Jan. 16, 1962 W. D. TOWNSON, JR 3,017,151

PALLET-FORMED STORAGE RACK

Filed Feb. 25, 1960

2 Sheets-Sheet 1

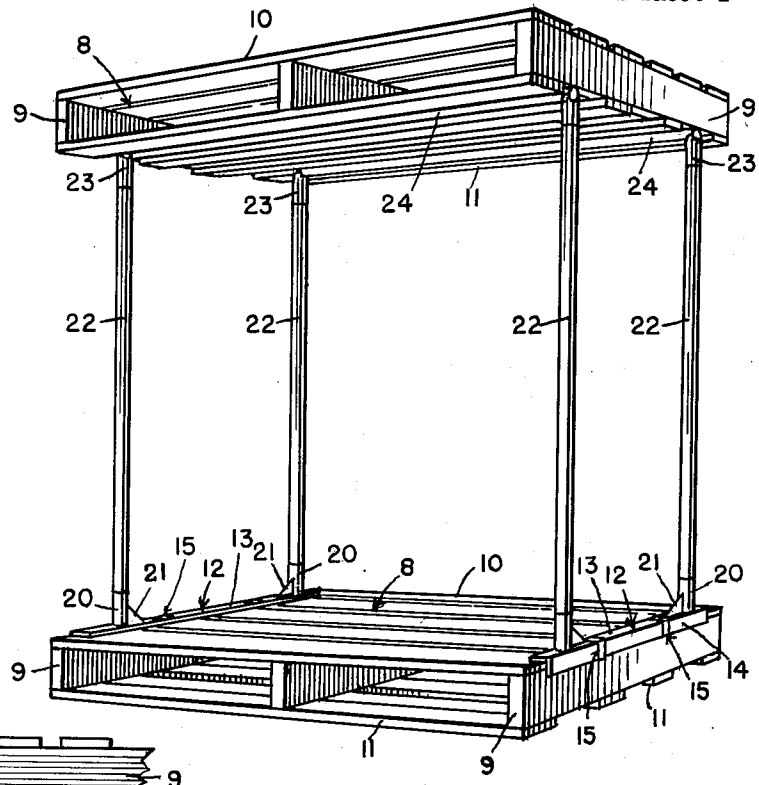
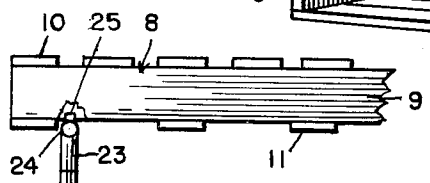


FIG. 1.



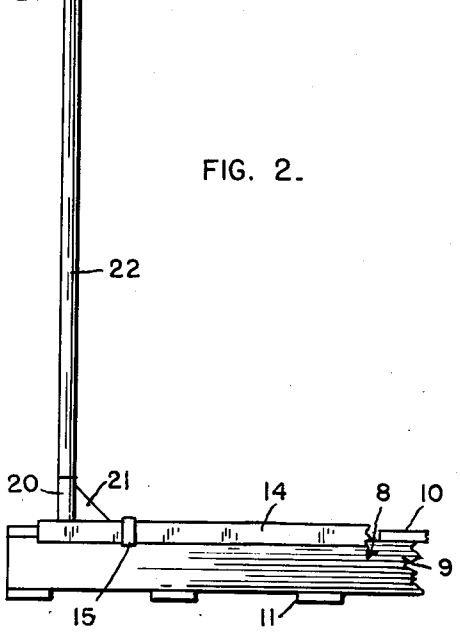


FIG. 2.

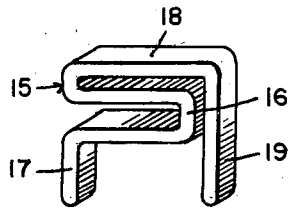


FIG. 6.

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PALLET-FORMED STORAGE RACK

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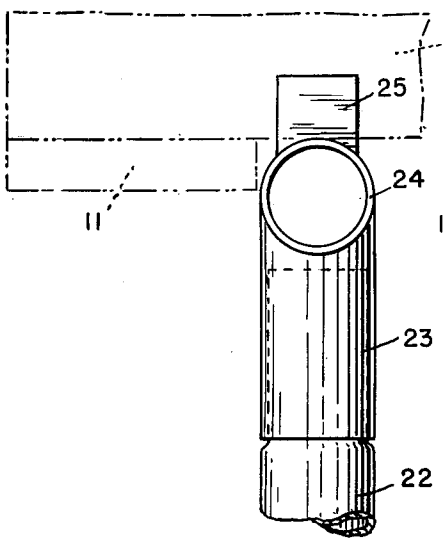


FIG. 5.

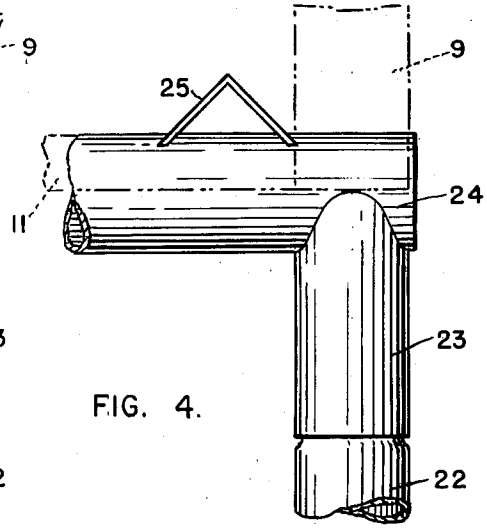
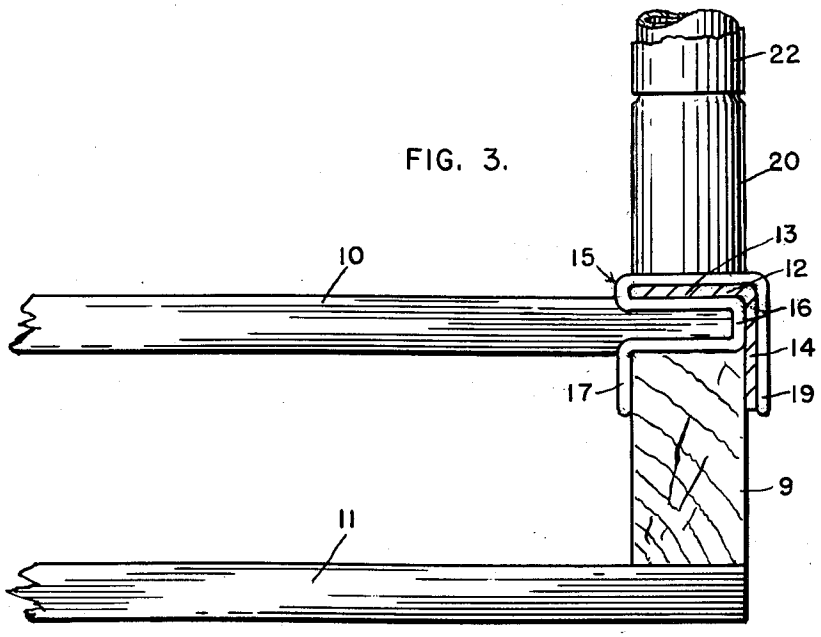


FIG. 4.

FIG. 3.



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PALLET-FORMED STORAGE RACK

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The following specification relates to a pallet-formed storage rack particularly adapted for assembly from ordinary and well known pallets.

In piling large quantities of goods in identical packages or cartons arranged on pallets, the support of one pallet and its load upon the load of a lower pallet, is open to the objection of increasing the load on the lower pallets beyond the point of safety or freedom from damage to the packages of goods.

The present invention is addressed to the provision of a rack by which well known ordinary pallets may be used as elements for building a structure subject only to the height of the storage area for the receipt of separately supported loaded pallets.

It is also an object of the invention to use such a device to support pallets and their loads in vertical arrangement, but separately sustained.

It is a further object of the invention to superimpose pallets one upon the other and interconnected with, however, providing for independent access of the load of any part without disturbing the load on a superior pallet.

It is a further object of the invention to utilize common shapes of construction material in the assembly of the storage rack.

Among the objects of the invention is to provide for desired variation in the dimensions of the rack either in the direction of the length and breadth of the pallets and also in the vertical spacing.

A still further object of the invention is to provide a rack structure in which maximum rigidity will be established for the parts in both the length and width of the individual pallets.

For the purpose of illustrating the invention I have shown by way of example the preferred form thereof on the accompanying drawings in which:

FIG. 1 is a perspective view of the assembled rack;

FIG. 2 is a fragmentary side elevation;

FIG. 3 is a fragmentary end view of the lower parts of the rack;

FIG. 4 is a fragmentary end view of the upper parts of the rack;

FIG. 5 is a fragmentary side view of the same, and

FIG. 6 is an enlarged perspective view of the clip used.

Briefly considered, the novel storage rack is built up utilizing two or more superimposed conventional pallets each capable of carrying an independent load. The frame of the rack other than the pallets themselves, consists of bottom spacing members provided with upwardly extending sockets or the like at spaced intervals near the corners of the pallets. Vertical posts are held on the sockets and the posts of one supporting member are connected at right angles thereto with the posts of the opposite supporting member. This forms a support for an upper pallet. This upper pallet in turn may carry supporting members which are part of similar frame work for a third higher pallet. The vertical series of pallets is limited solely to the height of the storage compartment. The weight of each pallet is supported independently by the frame members forming vertical columns running down to the floor.

On the drawings I have shown a conventional pallet **8** formed of transverse frame members or beams **9**. These beams are placed at each end of the pallet, and one or more such beams run transversely intermediate the ends.

A series of floor boards **10** connect the upper edges of the beams **9, 9**.

A similar series of spaced bottom boards **11** connect the bottom edges of the beams **9, 9**. It is not unusual to space the floor boards **10** a desired amount and likewise there may be considerably fewer bottom boards **11**.

The frame work for the rack rests upon the opposite ends of the pallet specifically over the ends of the floor boards **10**. This member of the frame preferably consists of an angle bar **12** extending over the greater length of the beam **9**. This angle bar has a horizontal flange **13** which rests upon the ends of the floor boards **10**. A vertical flange **14** of the angle bar depends beyond the ends of the boards **10** and flush with the outer side surface of the beam **9**, as shown in FIG. 3.

A fastening means in the form of the clip **15** particularly shown in FIG. 6, is proportioned to fit around the inside and top of the beam **9**, between the ends of the floor boards **10** and over the flanges **13** and **14** of the angle iron. The clip has a spacing loop **16**. This loop is approximately the same height as the width of the floor board **10**, so that it is in contact with the top edge of the beam **9** and the lower surface of the flange **13** (FIG. 3).

An inner tongue **17** extends downwardly from the free end of this loop **16** to fit against the inner vertical surface of the beam **9**.

An upper portion **18** is spaced from the loop **16** sufficiently to receive the upper flange **13** of the angle iron. The free end of the portion **18** is bent downwardly, as shown at **19**, to lie against the outer surface of the flange **14**. In this way the flange is encompassed by the clip **15**.

Two or more of the clips **15** hold each angle bar **12** in place on the ends of the pallet.

Each angle bar has a fixed socket **20** welded or otherwise attached to the upper portion of the horizontal flange **13**. These socket members are closely spaced from the ends of the angle bars. Each socket member has a triangular brace **21** connecting it with the angle iron in order to provide maximum rigidity.

Vertical posts in the form of pipes **22** rest on the sockets **20** which have their upper ends reduced in diameter. The vertical posts **22** may be hollow pipe and of any desired length depending upon the load on the individual pallet.

The upper ends of the posts **22** are also reduced in diameter to fit within socket members **23** attached transversely to crossbars or spreader bars **24**. The spreader bars **24** are substantially the length of the pallet extending between the beams **9, 9**. The spreader bars **24** therefore reinforce the posts **22** and hold them parallel in their common plane.

At the end of each spreader bar **24** and at points within the distance between the socket members **23**, there is mounted a pair of fixed detents **25**. These are in the form of short metal angles, welded or otherwise attached to the spreader bar **24**. The spacing is such that the pair of detents **25** fit within the beams **9** of a second or superior pallet **8**. This establishes the position of the upper pallet as above the lower pallet insofar as the beams **9** are concerned.

In the opposite direction, that is parallel to the angle bars **12**, the spreader bars **24** fit in the space between adjacent bottom boards **11** of the upper pallet.

The parts individually described above are readily assembled to form a rigid rack. Starting with two or more pallets **8** as described above and commonly constructed, a pair of clips **15** is slipped over the angle bar **12** and the clip is then laid upon the beam **9** between the ends of the floor boards **10**. In this position the horizontal flange **13** of the angle bar rests upon the ends of the

boards **10**. The vertical flange **14** is held in position flush with the outer face of the beam **9**. The free tongue **19** holds the flange **14** against the beam **9** on one side, while the free tongue **17** holds the clip **15** against the inner face of the beam **9** and from accidental dislodgment.

With the vertical post **22** mounted in each socket **20**, spreader bar **24** is fitted over the ends of the post **22** at opposite ends of the pallet.

In this assembled form, the upper pallet **8** fits down over the spaced spreader bars **24** and is held against horizontal movement by the detents **25**.

The structure thus described provides for independent support of the loads of two superimposed pallets. The upper pallet in turn may be used as a base upon which a second unit of the rack is assembled.

The racks may of course be lifted into position and fitted over the frame members by means of fork elevators or the like. Additional units can be assembled with pallets **8** side-by-side or end-for-end. The essential feature is that this arrangement may be extended to provide independent support of superimposed pallets and their separate loads. The arrangement utilizes pallets of ordinary construction and supplies the additional pallet to provide the rack from simple structural parts.

The above description applies to the preferred form of the invention. However, numerous minor details in arrangement of parts or material may be varied without departing from the scope of the invention as set out in the accompanying claims.

What I claim is:

1. In combination with a pallet having transverse beams and spaced floor boards, angle bars each adapted to rest on the ends of the floor boards with one flange depending beyond one transverse beam, a movable fastening member resting on the upper edge of each transverse beam between the adjacent floor boards and fitted against the opposite sides of both flanges of the angle bar, spaced upwardly extending holders on the angle bars, vertical posts mounted on said holders, and two spreader bars each having lateral depending holders fitting the posts of opposite angle bars.

2. In combination with a pallet having transverse beams and spaced floor boards, angle bars each adapted to rest on the ends of the floor boards with one flange depending beyond one transverse beam, a movable fastening member resting on the upper edge of each transverse beam between the adjacent floor boards and fitted against the opposite sides of both flanges of the angle bar, spaced upwardly extending sockets on the angle bars, vertical posts held in said sockets, two spreader bars each having lateral depending sockets fitting on the posts of opposite angle bars and spaced detents on each spreader bar.

3. In combination with a pallet having transverse beams and spaced floor boards, angle bars each adapted to rest on the ends of the floor boards with one flange depending beyond one transverse beam, a movable fastening member resting on the upper edge of each transverse beam between the adjacent floor boards and fitted against the opposite sides of both flanges of the angle bar, spaced upwardly extending sockets on the angle bar, vertical posts held in said sockets, two spreader bars each having lateral depending sockets fitting on the posts of opposite angle bars, spaced detents on each spreader bar and a second pallet having its frame members resting on said spreader bars.

4. In combination with a pallet having transverse beams and spaced floor boards, angle bars each adapted to rest on the ends of the floor boards with one flange depending beyond one transverse beam, a movable clip having an inner tongue and a spacing loop resting on the upper edge of the transverse beam between two floor boards and in contact with the inner surfaces of both flanges, a portion of said clip being extended over the horizontal flange of the angle bar and down beyond the vertical flange of the angle bar, spaced upwardly extending holders on the angle bars, vertical posts mounted on said holders, and two spreader bars each having lateral depending holders fitting the posts of opposite angle bars.

5. In combination, two superimposed pallets each having transverse beams and spaced floor boards, angle bars adapted to rest on the ends of the floor boards of the lower pallet with one flange depending beyond one transverse beam, movable fastening members resting on the upper edge of each transverse beam of the lower pallet between the adjacent floor boards and fitted against the opposite sides of both flanges of the angle bar, spaced upwardly extending holders on the angle bars, vertical posts mounted on said holders and two spreader bars each having depending holders fitting the posts of the opposite angle bars and said spreader bars supporting the upper pallet.

6. A clip for a pallet-formed storage rack having a spacing loop, a free end depending from one end of the loop, the opposite end of said loop being bent back to form a portion overlying the loop, and an angular extension on said portion opposite the loop and parallel to said free end.

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