March 31, 1959 W. W. HEWITT 2,880,024

ADJUSTABLE CREEL ASSEMBLY

Filed Jan. 13, 1958 2 Sheets-Sheet 1

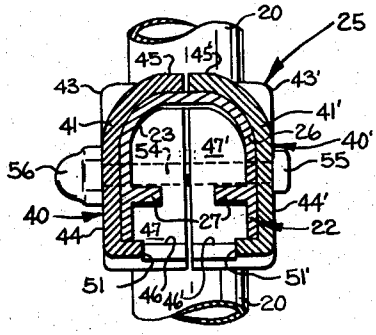

Fig-2

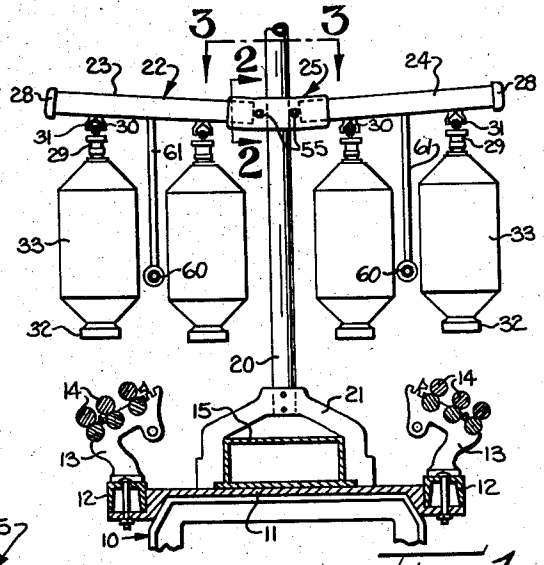

Fig-1

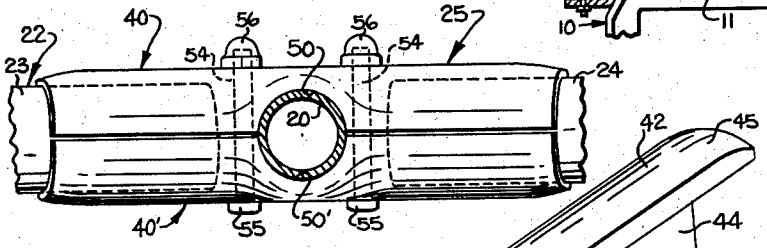

Fig-3

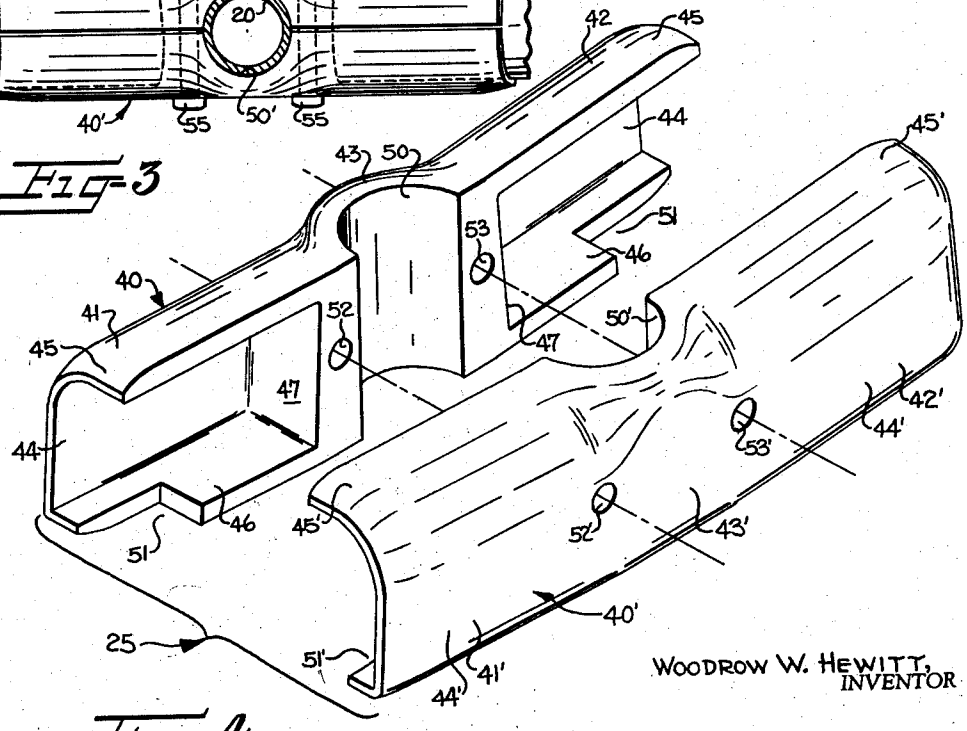

Fig-4

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March 31, 1959 W. W. HEWITT 2,880,024

ADJUSTABLE CREEL ASSEMBLY

Filed Jan. 13, 1958 2 Sheets-Sheet 2

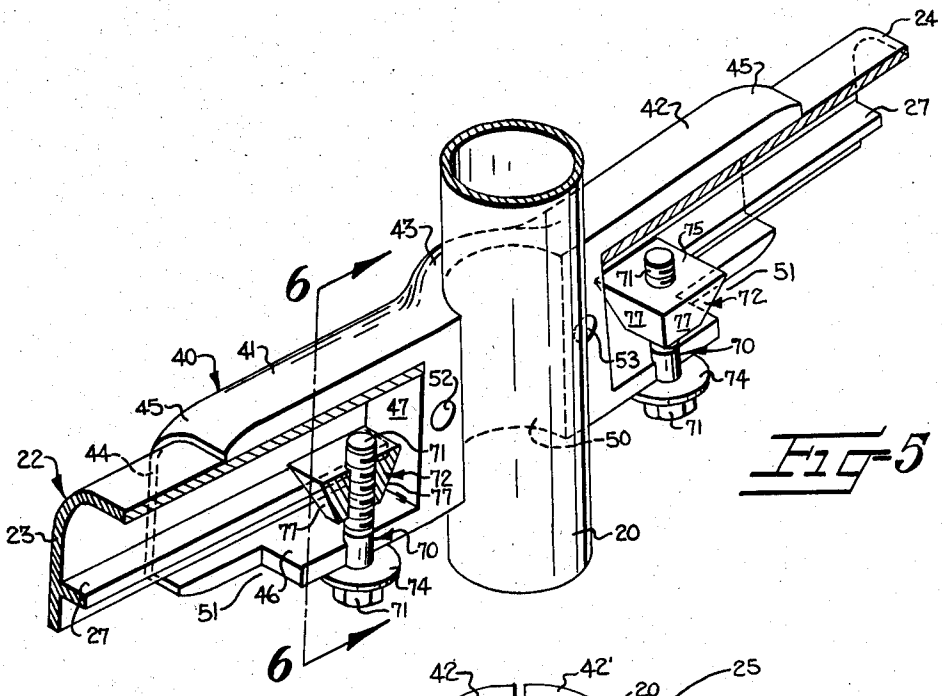

Fig-5

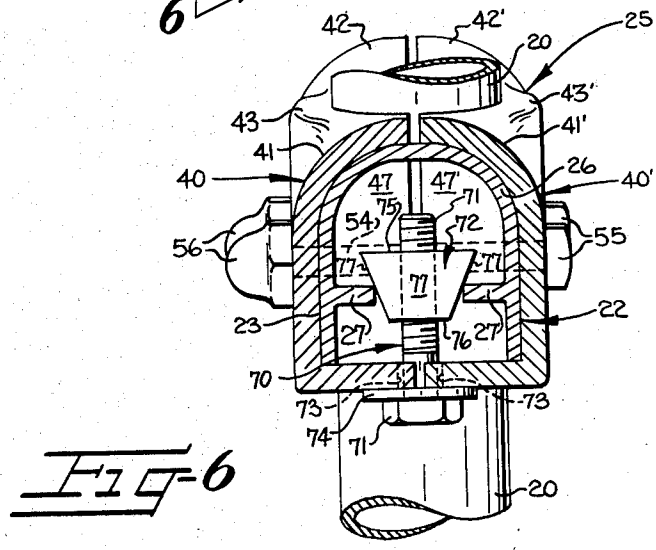

Fig-6

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2,880,024

ADJUSTABLE CREEL ASSEMBLY

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Application January 13, 1958, Serial No. 708,546

3 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 resides in an adjustable creel assembly which 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.

The present invention is particularly concerned with creels of the type which are positioned above the drafting rolls and comprise a plurality of vertical standards, each of which supports one or more lateral arms. Spindle supporting tracks extend longitudinally of the twisting machine and are suitably secured to the lateral arms, each of the spindle supporting tracks having a plurality of spindles adjustably secured thereto and depending therefrom, which spindles receive and support the upper ends of creel bobbins from whence yarn or roving is withdrawn in its course to the drafting rolls.

It is a common practice in the textile industry to provide a creel in which the lateral arms thereof are level—that is, the arms are mounted on their respective standards to be substantially parallel to the platform of the twisting machine. This arrangement results in positioning each of the plurality of spindle supporting tracks secured to the same series of lateral arms at the same height or elevation with respect to the platform of the twisting machine. Consequently, the spindles secured to these spindle supporting tracks and the bobbins mounted thereon are each located at the same height.

Upon it being necessary to replace a bobbin which has become substantially exhausted of yarn, the creel operator has found it to be exceedingly difficult to discern the exact location of the bobbin in question and to grasp the bobbin to be replaced because its location is relatively indistinguishable, each bobbin being mounted at the same height. In my co-pending United States patent application, Serial No. 591,598, filed June 15, 1956, now Patent No. 2,819,855, referred to above, there is disclosed a lateral creel arm attached intermediate its ends to a vertical standard. The creel arm has a stepped width arrangement whereby it is possible to secure the innermost or centrally located spindle supporting tracks at lower elevations than the outwardly positioned spindle supporting tracks secured to the creel arm. This results in the bobbins mounted on spindles depending from the innermost spindle supporting tracks being disposed at a height lower than that of the bobbins mounted on spindles depending from the outwardly positioned spindle supporting tracks. By providing for a progressive lowering of the bobbin heights from the outer ends of the creel arm inwardly to the central portion, the creel arm disclosed in my co-pending United States patent application, Serial No. 591,598, filed June 15, 1956, now Patent No. 2,819,855, facilitates the duties of the creel operator in replacing a bobbin from which the yarn has been substantially exhausted. Such an arrangement allows the

operator to quickly grasp the lowermost end of a bobbin depending from an inner spindle supporting track without fumbling for this end because it protrudes below the corresponding end of a bobbin depending from an outwardly disposed track and is not partially hidden as is the case in conventional structures. The stepped width arrangement of this creel arm although effective for the purpose desired would necessitate the use of expensive casting techniques for its manufacture.

From a cost stand-point, it would be highly desirable to eliminate casting in favor of extruding the creel arms, but the use of an extruded creel arm would again bring the problem of locating the spindle supporting tracks to be secured thereto at progressively lower elevations from the outer ends inwardly to the central portion into focus. An extruded creel arm would be straight and would have a uniform cross-section, thus eliminating a stepped-width arrangement for the creel arm and its resultant beneficial function.

It is a principal object of this invention to provide a creel wherein each arm is comprised of a pair of sections coupled to a vertical standard by means of a segmental sleeve connector, the creel arm sections being inclined upwardly and outwardly away from the sleeve connector in divergent relation. With such a construction, it is possible to secure spindle supporting tracks to the creel arm sections at different elevations from the twisting machine, the elevation of the spindle supporting tracks being progressively higher from the central portion of the creel arm outwardly to its opposite ends.

It is a more specific object of this invention to provide a two-piece sleeve coupling for assembling creel arm sections to a vertical standard, said two-piece coupling having open ended chambers laterally disposed with respect to the standard to telescopically receive creel arm sections and being provided with clamping means to tightly secure the sleeve coupling to the vertical standard while securing the creel arm sections in place within opposite ends of the sleeve coupling. The chambers may be inclined upwardly and outwardly with respect to a horizontal plane to dispose the creel arm sections in upwardly and outwardly inclined positions for permitting spindle supporting tracks secured to the creel arm sections to be located at progressively higher elevations from the inner portions of the creel arm sections outwardly.

Another object of this invention is to provide a segmental sleeve coupling of general utility for mounting a pair of arms on a supporting standard disposed transversely thereto, the segments of the coupling being adapted to be clamped together for tightly securing the coupling to the standard while tightly securing the arms within oppositely disposed chambers formed in the coupling.

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 adjustable creel assembly mounted thereon;

Figure 2 is an enlarged vertical sectional view taken along the line 2—2 in Figure 1;

Figure 3 is an enlarged fragmentary plan view of the two-piece sleeve coupling taken along the line 3—3 in Figure 1 and showing the vertical standard in section;

Figure 4 is an enlarged exploded isometric view of the two-piece sleeve coupling.

Figure 5 is an enlarged fragmentary isometric view of a modified form of the two-piece sleeve coupling mounted on the standard, the coupling being broken

away to show individual means for securing the creel arm sections therewithin and one such means being partially shown in section;

Figure 6 is an enlarged vertical sectional view taken along the line 6—6 in Figure 5, and showing the modified two-piece coupling when assembled.

Referring more specifically to the drawings, Figure 1 shows the frame of a twisting machine at **10**. The frame **10** includes a platform **11** having side portions which support conventional roll stand beams **12**, said roll stand beams having a plurality of roll stands **13** mounted thereon. The roll stands **13** carry drafting rolls **14**. The twisting machine may also be provided with a conventional clearer system which includes a substantially rectangular suction duct **15** extending longitudinally of the machine and centrally positioned on the platform **11**.

A plurality of cylindrical vertical standards **20**, only one of which is shown in Figure 1, are positioned above the platform **11**, each of the standards being secured thereto by a creel bracket **21**. Each vertical standard **20** may have one or more lateral creel arms extending therefrom, one such creel arm being shown at **22** in Figure 1. The creel arm **22** comprises a pair of outwardly extending creel arm sections **23, 24** connected together and to the vertical standard **20** by a sleeve coupling **25**. The creel arm sections **23, 24** are preferably of the type disclosed and claimed in my co-pending United States patent application, Serial No. 708,545, filed concurrently herewith, and each takes the form of an inverted U-shaped cross-section **26** having inwardly extending ledges or guideways **27**, as shown in Figure 2. The free end of each creel arm section may be provided with a removable cap member **28**. A series of spindles **29** depend from elongated supporting tracks **30** which may be attached to each of the creel arm sections **23, 24** by suitable attaching means or brackets **31**. The attaching means or brackets **31** may be of the type disclosed and claimed in my co-pending United States patent application, Serial No. 708,545, filed concurrently herewith and referred to above. Each spindle **29** has a tubular bobbin **32** mounted thereon containing a package of yarn **33**.

It will be noted that each of the creel arm sections **23, 24** extends outwardly and upwardly at a slight inclined angle to the horizontal which permits the individual packages of yarn **33** to depend at varying heights below the creel arm sections **23, 24**. Referring to the sleeve coupling **25** which connects the creel arm sections **23, 24** together and to the vertical standard **20**, it will be observed more clearly in Figure 4 that the sleeve coupling comprises two identical segments or members **40, 40'**. It will be understood in describing the segment **40** of the sleeve coupling **25**, an identical structural part identified by the same reference numeral with a prime notation added is also present in the segment **40'**. The segment **40** comprises a pair of elongated oppositely disposed creel arm receiving portions **41, 42** intermediate which is a central standard receiving portion **43** connecting the portions **41, 42** together.

Each of the creel arm receiving portions **41, 42** extending from its junction with the standard receiving portion **43** is inclined upwardly at a slight angle with respect to a horizontal plane, and includes a side wall **44** whose interior surface corresponds in shape to the exterior surface of the side wall of a creel arm section. The side wall **44** merges with a curved wall **45** which provides a top wall for each of the creel arm receiving portions **41, 42** and corresponds in shape along its interior surface with the exterior surface of the creel arm section to be received thereby. Integral with the lower edge of each side wall **44** there is an inclined flat bottom wall **46**. An end wall **47** integral with the side wall **44** and extending between the top wall **45** and the bottom wall **46** is interposed between each of the creel arm receiving portions **41, 42** and the standard receiving portion **43** of the segment **40**. The standard receiving portion **43** is provided with a groove **50** having a semi-circular cross-section, said groove **50** being adapted to receive approximately one-half of the circumference of the cylindrical vertical standard **20**, as shown in Figure 3. It is contemplated that standards and creel arm sections of varying cross-sectional shapes may be employed within the spirit of this invention, in which case the segments **40, 40'** of the sleeve coupling **25** would be modified to accommodate the particular cross-sectional shapes of the standard and creel arm sections used.

It will be observed that the outwardly directed free end of the bottom wall **46** of each of the creel arm receiving portions **41, 42** is provided with a suitable recess **51** for a purpose to be subsequently described. A pair of spaced parallel axially alined bore holes **52, 53** extend transversely through the end walls **47** of the creel arm receiving portions **41, 42** respectively.

When the sleeve coupling **25** is assembled, the two segments **40, 40'** are brought together in opposing relationship. The pair of bore holes **52, 53** of segment **40** are alined with the pair of bore holes **52', 53'** of segment **40'**. It will thus be noted that the grooves **50, 50'** cooperate to define a cylindrical bore through the sleeve coupling **25** for reception of the vertical standard **20**, and the creel arm receiving portions **41, 41'** and **42, 42'** cooperate to define a pair of oppositely extending chambers having open outer ends for reception of the creel arm sections **23, 24** respectively. Each recess **51** in segment **40** cooperates with its counterpart recess **51'** in segment **40'**, to define a notch in the bottom wall **46, 46'** of each of the pair of oppositely extending chambers adjacent the open outer end thereof. The inner bracket **31** carried by each of the creel arm sections **23** and **24**, respectively, may be received within the corresponding notch in order to permit the spindle supporting track **30** held by the bracket **31** to be moved closer to the standard **20** should this be found desirable. The two segments **40, 40'** comprising the sleeve coupling **25** may be suitably secured together by means such as stud members **54** extending through the alined pairs of bores **52, 52'** and **53, 53'**. Each stud member **54** includes a head **55** at one end for abutment against the exterior surface of one of the segments **40, 40'** comprising the sleeve coupling **25**. The opposite end of the stud member **54** protrudes outwardly from the other one of the segments **40, 40'** to threadably receive an end nut **56**.

When the segments **40, 40'** have been assembled about the vertical standard **20**, the stud members **54** may be positioned in the bores **52, 52'** and **53, 53'**, and the end nuts **56** may be threaded about the ends of their respective stud members **54** to thereby clamp the sleeve coupling **25** in position about the vertical standard **20**. Prior to the threading of the end nuts **56** about their respective stud members **54** an amount sufficient to clamp the sleeve coupling **25** about the standard **20**, the creel arm sections **23, 24** may be telescopically inserted within the chambers provided by the creel arm receiving portions **41, 41'** and **42, 42'** of the sleeve coupling **25**. The creel arm sections **23, 24** are loosely received within their respective chambers and extend outwardly therefrom at a slight upward inclined angle with respect to a horizontal plane. The end nuts **56** may then be threaded about the stud members **54** sufficiently to clamp the sleeve coupling **25** about the vertical standard **20** while substantially simultaneously clamping the creel arm sections **23, 24** within their respective chambers provided in the sleeve coupling **25**. It will be noted that the pair of end walls **47, 47'** and **47, 47'** in the sleeve coupling **25** provides a limiting means as to the extent to which the creel arm sections **23, 24** may be inserted within the sleeve coupling **25**.

It will be observed that the two-piece coupling **25** permits the insertion of creel arm sections **23, 24** within its creel arm receiving portions **41, 41'** and **42, 42'** thereby positioning these creel arm sections laterally with respect to the vertical standard **20** and in upwardly and outwardly inclined relation to a horizontal plane. The creel arm sections **23, 24** are thus located in outwardly divergent relationship with respect to each other and are adapted to support the tracks **30** at progressively increasing elevations from the inner ends of the creel arm sections **23, 24** outwardly. Each of the tracks **30** is supported at a plurality of places along its longitudinal extent from creel assemblies similar to the one described, thereby being maintained in a level condition by the several brackets **31** in the manner disclosed in my co-pending United States patent application, Serial No. 708,-545, filed concurrently herewith, to allow the spindles **29** mounted on the track to depend therefrom in an upright vertical position. Accordingly, the yarn **33** contained on the bobbins **32** is permitted to unwind from the bobbins in a proper manner as it is fed to the drafting rolls **14**.

As shown in Figure 1, the creel arm sections **23** and **24** may be provided with longitudinally extending roving rods or guides **60** connected thereto by suitable means, such as bars **61** depending vertically from the creel arm sections **23** and **24**, at the lower ends of which are carried the roving rods **60**. The ends of the roving or yarn from the yarn packages **33** hanging from the creel arm **22** are adapted to be passed over the roving rods **60** and then downwardly to the drafting rolls **14**.

By securing the spindle supporting tracks **30** to the creel arm sections **23** and **24** at progressively increasing elevations from the inner ends of these sections outwardly, the bobbins **32** mounted on the spindles **29** carried thereby are arranged in longitudinal rows with each row being at a progressively greater height than the inner row adjacent thereto. Thus, when the yarn has become substantially exhausted from one bobbin, the creel operator can readily locate the lower end of this bobbin for replacing it without fumbling for the same because its lower end is disposed at a different level than that of bobbins in rows adjacent thereto.

The sleeve coupling **25** permits the use of extruded creel arm sections which may be inserted in opposite ends of the sleeve coupling so as to be positioned in an upwardly and outwardly inclined manner. The creel arm sections **23, 24** thus extend laterally from the standard **20** in divergent relation with respect to each other and permit the spindle supporting tracks **30** to be located at different elevations as described. The necessity for casting a creel arm to accomplish this purpose with its resulting expense is eliminated. Moreover, the extruded creel arm sections may be made of any lengths desired depending on the space requirements for the creel.

Where manufacturing tolerances are such that it is inappropriate to obtain clamping engagement between the segmental sleeve coupling **25** and the creel arm sections **23, 24** at substantially the same time as clamping engagement is obtained between the segmental sleeve coupling **25** and the standard **20**, a modified form of the sleeve coupling **25**, as illustrated in Figures 5 and 6, may be used. In this modified form of the invention, a suitable fastener means **70** is provided for each of the creel arm receiving portions **41, 41'** and **42, 42'**.

Each of the fastener means **70** comprises a stud element or bolt **71** having a threaded shank and a wedge nut **72** provided with a threaded bore therein and adapted to threadably receive the shank of bolt **71**. The bottom walls **46, 46'** of each creel arm receiving portion **41, 41'** and **42, 42'** are suitably apertured to permit the shanks of the bolts **71** to be loosely passed therethrough. As shown in Figures 5 and 6, opposing grooves may be formed in the bottom walls **46, 46'** of the segments **40, 40'** for each of the creel arm receiving portions **41, 41'** and **42, 42'** to collectively define the apertures **73** through which the shanks of the bolts **71** are loosely passed. A washer **74** may be interposed between the lower surface of the bottom wall **46, 46'** and the head of each bolt **71**.

When the bolts **71** have been inserted in the apertures **73**, their threaded shanks extend upwardly within the chambers of the creel arm receiving portions **41, 41'** and **42, 42'** for reception of the wedge nuts **72**. As shown, each wedge nut **72** is provided with an upper surface **75** and a lower surface **76** of substantially square shape. The lower surface **76** is relatively small in area when compared to the upper surface **75**, thereby forming each of the four flat sides **77** of the wedge nut **72** with a tapered configuration from the upper surface **75** to the lower surface **76**. Thus, it will be seen that when the wedge nuts **72** are threaded about the shanks of their respective bolts **71**, they present two pairs of oppositely disposed inclined wedging surfaces defined by their four flat sides **77**. The wedging surfaces forming each oppositely disposed pair diverge upwardly.

The segments **40, 40'** of the modified sleeve coupling **25** are first tightly secured to the standard **20** by threading the end nuts **56** about the ends of their respective stud members **54** to clamp the segments **40, 40'** in position about the standard **20**. At this stage of assembly, the creel arm sections **23, 24** may be telescopically inserted within the chambers provided by the creel arm receiving portions **41, 41'** and **42, 42'**, where they will be loosely retained. It should be noted that the vertical dimension of each wedge nut **72** is sufficiently large to enable one pair of its oppositely disposed flat sides **77** to engage the incoming ends of the guideways **27** formed on the creel arm section to be inserted in each chamber when the wedge nut **72** is resting against the bottom wall **46, 46'**. This engagement serves to cam the wedge nuts **72** upwardly in their respective chambers when the creel arm sections **23, 24** are inserted therein.

The bolts **71** are then rotated, the wedge nuts **72** being restrained against movement with their respective bolts **71** by virtue of the engagement between the pair of oppositely disposed flat sides **77** on each nut and the guideways **27** on the corresponding creel arm section. The rotation of the bolts **71** effects a downward movement of the wedge nuts **72** with respect thereto, whereupon the creel arm sections **23, 24** will become tightly secured within their respective chambers.

It will be observed that the downward movement of the wedge nuts **72** not only forces the creel arm sections **23, 24** tightly against the bottom wall **46, 46'** of their respective creel arm receiving portions **41, 41'** and **42, 42'**, but also wedges the creel arm sections against the corresponding side walls of the creel arm receiving portions, such wedging action increasing as the bolts **71** continue to be rotated. Although a particular shape for the wedge nuts **72** has been illustrated and described, it should be understood that various shapes for the wedge nuts **72** could be employed without departing from the spirit of the invention. The modified form of the invention shown in Figures 5 and 6 permits the segmental sleeve coupling **25** to be tightly secured to the standard **20**, after which the creel arm sections **23, 24** may be tightly secured within the sleeve coupling **25**.

It will be apparent that the sleeve coupling **25** of this invention could also be formed of top and bottom mating segments rather than the two side segments illustrated, in which case the top segment would not be identical with the bottom segment.

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. A creel for use with textile machinery, such as a

twisting machine, said creel comprising a standard, a sleeve coupling adapted to be mounted about said standard, said sleeve coupling having a pair of mating segments, said segments collectively defining a bore therethrough for receiving said standard, said segments each having elongated creel arm receiving portions extending outwardly from oppositely disposed positions relative to said bore, said creel arm receiving portions collectively defining a chamber in opposite ends thereof with each chamber extending laterally with respect to said standard and being open at its outer end, each of said chambers being inclined upwardly and outwardly with respect to a horizontal plane, a creel arm section received in each of said chambers, each of said creel arm sections being inclined upwardly and outwardly with respect to a horizontal plane, an inner wall in each of said creel arm receiving portions remote from the open outer end of the chamber thereof to limit the extent to which the creel arm sections may be inserted within their respective creel arm receiving portions, and means positioned on opposite sides of the standard substantially along axes of said chambers and between the chambers and said bore to clamp said segments together and to tightly secure said sleeve coupling to said standard.

2. A creel for use with textile machinery, such as a twisting machine, said creel comprising a standard, a sleeve coupling adapted to be mounted about said standard, said sleeve coupling having a pair of mating segments, said segments collectively defining a bore therethrough for receiving said standard, said segments each having elongated creel arm receiving portions extending outwardly from oppositely disposed positions relative to said bore, said creel arm receiving portions collectively defining a chamber in opposite ends thereof with each chamber extending laterally with respect to said standard and being open at its outer end, each of said chambers being inclined upwardly and outwardly with respect to a horizontal plane, a creel arm section received in each of said chambers, each of said creel arm sections being inclined upwardly and outwardly with respect to a horizontal plane, an end wall disposed within each of said creel arm receiving portions and defining the inner boundary of its chamber, said end walls limiting the extent to which the creel arms sections may be inserted within their respective creel arm receiving portions, and

means on opposite sides of the standard substantially along the axes of said chambers and penetrating said end walls to clamp said segments together and to tightly secure said sleeve coupling to said standard.

3. A creel for use with textile machinery, such as a twisting machine for supporting bobbins of yarn, said creel comprising a standard, a sleeve coupling adapted to be mounted about said standard, said sleeve coupling having a pair of mating segments, said segments collectively defining a bore therethrough for receiving said standard, each of said segments having elongated creel arm receiving portions extending outwardly from oppositely disposed positions relative to said bore, collectively said creel arm receiving portions defining a pair of chambers therein with each chamber extending laterally with respect to said standard and being open at its outer end, each of said chambers being inclined upwardly and outwardly with respect to a horizontal plane, said bore being transversely disposed with respect to said chambers and interposed therebetween, means on opposite sides of the standard substantially along axes of said chambers and between the chambers and bore to clamp said segments together and to tightly secure said standard within said bore, a creel arm section received in each of said chambers, each of said creel arm sections being inclined upwardly and outwardly with respect to a horizontal plane, spaced apart means depending from said creel arm sections for supporting bobbins of yarn therefrom at varying heights, an end wall disposed within each of said creel arm receiving portions and defining the inner boundary of its chamber, said end walls limiting the extent to which the creel arm sections may be inserted within their respective creel arm receiving portions, and fastener means extending into each of said chambers to tightly secure the creel arm section therein.

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