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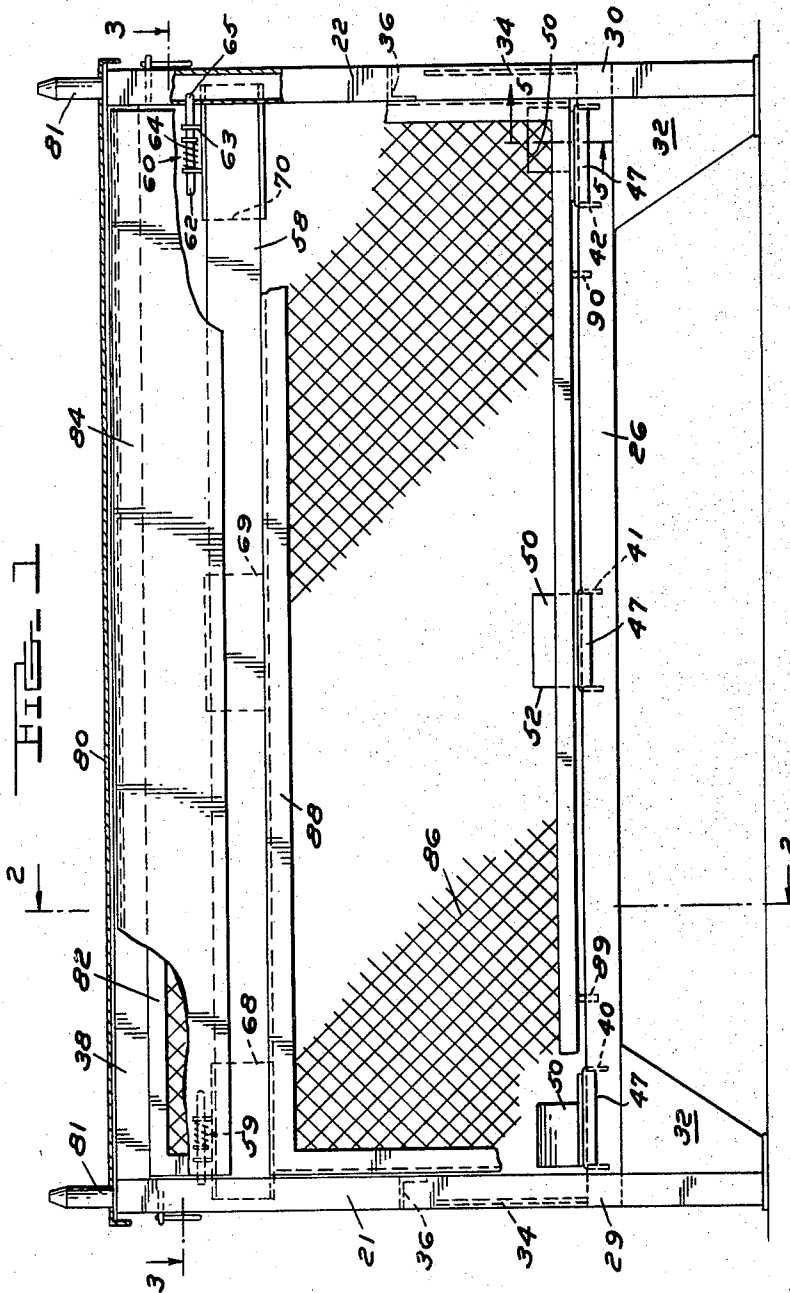
J. P. LAIRD

2,954,197

BEAM RACK

Filed June 30, 1958

3 Sheets-Sheet 1



INVENTOR.

J. PAUL LAIRD

BY *Farley, Forster & Farley*

ATTORNEYS

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J. P. LAIRD

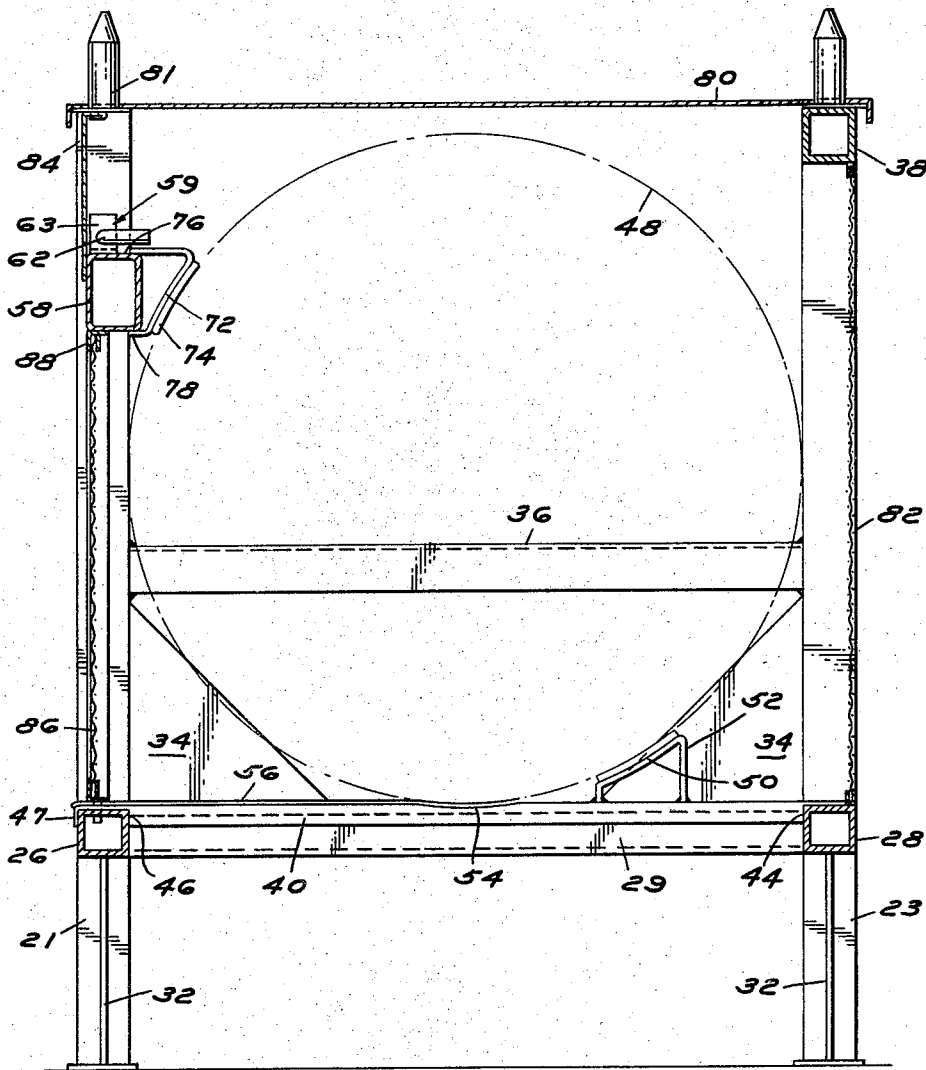
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FIG. 2



INVENTOR.

J. PAUL LAIRD

BY *Harley, Forster & Harley*

ATTORNEYS

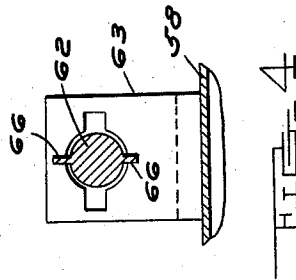
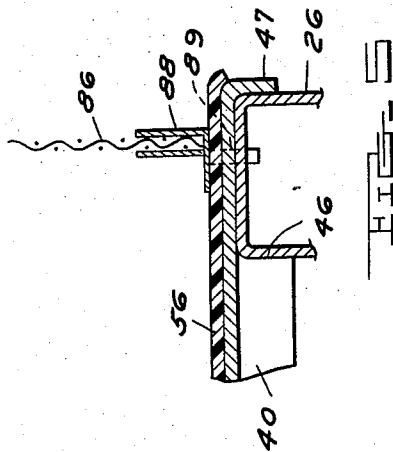
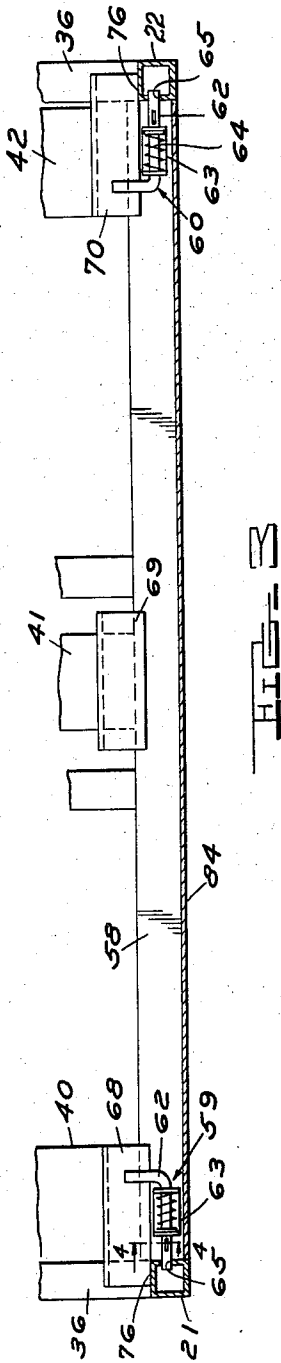
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J. P. LAIRD
BEAM RACK

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3 Sheets-Sheet 3



INVENTOR.

J. PAUL LAIRD

BY *Farley, Forster & Farley*

ATTORNEYS

1

2,954,197

BEAM RACK

Joseph Paul Laird, Philadelphia, Pa., assignor to Equipment Manufacturing, Inc., Detroit, Mich., a corporation of Michigan

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This invention pertains to an improved construction of a rack for the storing or transporting of cylindrical or spool-like articles such as textile beams.

The improvements of the invention provide a rack which can be loaded and unloaded with greater ease, less power equipment and decreased likelihood of damage to the article; and additionally a rack which supports a cylindrical article more positively so that there is less likelihood of damage to the article or to the rack from shifting of the article during transportation.

The improved rack construction consists of an open four-sided rigid framework formed by four corner upright members suitably interconnected by lower horizontal side and end members. Upper end members and one upper side member may also be employed to increase the rigidity of this framework. One side of the framework is open above the level of the lower side members.

Treads are mounted on the framework to extend inwardly from the lower side member of the open side to support a cylindrical object for rolling movement between the open side and a loaded position on the rack. This loaded position is defined by one or more locating surfaces carried by the rack framework and adapted to contact the periphery of the object being carried. A removable upper side member is provided for the open rack side and is detachably mounted between the corner posts. One or more clamping surfaces are mounted on the removable side member and are adapted to contact the surface of the object being carried when the removable side member is connected to the rack structure.

Preferably the clamping surfaces of the removable side member contact an upwardly directed surface of the article so that the article is held positively in the rack against both vertical and horizontal movement relative to the rack.

As previously mentioned the rack construction is particularly adapted for the handling of textile beams and for this application the rack is advisedly equipped with protective top and side panels when beams of relatively expensive yarn, such as nylon, are to be handled. A preferred feature is to form one removable side panel around the removable side member as a base. This removable side panel interlocks with the rack framework and is held in position by the means which detachably connect the removable side member to the corner posts.

The connecting means for the removable side member include releasable locks and means for transmitting any force imposed on the removable member from the object contacted by the clamping surfaces to the rack framework rather than to the locks.

Due to the particular utility of the improved construction in the handling of textile beams the invention is illustrated in this use in the accompanying drawings and following description.

These drawings comprise the following views:

Figure 1 is a side elevation, partially broken away, of a beam rack with the removable side panel in place;

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Figure 2 is a section taken on the line 2—2 of Figure 1 showing a loaded beam in phantom;

Figure 3 is a partial section taken on the line 3—3 of Figure 1 showing a plan view of the removable side member and associated framework members;

Figure 4 is an enlarged section taken on the line 4—4 of Figure 3 showing some details of the fastening means for the removable side member; and

Figure 5 is an enlarged section taken on the line 5—5 of Figure 1 showing a portion of a tread construction.

The basic framework of the rack shown in the drawings is conventional in construction and includes four corner posts three of which, 21, 22 and 23, are illustrated and which are rigidly interconnected by lower side members 26 and 28 and lower end members 29 and 30. Suitable gusset plates 32 are employed to reinforce the connection between each corner member and the side members 26 and 28, and gusset plates 34 are similarly employed at the connections between each corner post and the end members 29 and 30. An upper member 36 is provided at each end of the framework and an upper member 38 is provided at one side thereof.

Article supporting surfaces are provided in the form of treads 40, 41 and 42. Each of these treads is a channel member which extends between the lower frame side members 26 and 28. Each tread is provided with a notch 44 engaging side member 28, and with a notch 46 and a downwardly extending lip 47 engaging the side member 26. Each tread forms a supporting surface which extends inwardly toward the center of the rack from the side member 26 to a loaded position for a cylindrical object such as the beam 48 indicated in phantom in Figure 2.

This loaded position is defined by a locating surface 50 of a member 52 which is secured to each of the tread members. Loaded position is further defined by a depression 54 in the upper surface of each tread member. The tread members are positioned to be contacted by the ends of a textile beam and are preferably given a protective coating 56 of plastic or other suitable material to minimize the possibility of the beam ends becoming damaged or nicked.

An upper side member 58 is provided for the open side of the rack framework. This upper side member 58 extends between the corner posts 21 and 22 and is detachably connected thereto by a pair of locks 59 and 60 mounted on the side member 59. Each of these locks is of the conventional plunger type and consists of a combined plunger and handle member 62 slidably mounted in a bracket 63 and normally urged to locked position by a spring 64. In locked position the plunger 62 engages a hole 65 in the corner post. The plunger is held in unlocked position by lugs 66 which engage the mounting bracket 63.

Removable side member 58 carries members 68, 69 and 70 each of which provide a clamping surface 72 (Fig. 2) for engaging the surface of the beam ends. This clamping surface 72 is also preferably provided with a suitable coating 74.

Each of the members 68 and 70 at the ends of the removable side member 58 are mounted to extend beyond the side member ends so that their upper and lower surfaces 76 and 78 overlap and engage the inside surface of a corner post. Thus the members 68 and 70 not only act to hold a beam in loaded position, but also act to transmit any force resulting from any tendency of the beam to shift position to the corner post of the rack framework. The members 68 and 70 form a part of the means for detachably connecting the removable side member 58 to the rack framework.

In the construction shown, the rack is equipped with a removable top panel 80 (held in place by engagement

with conventional nesting caps 81) and a fixed side panel 82 (Fig. 2). Fixed protective end panels may also be employed if desired.

Removable side member 58 forms the base member for a side panel which consists of a sheet metal member 84 secured to and extending upwardly from the side member 58 and a wire mesh panel 86 secured to and extending downwardly from the side member 58. Wire mesh panel 86 is built around a suitable frame member 88 and is detachably engageable with the fixed side member 26 by pins 89 and 90. These pins extend through holes in the upper surface of the side member 26 and are held in engagement by the connection between the removable side member 58 and the rack framework.

The rack is shown in loaded condition in the drawings. To unload the beam 48, the top panel 80 is lifted off the nesting caps 81. Then the locks 59 and 60 may be unlocked and their plungers 62 retained in unlocked position by rotating the plunger to place lugs 66 in engagement with the lock bracket 63 (see Fig. 4). Removable side member 58, and its side panel structure may be removed by lifting the side panel vertically until the overlapping portions of the members 68 and 70 clear the inner surface of the side posts 21 and 22. This vertical movement of the side member 58 will also withdraw the pins 89 and 90 from the lower side member 26.

The beam 48 is then free to be rolled out of the rack along the treads 40 and 42 and onto a dolly or the like.

Loading of the rack is of course accomplished by a reversal of the above procedure.

During both loading and unloading operations the depressions 54 in the treads 40-42 serve to prevent accidental rolling movement of the beam during the time it is not engaged by the clamping surfaces 72. When the beam is rolled on the treads to loaded position, the beam ends seat themselves in the depressions 54 and then a positive force is required to cause movement of the beam from its loaded position.

In the construction shown the intermediate tread 41 and member 69 on the removable side member 58 are provided for supporting and clamping two half size textile beams.

Preferably the locating surfaces 50 and clamping surfaces 72 are relatively positioned in the manner shown in Figure 2 so that the combined action of the surfaces on a loaded textile beam positively positions the beam against movement both horizontally and vertically while supported in the rack.

Modifications of the construction shown and described to adapt the invention for rack structures to handle cylindrical objects of other sizes or types may of course be made. Such modifications as are within the scope of the following claims are to be considered part of the invention.

I claim:

1. A rack for storing and shipping a cylindrical object such as a textile beam comprising an open four sided framework formed by four corner upright members, lower horizontal side and end members connecting said upright members adjacent the lower ends thereof, a pair of treads extending transversely inwardly from one of said side members, said treads being adapted to support the ends of said beam for rolling movement transversely of said rack between said one side member and the de-

sired position of said beam on said rack, a pair of locating surfaces carried by said framework, said locating surfaces being aligned with said treads and being engaged by the periphery of said beam ends when the beam is in said desired position, an upper frame side member located vertically above said one side member, means for detachably connecting said upper side member to the corner upright member at each end thereof, and a pair of beam clamping surfaces carried by said upper side member for engagement with the periphery of said beam ends when said beam is in said desired position and when said upper side member is connected to the rack structure.

2. A rack construction according to claim 1 wherein at least one of said locating and clamping surfaces is above the horizontal center of said beam.

3. A rack construction according to claim 1 wherein said clamping surfaces contact an upwardly directed portion of said beam periphery which is spaced relative to the beam center more than 90° and less than 180° from the portion of beam periphery contacted by said locating surfaces.

4. A rack construction according to claim 1 wherein a side panel is secured to said upper side member, said side panel extending downwardly to said one lower side member and means for detachably engaging said side panel with said one lower side member.

5. A rack construction according to claim 1 wherein means for detachably connecting said upper side member to the corner upright member at each end thereof comprise releasable lock means and a member secured to and extending beyond each end of the said side member for overlapping engagement with the inside surface of said corner upright members.

6. A rack construction according to claim 5 wherein said clamping surfaces are provided on the said members secured to each end of said removable side member.

7. A rack for storing and shipping a cylindrical object comprising an open four sided framework formed by four corner upright members, lower horizontal side and end members connecting said upright members adjacent the lower ends thereof, a pair of treads extending transversely inwardly from one of said side members, said treads being adapted to support said object for rolling movement transversely of said rack between said one side member and the desired position of said object on said rack, at least one locating surface carried by said framework, said locating surface being engaged by the periphery of said object when in said desired position, an upper frame side member located above said one side member, means for detachably connecting said upper side member to the corner upright member at each end thereof, and a clamping surface carried by said upper side member for engagement with the periphery of said object when in said desired position and when said upper side member is connected to the rack structure.

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