Nov. 5, 1968 H. CUNNINGHAM, JR., ET AL 3,409,141

TEXTILE YARN PACKAGE TRUCK

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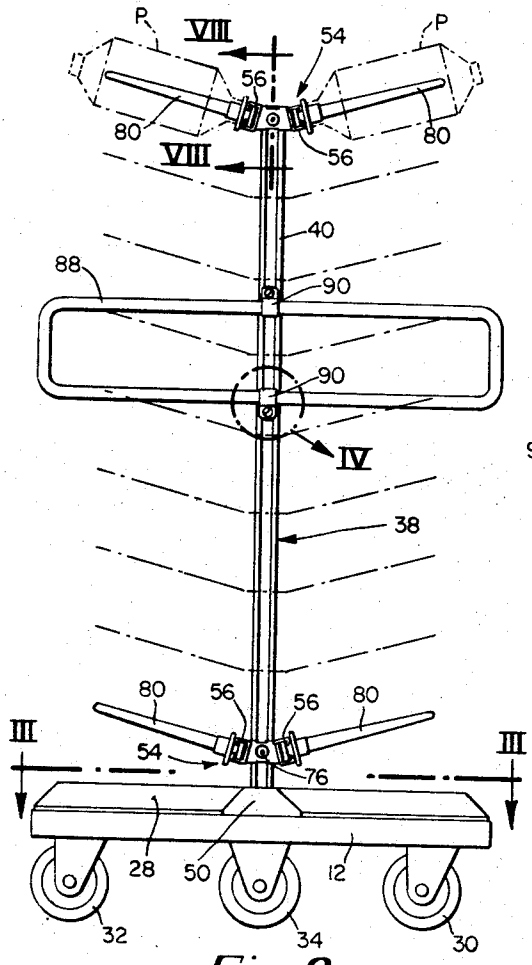


Fig. 2

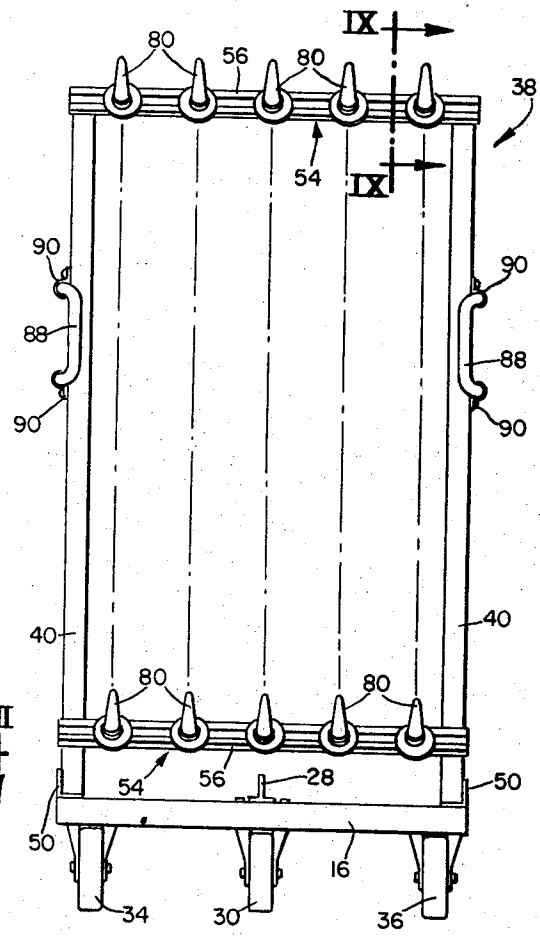


Fig. 1

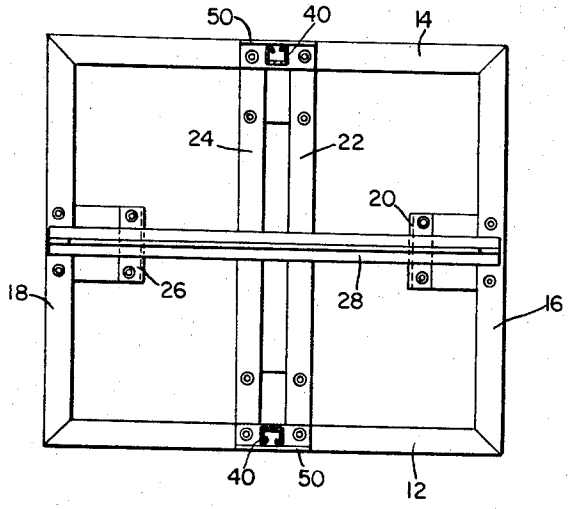


Fig. 3

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TEXTILE YARN PACKAGE TRUCK

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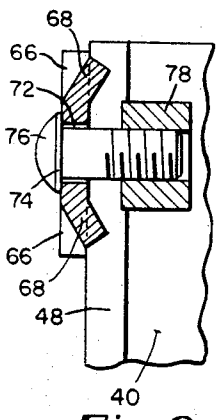


Fig. 8

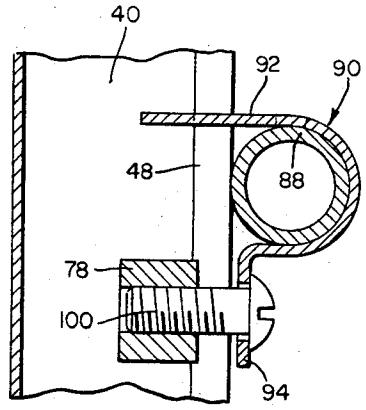


Fig. 5

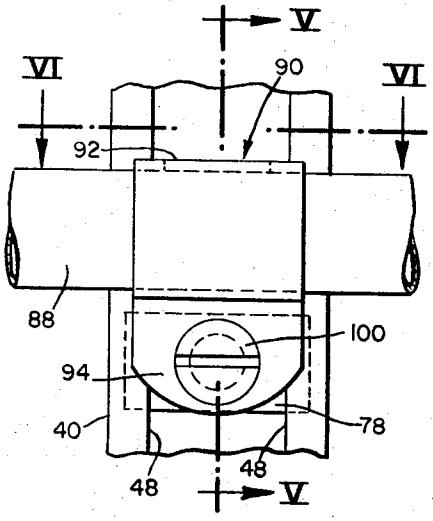


Fig. 4

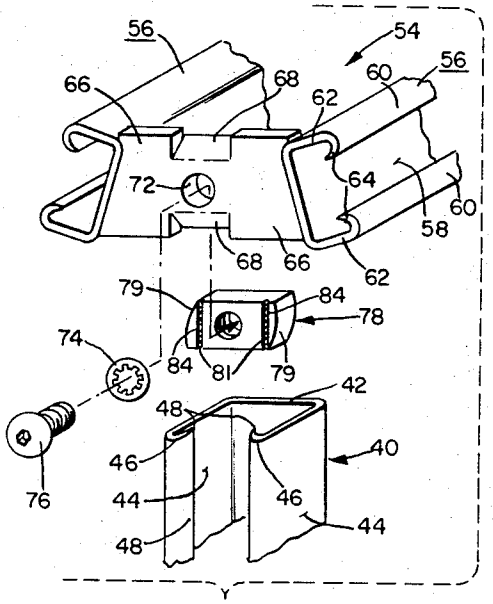


Fig. 7

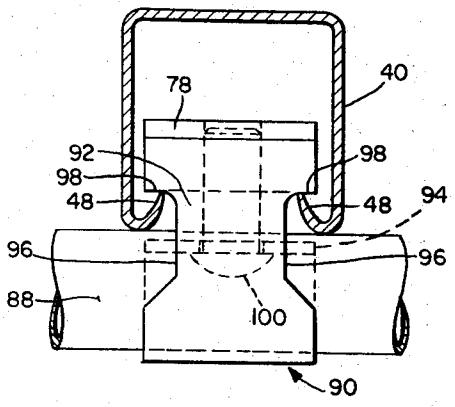
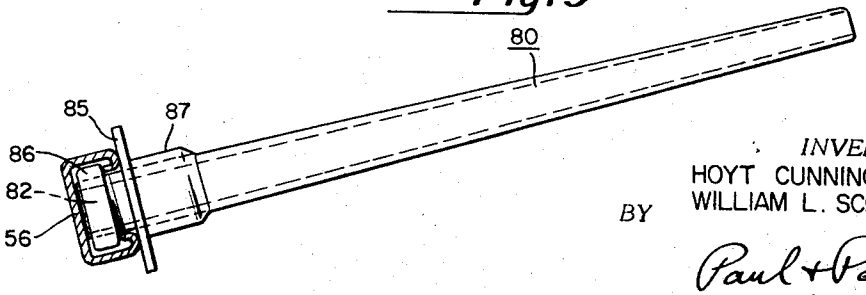


Fig. 6

Fig. 9



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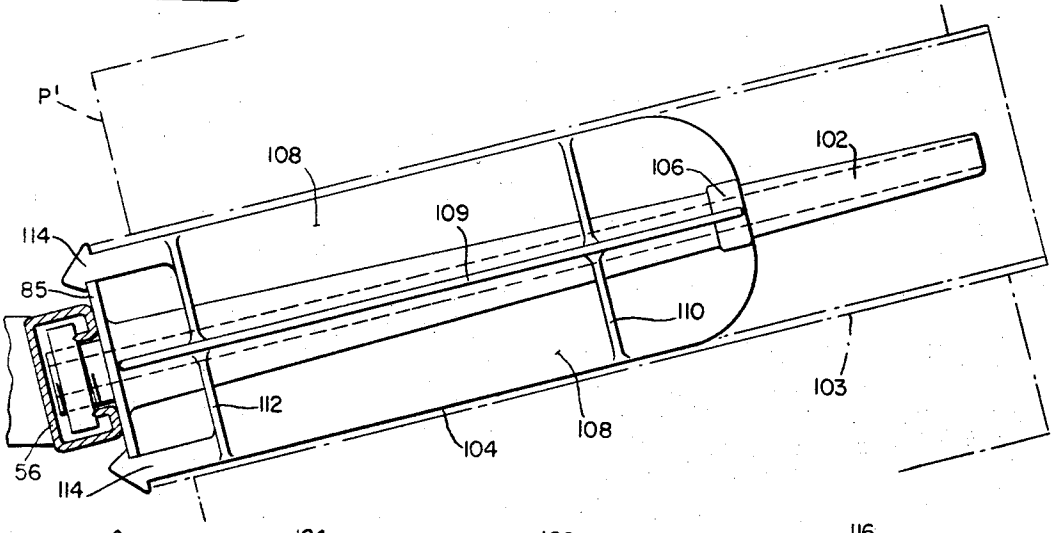
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TEXTILE YARN PACKAGE TRUCK

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Fig. 10



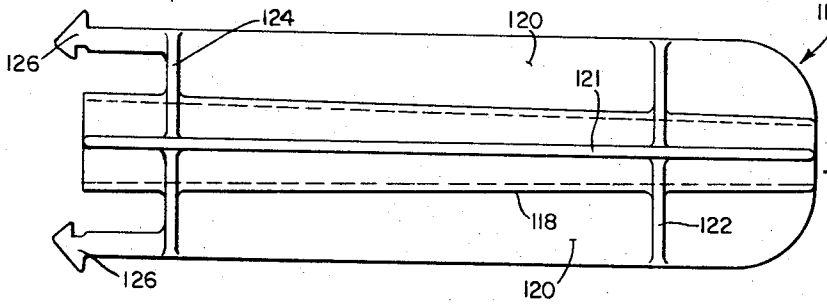
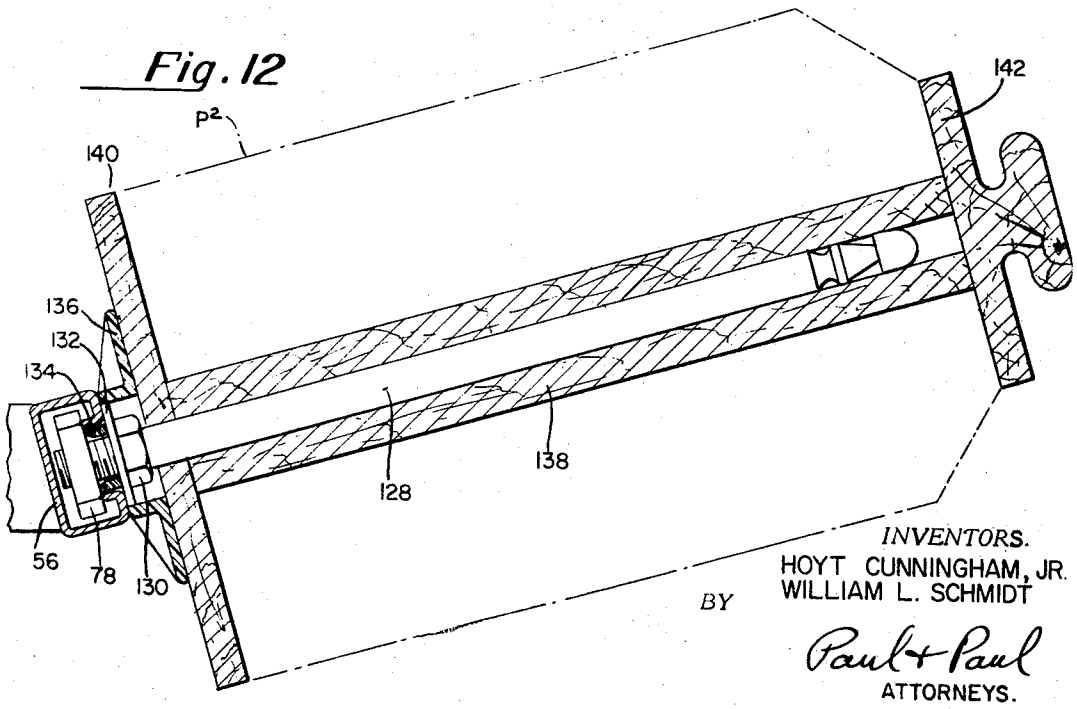


Fig. 11

Fig. 12



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TEXTILE YARN PACKAGE TRUCK

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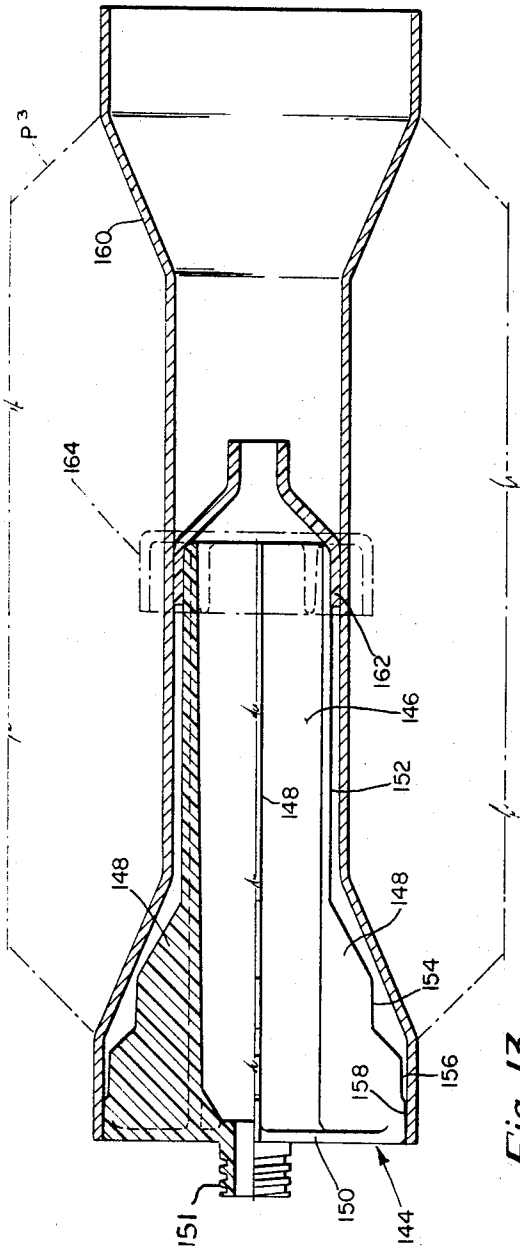


Fig. 13

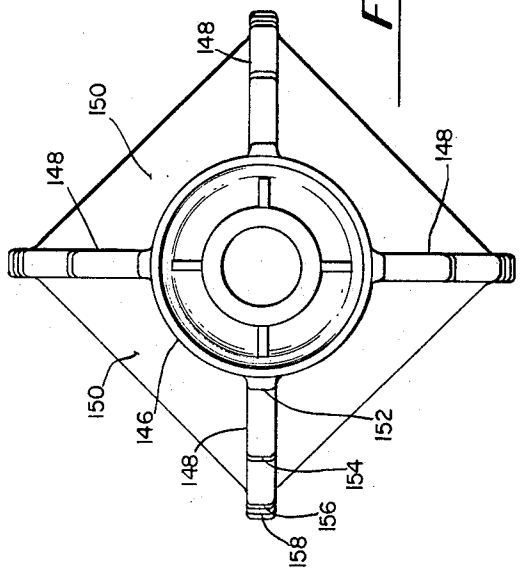


Fig. 14

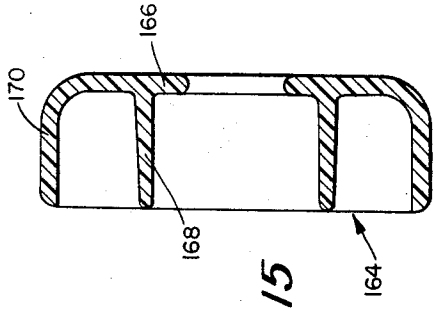


Fig. 15

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United States Patent Office 3,409,141 Patented Nov. 5, 1968

3,409,141

TEXTILE YARN PACKAGE TRUCK

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Continuation-in-part of application Ser. No. 565,595, July 15, 1966. This application Jan. 17, 1967, Ser. No. 609,934

10 Claims. (Cl. 211—13)

ABSTRACT OF THE DISCLOSURE

A mobile base carries a pair of laterally spaced posts. Pin rail assemblies span the posts. Each pin rail assembly includes a pair of pin rails permanently interconnected at each end of the assembly by a plate. The pin rail assembly may be assembled with the posts by being lowered thereonto as a unit and may be removed from the posts by being raised therefrom as a unit.

This invention is a continuation-in-part of our copending application, Ser. No. 565,595, filed July 15, 1966.

The invention relates generally to manually propelled industrial trucks and particularly to improvements in such trucks used for transporting pirns or bobbins of textile yarn, as for example, from one part of a mill to another.

An important object of the invention is to provide a pirn truck which has enhanced flexibility in use.

Another object is to provide such a truck with mounting assemblies readily adjustable for accommodating yarn packages of a given size and number at one time and yarn packages of a different size and number at another time.

Other objects of the invention will become apparent when the following description is read with reference to the accompanying drawings, in which:

FIGURE 1 is a front view of a pirn truck constructed in accordance with the invention;

FIGURE 2 is a side view of the pirn truck shown in FIGURE 1;

FIGURE 3 is a section on line III—III in FIGURE 2;

FIGURE 4 is an enlarged view of the encircled area IV in FIGURE 2;

FIGURE 5 is a section on line V—V in FIGURE 4;

FIGURE 6 is a section on line VI—VI in FIGURE 4;

FIGURE 7 is an exploded perspective view at one end of a frame for mounting one group of pirn mounting pins;

FIGURE 8 is an enlarged section on line VIII—VIII in FIGURE 2;

FIGURE 9 is an enlarged partial section on line IX—IX in FIGURE 1;

FIGURE 10 is similar to FIGURE 9, but shows a modified pin and an adapter mounted thereon;

FIGURE 11 is a view of a modified adapter;

FIGURE 12 is a view of another modified pin;

FIGURE 13 is a view of still another modified pin;

FIGURE 14 is an end view of the pin shown in FIGURE 13; and

FIGURE 15 is a section through an adapter shown in phantom in FIGURE 13.

Referring to the drawings, a pirn truck constructed in accordance with the invention includes a dirigible mobile base in the form of a frame, generally designated **10**. The frame **10** comprises longitudinally extending opposite side members **12** and **14**, transversely extending front and rear members **16** and **18** and transversely extending intermediate members **22** and **24**. A centrally disposed longitudinally extending member **28** overlies the members **16**, **22**, **24** and **18**. Underlying the member **28** are transversely extending members **20** and **26**. The members aforesaid are connected together to provide a rigid horizontally extending frame supported on a pair of swivel casters **30** and **32** disposed respectively at the front and rear thereof and a pair of fixed casters **34** and **36** disposed respectively on opposite sides thereof.

Extending upwardly from the mobile base frame **10** is an open framework, generally designated **38**. The framework comprises a pair of laterally spaced posts **40**, each provided with a web **42** and a pair of flanges **44**. Each flange **44** is turned inwardly toward the other, as at **46**, and then turned toward the web, as at **48**. The lower extremity of each post **40** is affixed to the mobile base frame **10** by means of an angle bracket **50**.

The framework **38** also comprises a plurality of vertically spaced assemblies **54**, each carrying pins adapted for mounting a group of pirns. Each assembly includes a pair of channel members **56**, and each member **56** is provided with a web **58** and a pair of flanges **60**. Each flange **60** is turned inwardly toward the other, as at **62**, and then turned toward the web, as at **64**. At each end of the assembly **54** is a plate **66** provided top and bottom with turned in portions struck therefrom to form tongues **68** slidably fitted between the flanges **44** of the associated post **40**. Each plate **66** rigidly secures together the associated end portions of the members **56** and positions the members **56** with their webs **58** disposed in planes which converge upwardly, as shown. Each plate is provided with a hole **72**, and projected through a lock washer **74** and the hole **72** is a screw **76** threaded into a nut **78**. The nut is of a depth slightly less than the clear distance between the inturned portions **48** of the flanges **44**, and diagonally disposed corners of the nut are rounded, as at **79**. One face of the nut is provided with laterally spaced parallel grooves **81** which receives marginal areas of the inturned portions **48** of the flanges **44**. The bottom of each groove **81** is provided with a series of transversely extending teeth **84** which firmly engage the opposed edge of the associated inturned portion **48**.

Each member **56** mounts a plurality of pins **80**, each of which has a threaded portion **82** extending from a flange **85** at the base thereof and between the flanges **60** of the member **56**. The portion **82** is threaded into a nut **86** non-turnably captured between the flanges **60** of the member **56**. The portions **64** of the flanges **60** overlie the nut **86** and secure the same against being pulled out from between the flanges **60**. It will be noted that the pins are inclined at an angle of approximately fifteen degrees relative to the horizontal. The body of the pin is tubular and tapered from a large diameter at the base of the pin to a smaller diameter at the opposite extremity thereof. Fitted over the main body of the pin, next to the flange **85**, is a collar **87**. The pin **80** in its entirety, including the nut **86**, preferably is made of nylon.

On each side of the truck is a tubular handle bar **88** which is rectangular in shape. Referring to FIGURES 4 to 6, each bar **88** is secured to the associated post **40** by a pair of clips **90**. Each clip has a semicircular main body part extending about the tube and terminating at one end in a portion **92** extending tangentially therefrom. At the opposite end is an ear **94** disposed at right angles to the portion **92**. The portion **92** is recessed on opposite sides, as at **96**, to provide shoulders **98**. The recesses **96** accommodate the flanges **44** of the post **40** and the shoulders **98** are opposed respectively to the inturned portions **48** of the flanges **44**. The clip is adjustably secured to the post **40** by a bolt **100** extending through the ear **94** and threaded into a nut **78**.

In the use of the truck, pirns or bobbins of yarn, designated P, are fitted over the pins **80**, thus affording a bank of pirns or bobbins of yarn P on each side of the framework **38**. Each pin is adjustably fixed in position. To shift the pin **80** horizontally, it is turned about its axis in a

direction to loosen its grip on the channel member **56**. Then the pin **80** and nut **86** are shifted as a unit to the desired position, whereupon the pin **80** is turned about its axis in the opposite direction to retighten the connection. Each assembly **54** is adjustably fixed in position. To shift the assembly **54** vertically, the screws **76** are turned out sufficiently to loosen the grip of the nuts **78** on the posts **40**. Then the entire assembly **54** is raised or lowered as desired, whereupon the screws **76** are turned in again to retighten the connections. It will be noted that one or more of the assemblies **54** may be conveniently removed as a unit from the framework **38** or added thereto to accommodate different sizes of yarn packages and different numbers thereof. For example, as illustrated, nine assemblies **54** are employed. Each assembly mounts ten yarn packages in all. This arrangement accommodates a total of ninety yarn packages. However, if desired, nine assemblies **54** may be employed, with each assembly mounting eight comparatively large yarn packages. Thus a total of seventy-two comparatively large yarn packages may be accommodated. In addition, the arrangement of pins **80** on one side of the framework may be different than that on the other side to suit requirements. Furthermore, pins that are in use may be removed readily and pins different in size and/or shape may be substituted therefor to carry yarn packaged differently.

For example, referring particularly to FIGURE 10, pins **80** may be removed and replaced by pins **102**, which are similar in every respect to pins **80**, except that the collar **87** is omitted. A package of yarn (not shown) may be mounted directly upon the pin **102**. On the other hand, the cylindrical core **103** of a yarn package P^1 may be fitted over an adapter **104**, which in turn is mounted upon the pin. The adapter is provided with a centrally disposed annulus **106** at the outer end thereof fitted snugly over the tapered body of the pin. Extending radially outwardly from the annulus **106** are a pair of diametrically opposite wings **108** and a pair of diametrically opposite wings **109** equally spaced about the annulus and extending therefrom toward the base of the pin. Intermediate the opposite ends of the adapter are a pair of axially spaced webs **110** and **112** interconnecting the wings **108** and **109**. The pin extends freely through the webs. The portions of the wings **109** extending rearwardly from the web **112** about the flange **85**, while the portions of the wings **108** extending rearwardly from the web **112** are shaped, as at **114**, to snap over the flange **85** of the pin. The adapter **104** preferably is made of nylon.

Referring particularly to FIGURE 11, the adapter **104** may be replaced by an adapter **116** capable of mounting the package P^1. The adapter **116** is provided with an axially extending tapered tubular sleeve **118** which fits snugly over the tapered body of the pin **102**. Equally spaced about the sleeve **118** and extending longitudinally thereof are a pair of diametrically opposite wings **120** and a pair of diametrically opposite wings **121** equally spaced about the sleeve **118**. Intermediate the opposite ends of the adapter are a pair of axially spaced webs **122** and **124** interconnecting the sleeve **118** and the wings **120**. The portions of the wings **121** extending rearwardly from the web **124** are adapted to abut the flange **85**, while the portions of the wings **120** extending rearwardly from the web **124** are adapted, as at **126**, to snap over the flange **85** of the pin **102**. The adapter **116** preferably is made of nylon.

Referring particularly to FIGURE 12, the pin **80** may be removed and replaced by a pin **128**. Threaded over the base end of the pin is a nut **130**. Underlying the nut is a flat washer **132** and underlying the flat washer is a cylindrical spacer **134** preferably made of nylon. The washer is seated upon the flanges **60** of the associated member **56**, and the spacer extends freely between said flanges. The end of the pin extending beyond the spacer is threaded into a nut **78**. Extending about the washer is the axially extending cylindrical portion of a flange **136**. The pin mounts a package of yarn P^2 wound on a spool **138** fitted over the pin. The spool is provided at one end with a base flange **140** seated against the flange **136** and at the opposite end with a flange **142**.

Referring to FIGURES 13 to 15, the pin **80** may be removed and replaced by a pin **144** provided with a cylindrical main body **146**. Equally spaced about the cylindrical body and extending longitudinally thereof are four wings **148** terminating at the base of the pin in a web **150**. Extending axially from the web **150** is an externally threaded tubular portion **151** by means of which the pin may be adjustably secured to the member **56**, with its web **150** seated against the flanges thereof. The wings **148** are stepped to provide shoulders **152** of minor radial depth, **154** and **156** of intermediate radial depth and **158** of maximum radial depth. The pin **144** mounts a package of yarn P^3 wound on a spool **160** fitted over the pin and provided with an insert **162** fitted over the outer end portion of the pin. The inner end portion of the spool fits over the shoulders **158**.

An adapter **164** having a centrally apertured wall **166**, an axially extending inner flange **168** and an axially extending outer flange **170** may be fitted over the end of the pin **144**. The outside diameter of the adapter **164** corresponds to the distance between oppositely facing shoulders **154** so that the cylindrical spool of a yarn package (not shown) may be fitted over said shoulders and adapter. The pin **144** and the adapter **164** preferably are made of nylon.

In mounting an assembly **54** on the posts **40**, the assembly is lowered over the posts **40** to the desired position thereof. The nuts **78** are then held with their grooves **81** extending horizontally, and then inserted between the flanges **44** of the posts. After positioning the nuts with their threaded openings in registry with the openings **72** in the plates **66**, the bolts **76** are projected through the lock washers **74** and the openings **72** and threaded into the nuts **78**. As a screw **76** is turned into the nut **78**, the nut turns till the corners that are not rounded engage the flanges **44** of the posts. When this occurs, the grooves **81** are in registry with the edges of the inturned portions **48** of the flanges **44**. When the screw **76** is threaded fully into the nut **78**, the teeth **84** at the bottom of the grooves **81** are firmly engaged with the edges of the inturned portions **48** of the flanges **44**. The vertical position of the assembly **54** may be adjusted by loosening the screws **76**, moving the assembly as a unit to the desired position thereof and then retightening the screw **76**. It will be noted that above the base frame **10**, the posts are tied together solely by the assemblies **54**. Therefore, the assemblies **54** may be assembled with the posts **40** by lowering them thereonto each as a unit, and may be removed from the posts **40** by raising them each as a unit. In other words, it is not necessary to disassemble a frame **54** in order to assemble it with or remove it from the posts **40**.

In addition, it will be noted that the members **56** are open ended channel members. Thus the number of pins mounted thereon may be readily varied by slipping the pins on and off endwise.

It is unnecessary to provide the specific channel iron construction for the adjustable pirn rails **56** for it will be apparent to those skilled in the art that many different shapes may be substituted without departing from the spirit of this invention. In addition, equivalent elements may be substituted for those specifically shown in the drawings and described herein, parts may be reversed, and certain features of the invention may be used independently of other features, all without departing from the scope of the invention as defined in the appended claims.

What is claimed is:

1. In a pirn truck, the combination comprising a mobile base, a framework including a pair of laterally spaced

posts extending upwardly from said base, and a plurality of vertically spaced frames each having a pin rail extending across the front of said posts, a pin rail extending across the rear of said posts, and cross members permanently interconnecting said pin rails, means connecting said frames to said posts for being selectively positioned vertically independently of each other, said frames being the sole means above said base interconnecting said posts, and being adapted for being assembled with said posts by being lowered thereover and for being removed from said posts by being raised therefrom, a bank of pins extending forwardly and upwardly from the pin rails in front of said posts, and a bank of pins extending rearwardly and upwardly from the pin rails in the rear of said posts, each pin mounted upon each pin rail of each of said frames having means for shifting horizontally relative to the other pin.

2. The combination according to claim 1 wherein the posts are of channel stock uniform in transverse section, the cross members permanently interconnecting the pin rails of each frame include a pair of plates respectively overlying the flanges of the posts and having tongues extending inwardly between said flanges, said plates being slidable longitudinally of said posts, and elements projected through said plates and extending between the flanges of said posts are threaded into nuts seated against inturned portions of and non-turnably captured between the flanges of said posts.

3. The combination according to claim 2 wherein the nuts are of a depth at least slightly less than the clear distance between the post flanges to permit insertion thereof between said flanges and removal thereof from between said flanges at any selected point along the length of a post.

4. In means for mounting yarn packages, the combination comprising a pin adapted for receiving a yarn package of a given size and type, and an adapter removably mounted upon said pin in lieu of said yarn package for receiving a yarn package of a different size and type, said pin including a radially extending flange at the base thereof, and said adapter including an annulus fitted over said pin, a plurality of wings extending radially from said annulus and spaced thereabout, the outer edges of said wings being adapted for receiving the cylindrical core of a yarn package fitted over said adapter, a plurality of axially spaced webs interconnecting said wings, extensions of said wings being hooked over said flange, and said annulus and hooked portions of the wings being operative conjointly to secure said adapter against axial movement relative to said pin.

5. The combination according to claim 4 wherein the annulus is disposed at the end of the adapter remote from the base of the pin, and the wings are interconnected solely by the webs and said annulus.

6. The combination according to claim 4 wherein the annulus is in the form of a tapered tubular member the base of which is seated against the flange of the pin, and the wings are interconnected by the webs and said tubular member.

7. The combination according to claim 4 wherein the adapter is made of a moldable synthetic material, and the extensions of the wings hooked over the flange of the pin are thereby adapted for flexing radially outwardly for being hooked over the flange of said pin by a snapping action.

8. The combination according to claim 4 wherein the adapter is molded in one piece.

9. A pin for mounting yarn packages, comprising a tubular main body part, a plurality of wings extending radially from and spaced about said tubular part, and a web extending across one end of said tubular part, said wings extending longitudinally from said web toward the opposite end of said pin, and being provided with sets of shoulders which reduce the size of said wings from a maximum size at said web to progressively smaller sizes remote from said web, each set of shoulders being adapted for receiving a cylindrical portion of the core of a yarn package fitted over said adapter.

10. The pin according to claim 9 wherein the pin carries an adapter having a main body part extending across the end of the pin remote from the web, an axially extending cylindrical flange fitted over the smaller set of shoulders, and an axially extending cylindrical flange extending about the first mentioned cylindrical flange and of a diameter corresponding to that of the cylindrical portion of the core of the yarn package which may be accommodated by one of the other sets of shoulders.

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