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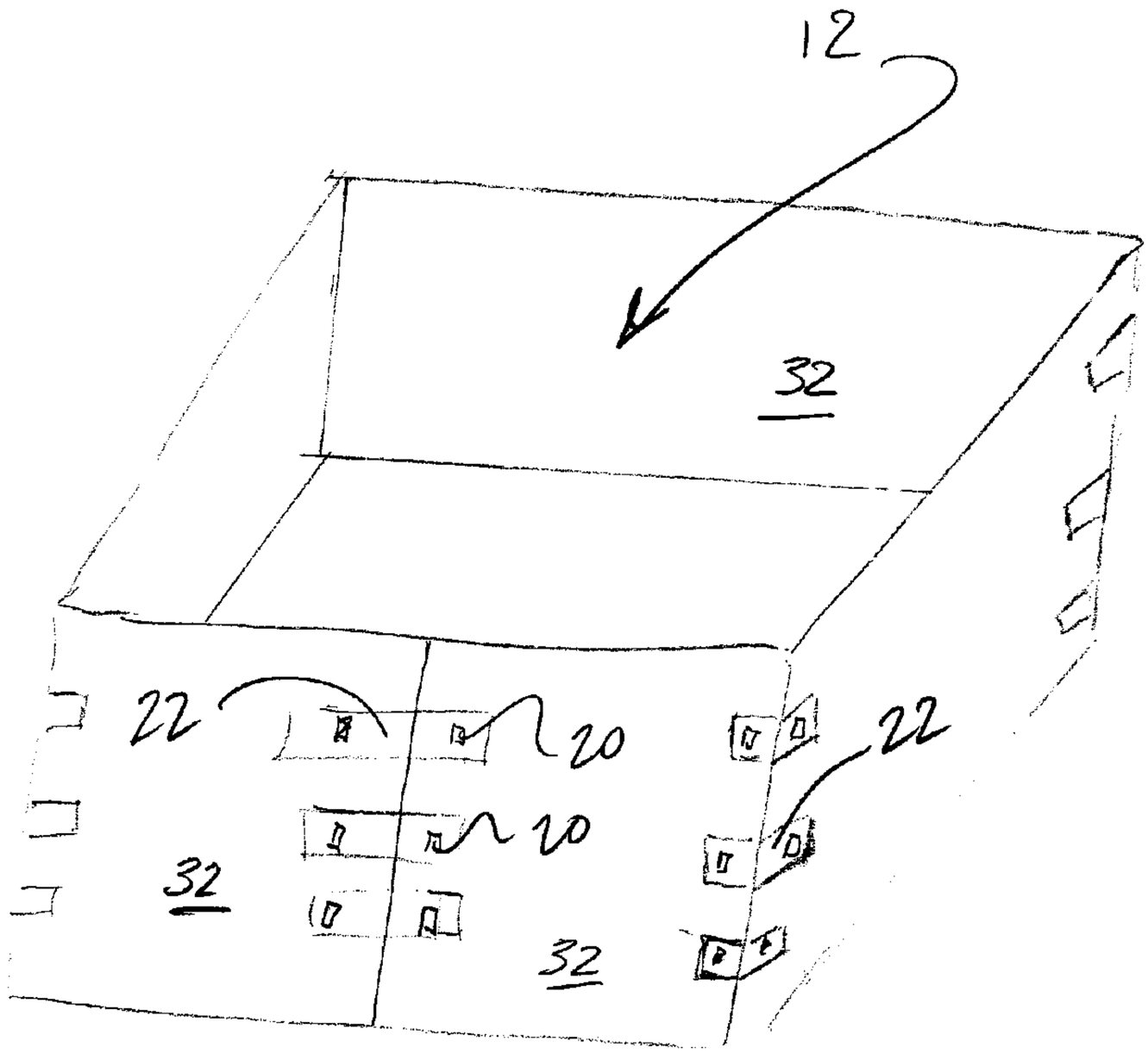
(54) Title: CONTAINER FASTENING ASSEMBLY



(57) Abrégé/Abstract:
A connection arrangement for connection of vertically and/or horizontally arranged containers. Each of the containers provides bosses or projections over a collinear pair of which is placed a separate plate. The plate provides matched polygonal apertures to receive the projections. Each of the projections provides an aperture there through to receive a retainer pin or bolt. the pin or bolt abuts the plate when engaged. The arrangement greatly expedites the separation of the containers when desired. The user need only tap out the retainer pin and pull off the plate. This obviates the use of fasteners which can freeze, rust or become otherwise inoperative or cumbersome.

ABSTRACT

A connection arrangement for connection of vertically and/or horizontally arranged containers. Each of the containers provides bosses or projections over a collinear pair of which is placed a separate plate. The plate provides matched polygonal apertures to receive the projections. Each of the projections provides an aperture there through to receive a retainer pin or bolt. the pin or bolt abuts the plate when engaged. The arrangement greatly expedites the separation of the containers when desired. The user need only tap out the retainer pin and pull off the plate. This obviates the use of fasteners which can freeze, rust or become otherwise inoperative or cumbersome.

CONTAINER FASTENING ASSEMBLY

TECHNICAL FIELD

The present invention relates to fasteners for modular containers/enclosures and more particularly , the present invention relate to a fastening assembly which is expeditiously removed and assembled to allow separation and assembly of the containers by the user without the need to unfasten bolts etc.

BACKGROUND OF THE INVENTION

Fastening assemblies of a broad variety have been used for some time in connecting modular containers and panels or segments making up the enclosures or containers. Contributory to the problem with the fastening arrangements known is that they are not designed for simplicity of use and with the least number of parts. It is well known that the nut and bolt or other mechanical arrangements are very often overly complex for the purpose of securing containers together. In the bolt system, the user is often faced with rusted connectors which are difficult if not impossible sometimes to disconnect. This often leads to complete destruction of the fastener and potential damage to the container which elevates costs for wasted time, materials and repairs.

As a further problem, the possibility of attempting to remove nuts from bolts etc. in inclement weather such as freezing weather becomes exceedingly difficult considering the clothing the user must wear to stay warm. The result is that the user often must at least remove hand protection to operate a wrench etc., thus introducing the possibility of frostbite or other exposure.

The prior art is replete with as many variations of fastening systems, all of which are not designed for user ease.

SUMMARY OF THE INVENTION

One object of the invention is to provide an improved fastening assembly for fastening adjacent containers.

A further object of one embodiment is to provide a connection assembly for connecting similar containers, comprising, in combination:

a first container and a second container in contact;

first cooperating engagement means projecting from each container of the containers, the first cooperating engagement means being in alignment on containers in contact;

second cooperating engagement means adapted for overlying releasable engagement with the first cooperating engagement means, the second cooperating means having a configuration matched in shape to the first cooperating engagement means, the first cooperating engagement means extending beyond the second cooperating engagement means when the second cooperating engagement means overlies the first cooperating engagement means;

third cooperating engagement means integral with the first cooperating engagement means; and

fourth cooperating engagement means adapted for releasable engagement with the third cooperating engagement means and for retaining the second cooperating engagement means when overlying the first cooperating engagement means, whereby when the first cooperating engagement means receives the second cooperating engagement means and the third cooperating engagement means receives the fourth cooperating engagement means, each container is connected and secured against substantial vertical and horizontal separation.

The arrangement has been found to be particularly simple to use in any weather conditions. The first cooperating engagement means in one embodiment comprises a polygonal boss or projection extending outwardly from each adjacently positioned container.

The second cooperating engagement means comprises, in one embodiment, a plate adapted to overly the bosses. The plate is provided with apertures matched in configuration to the bosses. It is preferred that the shape of the bosses and the plate apertures be selected from a polygonal repertoire; circular arrangements do not provide any protection for horizontal and/or vertical movement between adjacent containers. The polygonal shape is advantageous to avoid such potentially hazardous and damaging movement.

The bosses are horizontally and vertically collinear to allow any plate to be used over any projections.

With respect to the fourth cooperating engagement means, the same may comprise in one possible embodiment, a pin or L bolt which is simply inserted in to the aperture extending through each boss.

The arrangement is particularly convenient, since a user wishing to disconnect connected containers, simply pushes out the pin from each boss and pulls the plate free of the bosses.

A further object of one embodiment of the present invention is to provide a connection assembly for connecting similar containers, comprising, in combination:

a first container and a second container in contact;

a plurality of projections projecting from each container of the containers arranged in alignment on containers in contact;

a separate plate member adapted for overlying releasable engagement with the projections projecting from each container, the plate having apertures matched in shape to the projections, the projections extending beyond the plate when in overlying relation with the projections;

aperture means extending through the projections; and

retainer means adapted for releasable engagement with the aperture means, whereby when the projections receive the separate plate and the aperture means receives the retainer means, each container is connected and secured against substantial vertical and horizontal separation.

Yet another object of one embodiment of the present invention is to provide a modular container, comprising:

a plurality of separate container wall segments adapted for releasable connection with each other to form a container or enclosure;

first cooperating engagement means projecting from each container wall segment of the containers, the first cooperating engagement means being in alignment on each container wall segment;

second cooperating engagement means adapted for overlying releasable engagement with the first cooperating engagement means, the second cooperating

means having a configuration matched in shape to the first cooperating engagement means, the first cooperating engagement means extending beyond the second cooperating engagement means when the second cooperating engagement means overlies the first cooperating engagement means;

third cooperating engagement means integral with the first cooperating engagement means; and

fourth cooperating engagement means adapted for releasable engagement with the third cooperating engagement means and for retaining the second cooperating engagement means when overlying the first cooperating engagement means, whereby when the first cooperating engagement means receives the second cooperating engagement means and the third cooperating engagement means receives the fourth cooperating engagement means, each container wall segment is connected forming a container or enclosure and secured against substantial vertical and horizontal separation.

Advantageously, the use of the cooperating engagement means significantly reduces the time required to assemble and disassemble the enclosure or container and presents a marked benefit over existing arrangements.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the container arrangement and fastening assembly according to one embodiment;

Figure 2 is an enlarged view of the assembly illustrated in Figure 1;

Figure 3 is an enlarged view of Figure 2;

Figure 4 is a section along line 4-4 of Figure 3;

Figures 5A through 5D illustrate alternate embodiments of Figure 3;

Figure 6 is an illustration of an alternate embodiment of the present invention; and

Figure 7 is an illustration of yet another alternate embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to Figure 1, shown is a perspective view of a first embodiment of the present invention. Numeral 10, generally refers to the arrangement. Large containers 12 for storage of, for example, water are desirably connected together for modulation at a site. The overall fastening assembly is referenced by numeral 14 and is more detailed in Figure 2.

Each container 12 is positioned for contact with an adjacent container 12 at an interface16. A wall or extension 18 is provided on each container 12 for abutment with a similar component from the adjacent container 12. Each wall 18 includes a plurality of projecting bosses 20 extending outwardly in parallel planar relation from wall 18. The bosses 20 function as a first cooperating engagement. The bosses 20 may be welded to the walls 18. The bosses 20 on an individual container 12 are arranged in collinear equidistant relation and are horizontally aligned when walls 18 are abutted between containers 12. The horizontal distance between bosses 20 of adjacent containers, in this embodiment is the same and this is true of the spacing of bosses on an individual container 12.

With reference to Figure 3, shown is an enlarged view of the arrangement. The bosses 20, shown in the example as having a rectangular shape, receive, in overlying relation, a second releasable cooperating engagement member 22. The member 22 is shown in the example as a plate. The plate 22 has spaced apart apertures 24 which receive the bosses 20. The boss 20 shape and aperture 24 are configured for cooperation.

Plate 22 may comprise a similar material of which the containers 12 are made, such as steel. The plate 22 is dimensioned to overlie the interface of abutment, referenced by numeral 26, of the adjacent containers 12. The plate is also dimensioned to be of a lesser thickness than the height of the bosses 20. In this manner, the plate 22 can be loosely retained on the bosses 20 in a parallel plane to the walls 18.

In order to further assist in retaining the plate 22 on the bosses 20, a third releasably engageable cooperating means in the form of an aperture 28 (chain line) cooperates with a fourth releasably engageable cooperating means in the form of a pin or L-bolt 30. As is illustrated in the example, the pin 30 is received within the aperture

28. The reception is such that the pin 30 abuts the surface of the plate 22. This relationship ensures that the plate 22 remains snugly against the walls 18. The former relationship is depicted in Figure 4.

The Figures illustrate the boss 20 shape as a rectangle. This is useful when combined with a keyed or matched configuration in the plate 22 to reduce if not eliminate any vertical or horizontal movement of connected containers. Any suitable polygonal shape is envisioned as a possibility. Figures 5A through 5D illustrate a number of variations for the plate 22 in terms of the apertures 24 being diamond, square, hexagonal and generally square in shape. The bosses 20 would obviously have a keyed shape for cooperation. In addition, Figures 5A through 5D show variations on the shape and disposition of the pins or L bolts 30. The pins or bolts may be inserted into the aperture 28 of the bosses 20 vertically, horizontally or angularly. Further, the pins may be of a varying dimension, i.e. conical, straight, or bent. As a further variation, the plate 22 may comprise any suitable shape variations of which are shown in Figures 5C and 5D with a generally dumbbell configuration. Other variations will be appreciated by those skilled.

Referring now to Figure 6, shown is another alternate embodiment of the present invention.

In this embodiment, two bosses 20, a pair from each container 12 are connected by a modified plate 22'. In this embodiment, two plates are joined by joining members 32, shown in the example to be vertical arms. Any suitable configuration to achieve this end is possible and will be appreciated by those skilled. Further, any number of bosses 20 may be connected.

Referring now to Figure 7, shown is a further variation of the present invention. In this embodiment, the container 12 is formed of a plurality of individual wall segments 32. each segment includes the bosses 20 which cooperate with an adjacent segment 32 in a manner similar to that discussed with respect to the previous embodiments. Plate 22 joins the adjacent segments. Conveniently, the intersection of two segments at a corner can be easily accommodated by modifying plate 22 by a right angle bend as shown in the illustration. In situations where the angle required is acute or obtuse, the plate will be modified accordingly.

Although embodiments of the invention have been described above, it is not limited thereto and it will be apparent to those skilled in the art that numerous modifications form part of the present invention insofar as they do not depart from the spirit, nature and scope of the claimed and described invention.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A connection assembly for connecting similar containers, comprising, in combination:

a first container and a second container in contact;

first cooperating engagement means projecting from each container of said containers, said first cooperating engagement means being in alignment on containers in contact;

second cooperating engagement means adapted for overlying releasable engagement with said first cooperating engagement means, said second cooperating means having a configuration matched in shape to said first cooperating engagement means, said first cooperating engagement means extending beyond said second cooperating engagement means when said second cooperating engagement means overlies said first cooperating engagement means;

third cooperating engagement means integral with said first cooperating engagement means; and

fourth cooperating engagement means adapted for releasable engagement with said third cooperating engagement means and for retaining said second cooperating engagement means when overlying said first cooperating engagement means, whereby when said first cooperating engagement means receives said second cooperating engagement means and said third cooperating engagement means receives said fourth cooperating engagement means, each said container is connected and secured against substantial vertical and horizontal separation.

2. The combination as set forth in claim 1, wherein said second cooperating engagement means is separate and unconnected to each said container.

3. The combination as set forth in claim 1, wherein said second cooperating engagement means when engaged with said first cooperating engagement means overlies a contact interface of connected containers.

4. The combination as set forth in claim 1, wherein each container has a plurality of projecting first cooperating engagement means in vertical spaced relation.

5. The combination as set forth in claim 4, wherein said projecting first cooperating engagement means are in collinear arrangement.

6. The combination as set forth in claim 1, wherein projecting first cooperating engagement means of said first container and said second container are in a collinear arrangement.

7. The combination as set forth in claim 2, wherein said second cooperating engagement means comprises a removable plate.

8. The combination as set forth in claim 1, wherein the horizontal distance between said first projection means between contacted containers is identical to vertical distance between said first projection means of an individual container of said first container and a second container.

9. The combination as set forth in claim 1, wherein at least a first cooperating engagement means between adjacent containers is connected.

10. The combination as set forth in claim 1, wherein said third cooperating engagement means comprises an aperture extending through said first cooperating engagement means.

11. The combination as set forth in claim 1, wherein said fourth cooperating engagement means comprises a separate member unconnected to said container.

12. The combination as set forth in claim 11, wherein said fourth cooperating engagement means comprises an L –shaped pin releasably connectable within said third cooperating engagement means.

13. The combination as set forth in claim 1, wherein said fourth cooperating engagement means, when engaged with said third cooperating engagement means, abuts said second cooperating engagement means.

14. The combination as set forth in claim 1, wherein said first container and said second container are arranged in horizontal disposition.

15. The combination as set forth in claim 1, wherein said first container and said second container are arranged in vertical disposition.

16. The combination as set forth in claim 1, wherein said first cooperating engagement means and said second cooperating engagement means have matched polygonal shapes.

17. A connection assembly for connecting similar containers, comprising, in combination:

a first container and a second container in contact;

a plurality of projections projecting from each container of said containers arranged in alignment on containers in contact;

a separate plate member adapted for overlying releasable engagement with said projections projecting from each container, said plate having apertures matched in shape to said projections, said projections extending beyond said plate when in overlying relation with said projections;

aperture means extending through said projections; and

retainer means adapted for releasable engagement with said aperture means, whereby when said projections receive said separate plate and said aperture means receives said retainer means, each said container is connected and secured against substantial vertical and horizontal separation.

18. A modular container, comprising:

a plurality of separate container wall segments adapted for releasable connection with each other to form a container or enclosure;

first cooperating engagement means projecting from each said container wall segment of said containers, said first cooperating engagement means being in alignment on each container wall segment;

second cooperating engagement means adapted for overlying releasable engagement with said first cooperating engagement means, said second cooperating means having a configuration matched in shape to said first cooperating engagement means, said first cooperating engagement means

extending beyond said second cooperating engagement means when said second cooperating engagement means overlies said first cooperating engagement means;

third cooperating engagement means integral with said first cooperating engagement means; and

fourth cooperating engagement means adapted for releasable engagement with said third cooperating engagement means and for retaining said second cooperating engagement means when overlying said first cooperating engagement means, whereby when said first cooperating engagement means receives said second cooperating engagement means and said third cooperating engagement means receives said fourth cooperating engagement means, each said container wall segment is connected forming a container or enclosure and secured against substantial vertical and horizontal separation.

19. The container as set forth in claim 18, wherein said second cooperating engagement means comprises a plate.

20. The container as set forth in claim 19, wherein said plate is planar.

21. The container as set forth in claim 19, wherein said plate is angular.

Application number/numéro de demande: 2692016

Figures: 1-3, 6

Pages:

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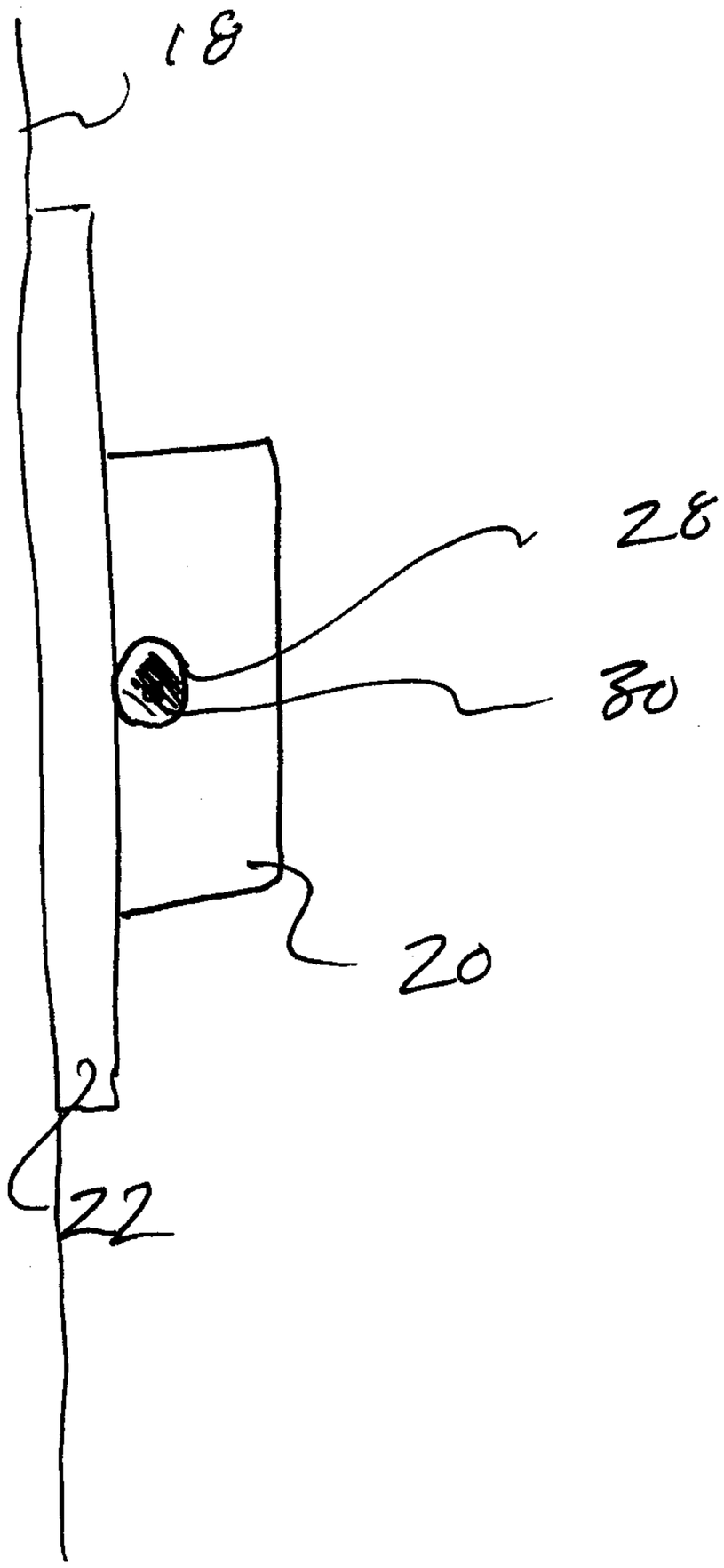


FIG 4

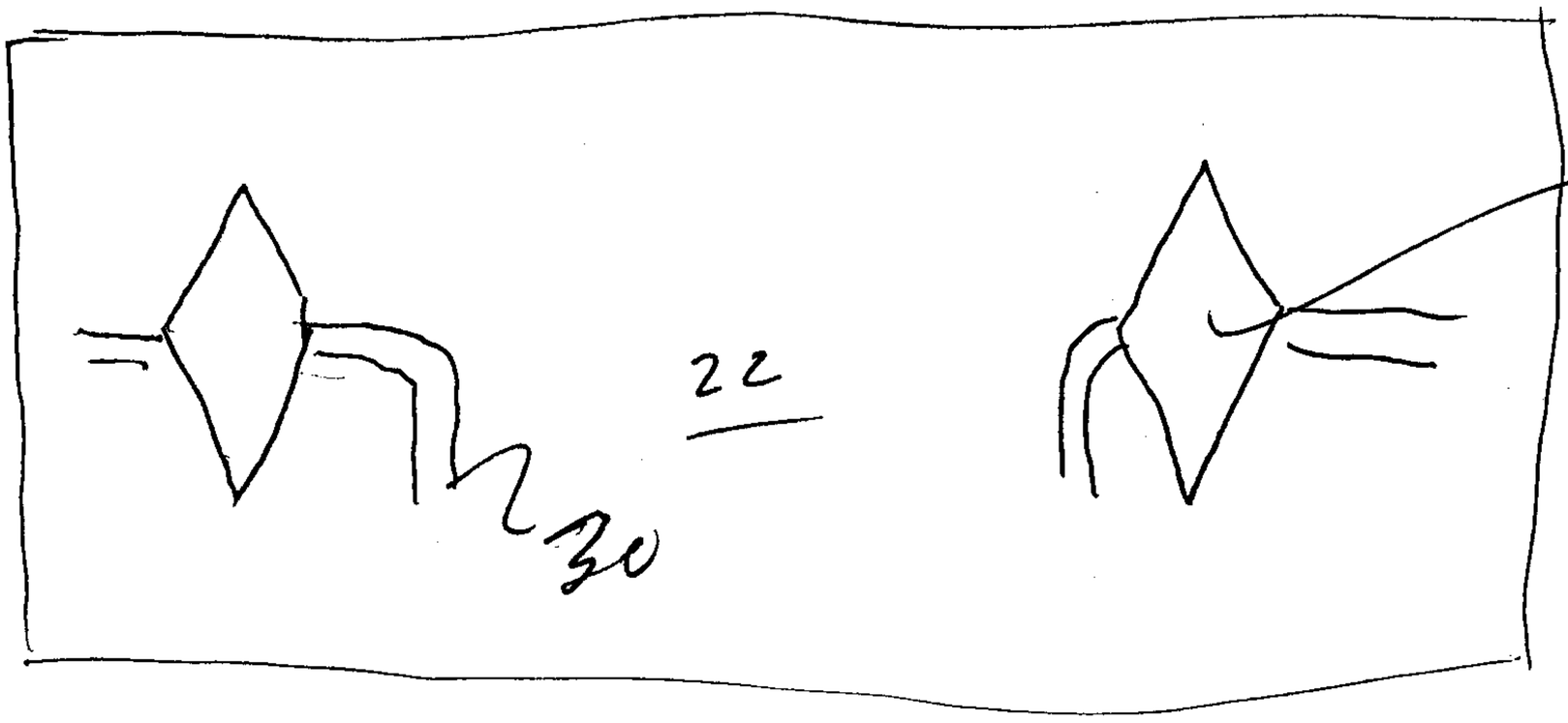


FIG 5A

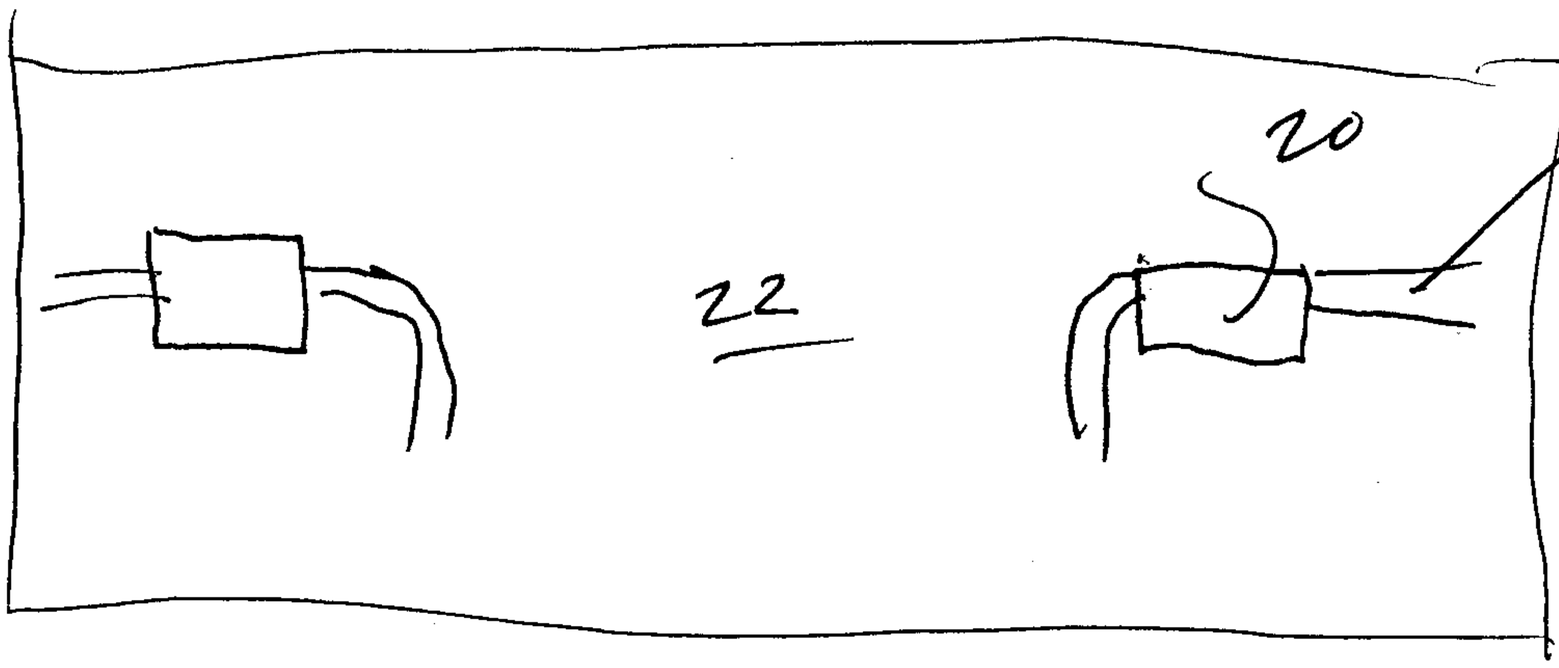


FIG 5B

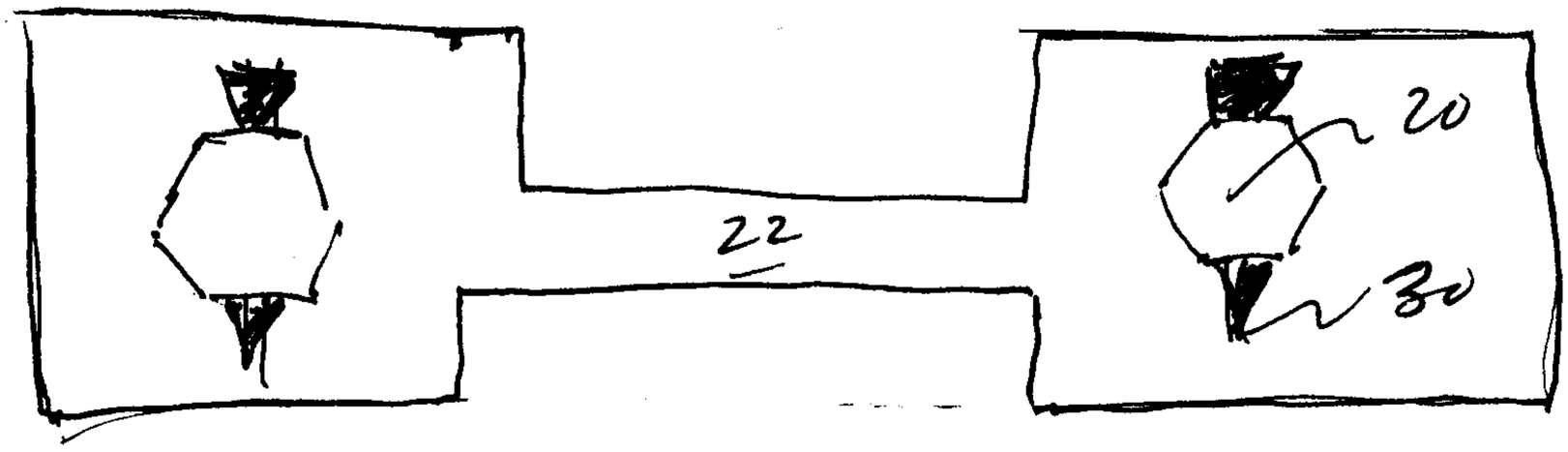


FIG 5C

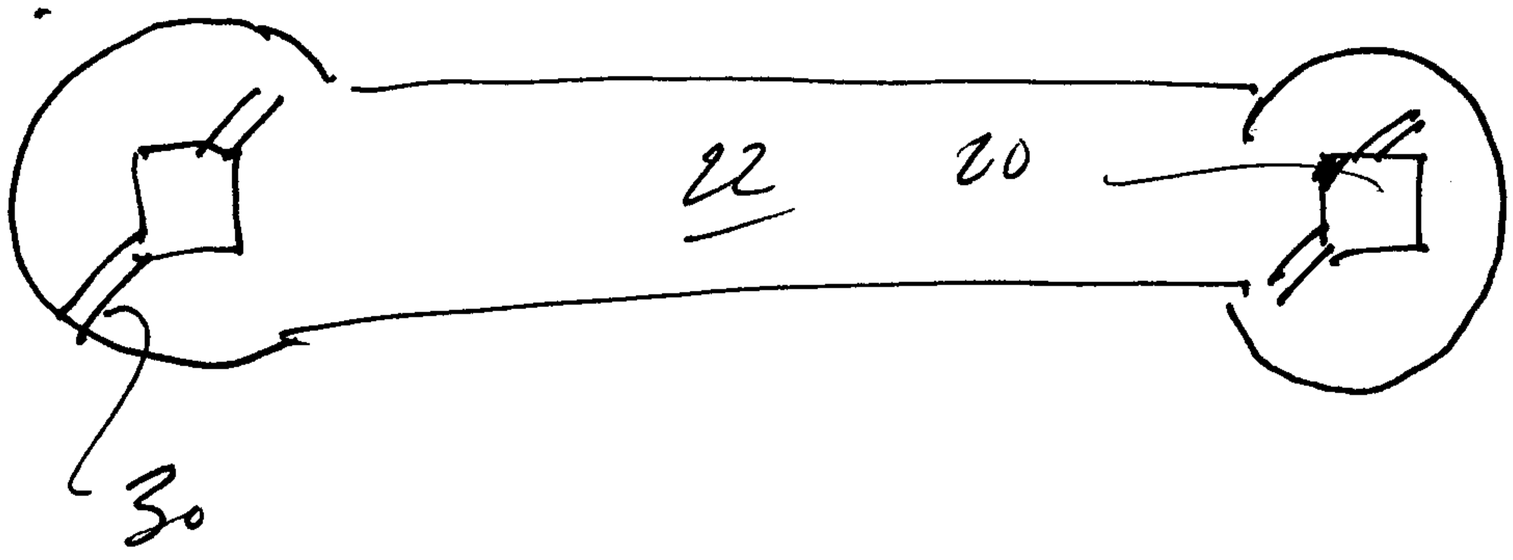


FIG 5D

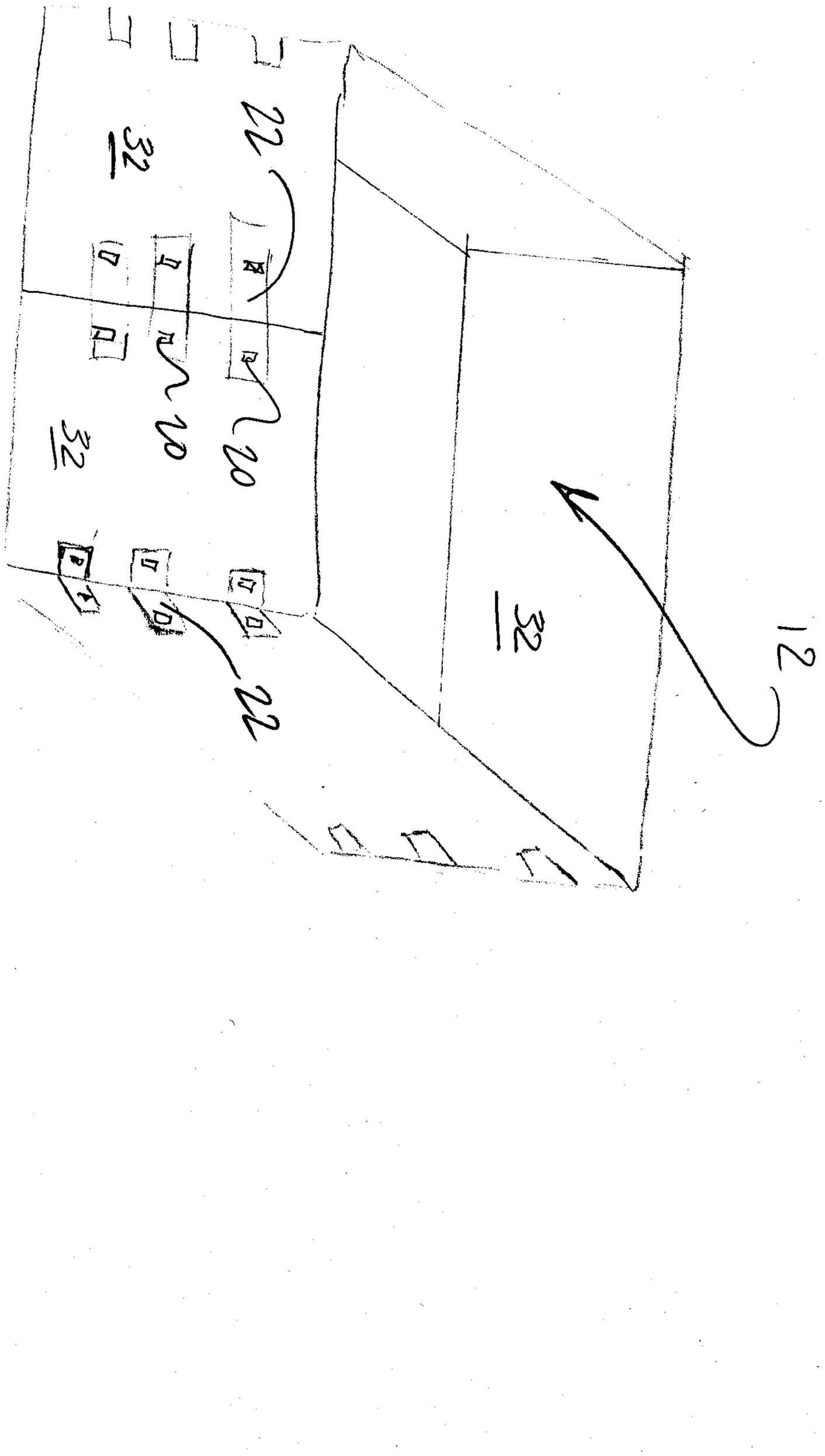
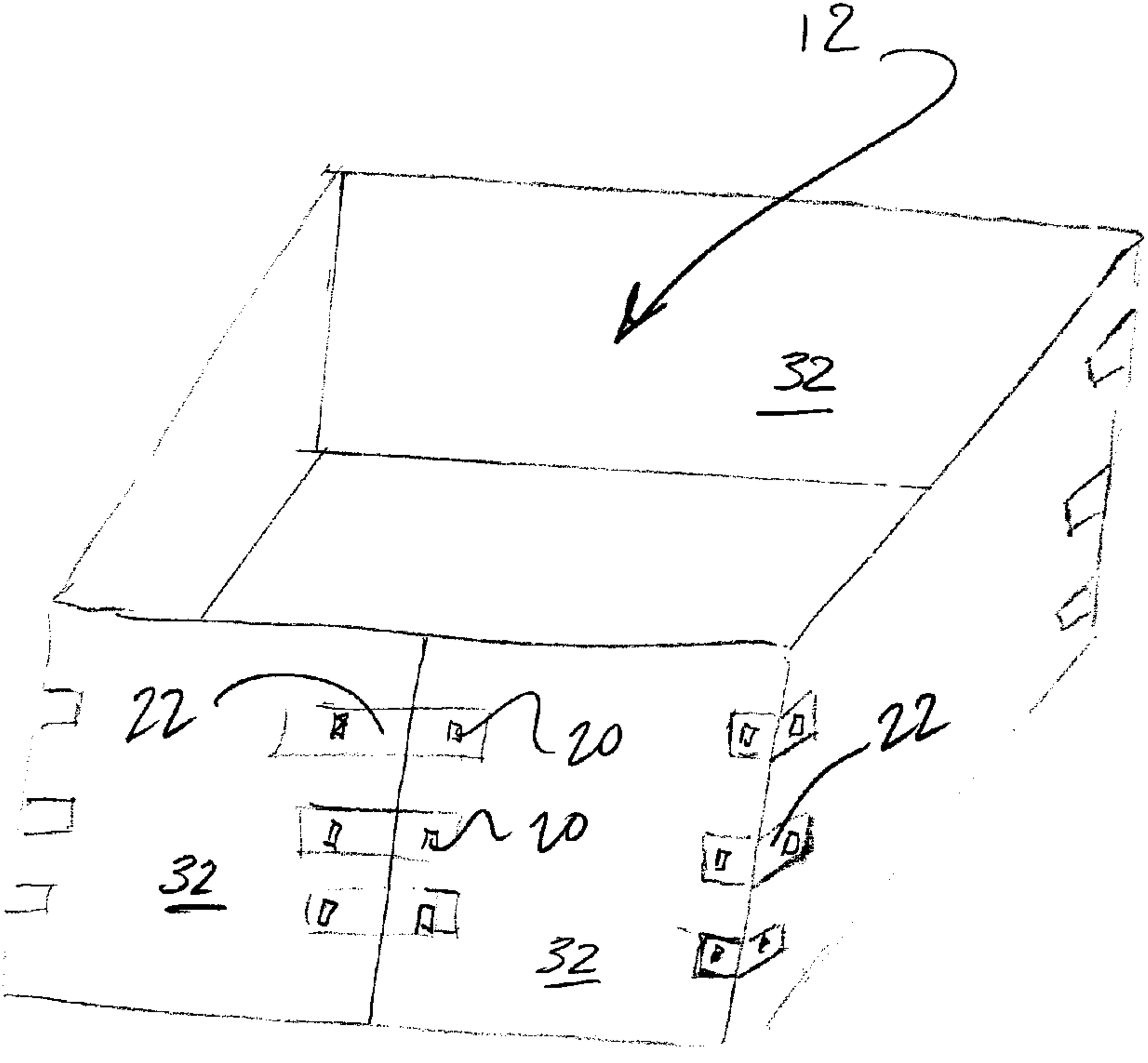


FIG. 7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