Jan. 20, 1959 W. W. HEWITT 2,869,903

CREEL FOR TWISTING AND SIMILAR MACHINES

Filed Jan. 13, 1958 2 Sheets-Sheet 1

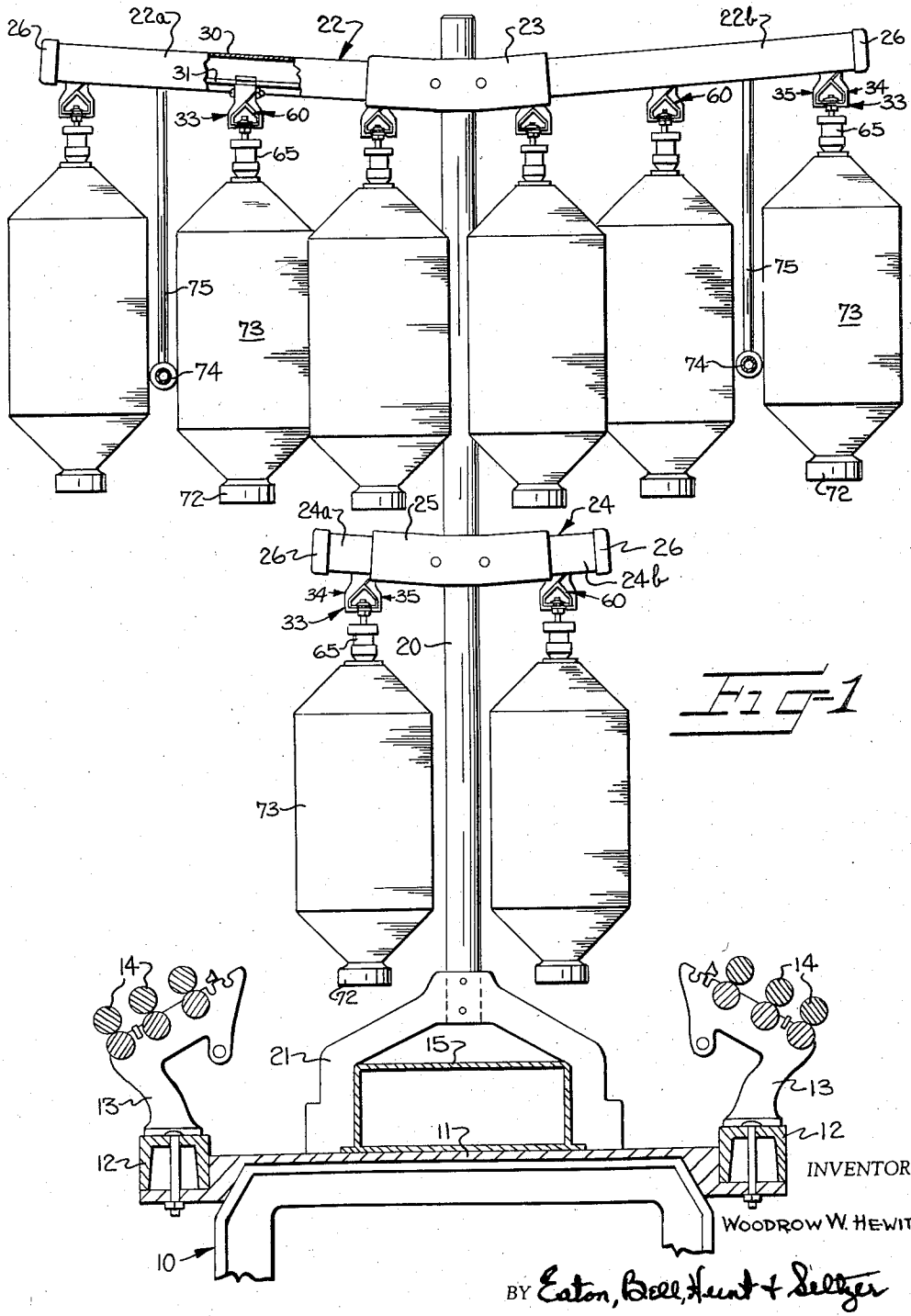


Fig-1

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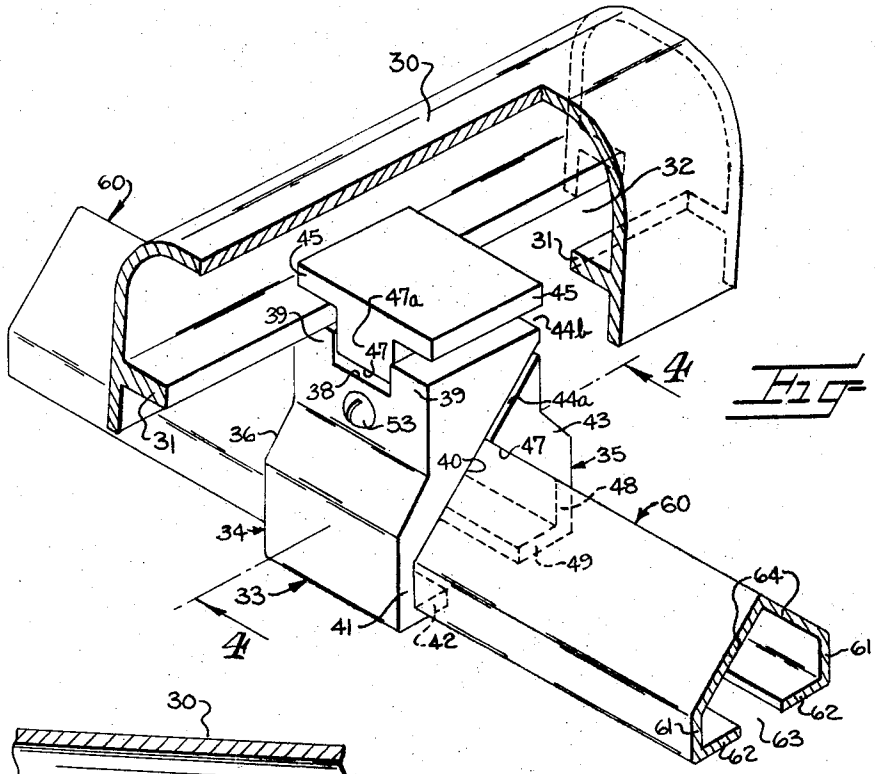


Fig. 2

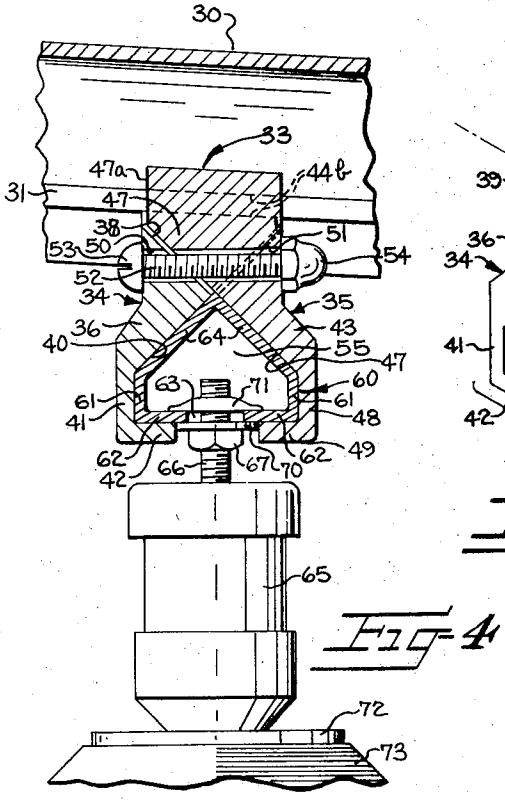


Fig. 4

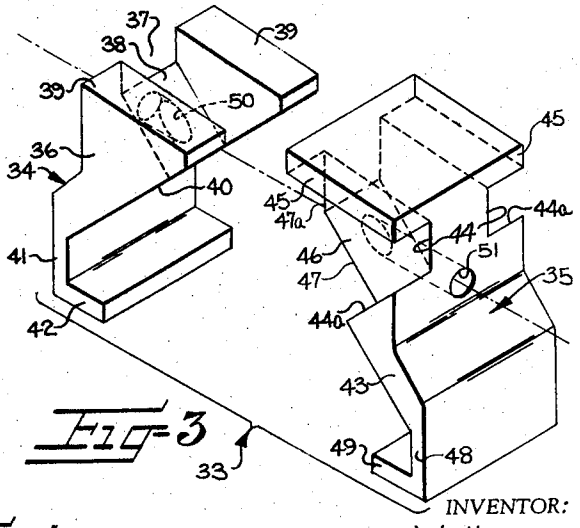


Fig. 3

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United States Patent Office 2,869,903 Patented Jan. 20, 1959

2,869,903

CREEL FOR TWISTING AND SIMILAR MACHINES

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Application January 13, 1958, Serial No. 708,545

8 Claims. (Cl. 287—54)

This invention relates to textile machinery, such as twisters and spinning frames and the like, which machines shall be hereinafter generically referred to as twisting machines. The present invention constitutes an improvement over the creel disclosed in my co-pending United States patent application, Serial No. 591,598, filed June 15, 1956 now Patent No. 2,819,855.

In my co-pending United States patent application, Serial No. 591,598, filed June 15, 1956, referred to above, there is disclosed a means for attaching spindle supporting rails or tracks to the lateral arms of a creel. Each of the spindle supporting rails in this prior application is formed with tapered inwardly and upwardly converging side walls adapted to be received within the attaching means which comprises a pair of nested complementary wedge-shaped bracket members. A threaded bolt extends downwardly through a suitable aperture formed in the lateral arm of the creel and is received by each of the wedge-shaped bracket members, the bracket members being so arranged that upon a nut being threaded about the upper end of the bolt which extends through the lateral arm, the lower one of the bracket members is drawn upwardly within the upper bracket member thereby causing the wedge-shaped side walls of the lower bracket member to be forced inwardly into clamping relationship with a spindle supporting rail. While this type of attaching means has proved to be very effective, holes must be tapped in the lateral arms of the creel wherever it is desired to locate a spindle supporting rail in order that the attaching means including the adjustable bolt may be secured to the lateral arm. Since the tapping of holes in the lateral arms of the creel may weaken the strength thereof, the number of spindle supporting rails which may be carried by such a creel arm is limited in this respect.

It is an object of the present invention to provide a creel arm having a guideway therein to accommodate one or more attaching means carrying spindle supporting rails without the necessity of tapping holes therein.

It is a further object of this invention to provide in combination with a creel arm having a guideway, a two-piece attaching means for securing a spindle supporting rail to said creel arm, the two parts comprising the attaching means being adapted to be clamped together to simultaneously tightly engage the guide way of said creel arm and the spindle supporting rail.

It is a more specific object of this invention to provide an attaching means in the form of a two-piece segmental bracket for use in securing a track, such as a spindle supporting rail, to an arm of a creel, wherein the upper extermities of the bracket segments define a pair of oppositely disposed channels for receiving guideways formed in the creel arm and the lower extremities of the segments define opposed jaws for gripping the track, there being clamping means to secure the bracket segments together and cam means on at least one segment of the bracket for guiding it upwardly with respect to the other segment in response to the tightening of the clamping means to thereby decrease the width of the channels and the width between the jaws for simultaneously tightly securing the bracket to the creel arm and to the track.

Other objects not specifically enumerated herein will become more readily apparent after reading the description which follows in connection with the accompanying drawings, in which—

Figure 1 is a vertical sectional view through the upper portion of a twisting machine, showing the improved creel assembly mounted thereon;

Figure 2 is an isometric view showing a creel arm partially broken away to illustrate the improved attaching means between the creel arm and the spindle supporting rail;

Figure 3 is an exploded view of the attaching means shown in Figure 2;

Figure 4 is a vertical sectional view taken along the line 4—4 in Figure 2 and showing a spindle held in position by the spindle supporting rail.

Referring more specifically to Figure 1 of the drawings, the frame of a twisting machine is broadly designated by the reference numeral **10**. The frame **10** includes a platform **11** whose side portions support conventional roll stand beams **12**, on each of which a plurality of roll stands **13** are mounted. The usual drafting rolls **14** are carried by the roll stands **13**. As shown, the machine may be equipped with a conventional clearer system which includes a substantially rectangular suction duct **15** extending longitudinally of the machine and centrally positioned upon the platform **11**.

Extending from the platform **11**, there are a plurality of vertical standards **20**, only one of which is shown. A suitable creel bracket **21** is provided for each of the vertical standards **20** to secure it to the platform **11**. Each vertical standard **20** has one or more lateral arms extending therefrom, two such lateral arms being shown in Figure 1. The lateral arm which appears uppermost in Figure 1 is designated at **22** and comprises a pair of sections, the left-hand section **22***a* and the right-hand section **22***b* which are coupled together and to the vertical standard **20** by means of a sleeve coupling **23**, which is preferably of the type disclosed and claimed in my co-pending United States patent application, Serial No. 708,546, filed concurrently herewith. Similarly, the lowermost creel arm **24** is comprised of a left-hand section **24***a* and a right-hand section **24***b* coupled to the vertical standard **20** by means of a sleeve coupling **25** identical with the upper sleeve coupling **23**. It will be noted that the creel arms **22** and **24** may be of different lengths, since as illustrated in Figure 1, the upper creel arm **22** is shown as being substantially longer than the lower creel arm **24**. It will further be observed that the sections comprising the upper creel arm **22** and the lower creel arm **24** extend away from their respective sleeve couplings at a slight upward angle with respect to a horizontal plane. A removable cap member **26** may be provided to cover the free end of each of the creel arm sections.

Figure 2 illustrates one section of either creel arm **22** or **24**, the creel arm section having a substantially inverted U-shaped cross-section designated by reference numeral **30** and hereinafter referred to as a creel arm. The inverted U-shaped creel arm **30** is provided with a pair of inwardly extending longitudinal ledges or guideways **31**, the ledges being located on opposite side walls and positioned itnermediate the upper and lower extremes of the creel arm **30**. The ledges **31** are spaced from each other to define a passageway **32** extending longitudinally of the creel arm **30**, this arrangement combining to form a trackway for an attaching means **33** which secures a spindle supporting track or rail **60** to the creel arm.

The attaching means 33 for securing the spindle supporting track or rail 60 to the creel arm 30 takes the form of a segmental bracket comprising a pair of complementary members 34 and 35. For purposes of description, the leftward-ends of the members 34 and 35, as seen in Figure 3, will be referred to as the forward ends, while the rightward-ends of these members will be termed the rear ends. Member 34 is provided with a body portion 36 having a groove 37 formed in its upper surface. The bottom wall 38 of groove 37 is inclined, extending from the forward end of member 34 downwardly and rearwardly. The groove 37 is located centrally of the sides of the body portion 36 to define a pair of identical body sections 39. Each of the body sections 39 is generally triangular in shape, having a relatively wide upper extremity tapering to a relatively narrow lower extremity. The body portion 36 is provided with an inclined surface 40 which forms the rear end thereof and consequently the rear ends of the body sections 39. The surface 40 extends downwardly and forwardly from the upper surface of body portion 36. The member 34 has a flange-like extension 41 offset forwardly from its body portion 36 and integral therewith, at the lower end of which is a leg 42 extending rearwardly at substantially a right angle thereto. The extension 41 and the leg 42 collectively define a jaw.

Referring to member 35, its body portion 43 contains oppositely disposed recesses 44 adapted to accommodate the body sections 39 of member 34. It will be noted that the bottom wall 44*a* of each recess is inclined and extends from the rear end of member 35 downwardly and forwardly to matingly receive the complementary rear end of the corresponding body section 39 of member 34. The upper surface of each body section 39 is spaced from the upper wall of the corresponding recess 44, thereby defining a pair of oppositely disposed openings or passageways in the form of channels 44*b* which extend throughout the width of the attaching means or bracket 33 on opposite sides thereof when the members 34 and 35 have been clamped together as will be subsequently described. The oppositely disposed recesses 44, as may be apparent from the above description, are located at intermediate positions on the body portion 43 with respect to the upper and lower extremities thereof, thereby defining oppositely extending flanges 45 thereabove which extend from a central web 46 of the body portion 43. The body portion 43 is provided with an inclined surface 47 which forms the major portion of the forward end thereof. The surface 47 extends from an intermediate position on web 46 downwardly and rearwardly. Merging with the uper end of surface 47 is a substantially flat vertical surface 47*a* which forms the remaining portion of the forward end of body portion 43 and consequently the uppermost section of the forward end of web 46. The web 46 is adapted to be partially received within the groove 37 of member 34, as will be observed in Figure 2.

Integral with the lower end of the body portion 43 and offset rearwardly therefrom, there is an extension 48 similar to the extension 41 of member 34. Extending forwardly of extension 48 from the lower end thereof at approximately a right angle thereto, there is a leg 49 similar to the leg 42 on member 34. The extension 48 and the leg 49 on member 35 collectively define a jaw similar to the jaw formed on member 34 and opposed thereto. The body portions 36, 43 of members 34 and 35 have axially alined bores 50 and 51 formed therein, respectively, to loosely receive a threaded stud element 52. The threaded stud element 52 has a head 53 at one end adapted to abut against the forward surface of member 34. An end nut 54 is threadably attached to the opposite end of the stud element 52 for abutment against the rear surface of member 35 to apply a clamping pressure to the members 34 and 35 for a purpose to be subsequently described.

It will be observed that the attaching members 34 and 35, when clamped together in the position shown in Figure 4, collectively define a passageway 55 between their lower extremities or jaws for reception of an elongated track or rail 60. The track or rail 60 includes vetical spaced side walls 61 at the lower ends of which are integral inwardly extending bases 62, the bases defining a longitudinally extending space 63 therebetween. Integral with the upper ends of side walls 61, there are inclined walls 64 converging inwardly to meet at an apex.

A series of spindles 65 is adapted to be supported from the track 60. Each spindle 65 includes on its upper surface a screw 66 which extends upwardly between the bases 62 of the track 60 in the space 63. A nut 67 is threaded about the screw 66 to a position below the bases 62 and supports a washer 70 for abutment against the bases 62. To hold the spindle 65 in position below the track 60, a speed nut 71 is threaded about the screw 66 into abutment with the upper surfaces of the bases 62. The spindle 65 is adapted to carry a tubular bobbin 72 having a package of yarn 73 thereon. As will be observed in Figure 1, the creel arm sections 22*a* and 22*b* of the upper creel arm 22 may be provided with longitudinally extending roving rods or guides 74 connected thereto by suitable means, such as bars 75 depending vertically from the creel arm sections 22*a* and 22*b*, at the lower ends of which are carried the roving rods 74. The ends of the roving or yarn from the yarn packages 73 hanging from the upper creel arm 22 are adapted to be passed over the roving rods 74 and then downwardly to the usual drafting rolls 14.

It will be observed that the cap 26 covering the outwardly disposed end of any one of the creel arm sections may be removed to expose the inverted U-shaped cross-sectional form 30 of the creel arm section. When the two members 34 and 35 comprising the attaching means or bracket 33 have been assembled together in complementary relationship, the oppositely disposed ledges 31 of the creel arm 30 are received within the passageways or channels 44*b* defined by the overlying flanges 45 of member 35 and the upper surfaces of body sections 39 of member 34. It will be observed that the pair of channels 44*b* are transversely disposed relative to the passageway 55. When loosely assembled, the segmental bracket 33 may slide along the passageway 32 supported by the ledges 31 of the creel arm 30 which extend into the channels 44*b* respectively, and the spindle supporting track 60 may be loosely received within the passageway 55 formed through the jaws of the bracket 33. Accordingly, the spindle supporting track 60 may be quickly positioned in the location desired by sliding the bracket 33 within the creel arm 30 and by sliding the spindle supporting track 60 within the passageway 55 collectively defined by the two members 34, 35 comprising the segmental bracket 33.

When the spindle supporting track 60 has been positioned in the desired location, the end nut 54 on the threaded stud element 52 connecting the two members 34, 35 together may be tightened. The increased clamping action effective between the members 34, 35 results in the member 34 being drawn toward the member 35 and upwardly with respect thereto. The inclined bottom wall 38 of groove 37 formed in member 34 is drawn upwardly toward the portion of the inclined surface 47 which forms the lowermost section of the forward end of web 46, while at the same time the portions of the inclined surface 40 which form the rear ends of the body sections 39 on the member 34 are drawn upwardly along the inclined bottom walls 44*a* of the recesses 44 formed in the body portion 43 of member 35.

As shown in Figure 4, it will be noted that the portions of the inclined surface 40 which form the rear ends of the body sections 39 are spaced from the inclined bottom walls 44*a* of the recesses 44 formed in the body portion 43 of member 35. In this instance, it will

be seen that the lefthand inclined wall 64 of the track 60, in effect, forms a continuation of the surface defined by the inclined bottom wall 44*a* and that the remaining portion of the inclined surface 40 is in mating camming relationship therewith. The camming relationship between the inclined wall 64 and the surface 40 causes the member 34 to be guided upwardly with respect to member 35 as well as toward it when the clamping action is increased. Should a track 60 of reduced width be introduced into the passageway 55, it is contemplated that the portions of the inclined surface 40 which form the rear ends of the body sections 39 may engage the inclined bottom walls 44*a* of the recesses 44 in mating camming relationship therewith to effect the same movement of member 34 with respect to member 35 when the clamping action is increased as previously described. Thus, it is apparent that the segmental bracket 33 may be used to attach spindle supporting tracks or rails 60 of varying sizes to the creel arm 30.

It is within the spirit of this invention to modify the lower extremities or jaws of the members 34, 35 to collectively define a passageway having a different shape than that shown for passageway 55 to accommodate a track having a different cross-sectional shape. For example, the passageway 55 could be formed generally circular for accommodating a substantially cylindrical track, in which case, the rear ends of the body sections 39 of member 34 would cam against the bottom walls 44*a* of the recesses to insure the proper clamping action of the bracket 33.

Thus, it will be apparent that the tightening of the end nut 54 on the threaded stud element 52 simultaneously causes the oppositely disposed channels 44*b* defined by the overlying flanges 45 of member 35 and the upper surfaces of body sections 39 of member 34 to be decreased in width and the passageway 55 defined by the jaws of the bracket 33 to be also decreased in width. It will therefore be observed that the bracket 33 becomes clamped in the passageway 32 by virtue of a tight engagement between the ledges 31 of the creel arm 30 and the upper and lower walls defining the channels 44*b*, which are the opposing surfaces of the flanges 45 and the body sections 39 of the bracket 33. At the same time, the spindle supporting track 60 becomes clamped in the passageway 55 provided by the jaws of the bracket 33. Where the relative proportions of the bracket 33 and the track 60 are such that there is no simultaneous clamping engagement between the bracket 33 and the ledges 31 together with the clamping engagement between the bracket 33 and the track 60, shims may be inserted in the channels 44*b* to further decrease the width thereof thereby permitting the desired simultaneous clamping engagement.

The segmental bracket 33 is designed to compensate for the slight upward inclination of the creel arm 30 to allow the legs 42, 49 of its two members 34, 35 to be horizontally disposed when the bracket 33 has been adjusted to clamped position. This compensating feature is brought about by forming the channels 44*b* defined in the bracket 33 with the same degree of inclination as that possessed by the ledges 31 which are received therein, this degree of inclination being determined when the legs 42, 49 of the bracket 33 are horizontally disposed. It will thus be noted that the oppositely extending flanges 45 of member 35 are inclined with respect to a horizontal plane, the upper and lower surfaces of each flange being in parallel relationship with respect to each other. The upper surfaces of the body sections 39 of member 34 are likewise inclined, being in spaced parallel relation with respect to the corresponding lower surfaces of the flanges 45. It is apparent that the upper surfaces of the flanges 45 may be made level, if desired, without destroying the inclined arrangement of the channels 44*b*. Referring to Figure 1 and especially to the portion of creel arm 22 which is broken away, it will be seen that each of the spindle supporting tracks 60 is carried by its bracket 33 in a level position, being supported in this manner by the horizontally disposed legs 42, 49 of the bracket. The spindles 65 depending from the tracks 60 are accordingly allowed to hang therefrom in an upright vertically disposed position to permit proper withdrawal of the yarn therefrom.

Should it be desired to relocate the spindle supporting track 60 or remove it entirely from the creel arm 30, it is only necessary to loosen the end nut 54 on the threaded stud element 52. When this has been done, the bracket 33 is again free to slide along the passageway 32 within the creel arm 30 and the spindle supporting track 60 is slidable in the passageway 55 formed through the bracket 33. However, it should be understood that each track 60 is usually secured at a plurality of places along its longitudinal extent to a series of creel arm assemblies similar to that described above and that the end nuts 54 for each of the individual stud elements 52 of the several brackets 33 must be loosened to allow the sliding action of the track 60 within the plurality of passageways defined by the jaws of the brackets 33.

From the foregoing description it will be seen that a relatively simple attaching means for securing a spindle supporting track to a creel arm has been provided, said attaching means being adjustable to allow it to be moved within the creel arm for positioning the spindle supporting track at any desired location while at the same time permitting the track to be adjusted relative to the attaching means.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a creel having a laterally extending creel arm provided with a longitudinal guideway, a spindle supporting track, and an attaching means for securing said spindle supporting track to said creel arm, said attaching means comprising a segmental supporting bracket having two mating members collectively defining a passageway between their lower extremities, means on the upper extremities of said members adapted to interlock with said guideway, said spindle supporting track loosely penetrating said passageway and said guideway loosely interengaging with said means on the upper extremities of said members, and means clamping said members together to tightly secure said spindle supporting track within said passageway while tightly securing said means on the upper extremities of said members in interlocked engagement with said guideway.

2. In a creel having a laterally extending creel arm provided with a longitudinal guideway, a spindle supporting track, and an attaching means for securing said spindle supporting track to said creel arm, said attaching means comprising a segmental supporting bracket having two mating members collectively defining a passageway between their lower extremities, means on the upper extremities of said members adapted to interlock with said guideway, said means being transversely disposed relative to said passageway, said spindle supporting track loosely penetrating said passageway and said guideway loosely interengaging with said means on the upper extremities of said members, and means clamping said members together to tightly secure said spindle supporting track within said passageway while tightly securing said means on the upper extremities of said members in interlocked engagement with said guideway.

3. In a creel having a laterally extending creel arm provided with a longitudinal guideway, said guideway including oppositely disposed inwardly extending ledges, a spindle supporting track, and an attaching means for securing said spindle supporting track to said creel arm, said

attaching means comprising a segmental supporting bracket having two mating members collectively defining a passageway between their lower extremities, one of said members having a pair of flanges positioned above the other member and spaced therefrom to define a pair of passageways therebetween, said spindle supporting track loosely penetrating said first-mentioned passageway and said pair of passageways loosely receiving the ledges of said guideway, and means clamping said members together to tightly secure said spindle supporting track within said first-mentioned passageway while tightly securing said ledges within said pair of passageways.

4. In a creel having a laterally extending creel arm provided with a longitudinal opening defining a guideway, a spindle supporting rail, and means for securing said spindle supporting rail to said creel arm, said means comprising a segmental supporting bracket having a pair of mating members each having jaw members on their lower ends collectively defining a passageway therebetween, one of said members having a pair of outwardly extending oppositely disposed flanges thereon, said flanges being positioned in spaced relation to the upper surface of the other member to define guideway receiving openings therebetween, said spindle supporting rail being positioned in said passageway and said openings receiving the guideway of said creel arm, and means to clamp said members together to tightly secure said spindle supporting rail within said passageway while tightly securing the bracket to said creel arm.

5. In a creel having a laterally extending creel arm provided with a longitudinal opening in its lower portion defining a guideway, a spindle supporting rail, and means for securing said spindle supporting rail to said creel arm, said means comprising a segmental supporting bracket having a pair of mating members each having jaw members on their lower ends collectively defining a passageway therebetween, one of said members having a pair of outwardly extending oppositely disposed flanges thereon, said flanges being positioned in spaced relation to the upper surface of the other member to define guideway receiving channels therebetween, said spindle supporting rail being positioned in said passageway and said channels receiving the guideway of said creel arm, and means to clamp said members together to tightly secure said spindle supporting rail within said passageway while tightly securing the bracket to said creel arm.

6. A bracket adapted to be secured to a creel arm for carrying a spindle supporting rail therefrom, said bracket comprising a pair of mating segments, said segments having jaws forming their lower portions between which is adapted to be received the spindle supporting rail for being carried by the same, one of said segments being of greater height than the other and having its uppermost extremities defined by a pair of outwardly extending oppositely disposed flanges, said flanges being positioned in spaced relation to the upper surface of said other segment to define openings therebeteween in which are adapted to be received portions of the creel arm for being engaged by the bracket, at least one of said segments being provided with an upwardly inclined camming surface for guiding said segment upwardly relative to the other segment, and means for clamping said segments together to cause said member with the camming surface to move inwardly and upwardly relative to the other segment to thereby cause the segments to tightly engage each other.

7. A bracket adapted to be suspended from a creel arm and for carrying a spindle supporting rail, said bracket comprising a pair of mating segments each having jaws defining their lower extremities and between which is adapted to be received the spindle supporting rail, one of said segments being of greater height than the other and having a pair of oppositely directed flanges defining its upper extremities, the upper surface of the other segment terminating in spaced relation to said flanges to define a pair of passageways therebetween which are adapted to receive portions of the creel arm for supporting the bracket, at least one of said segments having an upwardly inclined camming surface adapted to guide said one segment relative to the other, and means for securing said segments together, said means upon being tightened causing said one segment to move closer to the other segment while being guided towards said other segment by said camming surface.

8. A bracket adapted to be suspended from a creel arm and for carrying a spindle supporting rail, said bracket comprising a pair of mating segments each having jaws defining their lower extremities and between which is adapted to be received the spindle supporting rail, one of said segments being of greater height than the other and having a pair of oppositely directed flanges defining its upper extremities, the upper surface of the other segment terminating in spaced relation to said flanges to define a pair of channels therebetween which are adapted to receive portions of the creel arm for supporting the bracket, at least one of said segments having an upwardly inclined camming surface adapted to guide said one segment relative to the other, and means for securing said segments together, whereby said camming surface is effective to induce upward movement of said one segment relative to the other in response to the tightening of said securing means.

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