G. W. DEARBORN.

YARN BEAM HANDLING DEVICE.

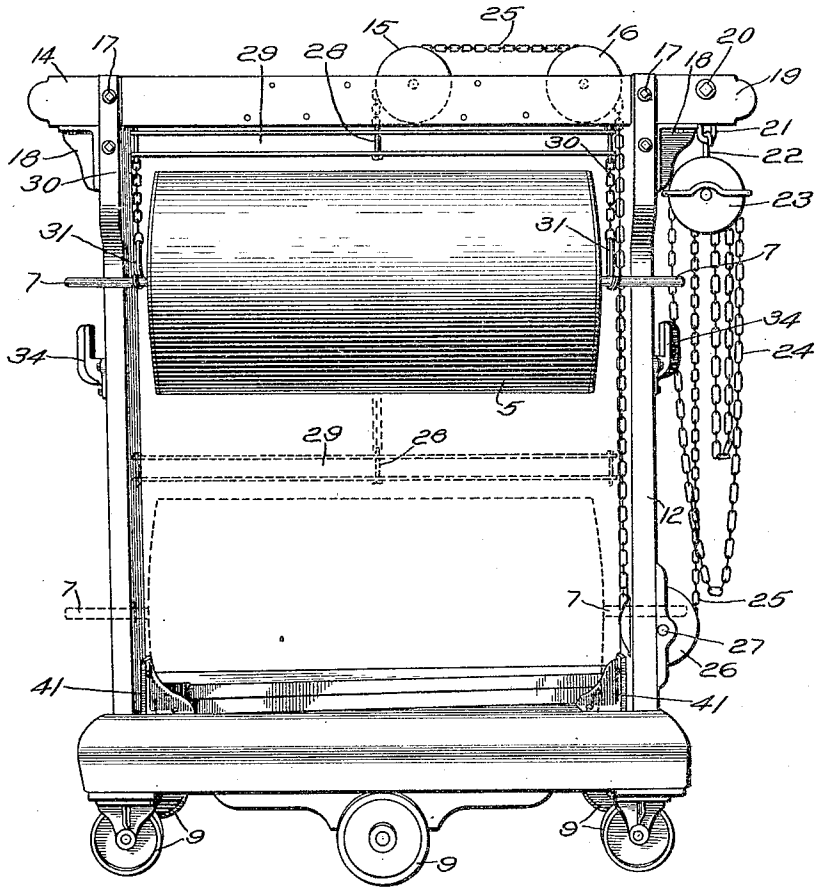
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1,121,807.

Patented Dec. 22, 1914.

2 SHEETS—SHEET 1.

Fig. 1.



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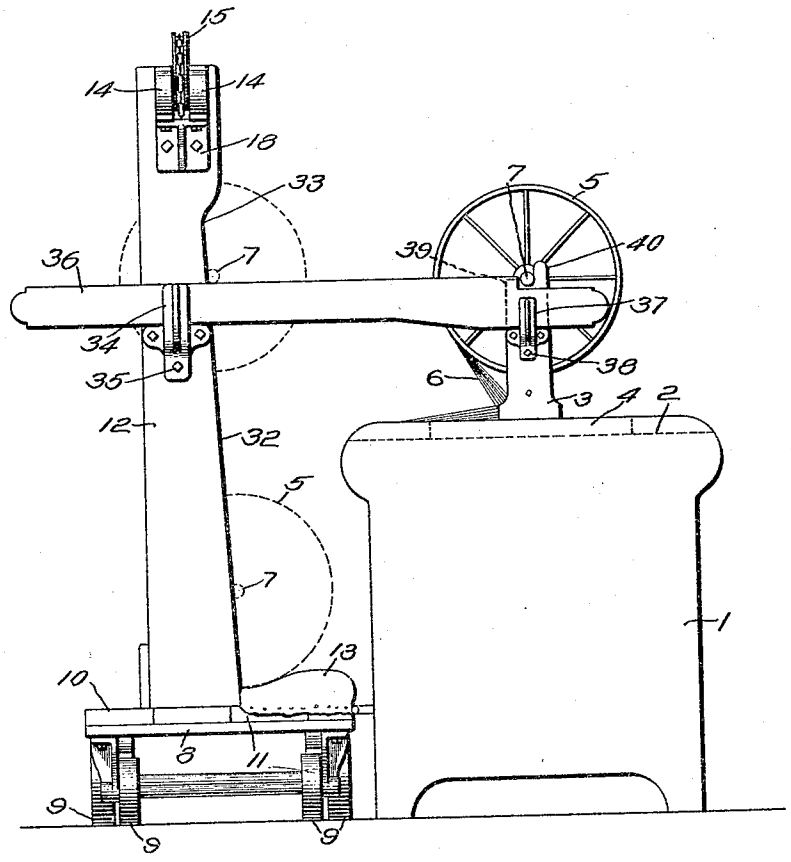
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

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YARN-BEAM-HANDLING DEVICE.

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To all whom it may concern:

Be it known that I, GEORGE W. DEARBORN, a citizen of the United States, and resident of Lowell, county of Middlesex, and State of Massachusetts, have invented an Improvement in Yarn-Beam-Handling Devices, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The invention to be hereinafter described relates to yarn beam handling devices for twister or spinning frames, and more particularly to devices that enable the heavy yarn beams to be placed in and taken from position with relation to the twister devices which twist together two or more yarns into a single heavier yarn or thread.

As well known by those skilled in the art, the yarns to be twisted together are wound side-by-side upon large beams or spools in a proper machine for this purpose, and are then transported to the twister frames, where these loaded beams are supported in suitable bearings to permit rotative movement. A series of groups of yarn, each group consisting of two or more yarns, are then led to the twister devices, where they are twisted together. It has been found convenient and practical to support the yarn beams on the twister frames between the rows of twister devices arranged and supported along the sides of the frame, but as such beams, when loaded, weigh several hundred pounds, the ready transportation of the beams to and from the twister frames and into and from their supports upon the twister frames presents difficulties and problems which it is the object of the present invention to overcome.

The aims and purposes of the present invention will best be made clear from the following description and accompanying drawings of one form of means for carrying the invention into practical effect, it being understood that the invention is not limited to the particular details thereof, but in its true scope is definitely set forth by the claims.

In the drawings:—Figure 1 is a front view in perspective of a yarn beam handling device embodying one form of the present invention; and Fig. 2 is an end view showing the frame of the twister, the beam handling device in position at the side of the twister, and the relation of parts in transferring a yarn beam to its supports on top of the twister frame.

The twister frame 1 may be of any desired character appropriate for the support and operation of the usual twisting or spinning means, which, being well understood by those skilled in the art, need not be shown or described herein. Mounted on the top 2 of the twister frame between the side portions thereof and preferably at the longitudinal central portions thereof are the beam supports for sustaining the yarn beams. The said supports may be of any approved character and construction, but as shown, each comprises an upright member 3 rising from a base 4 preferably resting upon or secured to the top of the twister frame, and between two of said supports the yarn beam 5 is adapted to be sustained while the yarn 6 is taken therefrom, as indicated in Fig. 2, and twisted. To provide suitable bearings for the journals of the yarn beam, the supports are provided with depressions in their upper ends, as indicated in Fig. 2, for receiving the journals 7 of the beam, the wall at one side of said depression being preferably extended sufficiently above to act as an effectual stop for the journals of the beam, when the latter moves to position between the supports, as will presently appear. Obviously, the elevated supports for sustaining the yarn beam in operative relation with the twister devices may be greatly varied, although the form described has been found practically convenient and effective.

As hereinbefore noted, the yarn is wound upon the beam in a suitable winding machine and has then to be transported to and placed in the elevated supports upon the top of the twister frame. As a means to this end the present invention contemplates a movable hoisting and transporting device, a preferred form of which is shown by the drawing, wherein the lower or base portion constitutes a rest for the beam and rising therefrom are suitable uprights which sustain an appropriate hoisting apparatus as will presently appear.

The lower or base portion of the hoisting transporting device comprises a platform 8 supported by appropriate rollers or wheels 9, whereby the base portion may properly

move from place to place. Preferably the rollers 9 are arranged as indicated in Figs. 1 and 2, wherein at each end of the base portion there are a pair of rollers and intermediate these another pair, whereby the device is given an appropriate rolling support. In order that the device may have its direction of movement changed appropriately, the central rollers 9 may be slightly larger in diameter than the end rollers, if desired, or any other appropriate direction-changing devices may be employed.

Extending from end to end of the base portion are the side frames 10 and 11, and rising from the base portion are the uprights 12, one at each end. As hereinbefore noted, a beam loaded with yarn to be twisted weighs several hundred pounds, and the delicate nature of the yarn requires that it shall not be injuriously brought into contact with the surrounding objects during the transportation of the yarn beam to the elevated support. As one means of securing this end, the base is provided with a cushion 13, the outer or edge portion of which is preferably higher than the inner portion, so that the natural tendency of the beam of yarn is to maintain its position upon the supporting base, as will more fully appear. The cushion 13 may be formed of any suitable material, and appropriately secured in place to afford the cushioning support, as above indicated.

The uprights 12 are connected at their upper ends by the cross members 14, preferably two in number, and arranged side-by-side. These cross members sustain between them the pulleys 15, 16, said cross members 14 being appropriately connected to the uprights 12 by suitable bolts or other securing means 17, and the corner brackets 18. By the formation of the members 14 the pulleys 15 and 16 are given appropriate direct bearing support upon their journals, whereby all binding action is overcome. Of course the construction in this respect may be varied within the true scope of the actual invention, but the above constitutes a convenient and good practical form of this feature of the device.

The cross members 14 at the top of the uprights 12 extend beyond the uprights, as indicated in Fig. 1, particularly at one side, as at the right in Fig. 1, where they constitute arms 19 for the support of a suitable hoisting device or pulley. In the illustrated form of the invention, the arms 19 are connected by a bolt 20 from which depends a supporting link 21 for engaging a hook 22 and the hoisting pulley 23, said hoisting pulley being of any desired character, but preferably of the differential type and operable by a suitable chain or other flexible means 24, Fig. 1.

The hoisting pulley 23 in its particulars of structure, forms no essential part of the present invention, and, being of the differential type which is well understood by those skilled in the art, detailed description thereof is unnecessary, it being sufficient to note that by pulling upon the chain 24 in one or the other direction, the power transmitted to the hoisting chain to be hereinafter described, may be caused to either raise or lower the hoisting chain and, perforce, the weight suspended from it, as will presently appear.

Passing around the hoisting pulley is the hoisting chain 25 which leads from said pulley about an idler or guide pulley 26, supported at 27 near the lower portion of one of the uprights 12 and from said idler leads upward about the pulleys 16 and 15, as will clearly appear from Fig. 1.

Secured to the end of the chain 25 by a suitable bolt 28 is a hook-carrying-bar 29, preferably formed of metal, the bolt 28 being preferably secured centrally of said bar, whereby the bar 29 may be appropriately sustained by the chain 25, and operated in a manner presently to be shown.

The hook supporting bar 29 is of appropriate length suitable to the length of the yarn beams to be handled by the apparatus, and at each end the said bar 29 carries a flexible strap 30, shown as a chain to the end of which is secured a hook 31 adapted to engage the journals 7 of the yarn beam.

From the construction thus far described, it will be apparent that upon operation of the chain 24 by an attendant, as usual in this class of pulley devices, the hoisting chain 25 may be appropriately moved either to raise or lower the hook bar 29 and with it the beam which may be engaged by its journals 7 in the hooks 31.

Inasmuch as the yarn beam with its load is to be transported, sometimes a considerable distance over the floor of the twisting room, it is desirable that the yarn beam be sustained at the lower portion of the hoisting apparatus, and in stable equilibrium. It is also of importance that when the hoisting apparatus has arrived in position opposite the elevated support on the twister frame, that the yarn beam be prevented from swinging or other accidental or disturbing movements. Such movements would be liable to cause trouble, in view of the weight of the beam, and especially would this be the case when the beam has been raised from the base portion of the apparatus. In order to meet this condition, the present invention contemplates that the yarn beam, when placed upon the base portion as indicated by dotted lines, Fig. 1, and in the lower dotted lines, Fig. 2, shall primarily rest upon the cushioned portion of the base on the inwardly-inclined surface thereof, and that the journals 7 shall have

a tendency to bear directly upon the edges of the uprights 12. As a means for effecting these results, it will be noted that the uprights 12 rise from the base portion at one side of the center thereof and that the edge 32 of each of the uprights 12 is inclined from the base portion upwardly until at its top portion 33 the inclined edge 32 is more nearly directly under the pulleys 15 and 16 over which passes the hoisting chain 25. From Fig. 2 it will be noted that the preferred construction in this respect contemplates that the edges 32 of the uprights 12 be inclined from the base at one side of its center upwardly in a plane passing substantially through the hoisting pulleys 15 and 16. By this arrangement a better lead for the hoisting chain 25 is secured, the yarn beam is maintained with its journals 7 in direct contact with the edges of the uprights 12, all wabbling or free movement of the beam is prevented both when in elevated and lowered positions, and when moving between said positions, and when the yarn beam is in raised position, the lead of the hoisting chain from the pulley 15 to the hook bar 29 is substantially the same as when the beam is in lowered position, as indicated in Fig. 2. Obviously, the invention may be varied in this respect without departing from the true scope thereof, as to other features of the construction pointed out by the claims.

In operating the apparatus, the hoisting frame is moved upon its trucks into position along-side the full yarn beam, and the hooks 31 depending from the hook bar 29 are engaged with the journals 7 projecting from the ends of the beam. The chain 24 of the differential hoisting pulley is then operated appropriately to put tension upon the hoisting chain 25, whereupon the loaded beam rises from the floor or other support over the cushioned edge 13 of the base portion of the apparatus and takes position as indicated in the dotted lines of Fig. 1, or by the lower dotted lines in Fig. 2, wherein the journals 7 bear with considerable force against the inclined edges 32 of the uprights 12, thereby serving in connection with the inclined surfaces of the pad 13 and the weight of the loaded beam to support the beam upon the base of the apparatus in stable equilibrium. The hoisting apparatus is now moved into a position opposite the elevated support 3 on the top of the twister frame, and the chain 24 is further operated to raise the beam into its upper position, as indicated by full lines, Fig. 1, and the upper dotted lines in Fig. 2, at which position the beam will be sustained from the hook bar 29, as will be readily understood.

In order to transfer the beam from the hoisting apparatus to the elevated supports, the said elevated supports, as well as the uprights 12, are provided with appropriate means to support the transferring arms, one form of which is clearly indicated in Fig. 2, wherein each upright 12 is provided with a bracket 34 appropriately secured thereto by bolts 35, or other securing means, and providing between the faces of the uprights 12 and the bracket 34, a recess for the support of one portion of the transferring arms 36. Similarly, the elevated supports 3 are provided with brackets 37 which may be secured thereto in a similar manner, as by bolts 38, thus providing a space between the face of the supports 3 and the brackets 37, one on each upright, for the support of another end portion of the transferring arms 36.

When the beam has been raised to the upper dotted line position, Fig. 2, or somewhat above this, as in full lines, Fig. 1, the transferring arms 36 are placed in the brackets 34 and 37, and the chain 24 operated in reverse direction to lower the beam, so that its journals 7 may rest upon the top edge of the transferring arms 36. The hooks 31 are then detached from the journals, and the yarn beam is then rolled upon its journals on the top edge of the bars 36 into the supporting sockets at the upper ends of the elevated supports 3. To better accomplish this transfer, the transferring arms 36 are each provided with a shoulder 39 which, when the transferring arms 36 are in position as indicated in Fig. 2, are just at the left of the socket portions of the elevated supports 3, the construction being such that as the yarn beam passes over the shoulder 39 of the transferring arms 36, the journals 7 will drop into the socketed portions of the elevated supports 3 and be sustained by them clear of the transferring arms 36, so that the latter may be readily removed.

As hereinbefore indicated, the whole of the support 3 at one side of the socketed portions, is formed as a stop to arrest the movement of the yarn beam as it arrives in supporting position upon the elevated supports 3. This stop is, or may be formed as a part 40, either formed integral with the supports 3 or otherwise.

Increased rigidity to the frame of the hoisting apparatus may be secured, if desired, by means of corner brackets 41 at the lower portions thereof, and obviously various changes may be made in the details of the parts described without departing from the true scope of the actual invention as defined by the claims. Thus, for instance, while the single hoisting chain 25 is found to be an appropriate and convenient means for acting through the hook supporting arm 29, for hoisting the yarn beam, a number of the chains may be employed, and their lead to and from the hoisting device may be ar-

ranged and changed within the skill of the mechanic without departing from the true scope of the actual invention.

What is claimed is:—

1. An apparatus for handling yarn beams, comprising a portable truck having a base portion adapted to support the yarn beam as it is transported by the truck, uprights rising from said base portion, and a hoisting device carried by the truck for raising the yarn beam, from the base portion to the upper portion of the uprights.

2. An apparatus for handling yarn beams, comprising a portable truck having a base portion adapted to support the yarn beam as it is being transported by the truck, uprights rising from said base portion, a hoisting device to raise the yarn beam from said base portion to the upper part of the uprights and, transferring arms, to sustain the journals of the yarn beam as the latter is transferred from the truck.

3. In an apparatus for handling yarn beams, the combination of a base portion for supporting a yarn beam, roller supports for said base portion, uprights rising from the base portion at each end thereof and having edges to engage the journals of a yarn beam supported on said base portion, and means for hoisting a yarn beam toward the upper ends of said uprights with its journals bearing upon said edges.

4. An apparatus for handling yarn beams, comprising a base, roller supports for said base, side uprights rising from said base, said base having a supporting portion between said uprights for supporting a yarn beam as it is transported, means for hoisting the yarn beam toward the upper portion of said side uprights, and means for transferring the yarn beam from the hoisting means to other supports.

5. An apparatus for handling yarn beams, comprising a base, roller supports therefor, uprights rising from the base, said base having a supporting seat for a yarn beam to sustain said beam as it is being transported, hoisting means for raising the yarn beam from said seat and maintaining the journals thereof in contact with the uprights to steady the beam as it is hoisted, and means for transferring the yarn beam from the hoisting means to said elevated supports.

6. An apparatus for handling yarn beams, comprising a base and roller supports therefor, uprights rising from said base having yarn beam journal bearing portions for steadying the beam as it is hoisted, hoisting means for raising the beam and acting to maintain the journals of the beam in steadying contact with said bearing portions as the beam is hoisted.

7. In an apparatus for handling yarn beams, the combination of a base, roller supports therefor, uprights extending upward from the ends of the base, said base having a supporting seat between said end uprights for supporting a yarn beam with the journals thereof bearing against the edges of the uprights, cross members connecting the upper portions of the uprights, and hoisting means sustained by said cross members and acting as the beam is raised from the supporting seat to maintain the journals thereof in steadying contact with said uprights.

8. In an apparatus for handling yarn beams, the combination of a base having roller supports and provided with a seat for supporting a yarn beam, side uprights secured to said base, cross members connecting the upper portions of said uprights, a hook bar having a hook at each end for engaging the journals of a yarn beam, and a hoisting device for raising the yarn beam from its seat on said base including a flexible connection secured to the said hook bar.

9. In an apparatus for handling yarn beams, the combination of a base having roller supports and a seat for a yarn beam, end uprights extending upward from the base and having an edge portion for engaging the journals of a yarn beam, cross members connecting the end uprights at their upper portion, a guide pulley sustained by said cross members in a vertical plane at one side of the vertical plane passing through the journals of a yarn beam sustained upon said seat, a hoisting device, for raising the yarn beam from its seat including a flexible connection passing over said guide pulley and acting to maintain the journals of the beam in steadying contact with the edge portion of the uprights as the beam is hoisted.

10. A beam handling apparatus, comprising a portable truck having a base portion provided with a seat to support the beam as it is transported, uprights carried by the base portion and adapted to be engaged by the journals of the beam to steady the beam upon its seat as it is being transported, transferrer arms for supporting the journals of the beam as it is transferred from the truck, means for connecting the transferrer arms to the upper portion of the uprights, and means carried by the truck for hoisting the beam from its seat on the base of the truck toward the upper portion of the uprights.

11. In an apparatus for handling yarn beams and transferring them to elevated supports, the combination of a truck having uprights, transferrer arms, means for connecting the transferrer arms to the upper portion of said uprights, means for hoisting a yarn beam to enable its journals to rest upon the transferrer arms when they are in place, said transferrer arms having depressed portions in the outer ends thereof to enable the journals to drop onto supports higher

than such depressed portions to free the transferrers when the yarn beam is transferred from said truck.

12. An apparatus for handling yarn beams, comprising a truck, a cushioned seat at the base of the truck for supporting a yarn beam by engagement of its cylindrical surface, uprights for engaging the journals of the yarn beam to steady the beam as it is being transported, means carried by the truck for hoisting the yarn beam from its seat when at the point of delivery of the yarn beam, and transferrer arms for supporting the yarn beam after it has been raised from its seat.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEORGE W. DEARBORN.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."