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(54) Titre : LOGEMENT A PILES

(54) Title: BATTERIES HOUSING

(57) **Abrégé/Abstract:**

A batteries housing comprising a structure having - two outwardly open compartments between which a hollow zone is interposed, each of the two outwardly open compartments being divided in several partitions, each of the several partitions being adaptable to receive one of several rechargeable batteries, the several rechargeable batteries having terminals for contacting a wiring; each of the two outwardly open compartments being provided with -channels for air for heating the several rechargeable batteries, said channels for air for heating the several rechargeable batteries being located in the two outwardly open compartments, in and adjacent their walls, as follows: a) in a top and bottom walls and in a pair of second lateral walls, and open towards the several partitions, and b) adjacent a first lateral wall, for forming upper and lower passages.



TITLE: BATTERIES HOUSING

ABSTRACT

A batteries housing comprising a structure having

- two outwardly open compartments between which a hollow zone is interposed, each of the two outwardly open compartments being divided in several partitions, each of the several partitions being adaptable to receive one of several rechargeable batteries, the several rechargeable batteries having terminals for contacting a wiring; each of the two outwardly open compartments being provided with
- channels for air for heating the several rechargeable batteries, said channels for air for heating the several rechargeable batteries being located in the two outwardly open compartments, in and adjacent their walls, as follows: a) in a top and bottom walls and in a pair of second lateral walls, and open towards the several partitions, and b) adjacent a first lateral wall, for forming upper and lower passages.

TITLE: BATTERIES HOUSING**I. Background of the Invention****1. Field of the Invention**

The present invention relates in general to devices for heating batteries and, more particularly, to a batteries housing using hot or warm air for heating.

2. Description of the Prior Art

The operation of a battery is conditioned by a number of factors, one of which is temperature.

Common batteries with aqueous or nonaqueous electrolytes perform poorly in environments colder than their lowest operational temperatures, because the electrolytes freeze and/or become viscous, with consequent degradation of ion-transport properties. Furthermore, for example, when an engine starts, the battery must produce high voltage energy and this becomes critical in cold weather when the resistance in the battery increases and the voltage is lower.

Conventional battery heating systems typically use a separate power source to supply energy to a heating element that generates the required heat. The resultant heat is then transferred to the battery by either a convection system or a conduction system. Convection systems blow hot air across the battery, whereas conduction systems apply heat directly to the surface of the battery.

Warm air heating requires complex mechanical systems that use substantial amount of external power. This constraint limits the portability of batteries and demands the availability of an external separate power source for heating the battery.

Systems employing thermal jackets usually include flexible insulators that wrap around of batteries. The thermal jackets must also be powered by separate power sources and require substantial amounts of energy.

II. Summary of the invention

Accordingly, it is desirable to overcome the disadvantages associated with the prior art systems. The present invention addresses these disadvantages by using a batteries housing comprising a structure having

- two outwardly open compartments between which a hollow zone is interposed, each of the two outwardly open compartments being divided in several partitions, each of the several partitions being adaptable to receive one of several rechargeable batteries, the several rechargeable batteries having terminals for contacting a wiring; each of the two outwardly open compartments being provided with
- channels for air for heating the several rechargeable batteries, said channels for air for heating the several rechargeable batteries being located in the two outwardly open compartments, in and adjacent their walls, as follows: a) in a top and bottom walls and in a pair of second lateral walls, and open towards the several partitions, and b) adjacent a first lateral wall, for forming upper and lower passages.

In one aspect of this invention, use is made of inlet and outlet fittings affixed perpendicular to the first lateral wall, in an area corresponding to the hollow zone, and communicating with the upper and lower passages.

In another aspect of this invention, sizes of the several partitions and the several rechargeable batteries are so chosen that a light-press fit is obtained when the latter are inserted into the former.

III. Brief description of the drawings

Although the characteristic features of this invention will be particularly pointed out in the claims, the invention itself, and the manner in which it may be made and used, may be better understood by referring to the following description taken in connection with the accompanying drawings forming part hereof, wherein like reference numerals refer to like parts through the several views in which:

FIG. 1 is a perspective view of a batteries housing according to the embodiment of the present invention;

FIG. 2 is a perspective view of the batteries housing of FIG. 1 depicted without one of the top walls;

FIG. 3 is a perspective view of one of the rechargeable batteries used in the embodiment of the present invention;

FIG. 4 is a perspective view of one of the two outwardly open compartments of batteries housing depicting a wiring;

Fig. 5 is a side view of an enclosure located in a hollow zone between the two outwardly open compartments;

Fig. 6 is a view of FIG. 5 as viewed from arrow A; and

FIG. 7 a diagrammatic view of the flow of hot/warm air in batteries housing.

IV. Description of a preferred embodiment

Referring now to FIGS. 1 to 7, batteries housing 200 constitutes a unitary structure generally comprising two outwardly open compartments 202, between which a hollow zone 204 is interposed. Each outwardly open compartment 202 represents a mirror image of the other outwardly open compartment 202. Referring now in detail, batteries housing 200 comprises:

- a bottom wall 206 extending across two outwardly open compartments and hollow zone 204;
- a pair of top walls 208, each top wall 208 extending across one outwardly open compartment 202;
- a first lateral wall 210, perpendicularly disposed to bottom and top walls 206 and 208 and extending along two outwardly open compartments 202 and hollow zone 204;
- a pair of second lateral walls 212, perpendicularly disposed to bottom and top walls 206 and 208, each second lateral wall 212 extending along an outwardly open compartment 202;
- a pair of back walls 214 disposed perpendicular to bottom wall 206 and used for closing each outwardly open compartment 202 and for forming, together with portions of bottom and first lateral walls 206 and 210, respectively, hollow zone 204;
- several separating, equally spaced walls 216, extending across each outwardly open compartment 202 and disposed parallel to first lateral wall 210; thus, each outwardly open compartment 202 is divided in several partitions 218; each one of several partitions 218 having a rear wall 214' that constitutes a portion of back wall 214; on each rear wall 214', which face each of several partitions 218, a pair of (+) and (-) contacts 220 is located; the pair of (+) and (-) contacts 220 (usually springs) is adaptable to contact a rechargeable battery 222, respectively its terminals 224; a wiring 226, connecting all pairs of (+) and (-) contacts 220 of several partitions 218, is disposed on each back wall 214, towards hollow zone

204; the size of each rechargeable battery 222 is relatively lesser than that of a regular motorcycle battery; therefore, several partitions 218 are used in each outwardly open compartment 202;

bottom wall 206 is provided with two first parallel channels 228 open towards the interior of each outwardly open compartment 202 and located between first and second lateral walls 210 and 212;

each of the pair of top walls 208 is also provided with two first parallel channels 228 (not shown) open towards the interior of each outwardly open compartment 202 and located between first and second lateral walls 210 and 212, opposite to the two first parallel channels 228 provided in bottom wall 206;

each of the pair of second lateral walls 212 is provided with two-second parallel channels 230 open towards the interior of each outwardly open compartment 202, between bottom and top walls 206 and 208;

in each outwardly open compartment 202, proximate to first lateral wall 210, one of several separating, equally spaced walls 216 is located; a dividing wall 232 perpendicular to the former and the latter forms an upper and lower passages 234 and 236;

in hollow zone 204 an enclosure 238 is formed by: a) portions of bottom wall 206 and first lateral wall 210, respectively, and b) a first interconnecting wall 240, which is coplanar with one of several separating, equally spaced walls 216 that is proximate to first lateral wall 210, c) a second interconnecting wall 242 coplanar with the pair of top walls 208 and d) a spacing wall 243 coplanar with dividing wall 232;

a pair of first openings (not shown) provided in each back wall 214 communicates with upper and lower passages 234 and 236;

a pair of second openings 244 communicating with said pair of first openings is provided in first lateral wall 210 in an area situated between the pair of back walls 214 and corresponding to hollow zone 204; an inlet and outlet fittings 246 and 248 are affixed to the pair of second openings 244, perpendicular to first lateral wall 210;

a front stop wall 250 is used in each outwardly open compartment 202, for closing ends of upper and lower passages 234 and 236, which are disposed opposite to enclosure 238;

each of the several separating, equally spaced walls 216 that form partitions 218 for rechargeable batteries 222 is provided longitudinally, at each lateral side, with a notch 252;

each rechargeable battery 222 has, longitudinally, on each lateral face, a ridge 254 adaptable to be inserted into an adjacent notch 252;

generally, the sizes of partitions 218 and rechargeable batteries 222 are so chosen that a light-press fit is obtained when the latter are inserted into the former;

various mechanical features for securing rechargeable batteries 222 in outwardly open compartments 202 can be easily developed by a person skilled in the art.

A diagrammatic view of a flow of hot/warm air in batteries housing 200 is shown in FIG.7.

While the batteries housing herein described constitutes a preferred embodiment of the invention, is to be understood that the invention is not limited to this precise structural description, and changes may be made therein without departing from the scope and spirit of the invention as defined in the appended claims.

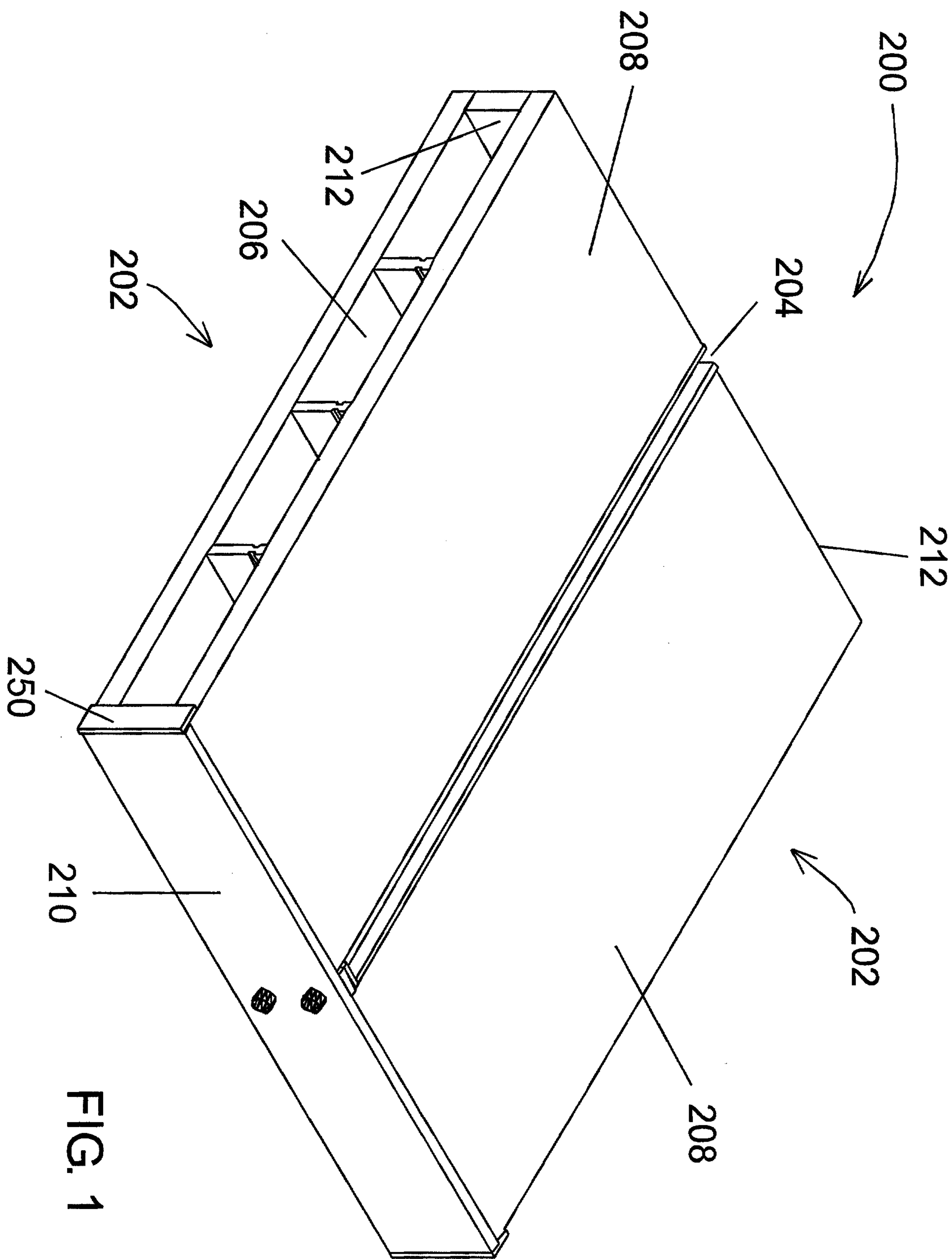
The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. Batteries housing comprising a structure having

- means for forming two outwardly open compartments between which a hollow zone is interposed, each of said two outwardly open compartments being divided in several partitions, each of said several partitions being adaptable to receive one of several rechargeable batteries, said several rechargeable batteries having terminals for contacting a wiring; each of said two outwardly open compartments being provided with
- means for channeling air for heating said several rechargeable batteries, said means for channeling air for heating said several rechargeable batteries being located in said two outwardly open compartments, in and adjacent their walls, as follows: a) in a top and bottom walls and in a pair of second lateral walls, and open towards said several partitions, and b) adjacent a first lateral wall, for forming upper and lower passages.

2. Batteries housing as defined in claim 1, further comprising inlet and outlet fittings affixed perpendicular to said first lateral wall, in an area corresponding to said hollow zone, and communicating with said upper and lower passages.

3. Batteries housing as defined in claim 1 or claim 2, wherein sizes of said several partitions and said several rechargeable batteries are so chosen that a light-press fit be obtained when the latter are inserted into the former.



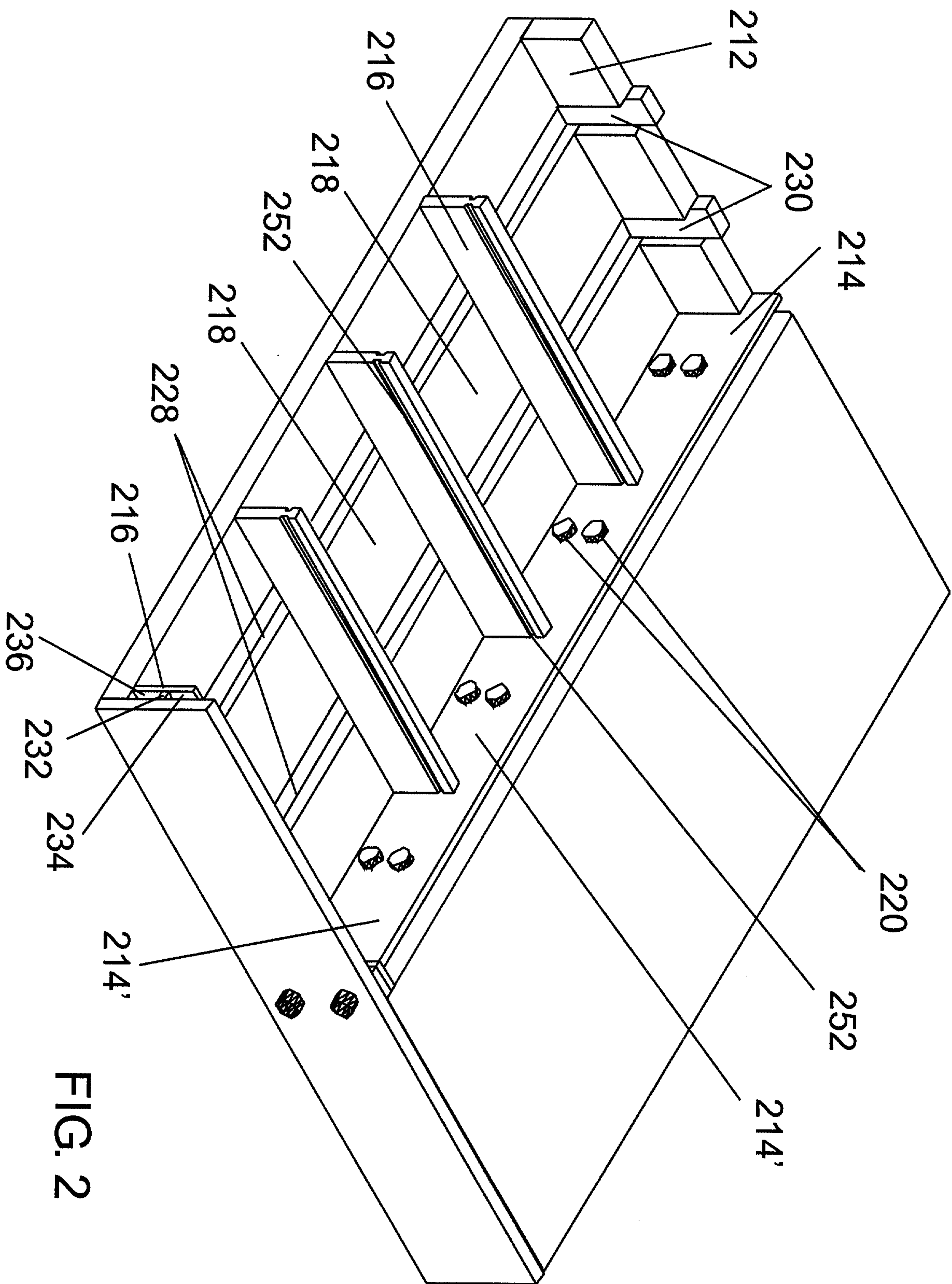
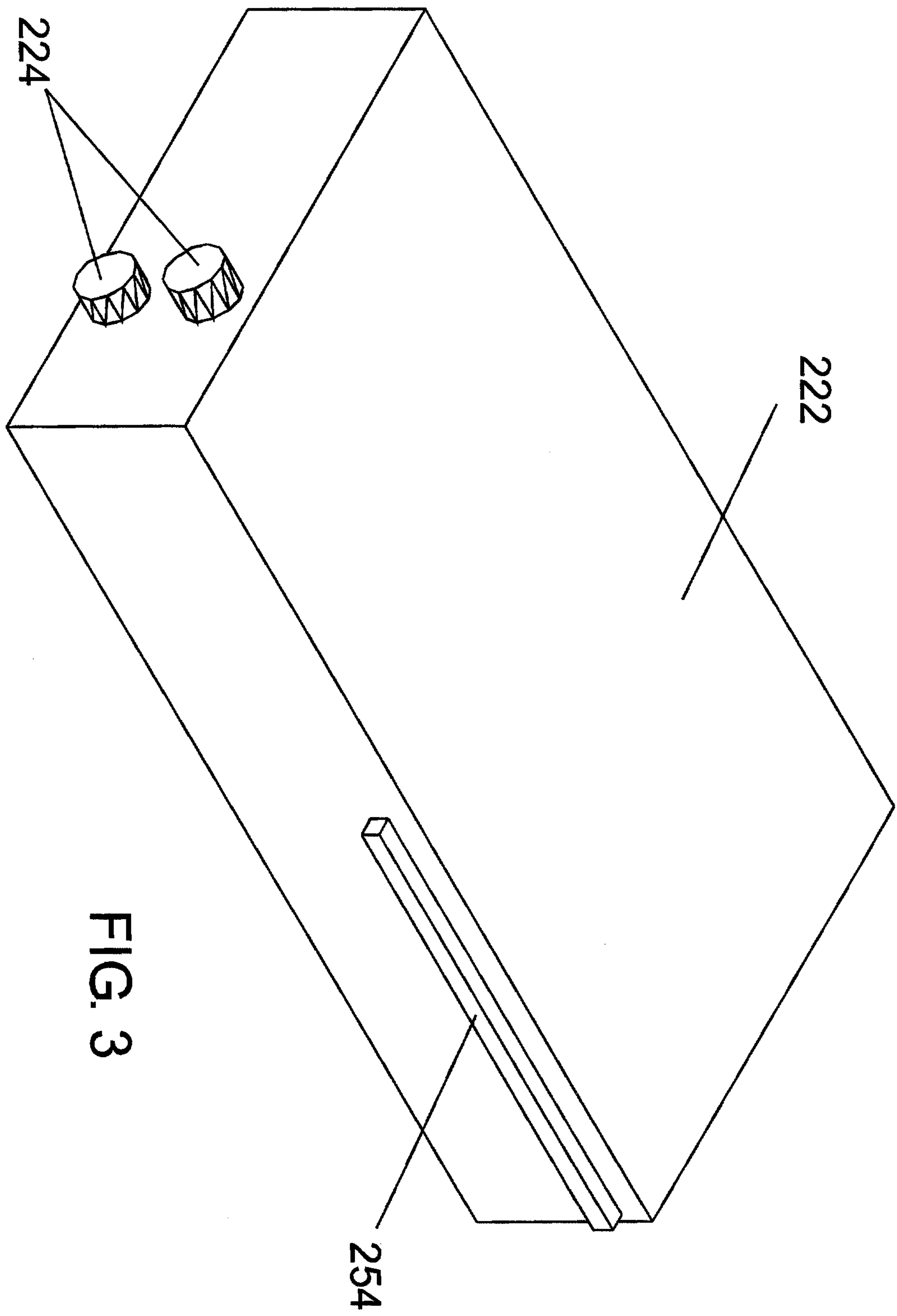


FIG. 2



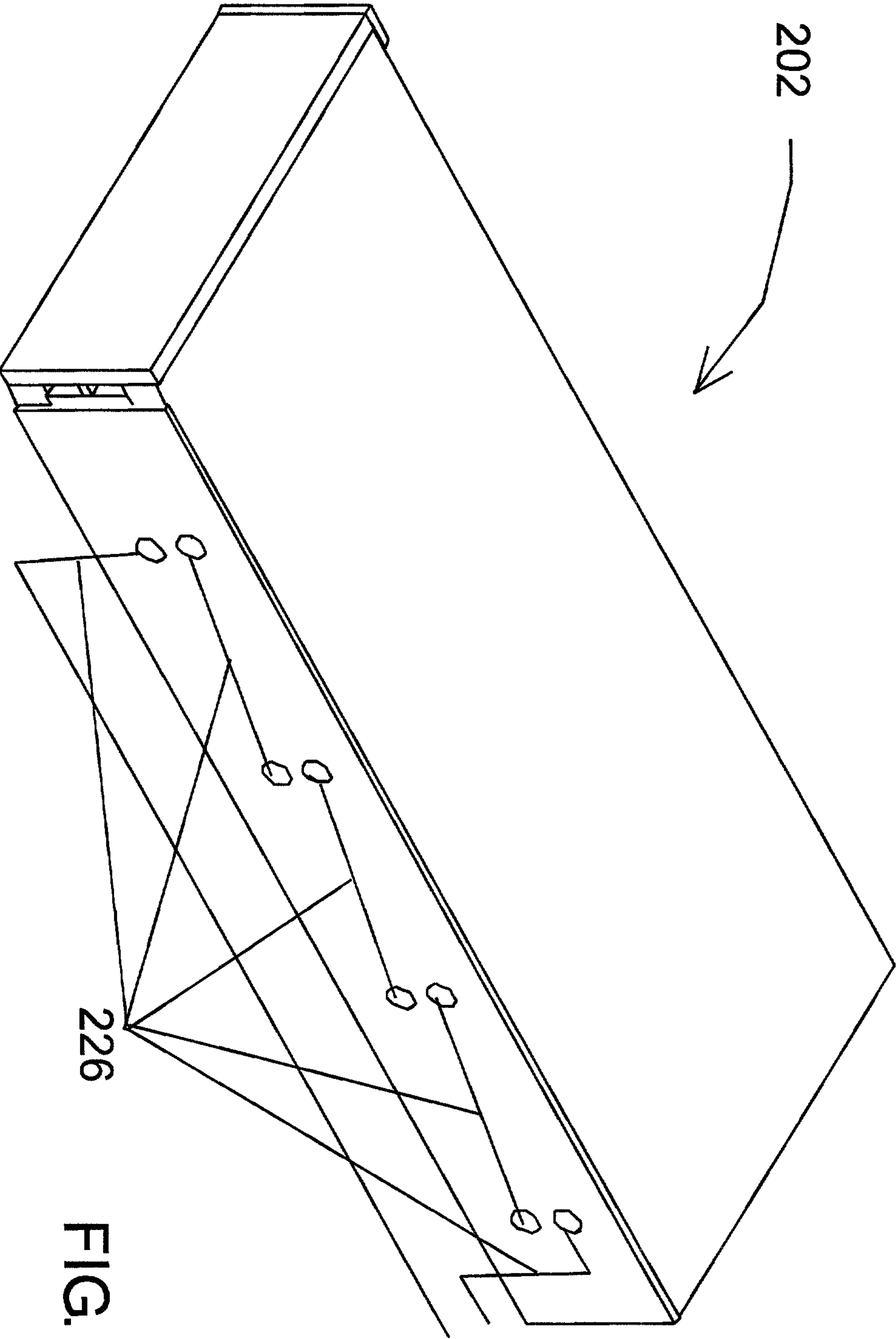
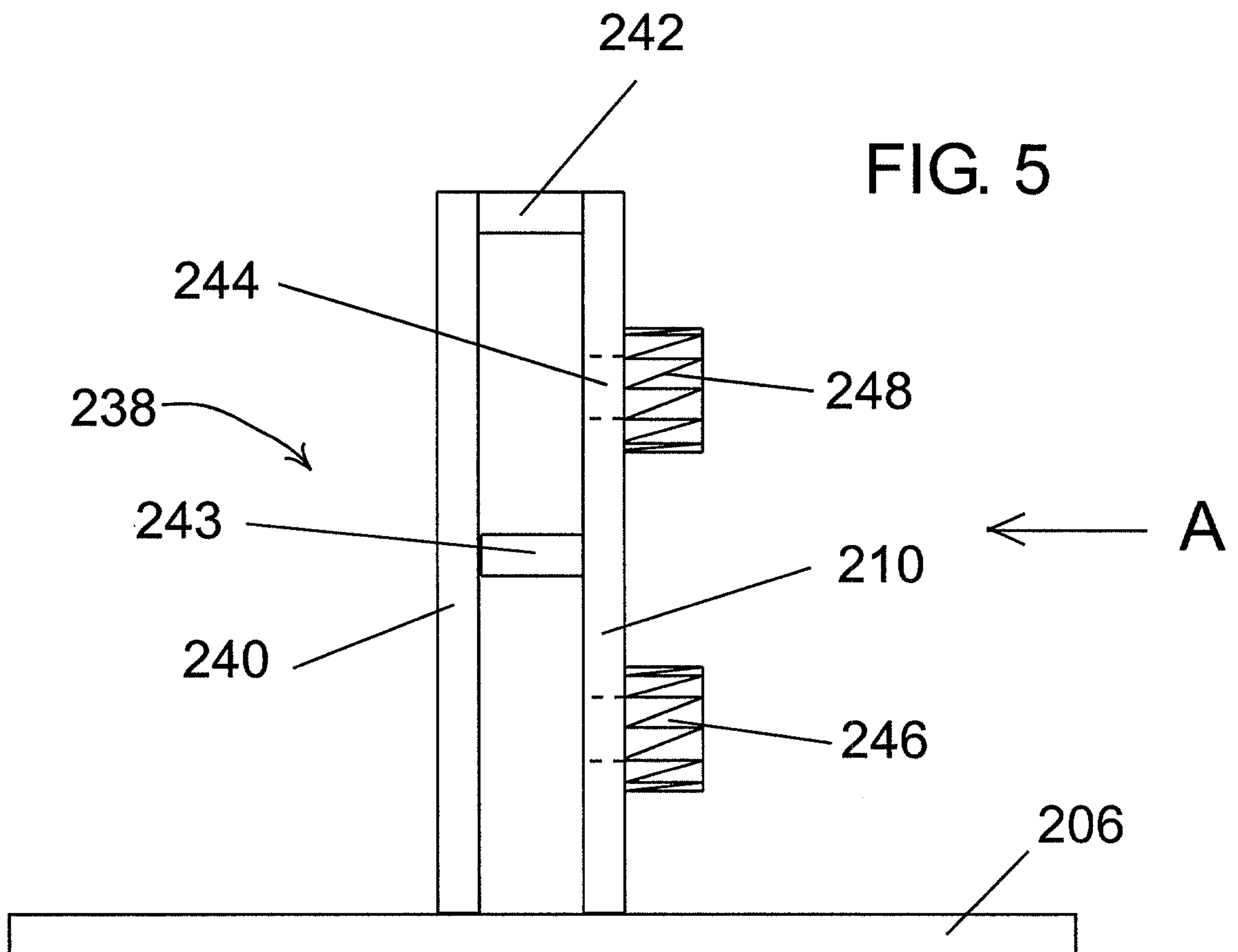


FIG. 4



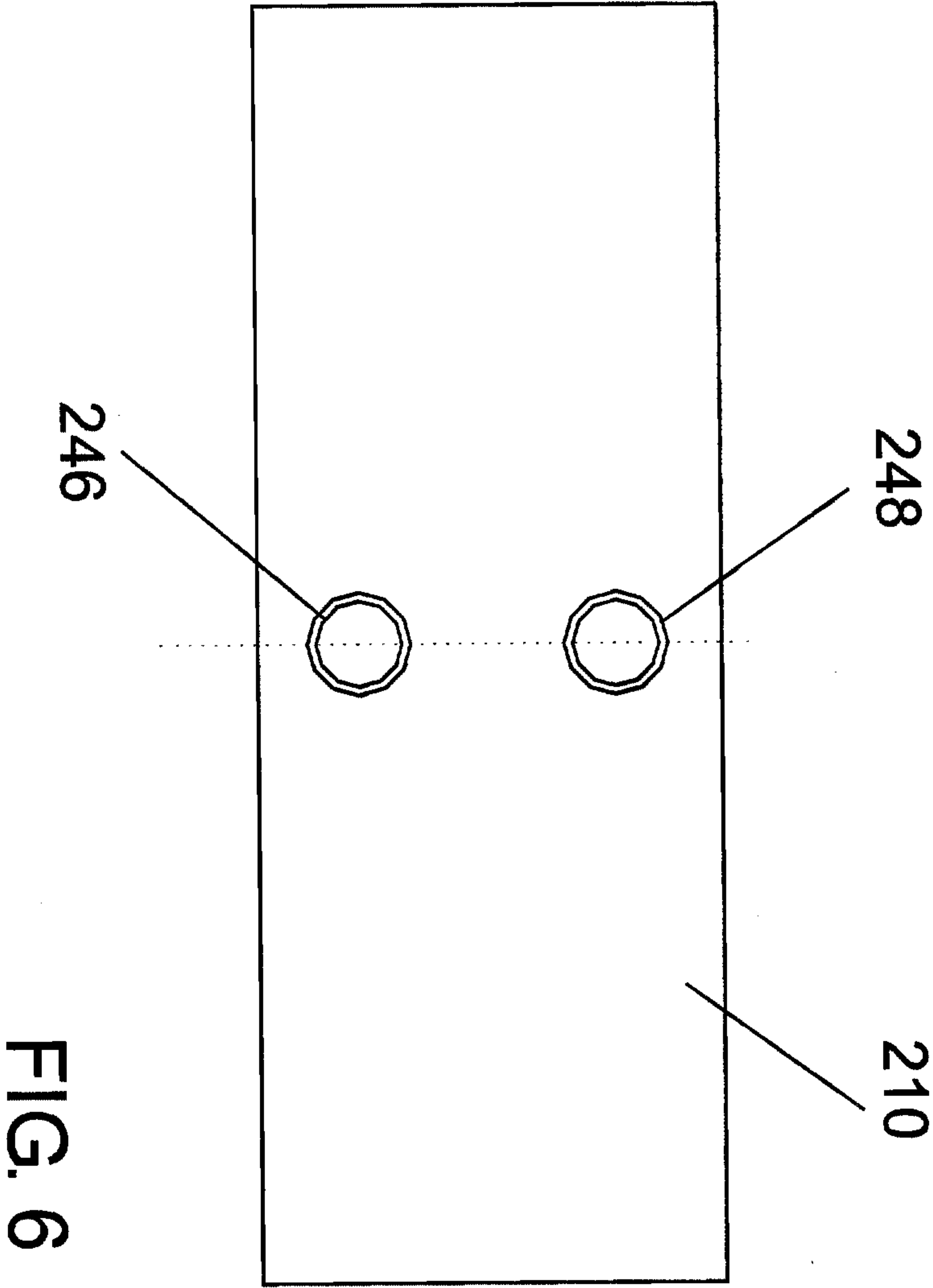


FIG. 6

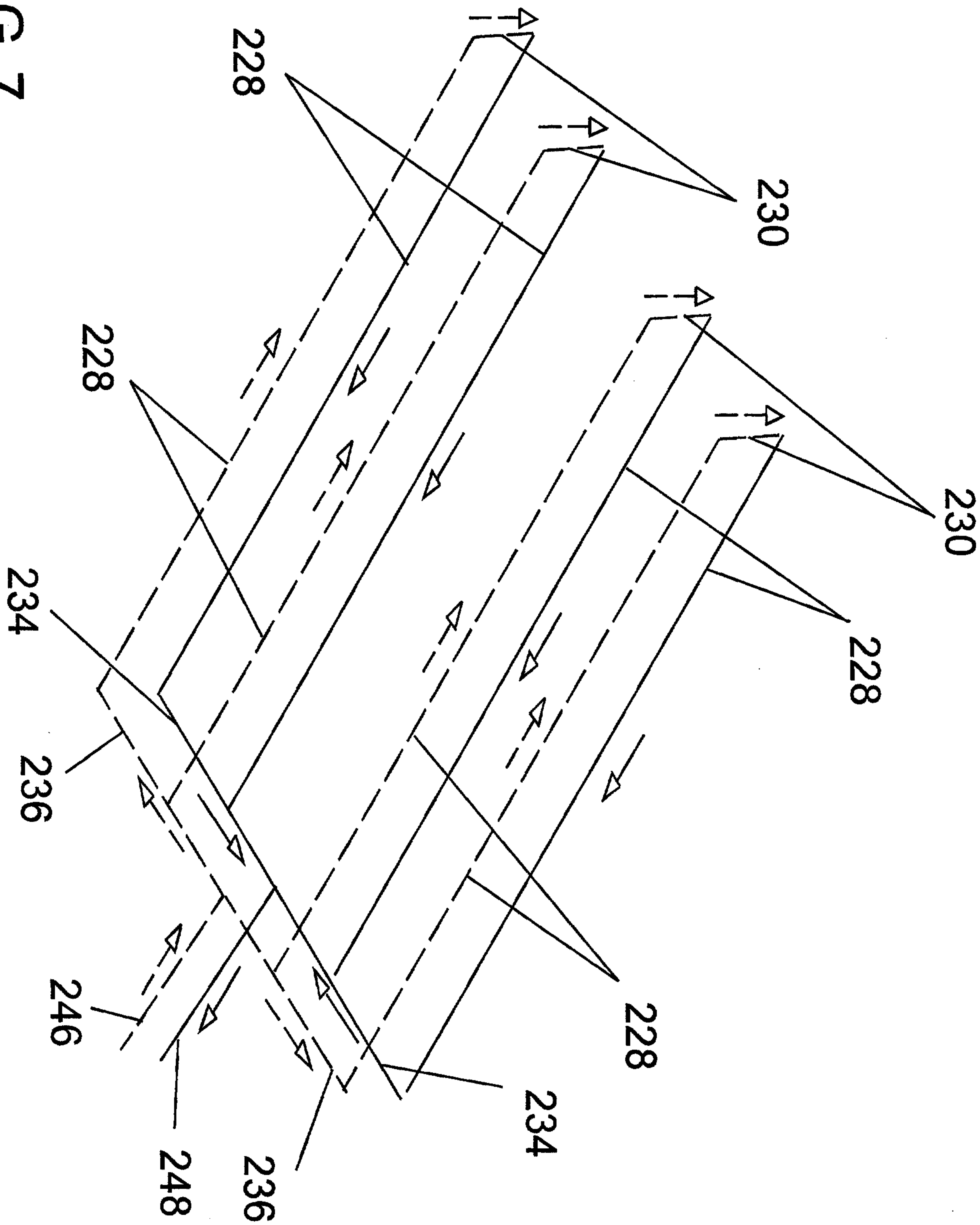


FIG. 7