

[54] **DRUM-SUPPORTING STRUCTURE**

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 [51] Int. Cl. **B65g 1/14**
 [58] Field of Search 105/367, 369 S;
 220/97 B; 206/65, 65 R; 211/13, 49; 108/53,
 55; 214/10.5 R; 248/119

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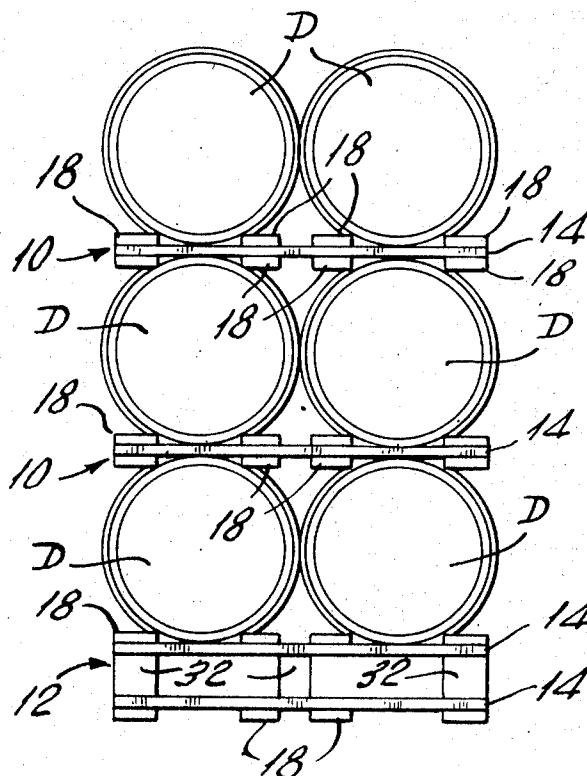
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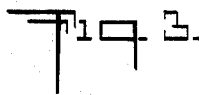
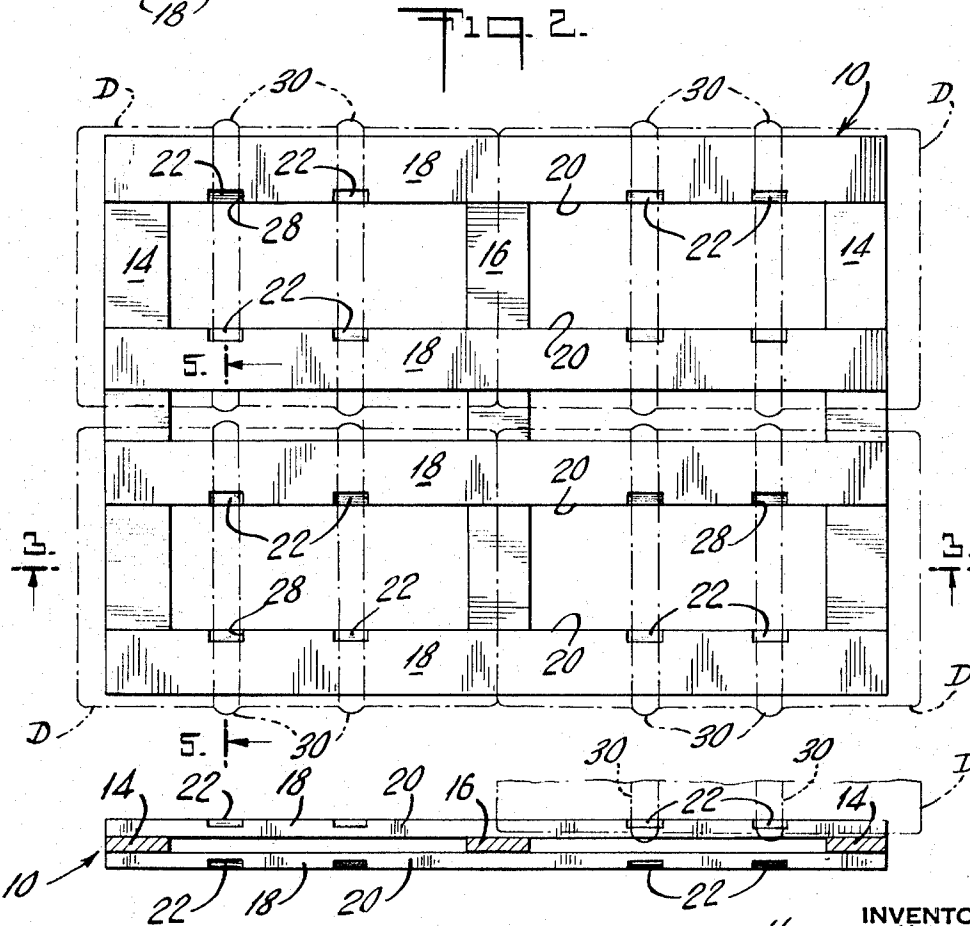
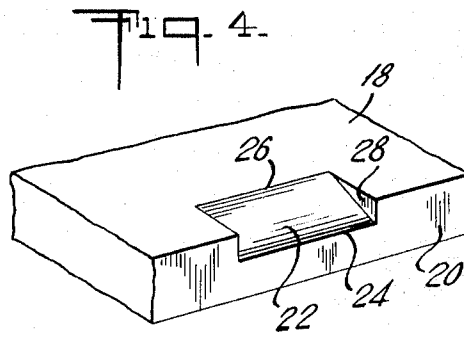
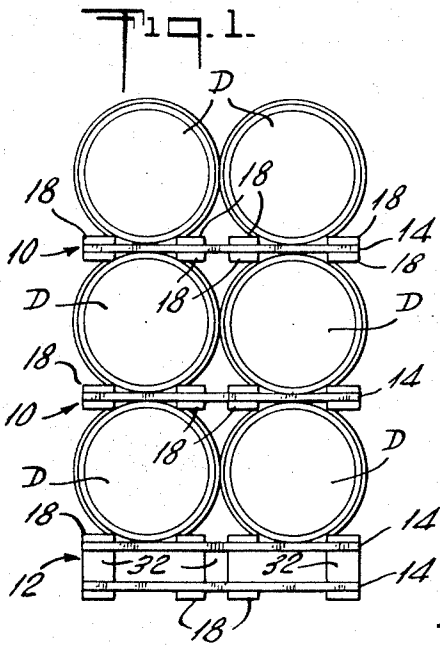
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[57] **ABSTRACT**

A structure for supporting drums such as beer kegs. The drum is adapted to be supported with its axis extending horizontally, and the drum has between its ends a rolling ring. The structure includes a pair of elongated parallel frame members which extend perpendicularly to the drum axis and a pair of elongated parallel drum-engaging members which extend parallel to the drum axis and which extend perpendicularly with respect to the frame members and are fixed thereto. The frame members are spaced at a substantial distance from each other and the drum-engaging members are also spaced at a substantial distance from each other. The pair of drum-engaging members are respectively formed at their inner edges with a pair of aligned notches for receiving the rolling ring of the drum, so that with this construction the pair of drum-engaging members will oppose rolling movement of the drum perpendicularly across the drum-engaging members while the notches will oppose axial movement of the drum in a direction parallel to the drum-engaging members. This structure may form either part of a pallet or part of a spacer to be situated between a pair of drums which are located one above the other.

10 Claims, 8 Drawing Figures





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Fig. 5.

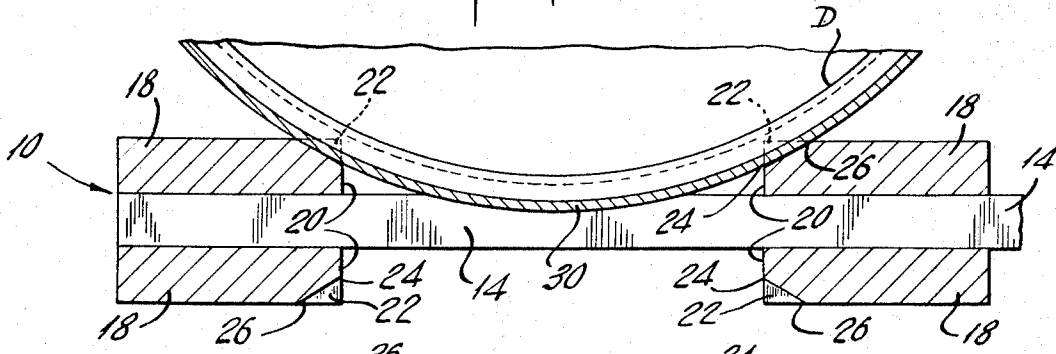


Fig. 6.

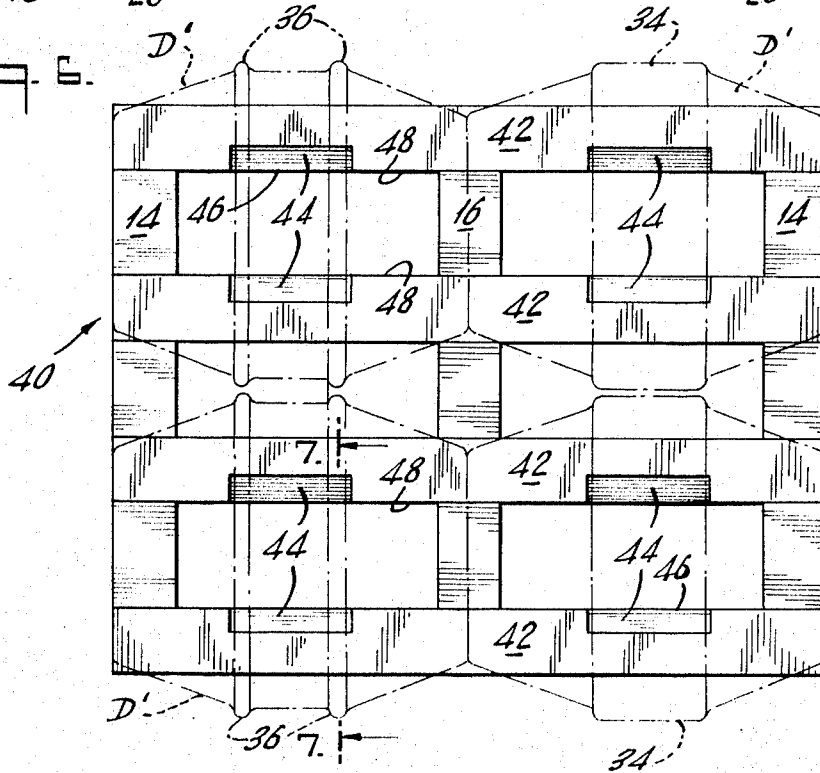


Fig. 7.

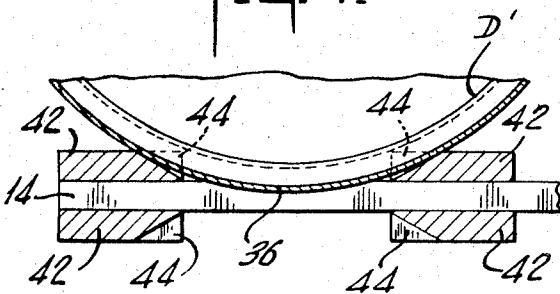
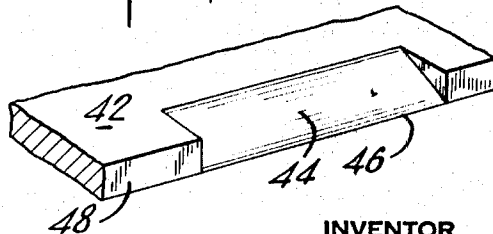


Fig. 8.



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DRUM-SUPPORTING STRUCTURE**BACKGROUND OF THE INVENTION**

The present invention relates to drum-supporting structures.

Thus, the present invention relates to that type of structure which has been used for supporting beer kegs, although the structure of the invention is also generally applicable to all types of cylindrical drums such as metal drums adapted to contain any fluid and having between their ends circular rolling rings.

It has been customary in the past to stack such drums on their ends so that the axes of the drums extend vertically. However, this arrangement has proved to be highly undesirable because of the difficulty in handling drums which rest on their ends and because of the extreme height which is required when several layers of such drums are arranged one on the other with the drum axes extending vertically. A further disadvantage of this arrangement resides in the fact that such drums, particularly when they are relatively heavy, must be tilted to 90° so that they can roll on their sides, with the drums having rolling rings provided for this purpose. Thus, in order to stack drums on their ends it is necessary to roll the drums on their sides and then turn the drums onto their ends, and the reverse operations are required when taking the drums from a stack, so that considerable inconvenience is involved with such arrangements.

It has therefore been proposed to arrange the drums, when they are stored, at an attitude where the drum axes extend horizontally. Of course, one of the problems encountered with this type of stacking is that the drums must be prevented from rolling. Thus, while there is the advantage of being able to accommodate a larger number of drums within a space which is of a smaller height when the drum axes extend horizontally, and there is also the advantage of having the drums remain in an attitude where they are ready roll to and from the location where they are stored, there is the requirement that the drums be prevented from rolling from the location at which they are stored.

In order to solve this problem it has already been proposed to provide panels in the form of heavy sheets of plywood, for example, adapted to form parts of pallets as well as spacers between drums which are situated one above the other. Such large, expansive sheets of substantially thick plywood or other material used for the panels are extremely difficult to handle. They have a considerable bulk and area and are fairly expensive to form with the structure required to coact with the drums to prevent rolling thereof and to prevent engagement between drums which are stacked one above the other. One of the principal disadvantages encountered with panels of this type is that they frequently become broken due to the rough handling thereof, and when broken it is impossible to repair them, so that they simply must be discarded. Thus, experience has shown that such panels are expensive to manufacture, inconvenient to handle and have only a short operating life.

SUMMARY OF THE INVENTION

It is accordingly a primary object of the present invention to provide a construction which will avoid the above drawbacks.

Thus, it is an object of the invention to provide a drum-supporting structure which is far less expensive

than known structures such as the panels of the type referred to above, while at the same time being able to effectively prevent drums from rolling and from shifting axially.

It is also an object of the present invention to provide a construction of this type which lends itself to formation of part of a pallet or to formation of a spacer to be situated between drums which are located one above the other.

Also, it is an object of the present invention to provide a construction which only requires that the drum-supporting structure be made up of inexpensive elongated members, in the form of wooden boards, for example, which need not be very wide and which can simply be nailed together in an inexpensive, expeditious manner to form the structure of the invention.

According to the invention the drum-supporting structure includes a pair of elongated parallel frame members which are spaced at a substantial distance from each other and a pair of elongated parallel drum-engaging members which also are spaced at a substantial distance from each other and which extend perpendicularly to the frame members. The frame members are adapted to extend perpendicularly to the drum axis while the drum-engaging members are adapted to extend parallel to the drum-axis. These drum-engaging members have inner edges directed toward each other and respectively formed with aligned notches for receiving the rolling ring of a drum. In this way a drum carried by such a structure is prevented from rolling by the drum-engaging members while at the same time is prevented from shifting longitudinally or axially by the notches of the drum-engaging members.

BRIEF DESCRIPTION OF DRAWINGS

The invention is illustrated by way of example in the accompanying drawings which form part of this application and in which:

FIG. 1 is an elevation illustrating the manner in which the drum-supporting structures of the invention are used to support several tiers of drums;

FIG. 2 is a top plan view of a drum-supporting structure of the invention;

FIG. 3 is a longitudinal sectional elevation taken along line 3—3 of FIG. 2 in the direction of the arrows;

FIG. 4 is a fragmentary perspective illustration showing the details of a notch which forms part of the structure of the invention;

FIG. 5 is a fragmentary transverse section of the structure of FIG. 2 taken along line 5—5 of FIG. 2 in the direction of the arrows and showing the structure on a scale which is enlarged as compared to FIG. 2;

FIG. 6 is a top plan view of another embodiment of a drum-supporting structure of the invention;

FIG. 7 is a fragmentary transverse section of the structure of FIG. 6 taken along line 7—7 of FIG. 6 in the direction of the arrows; and

FIG. 8 is fragmentary perspective illustration showing the details of a notch which forms part of the structure of FIGS. 6 and 7.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to FIG. 1, it will be seen that a plurality of tiers of drums D are illustrated with their axes extending horizontally and with these drums supported by the structure of the invention. This structure includes

the spacers 10 and the pallet 12. One of the spacers 10 is shown in detail in FIGS. 2-5.

Thus, each spacer 10 includes at least one pair of elongated frame members 14 which are spaced from and parallel to each other. In the illustrated example there are two frame members 14, a third frame member 16 being situated midway between and extending parallel to the frame members 14. These frame members may simply take the form of wooden boards and they are all of the same length. The distance between each end frame member 14 and the intermediate frame member 16 will correspond approximately to the length of a drum, the drums being indicated in phantom lines in FIG. 2.

A pair of elongated drum-engaging members 18 are fixed to and extend perpendicularly with respect to the frame members 14, 16. These drum-engaging members 18 may take the form of boards identical with the boards which form the frame members 14, 16 but having a different length. As is apparent from FIG. 2, while the frame members 14, 16 extend perpendicularly to each drum axis, the drum-engaging members extend parallel to each drum axis. In the illustrated example there are two pairs of drum-engaging members 18 with each pair being formed by an outer drum-engaging member 18 and the intermediate drum-engaging member 18 closest to the particular outer drum-engaging member 18. Each of these pairs of drum-engaging members 18 has a pair of inner edges 20 directed toward each other. Each inner edge 20 of a drum-engaging member is formed with notches 22. As is apparent particularly from FIG. 4, each notch 22 has an inner edge 24 situated at the inner edge 20 of the member 18 and an outer edge 26 situated outwardly of the inner edge 24. Between these edges 24 and 26 each notch 22 has a relatively flat inclined surface. Each notch 22 also has a pair of opposed end surfaces 28 which are perpendicular to the drum axis as well as all of the members 14, 16, 18. The several members 18 are simply nailed, for example, to the frame members 14, 16 so as to be fixed thereto in the manner illustrated in FIG. 2.

It will be noted from FIG. 2 that the particular drums D illustrated therein are of a substantially uniform diameter and have between their ends a pair of rolling rings 30. In order to accommodate such drums each drum-engaging member 18 is formed between each frame member 14 and the intermediate member 16 with a pair of notches 22. Thus, with the particular example shown in FIG. 2 it is possible to situate on the structure four drums D arranged as shown in FIG. 2. The drum-engaging members 18 will of course prevent rolling of the drums while the notches 22 will prevent longitudinal shifting of the drums.

In order to form from a structure as thusfar described a spacer 10 of the invention, it is only necessary to fix to that surface of frame members 14, 16 which is directed away from the drum-engaging members 18 visible in FIG. 2 a second set of additional drum-engaging members 18 identical with and coextensive with those apparent from FIG. 2. Thus, FIG. 3 shows a lower set of drum-engaging members 18 situated beneath the plurality of members 18 which visible in FIG. 2. The lower members 18 are coextensive with the upper members 18 and are formed at their inner edges with identical notches 22.

Thus, as may be seen from FIG. 1, with this construction each spacer 10 can be situated above a lower drum and beneath an upper drum with the lower drum-engaging members engaging upper parts of the rolling rings and with the upper drum-engaging members engaging lower parts of the rolling rings of the upper drums.

As is apparent particularly from FIG. 5, the depth of the notches 22 is such that the rolling ring of each drum while extending through the plane situated at the area of engagement between the frame members and drum-engaging members will not extend beyond this plane by a distance greater than one-half the thickness of the frame members, such as the frame member 14, shown in FIG. 5. Thus, the drums which are situated one above the other will not engage each other.

In order to form from the structure apparent from FIG. 2 a pallet 12, it is only necessary to fix the surfaces of frame members 14, 16 a plurality of blocks 32, located, for example, at the area where the drum-engaging members and frame members intersect each other. One set of frame members and drum-engaging members is fixed to the blocks 32 at one of the ends thereof while a second set, inverted with respect to the first set, is fixed to the blocks 32 at the opposed ends thereof, so that two sets of frame members and drum-engaging members are provided having an inverted relation with respect to each other, so that the pallet 12 can be used either in the position shown in FIG. 1 or in an inverted position. With this construction it is a simple matter for the fork of a lift truck to have access into the space between the frame members, as determined by the lengths of the blocks 32.

The structure shown in FIGS. 2-5 is particularly suitable for elongated drums of substantially constant diameter each of which has a pair of rolling rings 30, as described above.

With the embodiment of the invention which is illustrated in FIGS. 6-8, the structure is adapted to be used with drums D' in the form of kegs which taper at their opposed end portions where the kegs extend beyond a central relatively wide rolling ring 34 in the case of the right kegs of FIG. 6. Also such kegs may have a pair of rolling rings 36, as shown for the left kegs in FIG. 6.

In any event, the drum-supporting structure 40 of this embodiment includes elongated frame members 14, 16 identical with those described above. The elongated drum-engaging members 42, however, differ from the drum-engaging members 18 in that the members 42 are formed with the elongated notches 44. These elongated notches 44 have a length capable of accommodating either the wide rolling ring 34 or the pair of rolling rings 36, as is apparent from FIG. 6.

It will be noted from FIG. 7 that the depth of the notches 44 is such that the rolling ring 36 does not extend through the plane of engagement between the frame members and drum-engaging members to an extent beyond one-half the thickness of the frame members, so that drums stacked one above the other will not engage each other.

Also, as is apparent from FIG. 8, with this particular construction each notch 44 has its inner edge 46 situated not only at the inner edge 48 of each member 42 but also substantially in the plane of engagement between the drum-engaging members and the frame members. Otherwise the structure of FIGS. 6-8 is identical with that of FIGS. 1-5. In other words, the struc-

ture shown in FIGS. 6 and 7 may be fixed to a pallet-forming means, constituted by several blocks corresponding to blocks 32 and an additional assembly as shown in FIG. 6, so as to form a pallet, or this structure may simply have fixed to the surfaces of the frame members which are directed away from the drum-engaging members 42 which are visible in FIG. 6, a second set of drum-engaging members to achieve structures corresponding to the spacers 10 of FIG. 1.

It is apparent that the above structure of the invention is simple and inexpensive. It can be readily manufactured from simple boards which need only be nailed together and which can readily be formed at low cost with the required notches. Furthermore, in the event of breakage it is a simple matter to replace one board with another. Also, the structure is relatively light and easy to handle.

What is claimed is:

1. In a structure which is adapted to extend beneath and support a cylindrical drum which has intermediate its ends a rolling ring and which is to be supported in a position where the drum axis extends horizontally, a pair of elongated parallel frame members spaced at a substantial distance from each other and adapted to extend perpendicularly to the drum axis, and a pair of elongated parallel drum-engaging members fixed to and carried by said frame members and extending perpendicularly to the latter in the direction parallel to the drum axis, said pair of drum-engaging members also being spaced at a substantial distance from each other and respectively having inner edges directed toward each other, said drum-engaging members respectively being formed at said inner edges thereof with aligned beveled notches converging toward one another for receiving the rolling ring of the drum, whereby said drum-engaging members oppose rolling movement of the drum in a direction parallel to said frame members and said notches of said drum-engaging members oppose axial movement of the drum.

2. The combination of claim 1 and wherein a pallet-forming means is fixed to surfaces of said frame members which are directed away from said drum-engaging members for forming a pallet with said frame members and drum-engaging members.

3. The combination of claim 2 and wherein said pallet-forming means includes blocks fixed to said surfaces of said frame members which are directed away from said drum-engaging members at the areas where said frame members and drum-engaging members engage each other, and a pair of additional frame members and additional drum-engaging members identical with said first-named members fixed to ends of said blocks which are distant from said first-named members and having an inverted position with respect to said first-named members.

4. The combination of claim 1 and wherein a pair of additional drum-engaging members are respectively fixed to said frame members at surfaces of the latter which are directed away from said first-named drum-engaging members with said additional drum-engaging members being identical with said first-named drum-engaging members and coextensive therewith so that the two pairs of drum-engaging members and the frame members extending therebetween form a spacer to be situated between a pair of drums one of which is situated over the other.

5. In a structure which is adapted to extend beneath and support a cylindrical drum which has intermediate its ends a rolling ring and which is to be supported in a position where the drum axis extends horizontally, a pair of elongated parallel frame members spaced at a substantial distance from each other and adapted to extend perpendicularly to the drum axis, and a pair of elongated parallel drum-engaging members fixed to and carried by said frame members and extending perpendicularly to the latter in the direction parallel to the drum axis, said pair of drum-engaging members also being spaced at a substantial distance from each other and respectively having inner edges directed toward each other, said drum-engaging members respectively being formed at said inner edges thereof with aligned notches for receiving the rolling ring of the drum, whereby said drum-engaging members oppose rolling movement of the drum in a direction parallel to said frame members and said notches of said drum-engaging members oppose axial movement of the drum, said drum-engaging members and said frame members engaging each other in a predetermined plane and said notches having a depth which prevents the rolling ring of the drum from extending beyond said plane by a distance greater than one-half the thickness of each frame member.

6. In a structure which is adapted to extend beneath and support a cylindrical drum which has intermediate its ends a rolling ring and which is to be supported in a position where the drum axis extends horizontally, a pair of elongated parallel frame members spaced at a substantial distance from each other and adapted to extend perpendicularly to the drum axis, and a pair of elongated parallel drum-engaging members fixed to and carried by said frame members and extending perpendicularly to the latter in the direction parallel to the drum axis, said pair of drum-engaging members also being spaced at a substantial distance from each other and respectively having inner edges directed toward each other, said drum-engaging members respectively being formed at said inner edges thereof with aligned notches for receiving the rolling ring of the drum, whereby said drum-engaging members oppose rolling movement of the drum in a direction parallel to said frame members and said notches of said drum-engaging members oppose axial movement of the drum, each notch having an inner edge coinciding with the inner edge of the drum-engaging member in which the notch is formed and an outer edge spaced outwardly beyond said inner edge between opposed side edges of the drum-engaging member at a surface of the latter which is directed away from said frame members.

7. The combination of claim 6 and wherein each notch has a substantially flat inclined surface extending between said inner and outer edges thereof.

8. The combination of claim 6 and wherein each notch has a pair of opposed substantially flat ends extending between said inner and outer edges of the notch with each end situated substantially in a plane which is perpendicular to said frame members and drum-engaging members.

9. The combination of claim 6 and wherein said drum-engaging members and said frame members engage each other in a predetermined plane, and the inner edge of each notch being spaced from said plane.

10. In a structure which is adapted to extend beneath and support a cylindrical drum which has intermediate

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its ends a rolling ring and which is to be supported in a position where the drum axis extends horizontally, a pair of elongated parallel frame members spaced at a substantial distance from each other and adapted to extend perpendicularly to the drum axis, and a pair of elongated parallel drum-engaging members fixed to and carried by said frame members and extending perpendicularly to the latter in the direction parallel to the drum axis, said pair of drum-engaging members also being spaced at a substantial distance from each other and respectively having inner edges directed toward each other, said drum-engaging members respectively being formed at said inner edges thereof with aligned notches for receiving the rolling ring of the drum,

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whereby said drum-engaging members oppose rolling movement of the drum in a direction parallel to said frame members and said notches of said drum-engaging members oppose axial movement of the drum, said frame members being spaced from each other by a distance which is approximately equal to twice the length of a drum, and a third frame member situated midway between and extending parallel to said pair of frame members, said drum-engaging members being formed between each of said pair of frame members and said third member with a notch for receiving part of a rolling ring of a drum.

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