April 7, 1964 J. J. MOSINSKI 3,127,995

ADJUSTABLE PALLET RACK

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FIG. 1.

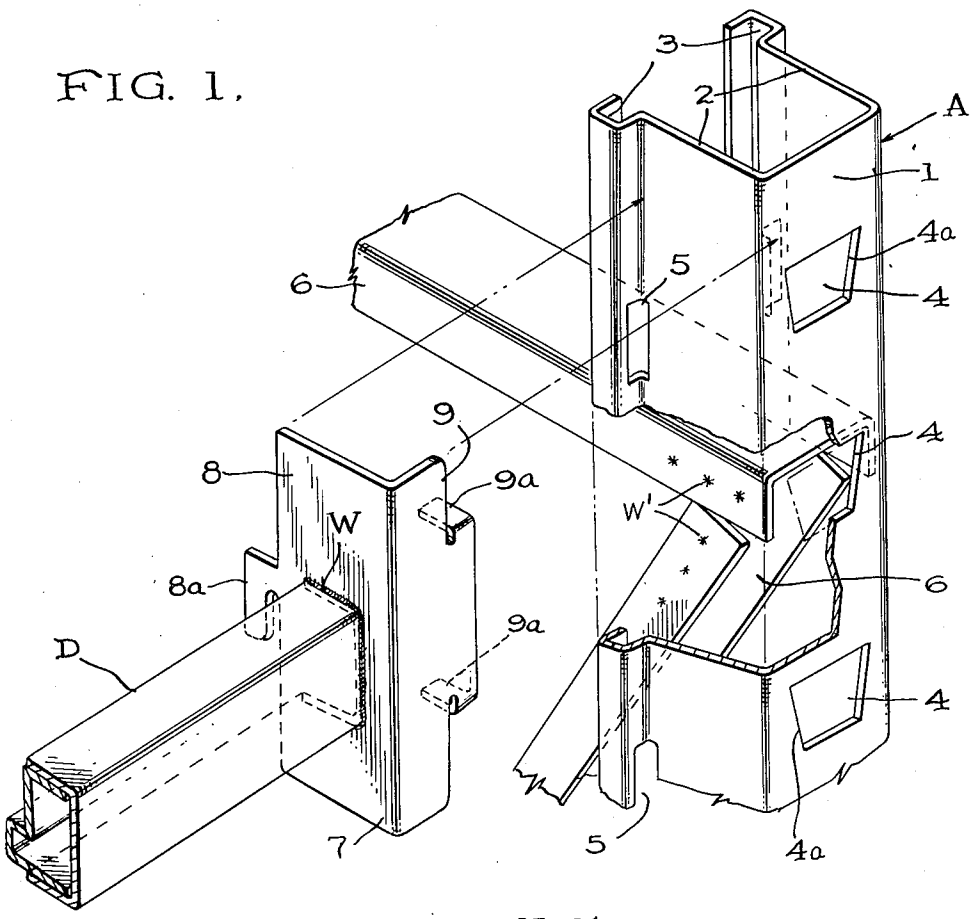


FIG. 5.

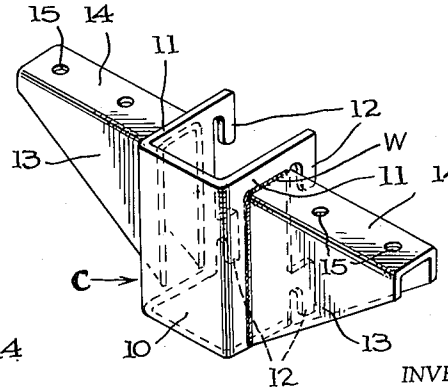
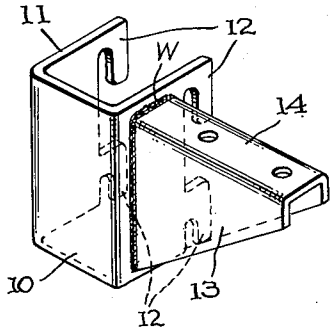


FIG. 6.



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FIG. 2.

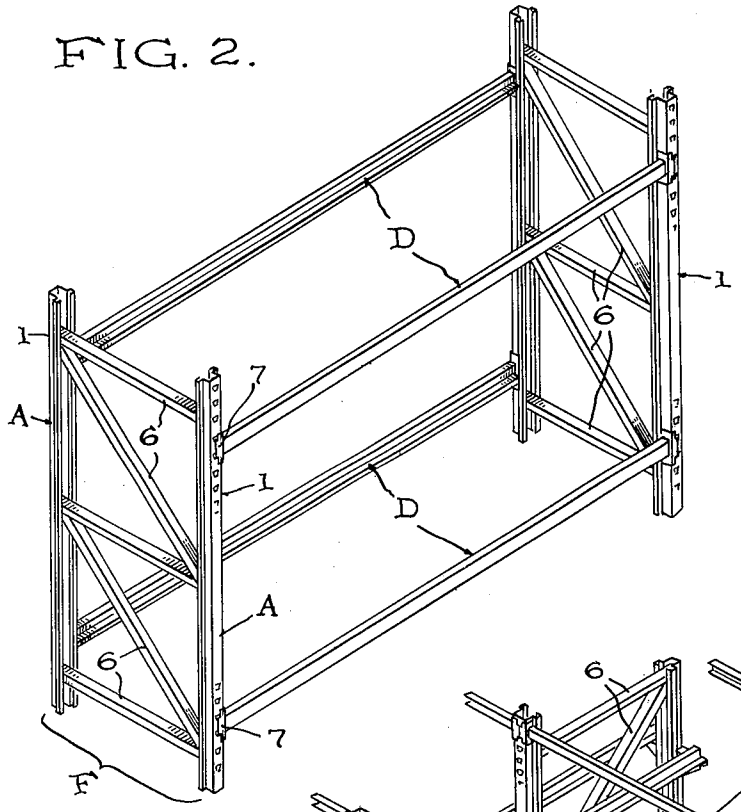
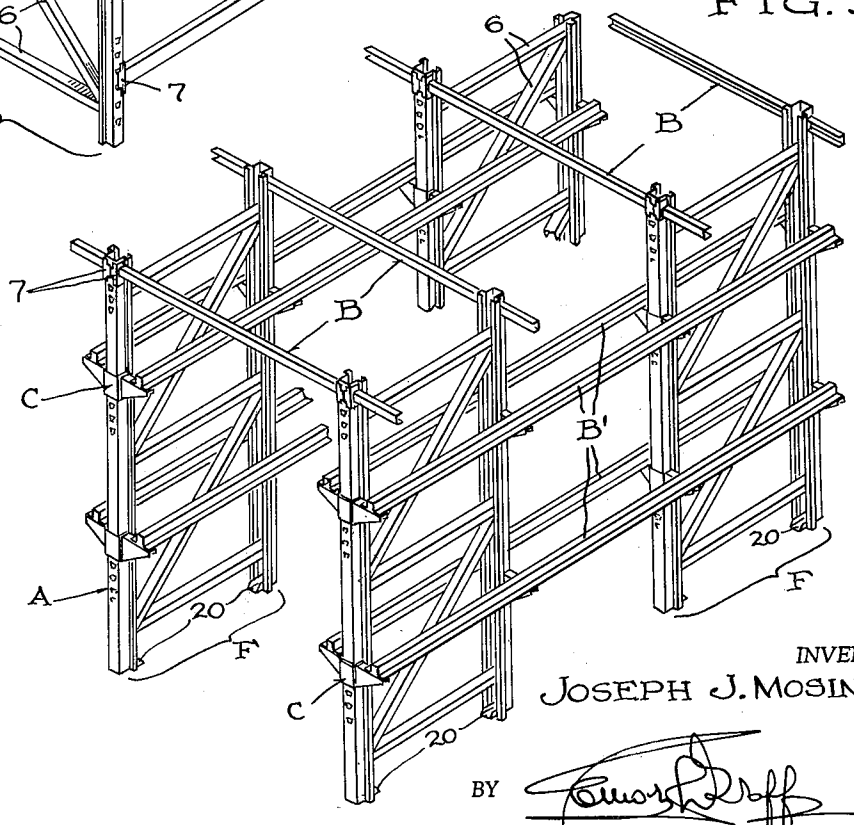


FIG. 3.



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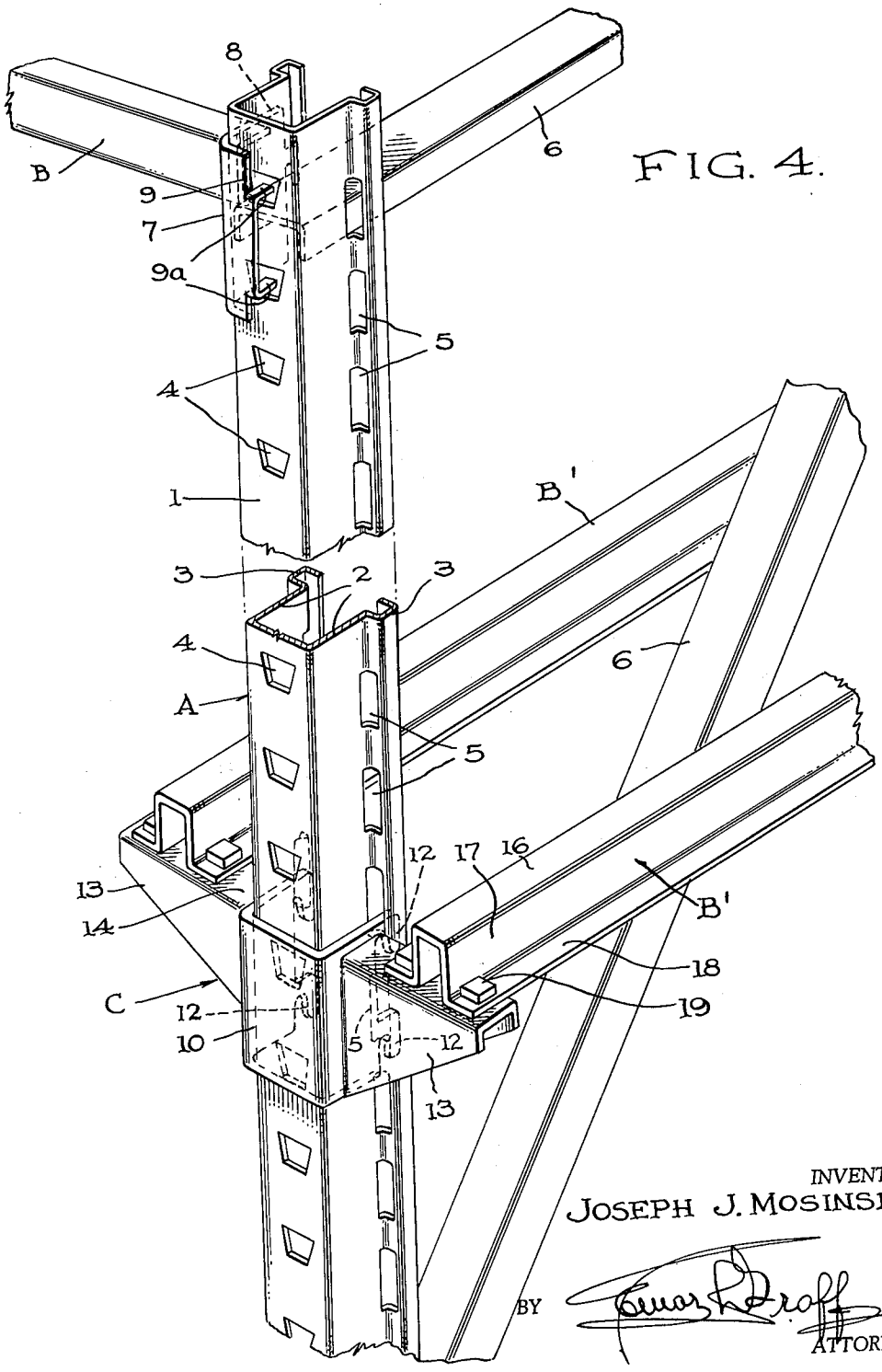


FIG. 4.

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ADJUSTABLE PALLET RACK

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3 Claims. (Cl. 211—148)

This invention relates to adjustable pallet racks or the like which may be erected by using prefabricated shapes.

One of the objects of the invention is to provide a standardized upright or column element of channel formation having a web provided with keystone shaped slots and laterally projecting flanges also provided with related slots for use with horizontal beams having end plates provided with connecting elements in the form of hooks and tabs. In that connection, it is proposed to provide a pallet rack wherein the load bearing members may be readily positioned at variable heights to handle the palletized material.

A further object of the invention is to provide a column having the slot arrangement above described, and which column may be used in connection with connecting elements having members mating with related parts of the column to thereby provide loading bearing members which cooperate with certain of the slots for the purpose of spacing the uprights laterally and vertically. The columns may also be used in connection with a novel form of bracket to provide pallet supports at one or both sides of the column.

With the above and other objects in view, which will more readily appear as the nature of the invention is better understood, the invention consists in the novel construction, combination, and arrangement of parts, hereinafter more fully described, illustrated and claimed.

Reference may be made to the accompanying drawings, in which,

FIGURE 1 is a detailed enlarged perspective view of the column and one of the connecting load bearing members.

FIGURE 2 is a perspective view of one type of rack which may be made with the columns.

FIGURE 3 is a detailed perspective view of a drive through type of pallet rack.

FIGURE 4 is an enlarged detailed perspective view of the bracket secured to the column with pallet supporting load beams attached to said bracket.

FIGURE 5 is a perspective view of the load beam supporting bracket used for a drive-in or drive-through type of pallet rack.

FIGURE 6 is a modification of the bracket shown in FIGURE 5.

Similar reference characters designate corresponding parts in the several figures of the drawings.

Referring first to FIGURE 1, it will be observed that the column A is of channel shaped cross section including a web **1**, spaced parallel side walls **2**, each of which is provided with a hollow tubular flange portion **3**. The web **1** is provided with a plurality of keystone shaped openings **4** while each of the flanges **3** is provided with a series of vertically spaced slots **5**. This column may be united with another column by suitable brace elements **6** welded thereto at W' and arranged in any suitable manner to provide opposite column elements A—A as shown for example in FIGURE 2.

When it is desired to construct an adjustable pallet rack as shown in FIGURE 2, the columns A—A joined by the reinforcing or brace members **6** constitute a frame F and a pair of these frames may be connected by load beams D of hollow tubular formation. The beams D are provided at each end with a connector plate **7** of

angular cross section to provide base **8** and a flange **9** offset therefrom. As shown in FIGURE 1, by way of example, the base **8** may be secured to the beam D by weld W. The flange **8** is provided with a hook **8***a* and the flange **9** is provided with a pair of inturned tabs **9***a*. When the beams D are arranged as shown in FIGURE 2, the hook **8***a* will engage in one of the related slots **5** on one of the flanges **3** of the column A. This positions flange **9** against web **1** with tabs **9***a* fitting into the keystone slots **4** ready to bear against one of the sloping sides **4***a*, and to become wedged in place as shown in the upper portion of FIGURE 4. The wedging action occurs due to the fact that the distance between the slope of the slot **4** and the surface of the sidewall **2** increases toward the bottom of the slot **4**. This increase in metal on the web **1** acts as a wedge between flange **8** and the tab **9***a*. Any downward thrust on the connector plate **7** due to loading will develop a binding action that increases with additional loading. The bottom of the slot **4** is of sufficient width so that an identical connector plate may be attached to the other side of the column A and the tabs **9***a* thereof can fit into the same slots **4** as the tabs shown in the upper portion of FIGURE 4.

When it is desired to make a drive-in or a drive-through type of rack, the frames F may be arranged longitudinally to form the opposite sides of an aisleway between them as shown for example in FIGURE 3. In this situation, the beams D shown in FIGURE 2 are removed and connecting tie beams B are added to the upper section of frame F. The load bearing beams B^1 are supported on brackets C shown in detail in FIGURE 4. These brackets comprise a medial column embracing portion which includes a web **10** having a pair of spaced parallel plates **11** extending at right angles thereto. Each of the plates **11** is provided with two hooks **12**, adapted to enter related slots **5** on the flanges **3** of the column A. In addition, each bracket includes outwardly extending pairs of wings **13** welded thereto, each of said wings having a transverse supporting surface **14** provided with a plurality of openings **15**. As will be seen from FIGURE 4, the inverted U-shaped load bearing beams B^1 are supported on the surface **14** of wings **13** and include a pallet receiving web **16**, side walls **17** and out-turned flanges **18** which are perforated to receive fasteners **19** which enter the holes **15**.

In order to position the frames F in parallel spaced relation to form the necessary aisleway, the upper ends of the columns A, are connected by transverse tie beams B provided with connector plates **7** as shown in FIGURES 3 and 4. For added structural rigidity of the unit the columns may be provided with foot plates **20** which are bolted to the floor. For extremely high units, external overhead fastening will be necessary. The degree of reinforcement will depend upon the height of the unit and the load requirements.

FIGURE 6 shows a modified form of bracket which may be used as an end bracket in which case only one supporting surface for a load beam is required. This type of bracket may also be used in place of the bracket shown in FIGURE 5 when the material being handled in adjacent racks might require different vertical spacing between the tiers of pallets within said racks.

It will be seen from the foregoing that the invention provides a versatile and adjustable pallet rack assembly which sacrifices neither strength nor rigidity and may be erected and dismounted with a minimum of time and effort.

I claim:

1. A pallet rack assembly comprising in combination, a plurality of vertically disposed channel shaped columns including a web and spaced parallel side walls extending therefrom, the free end of each of said side walls terminat-

ing in an outwardly turned flange, said flanges having a plurality of vertically spaced slots, said web having a plurality of vertically spaced tapered openings, brace members connecting an opposed pair of said columns to form a frame section, at least one pair of longitudinal spacer elements extending between a pair of frame sections, means at the ends of said spacer elements cooperating with both said vertically spaced slots and said vertically spaced tapered openings to secure said spacer elements to aligned columns of opposed frame sections, and means connecting a series of the thus connected pairs of frame sections to form an aisleway with pallet supporting surfaces on opposite sides thereof.

2. A pallet rack assembly as set forth in claim 1, wherein said connecting means comprises at least one bracket secured to each of said columns, said bracket including a pair of horizontally disposed wing members, and a load bearing beam supported by and secured to the upper surface of each of said wings.

3. A pallet rack assembly as set forth in claim 1, wherein said connecting means comprises at least one bracket

secured to each of said columns, said bracket comprising a web portion, a pair of spaced parallel plates extending at right angles thereto and straddling the web of said columns, the free edges of each of said plates provided with hooks which engage in related slots in the flanges of said column, a pair of wings extending outwardly from the web of said bracket and having a transverse supporting surface, and a load bearing beam secured to the supporting surface of each of said wings.

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