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3,207,095

MULTI-PURPOSE MATERIAL HANDLING STRUCTURE

Filed Jan. 29, 1963

2 Sheets-Sheet 1

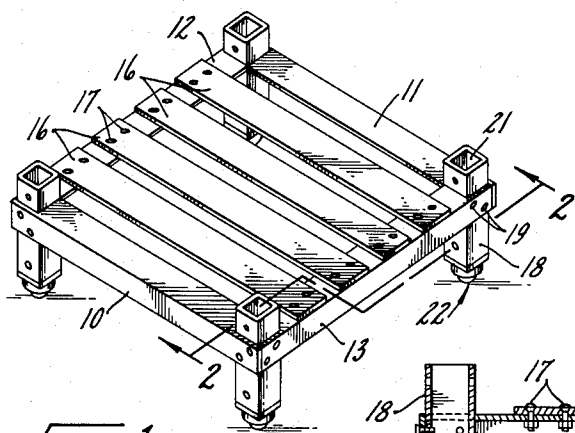


Fig. 1.

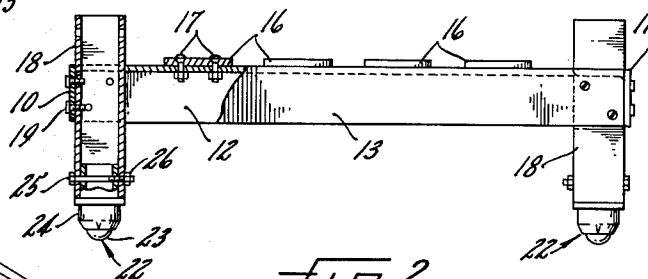


Fig. 2.

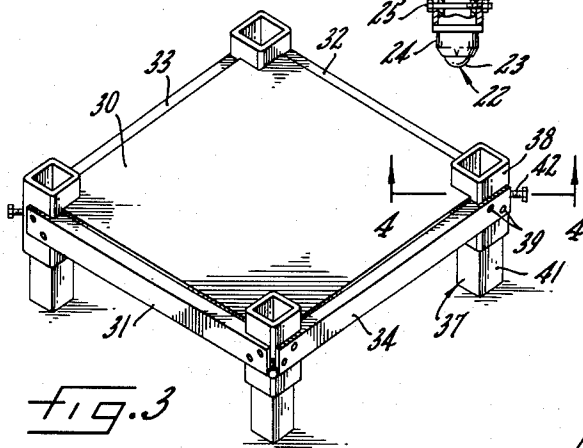


Fig. 3.

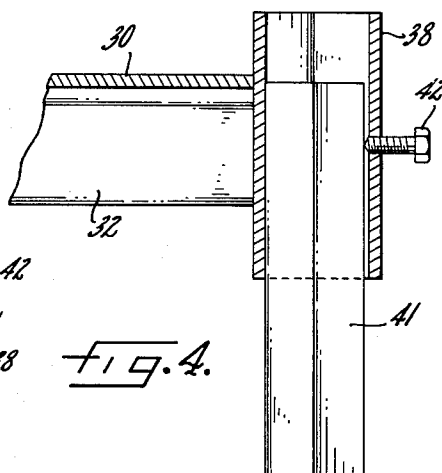


Fig. 4.

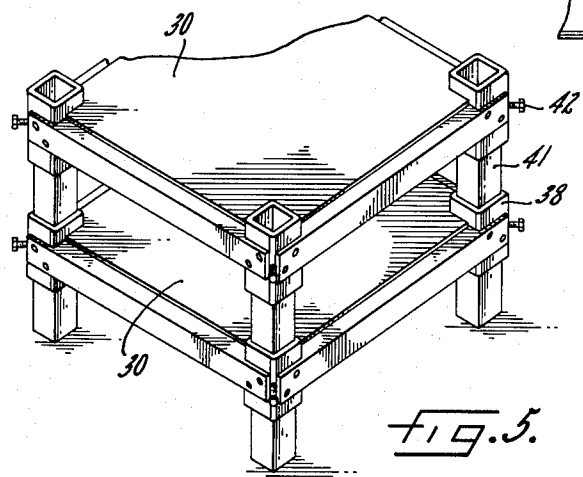


Fig. 5.

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2 Sheets-Sheet 2

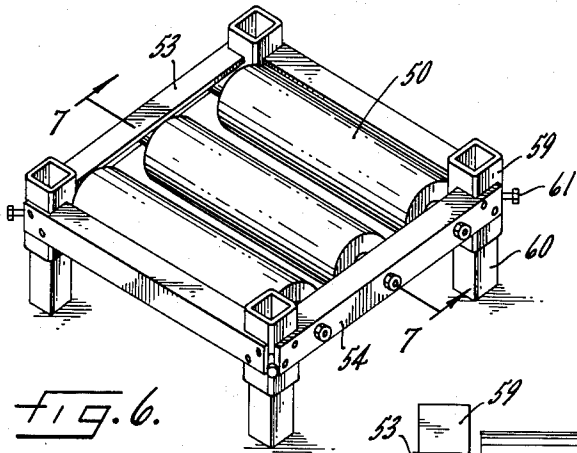


Fig. 6.

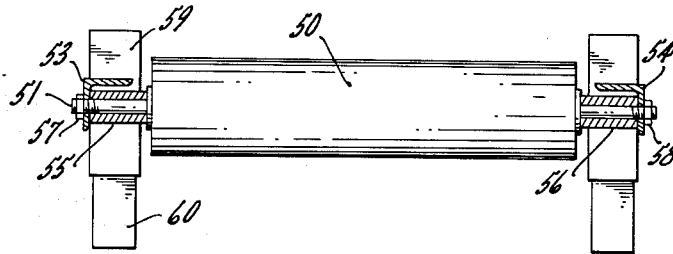


Fig. 7.

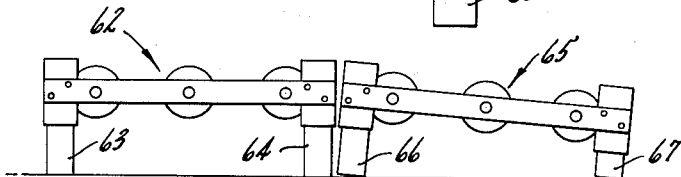


Fig. 8.

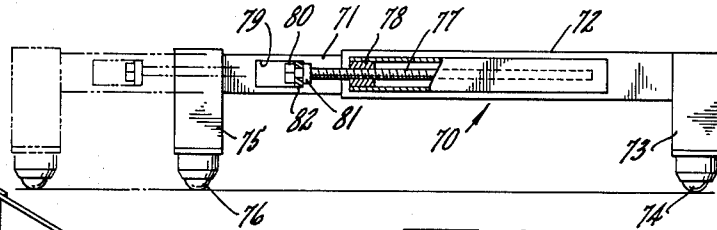


Fig. 9.

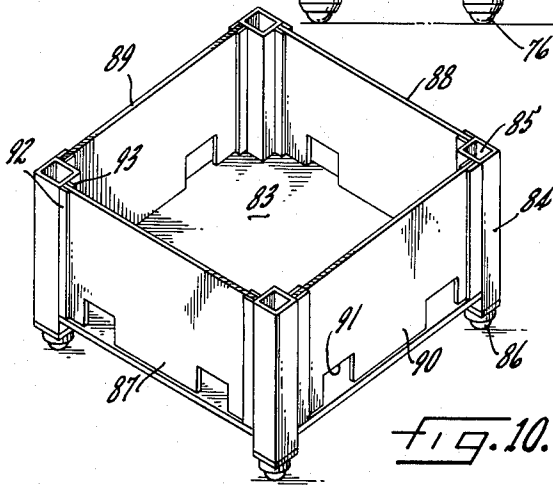


Fig. 10.

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3,207,095

MULTI-PURPOSE MATERIAL HANDLING STRUCTURE

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2 Claims. (Cl. 108—53)

This invention relates to a material handling structure and particularly relates to a structure having versatile applications alone and with similar structures.

An object of this invention is a material holding structure which can be adapted for multiple uses.

Another object is a material holding structure with adjustable features to satisfy different material holding requirements.

Another object is an adjustable material holding structure which may be used with other structures to simply and economically satisfy different material holding requirements.

Another object is a material holding container which may be used as a pallet or table.

Another object is a material holding device which may be used as a basket.

Another object is a material holding structure which may be used with other similar structures adjusted to form a conveyor.

Another object is a material holding structure which may have removable side walls and a floor portion of extensible area.

Another object is a material holding structure which, together with other similar structures, may be transformed into shelving units.

These objects along with other objects which will occur to those skilled in the art are attained by the present invention. Reference will be made to the detailed disclosure and to the accompanying drawings wherein:

FIGURE 1 is a perspective view of one embodiment, FIGURE 2 is a view along line 2—2 of FIGURE 1, FIGURE 3 is a perspective view of another embodiment,

FIGURE 4 is a view along line 4—4 of FIGURE 3, FIGURE 5 is a view of stacked structures.

FIGURE 6 is a perspective view of another embodiment,

FIGURE 7 is a view along line 7—7 of FIGURE 6, FIGURE 8 is a view of structures aligned in a conveyor assembly,

FIGURE 9 is a side view partly in section of a structure with an extensible floor portion, and

FIGURE 10 is a perspective view of still another embodiment.

The same numerals of the various views will refer to the same structures, elements and concepts.

The material holding structure of FIGURE 1 is seen to have a floor portion formed by opposed angles 10, 11 and 12, 13, and a plurality of slats such as 16 fixed to the opposed angles by screws or the like 17. The ends of the respective angles are rabbet fitted to similar legs such as 18 by screws or the like 19. The legs are shown as square tubes which have a bore or open end such as 21 at the top, and a roller such as 22 fixed to the bottom. The roller may be a ball bearing, caster or other means to facilitate easy movement of the structure on a hard surface. The roller is shown here as a ball bearing or the like 23 fixed in a housing 24 which is telescoped in the bottom of the leg and secured there by a bolt 25 held by a nut 26.

The material holding structure of FIGURE 3 is seen to have a one-piece floor portion 30 which may be freely laid or otherwise placed on opposed angles 31, 32 and 33, 34. Similar leg structures such as 37 are fixed to an upper larger tube 38 by screws or the like 39. A

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lower smaller tube 41 is adjustably positioned within the larger tube by a releasing set screw 42. All the legs on the structure are shown to be of similar design and adjustability. As seen in FIGURE 5, one structure may be stacked on a similar structure by seating the smaller tube 41 of an upper structure in the larger tube 38 of a leg of the lower structure. The spatial distance between floor portions 30, 30 is selectively controlled by adjusting the length of the smaller tubes in the legs and securely setting the set screw 42 by tight frictional contact against the smaller tubes.

Another embodiment is shown in FIGURE 6 wherein the floor portion is seen to consist of a plurality of rollers such as 50. The rollers are adapted to turn around a dead shaft such as 51 which extends through apertures in opposed angles 53 and 54. The rollers are positioned by spacers such as 55, 56, and the ends of the shaft are locked against angles by nuts or the like 57, 58. The legs on this structure are also shown as adjustable to vary the position of the floor portion. The legs have the larger upper tube 59, the smaller lower tube 60 which telescopes into the upper tube, and a set screw 61 which fixes the lower tube in a selected position. As seen in FIGURE 8, a plurality of such structures may be aligned to form a conveyor. In particular, a rear structure 62 has its rear pair of legs 63 and its front pair of legs 64 of substantially equal height, and a front structure 65 has its rear pair of legs 66 extended farther out of its tube than the front pair of legs 67.

Means may be included on the floor portion to extend its area as shown in FIGURE 9. Here, the floor portion 70 is shown with one substantially rectangular and hollow portion 71 telescoped into a larger substantially rectangular and hollow portion 72. A pair of legs such as 73 with attached roller 74 are fixed to the larger floor portion, and another set of legs such as 75 with attached roller 76 are fixed to the opposed ends of the smaller floor portion. A locking stud 77 is threadably engaged to the larger portion at 78, and this stud extensibly interconnects both portions. A passageway 79 in the smaller portion permits access to the head 80 of the stud so that the smaller floor portion extends when the head is turned by an appropriate tool or by hand. A flange 81 fixed to the stud will abut stationary portion 82 of the smaller floor portion as the stud is turned. This will cause the smaller floor portion to extend away from the larger floor portion as indicated by phantom outline.

A basket type material holding structure is seen in FIGURE 10 and it has a one-piece floor portion 83, four corner legs such as 84 having a bore or opening 85 in the top, and a roller 86 in the bottom. Opposed side walls 87, 88 and 98, 90 extend up from the floor portion and between the legs. Openings such as 91 may be distributed throughout the walls to form a grasping surface. The wall portions may be removable, and means such as spaced ridges or the like 92, 93 may be provided on opposed legs to receive the removable walls in sliding relationship. The height of the walls may be made changeable, or several wall portions may be stacked end on end by separating them into hinged portions.

The use and operation of my invention are as follows:

The multi-purpose material holding structures shown here may be used for a variety of applications. An important feature is the versatility of the structure in and of itself, and in association with other similar structures.

The structures have a floor portion which has conveniently been illustrated as substantially rectangular in shape. A plurality of legs are spaced around the floor portion to provide good stability as in the case where each corner of a rectangular floor portion has a leg. The legs have a bore in the top end which is suitable to receive and seat the bottoms of legs of an upper structure

which has been stacked on a lower structure. The bottom of the legs may be provided with means to roll the structure such as ball bearings, and the legs may be adjustably attached to the floor portion to vary the position of the floor portion.

This floor portion may take various forms to meet different requirements; for instance, it may be a series of economically attached slats to hold bulkier materials, or it may be a solid one-piece floor portion to hold smaller volume materials. The appearance of the structure may be crude for gross work, or finished for interior applications such as shelving, room dividing or the like. It has been shown that a plurality of rollers may constitute the floor portion for a conveying operation. A single material holding structure with a plurality of rollers may be used to quickly transfer materials into an adjoining container, or a series of similar material holding structures may be aligned to obtain a conveyor rack of longer length. Additionally, the adjustability of the floor portion positions will allow a conveyor of a selected configuration.

To enhance the versatility, the floor portion may have its area extended by suitable means, one of which has been illustrated. In general, the floor portion may be divided into several portions, one of which telescopes in and out of the other.

The structure may be additionally used as a basket. In such an application, wall portions are provided so that they extend upward from the floor portion and extend between adjoining legs. It is further provided that such wall portions may be removable so that the material in the basket may be exposed or be placed in a position of greater access or the like. One application would be the shipment of food materials to a market so that the proprietor may simply form a shelf out of a plurality of such material holding containers after the walls have been removed.

Among the various applications which have been described or suggested are the use of the material holding structures as load dividers, tables, baskets, pallets, conveyor racks, scrap baskets, shipping racks, die carts, room dividers, and store shelves. The versatility of the material holding structures will lend themselves to even additional applications as will become apparent to those skilled in the art.

The foregoing invention can now be practiced by those skilled in the art. Such skilled persons will know that the invention is not necessarily restricted to the particular embodiments presented herein. The scope of the invention is to be defined by the terms of the following claims as given meaning by the preceding description.

I claim:

1. A glidable material holding structure which can be variously positioned relative to the supporting base on which it is to be placed and which can be securely stacked and interlocked on top a like structure, including a substantially planar floor portion adapted to hold material,

a plurality of supporting legs spaced around the periphery of the floor portion at a plurality of attachment points, each leg having a polygonal cross section, a polygonal bore in the top of each leg, glider means connected to the bottom of each leg, the configuration of each of said glider means being dimensioned to allow said glider means to be seated within a polygonal bore in the top of each supporting leg of a like structure so that the polygonal cross section of the legs in one superimposed structure can be seated and interlocked in the polygonal bores of a like underlying structure, connecting means attaching each leg to its attachment point at the periphery of the floor portion, and said connecting means allowing each leg to be independently connected at different levels relative to the supporting base.

2. A rollable material holding structure which can be variously positioned relative to the supporting base on which it is to be placed and which can be securely stacked and interlocked on top a like structure, including a substantially planar rectangular floor portion adapted to hold material, a rectangular sleeve rigidly connected to each corner of the floor portion, a leg of rectangular cross-section slidably mounted in each rectangular sleeve, a rectangular bore in the top of each leg dimensioned to securely receive the bottom of a leg of a like structure in a stacking position, roller means connected to the bottom of each leg, the configuration of each of said roller means being within the dimensions of the rectangular cross section of each supporting leg so that the bottoms of the legs of one superimposed structure can be seated and interlocked in the rectangular bores of like underlying structure, adjustable connecting means attaching each leg in its rectangular sleeve, and said connecting means allowing each leg to be independently connected at different levels within said sleeve relative to the supporting base.

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