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STEEL SHIPPING PACKAGE FOR SECTION BEAMS

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FIG. 2

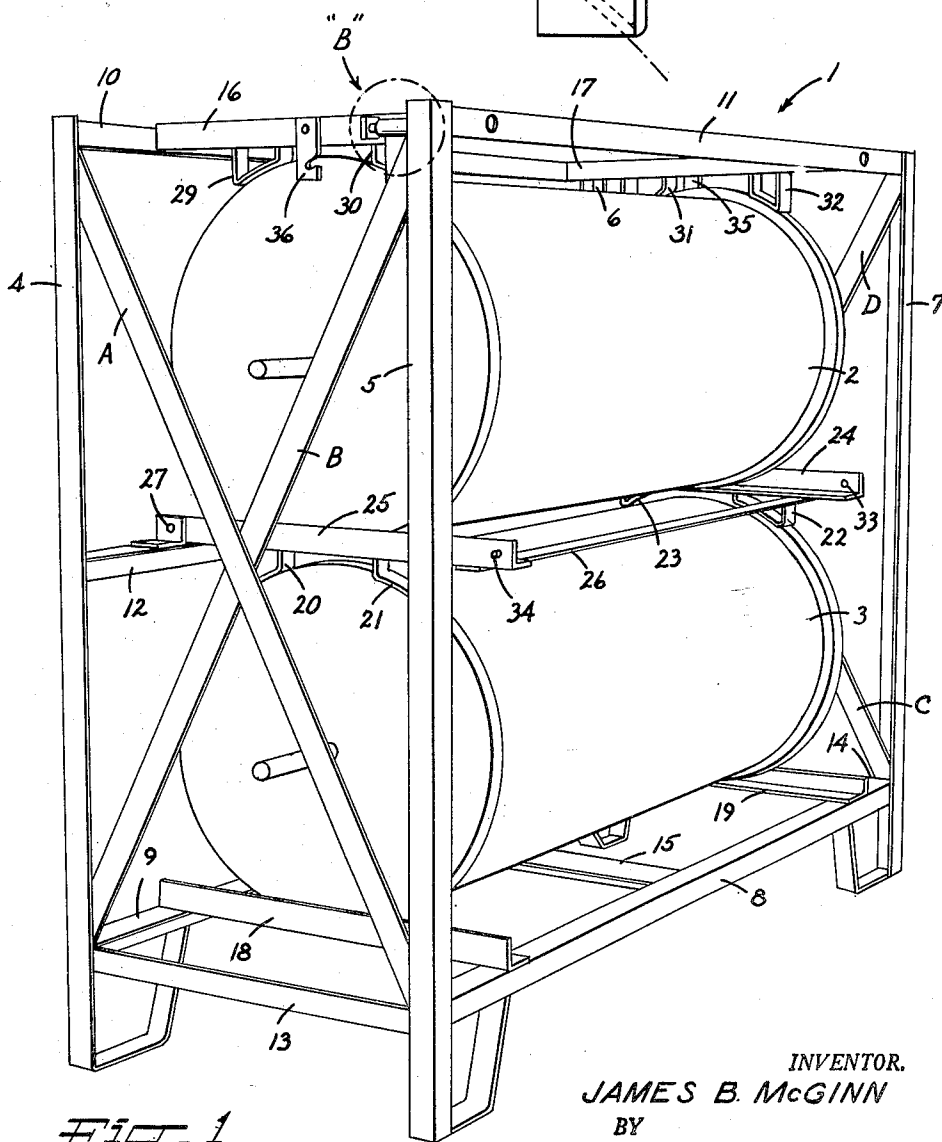
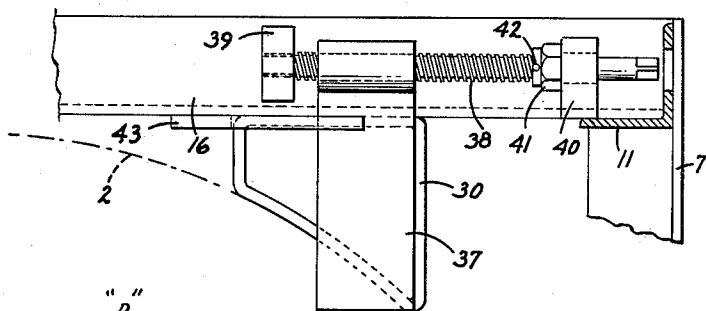


FIG. 1

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STEEL SHIPPING PACKAGE FOR SECTION BEAMS

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6 Claims. (Cl. 214-10.5)

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This invention relates to the loading and transportation of yarn beams and the like. More particularly, this invention concerns an apparatus for loading a large number of heavy spools or beams of yarn in a vehicle in such a way as to avoid shifting of the load in transit.

The problem which gave rise to the present invention was the transportation of large spools of rayon thread from the manufacturing plant to the looms or mills. The beams under consideration weigh up to approximately one thousand pounds each, and in loading and transporting the beams, considerable difficulty was experienced in arranging and supporting the beams in the truck or car body in a manner such as to avoid shifting and resultant damage during transportation. Obviously the question of space plays an important part in the problem, and it became practically essential to load the beams in rows and in superimposed relation. Despite extreme care and more or less complicated reinforcing and chocking structures used in the loading, the losses resulting from shifting of the spools and crushing or bruising of a relatively large quantity of thread often were considerable since in the event the thread of a beam is bruised, the latter is returned for rewinding.

The primary object of the present invention therefore is to provide an apparatus for securing relatively large, heavy beams and similarly shaped objects in a manner such as to avoid shifting and resultant damage to the contents of the beams during transportation. More specifically, the invention is concerned with the loading and transportation of beams of thread, such as rayon thread, and threads which are susceptible to bruising and damage when the edge of one beam strikes and rides upon the body portion of another.

Another object is to provide means whereby a plurality of relatively large and heavy spool shaped objects may be loaded in superimposed relationship onto a truck or freight car body or other supporting structure expeditiously and with relative ease and transported any desired distance over rough roadways without danger of relative shifting and misalignment of the spools.

Other objects and advantages of the present invention will become apparent from a study of the drawings and description hereinafter.

In the drawings

Figure 1 is a perspective view of a preferred embodiment of the present invention.

Figure 2 is an enlarged view of detail B in Figure 1.

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As shown in Figure 1, reference character 1 indicates generally the framework for supporting the section beams 2 and 3. The framework comprises the vertical members 4, 5, 6 and 7, longitudinally extending members 8, 9, 10, 11 and 12 and the transverse members 13, 14, 15, 16 and 17. The structure is further reinforced by the diagonal members A, B, C and D. All of the aforementioned members are suitably secured by a weld or the like. Welded to the longitudinal members 8 and 9 are two transverse angle irons 18 and 19 which support the vertical component of force from the section beams 2 and 3. The transverse angle irons 18 and 19 are spaced at such a distance that the horizontal member forms a skid or track for the beam flanges and the vertical member restricts the movement of the section beam 3 in a longitudinal direction. The section beam 3 is restricted in movement in the transverse direction by arcuate flange-clamping means 20, 21, 22 and 23 fixedly secured to the underside of the hingedly mounted transverse skid racks 24 and 25. The skid racks are connected by a longitudinal member 26. The transverse skid racks 24 and 25 are hingedly mounted to the longitudinal member 12 by the pins 27. Supported in the transverse skid racks 24 and 25 is the section beam 2. Movement in the longitudinal direction is restricted by the vertical member of said skid racks. Movement in the transverse direction is restricted by the arcuate flange clamping means 29, 30, 31 and 32. The clamping means 29 and 31 are fixedly secured to the underside of the transverse members 16 and 17 and the clamping means 30 and 32 are rotatably mounted thereon. As shown there are two arcuate flanged clamping means on each of the transverse members. These arcuate clamping means are arranged so that they conform to the shape of the spool on which the filaments or fabrics are wound. They are also placed so that they will resist any movement of the section beam in a transverse direction.

In loading the section beams on the supporting structure, the hingedly mounted transverse members 24 and 25 are rotated counter-clockwise until the pins 33 and 34 on the members 24 and 25 respectively engage in the slot in the freely swingable rack holders or hooks 35 and 36 respectively. The section beam 3 is then lifted by means of a hoist, block and tackle or the like and rolled on the transverse skid members 18 and 19. The hingedly mounted transverse skid is then lowered until the arcuate flange clamping means 20, 21, 22 and 23 contact

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spaced portions of the section beam's outer flanges.

Prior to placing the section beam 2 on the transverse skid racks 24 and 25 the arcuate flange clamping means 30 and 32 are rotated 180° so that they will not obstruct the passage of the section beam 2 on the transverse skid racks 24 and 25. The means by which the arcuate flange clamping means is rotated is more clearly illustrated in Figure 2. The arcuate clamping means 30 is fixedly secured to a plate member 37 that is rotatably mounted on a threaded shaft 38. The shaft 38 is suitably mounted in bearing-like members 39 and 40 which are secured to the transverse member 16. The portion of the shaft extending from the bearing is machined so that it will fit a standard size socket wrench. Bearing against the bearing-like member 40 on its opposite face is a lock nut 41 which is fixedly secured to the shaft 38 by a cotter pin.

Since the plate 37 is threaded to fit the screw shaft 38, as the shaft 38 is rotated in a clockwise direction the plate 37 carrying the arcuate clamp 30 will move toward the bearing 40. The screw shaft 38 is rotated until the arcuate flange clamping means 30 is at such a distance as to freely rotate it out of the path of the section beam 2. The clip or guide means 43 forms a slot as a retainer for the locking chocks and prevents them from swinging upward if loosened by vibration in transit. The mechanism operating the arcuate flange clamping means 32 is substantially the same as the mechanism operating the arcuate clamp 30 as described in the foregoing.

In placing the section beam 2 in the supporting rack it is lifted by a chain hoist, a block and tackle or the like and placed on the transverse skid members 24 and 25 until its outer flange contacts the arcuate flange clamping means 29 and 31. With the section beam in place the arcuate flange clamping means 30 and 32 are rotated 180° and the screw shafts are rotated in a counter-clockwise direction until the arcuate clamps 30 and 32 contact the flanges of the section beam 2.

While preferred embodiments have been shown or described it is to be understood that variations and changes may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A rack for supporting cylindrical articles, such as yarn beams, comprising a supporting framework having a pair of fixedly secured transverse members disposed in a generally horizontal plane, a lower pair of swingably mounted transverse members having spaced arcuate retaining elements fixedly secured thereunder, the swingably mounted members being superposed with respect to the first-mentioned pair of mem-

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bers, and an upper pair of fixedly secured transverse members superposed with respect to the hingedly mounted members, each of the upper members having an arcuate retaining element fixedly secured thereunder and an arcuate retaining element mounted thereunder rotatably about an axis generally parallel to the transverse members.

2. A rack for supporting cylindrical articles, such as yarn beams, comprising a supporting framework having a pair of fixedly secured transverse members disposed in a generally horizontal plane, a lower pair of swingably mounted transverse members, each having a pair of spaced arcuate retaining elements fixedly secured thereunder, the swingably mounted members being superposed with respect to the first-mentioned pair of members, and an upper pair of fixedly secured transverse members superposed with respect to the hingedly mounted members, each of the upper members having an arcuate retaining element fixedly secured thereunder and an arcuate retaining element mounted thereunder rotatably about an axis generally parallel to the transverse members.

3. Means as defined in claim 2 comprising screw means for adjusting the rotatably mounted elements toward and away from the elements fixed under the upper transverse members.

4. A rack as defined in claim 2 in which there is a fixed lateral member extending along one side of the framework, the swingable transverse members being hingedly mounted at one end thereof on said lateral member, a rigid connection between the swingable transverse members to constrain them to swing as a unit, the upper fixed retaining elements are disposed near the side of the framework provided with the lateral member and the rotatable elements are disposed away from that side of the framework.

5. Means as defined in claim 4 comprising screw means for adjusting the rotatably mounted elements toward and away from the elements fixed under the upper transverse members.

6. A rack as defined in claim 5 comprising hook means carried in an upper part of the framework for releasably engaging the swingable transverse members when such members are swung upwardly during loading or unloading.

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