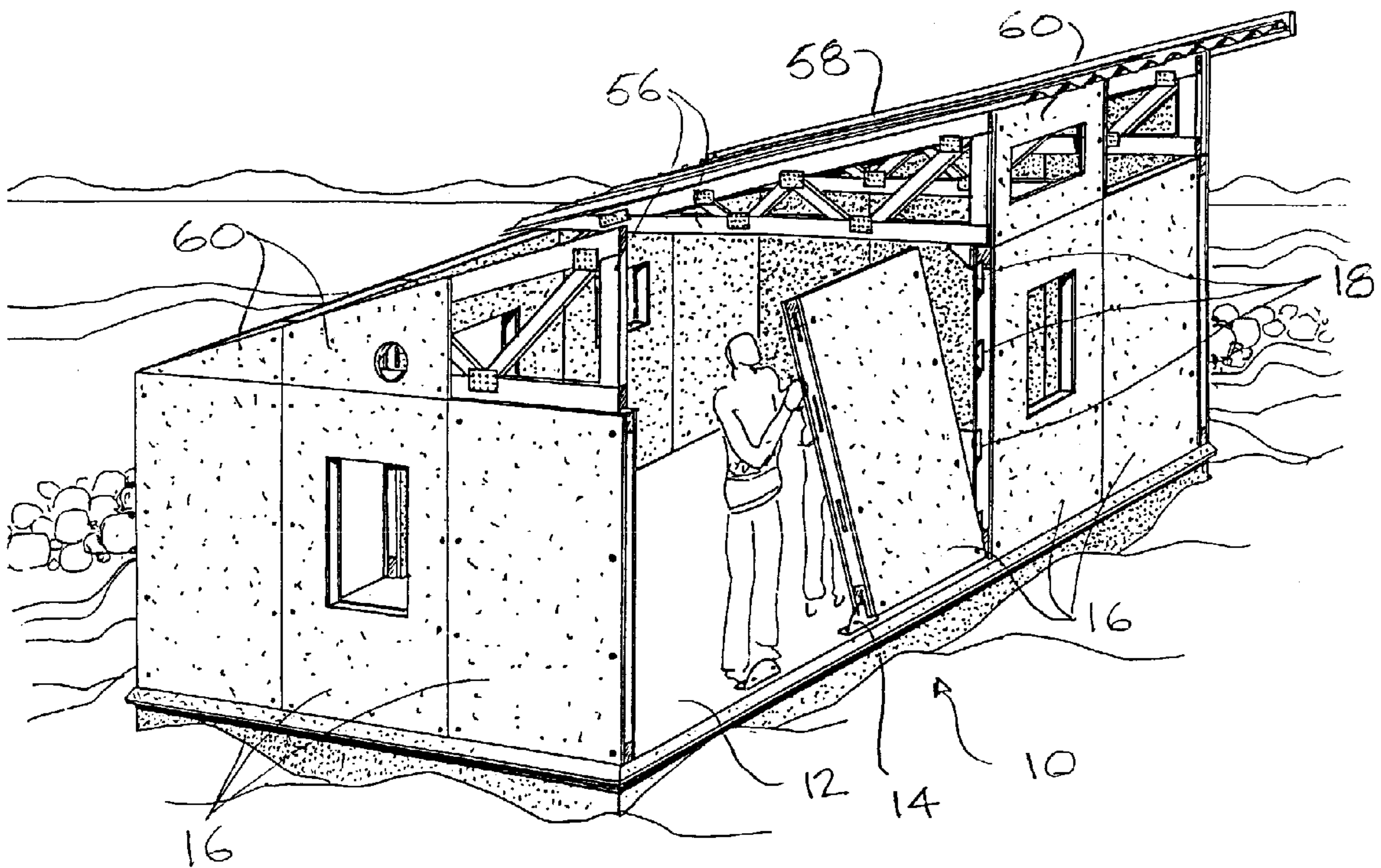




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(51) Int.Cl.⁶ E04B 2/72, E04B 1/343
(54) **PANNEAU DE CONSTRUCTION ET SYSTEME
D'ASSEMBLAGE**
(54) **STRUCTURAL PANEL AND CONNECTOR SYSTEM**



STRUCTURAL PANEL AND CONNECTOR SYSTEM

The present invention relates to a building construction system and more particularly to a structural panel and connector system that may be used to provide readily transported building kits for assembly into buildings quickly and without highly skilled personnel.

According to the present invention there is provided a construction system for the erection of a building on a floor slab, the system comprising:

a plurality of structural wall panels having bottom edges, opposed side edges and slots in the bottom and side edges;

bottom connector plates mountable on the floor slab to project upwardly from the floor slab to engage in respective ones of the slots in the bottom edges of the panels; and

side connector plates engageable in aligned slots in adjacent side edges of adjacent ones of the panels.

The bottom connector plates are readily mounted on the floor slab using flanges and conventional fasteners, for example nails, screws or bolts. A wall panel may then be set on one or more bottom connector plates and fastened in place using, for example a nail or screw through the wall panel and the connector. Other wall panels are also supported on bottom connector plates and adjacent panels are coupled using side connector plates that fit into the aligned side slots in the panels. The panels are connected to the side connector plates with fasteners extending into the panels and through the connector plates. The panels are pre-drilled to accept the fasteners or otherwise marked to indicate the proper fastener locations.

The structural wall panels may be constructed as stud wall frames with inner and outer skins of an appropriate sheet material and, where desired, an insulated core. The selection of the frame structure will depend on the structural

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requirements of the panel. The sheathing or skins of the panels are of materials suitable for the end use of the building. Drywall, wafer board, particle board, plywood and other materials are suitable for various applications.

The panels may be equipped with doors or windows, suitably framed.

5 Using this system, the basic structure of the building is set up by erection of the walls. The building may be completed with a set of roof trusses, roofing on the trusses and additional panels that extend from the tops of the structural panels to the roof where required.

In the accompanying drawings, which illustrate an exemplary embodiment

10 of the present invention and two embodiments of the side connector:

Figure 1 is a perspective view of a building being constructed according to the present invention;

Figure 2 is a front view of two assembled panels with the skin omitted to show the panel framework;

15 Figure 3 is an end view of Figure 2;

Figure 4 is a detail of the bottom of Figure 3;

Figure 5 is a front view of a side connector;

Figure 6 is an edge view of a side connector;

Figure 7 is a front view of a bottom connector;

20 Figure 8 is a side view of the connector of Figure 7;

Figure 9 is a top view of the connector of Figure 7 and 8;

Figure 10 is a front view of an alternative embodiment of side connector;

and

Figure 11 is a side view of the connector of Figure 10.

25 Referring to the accompanying drawings, particularly to Figure 1, there is illustrated a building 10 being erected on a floor slab 12. Spaced around the

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periphery of the floor slab are bottom connectors 14 that engage the bottom edges of structural wall panels 16. Adjacent panels have their side edges connected by connector plates 18.

As illustrated most particularly in Figures 2, 3 and 4, each of the wall panels 16 is constructed with an outer skin 20, an inner skin 22 and a structural frame 24 of wooden studs. The frame includes a double top plate 26, a bottom plate 28 and a set of studs 30 joining the top and bottom plates. In the panel illustrated on the left hand side in Figure 2, the left and centre studs 30 are single while the right hand stud is double. In the right hand panel, the studs along the side edges are both double, while the centre stud is single.

The configuration of the bottom connector 14 is illustrated most particularly in Figures 7, 8 and 9. This connector includes a floor flange 32 with a fastener hole 34 and an upright connector flange 36 projecting upwardly from one end of the floor flange. A fastener hole 38 is formed in the connector flange. As illustrated in Figures 1 through 4, the bottom connector is mounted on the floor slab 12 using a fastener 39 through the fastener hole 34. To mount the wall panel on the bottom connector, slots 40 in the bottom plate 28 are placed over the upright connector flange 36. A fastener 41 is then driven into the bottom plate 28, through the fastener hole 38 in the connector flange. The panel is pre-drilled to receive the fasteners. Alignment of the fasteners with the holes in the connectors ensures proper alignment of the panels on the connectors.

As illustrated most particularly in Figures 5 and 6, the side connector plates 18 are circular. They have four fastener holes 42 spaced along a diameter of the plate. A second diameter perpendicular to that through the fastener holes is marked by line 44 across the plate. In use, the side connector plate 18 is inserted into a slot 46 in the side edge of a wall panel until the line 44 lines up with the side edge.

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At that point the connector is fastened in place using fasteners through the fastener holes 42 and corresponding pre-drilled holes in the panel studs. When the next adjacent panel is put in place, the connector plates 18 extend into the slots 46 in the side edge of that panel and are fastened in place with fasteners through the studs and the fastener holes 42.

Figures 5 and 6 illustrate an alternative embodiment of the side connector plates where the line 44 is omitted and a tab 48 is struck out between a cut line 50 in the plate and a radial fold line 52. The tab 48 lies flush on the edge of the panel when the connector is properly seated in the slot 46. A fastener hole 54 in the tab 48 is used for fastening the connector to the edge of the panel.

Returning once more to Figure 1, erection of a building involves fastening the bottom connectors 14 to the floor slab 12, installing a wall panel 16 which is set in place on the bottom connectors and fastening the panel in place. Side connectors 18 are inserted into slots 46 in the side edge of the panel and fastened in place on the mounted bottom connectors and then another panel is put in place edge-to-edge with the first, with its slots 46 engaging the side connectors 18 of the already installed panels. At corners of the building, where two walls meet, one of the panels will overlap the side edge of the other and be fastened in place using fasteners, for example nails, through the edge studs of the two walls.

Once the building walls are in place, a set of trusses 56 is mounted on the walls to support roofing 58. To complete the building, panels 60 extending from the top of the outer skin of each panel 16 to the underside of the roof 58 are fastened in place over the trusses 56.

Once the building has been erected as described, it is finished by installing services, partition walls, windows and doors as required.

While one embodiment of the invention has been described in the

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foregoing, it is to be understood that other embodiments are possible and are intended to be included herein. A wide variety of buildings can be constructed using the technique described above. Kits for manufacturing buildings according to the invention are easily packaged for shipping with very little waste space or excess
5 weight.

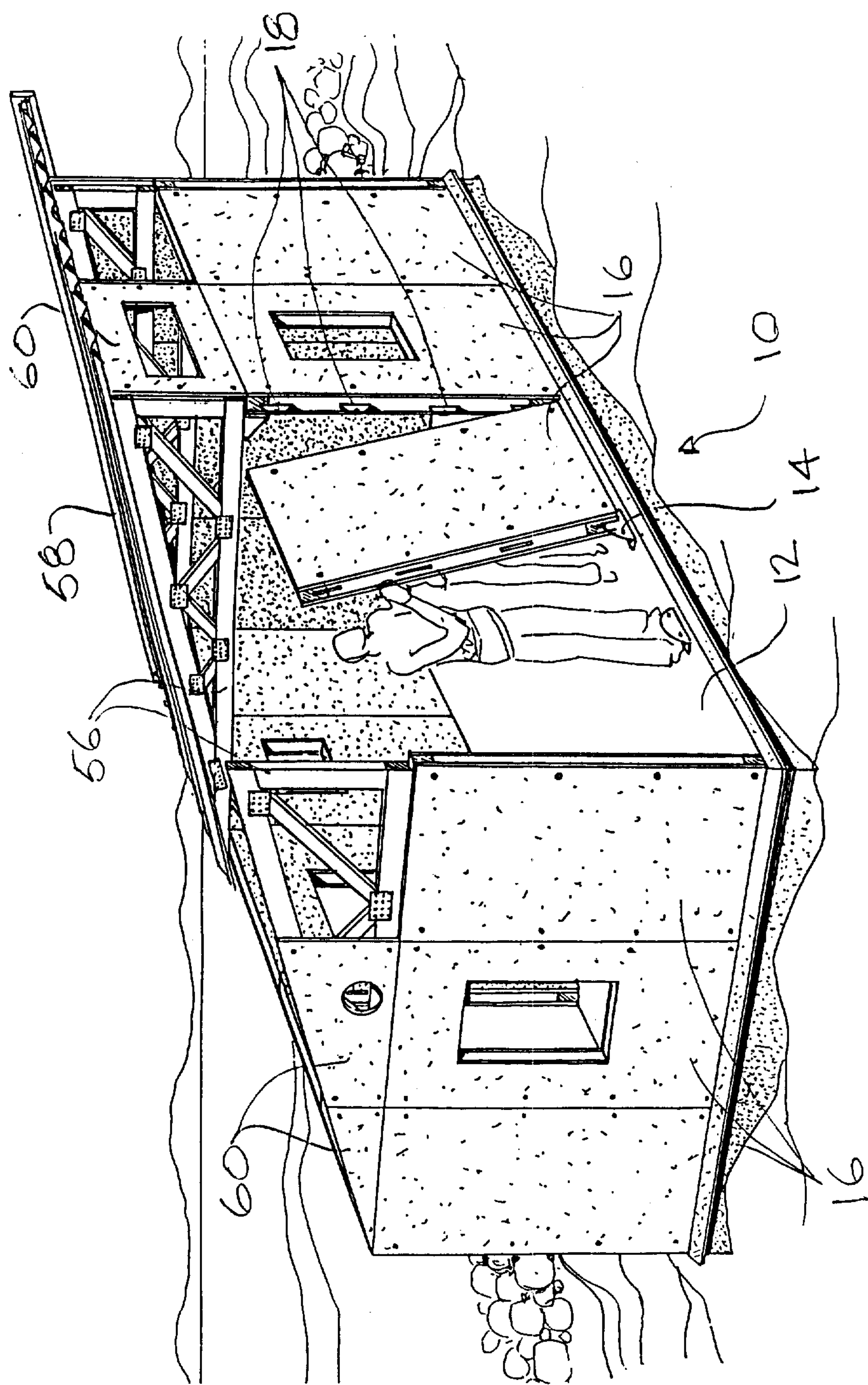


FIG. 1

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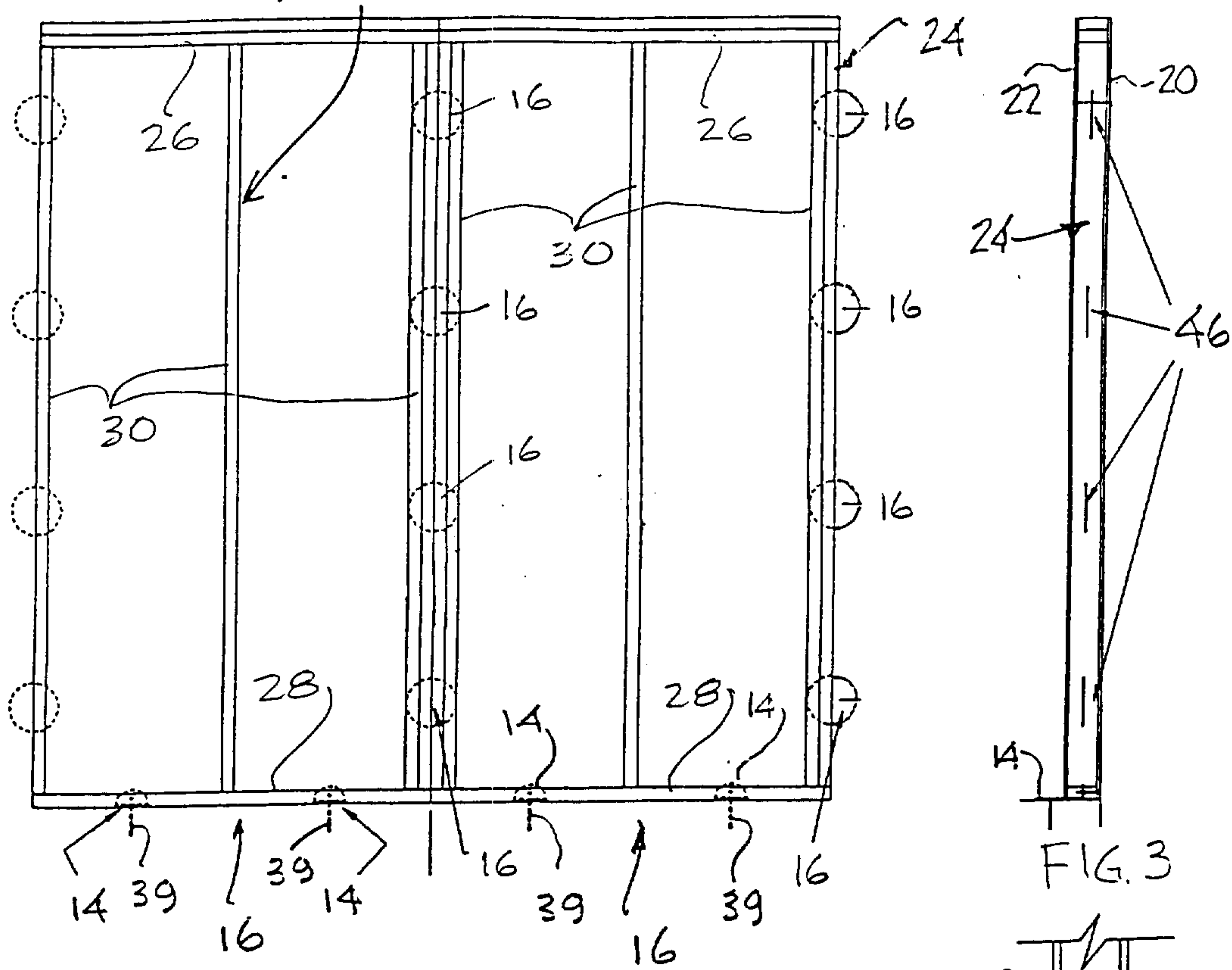


FIG. 2

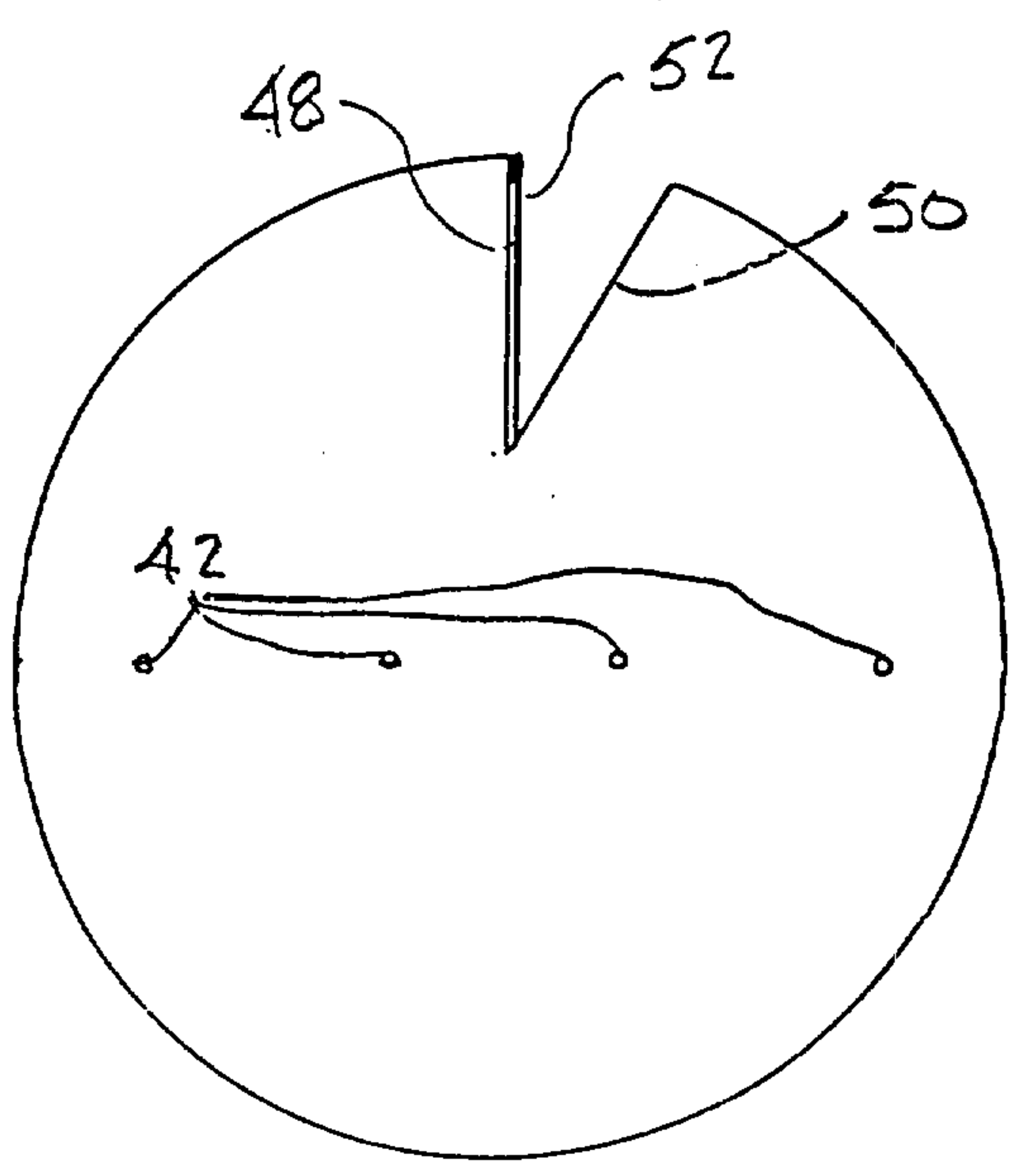


FIG. 10

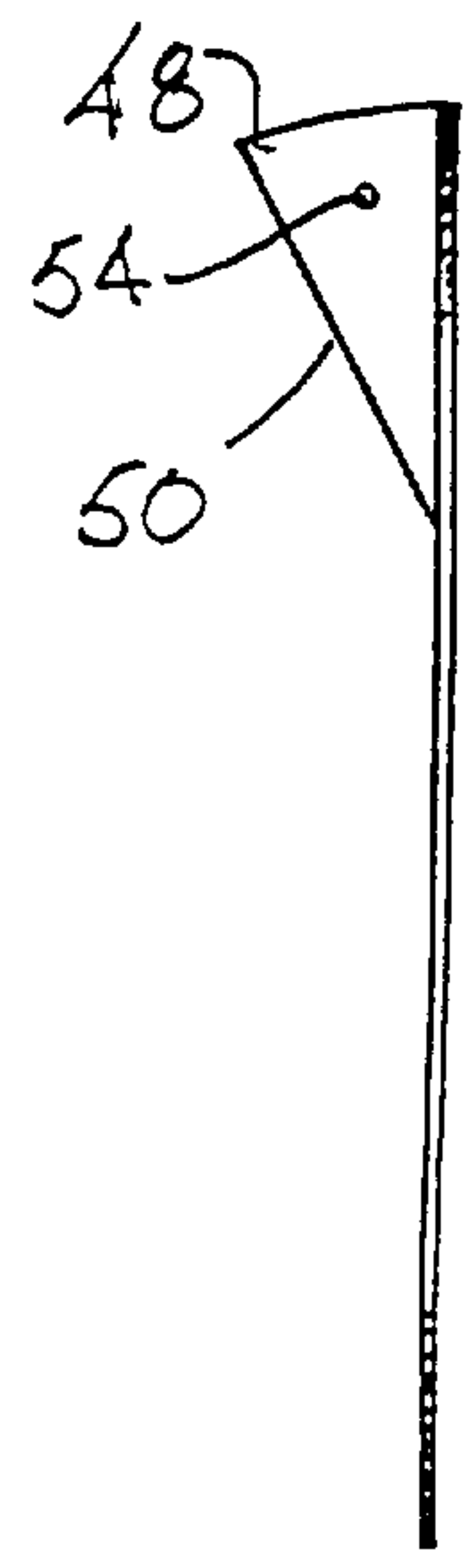


FIG. 11

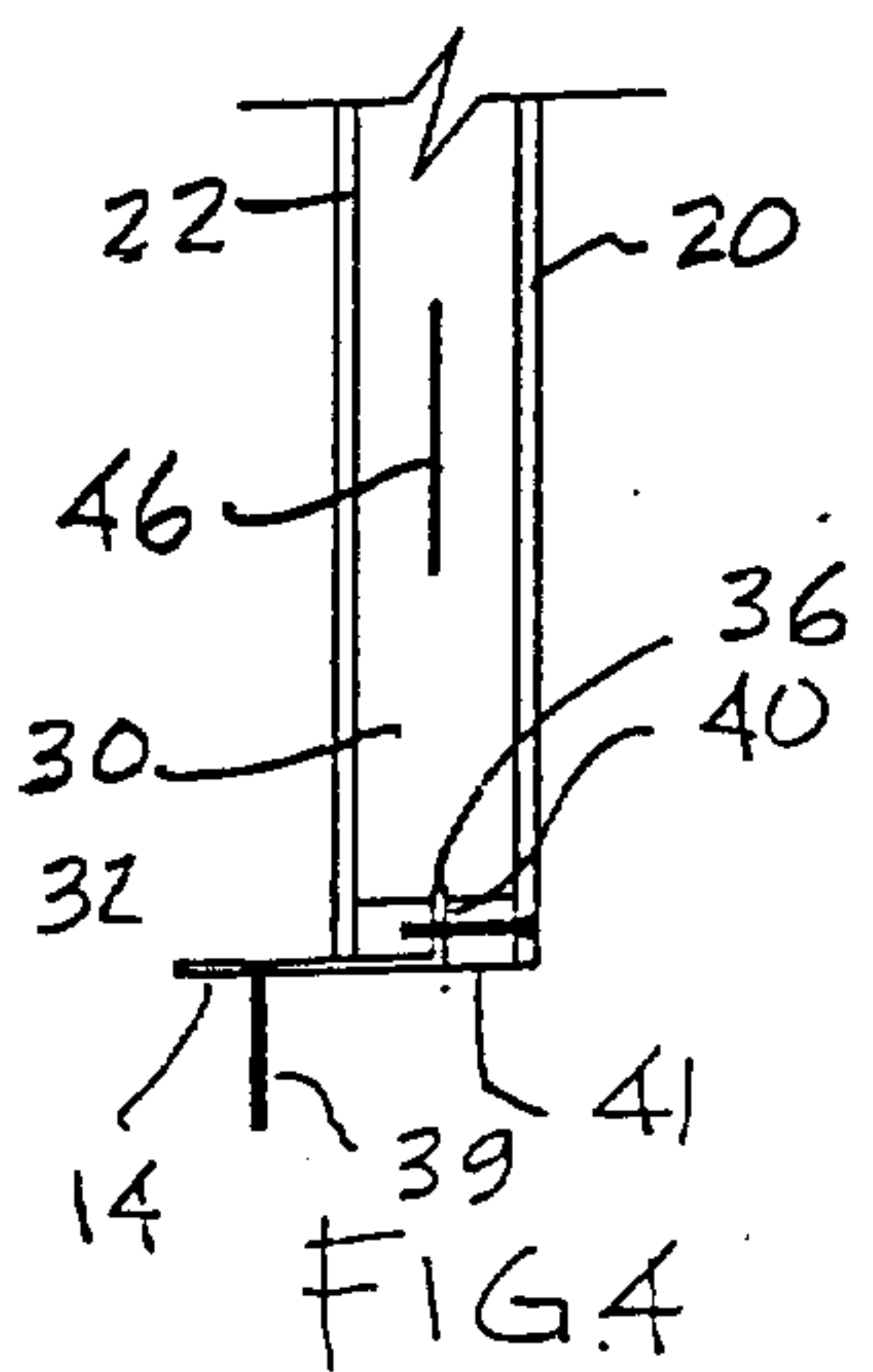


FIG. 4

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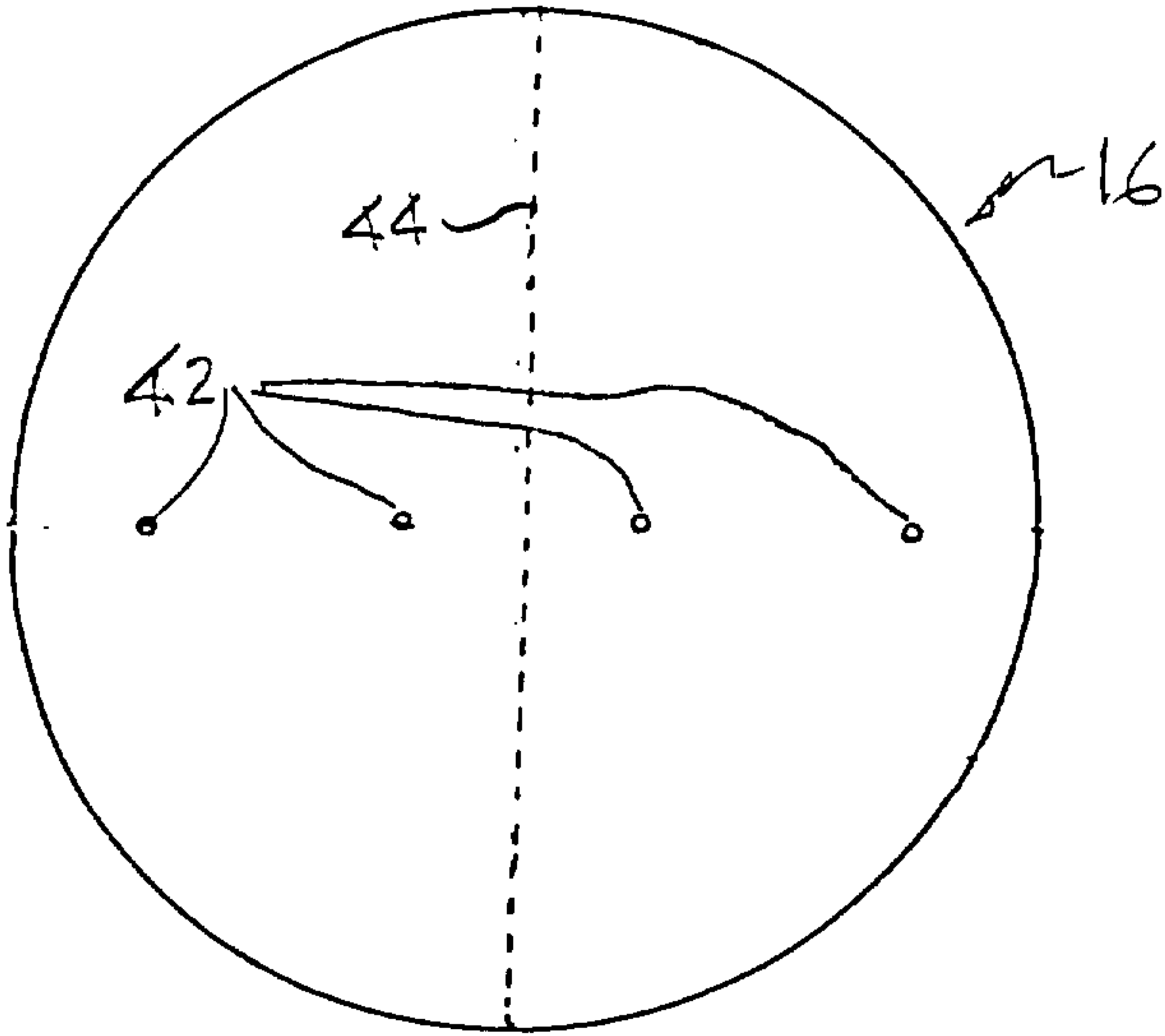


FIG. 5

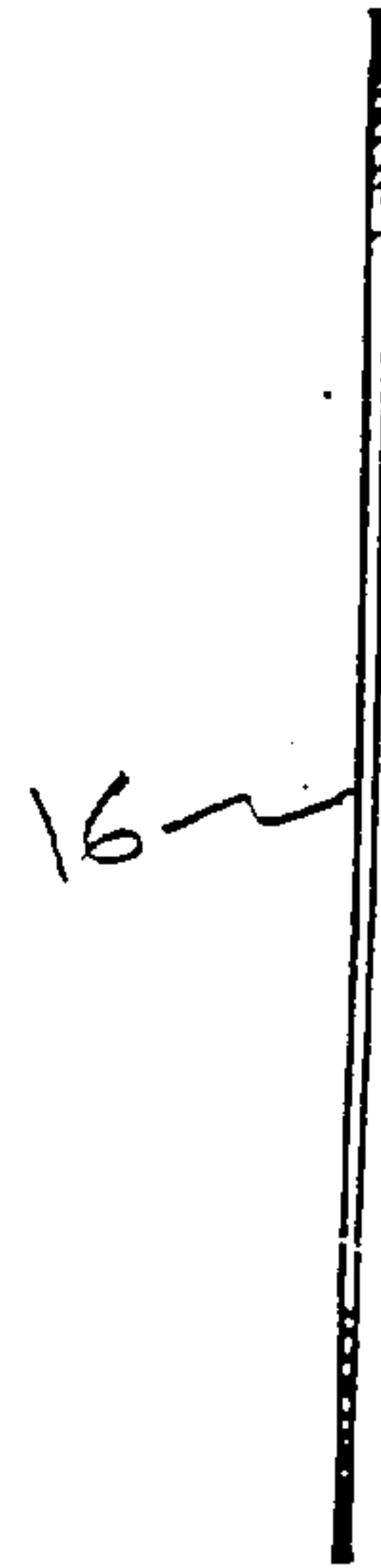


FIG. 6

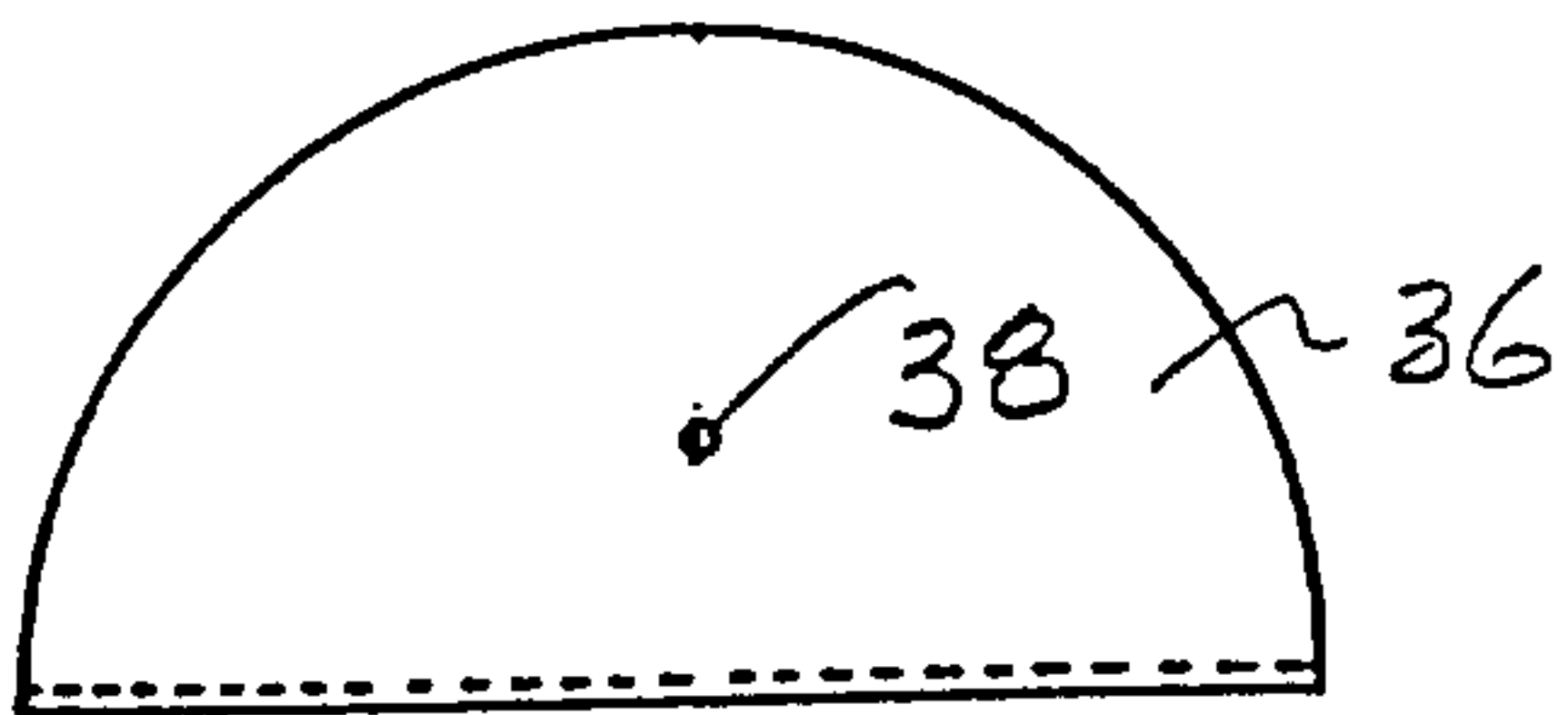


FIG. 7

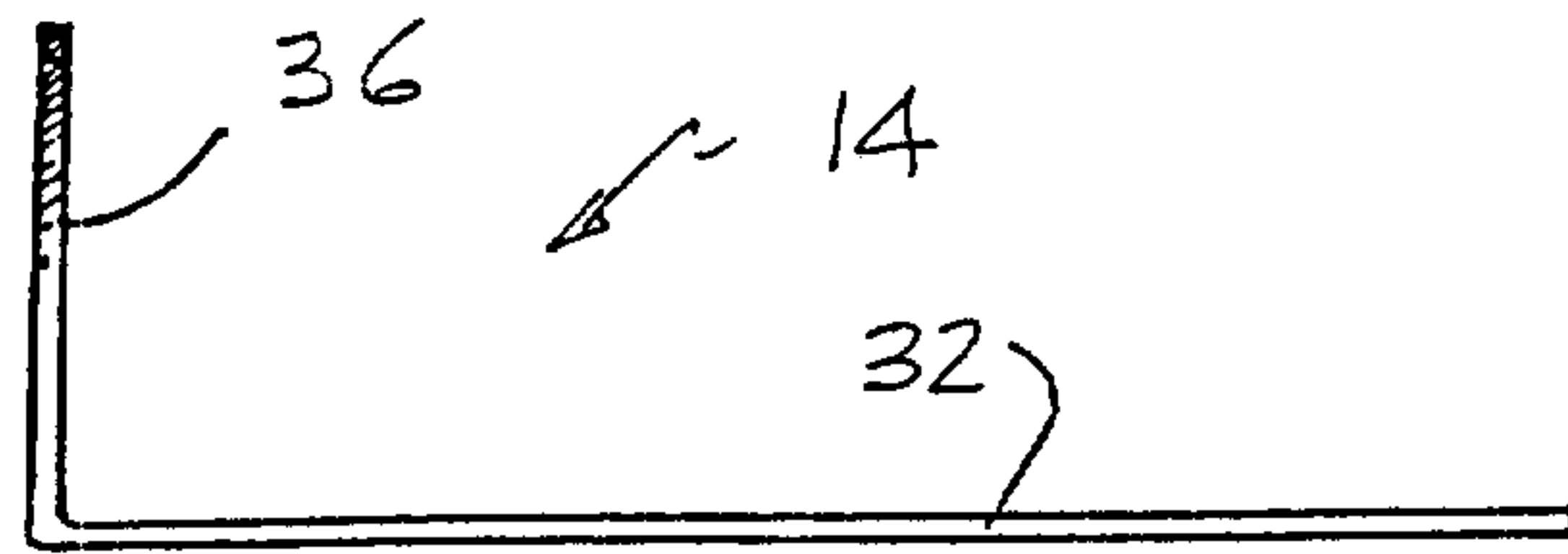
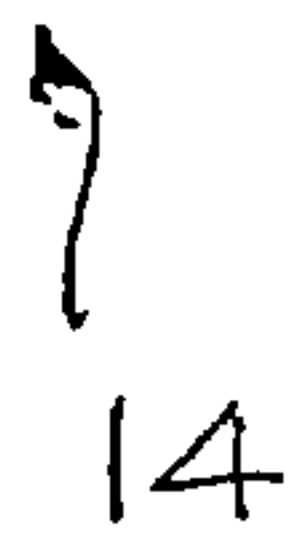


FIG. 8

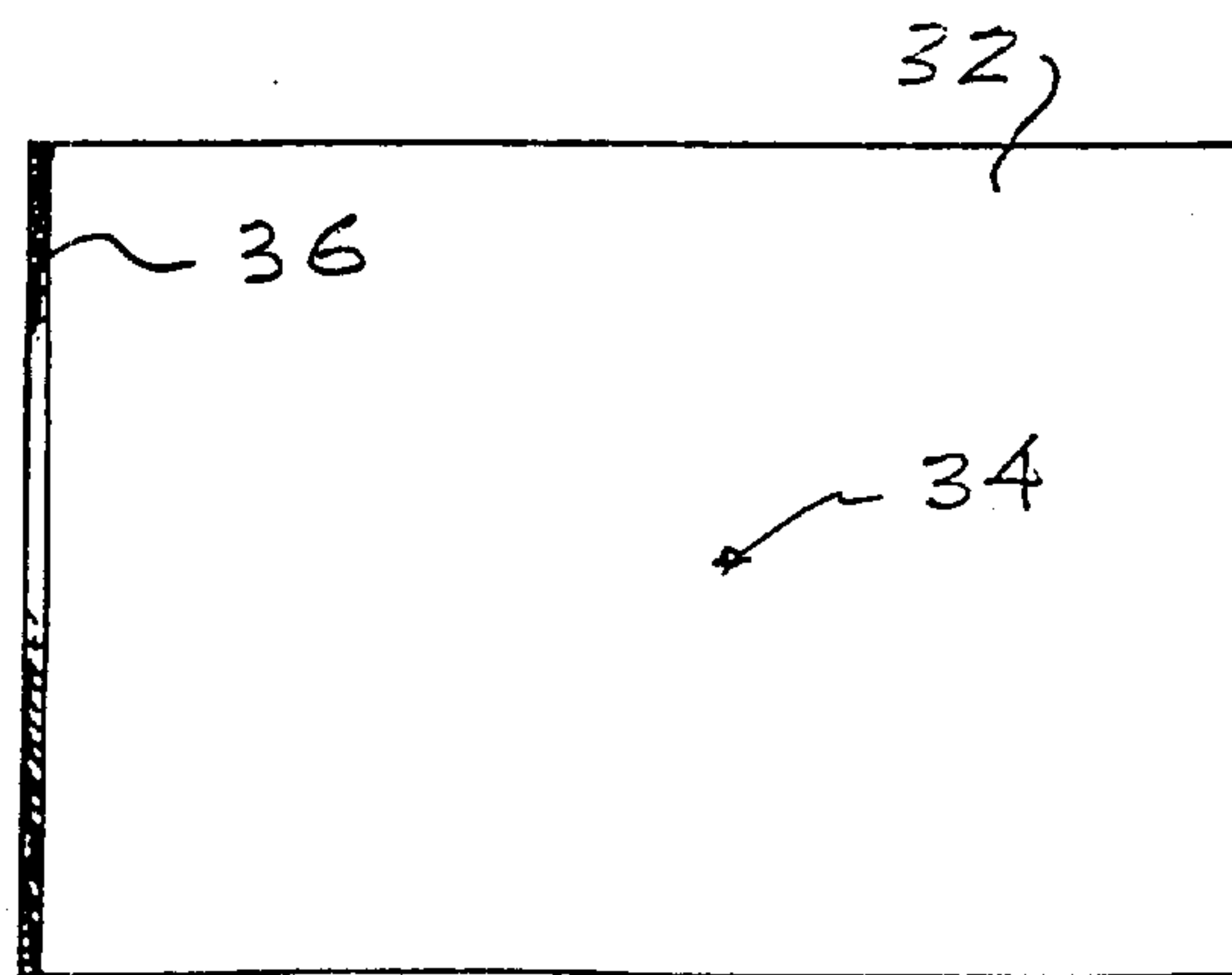


FIG. 9

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