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ARTICULATED BOBBIN HOLDER

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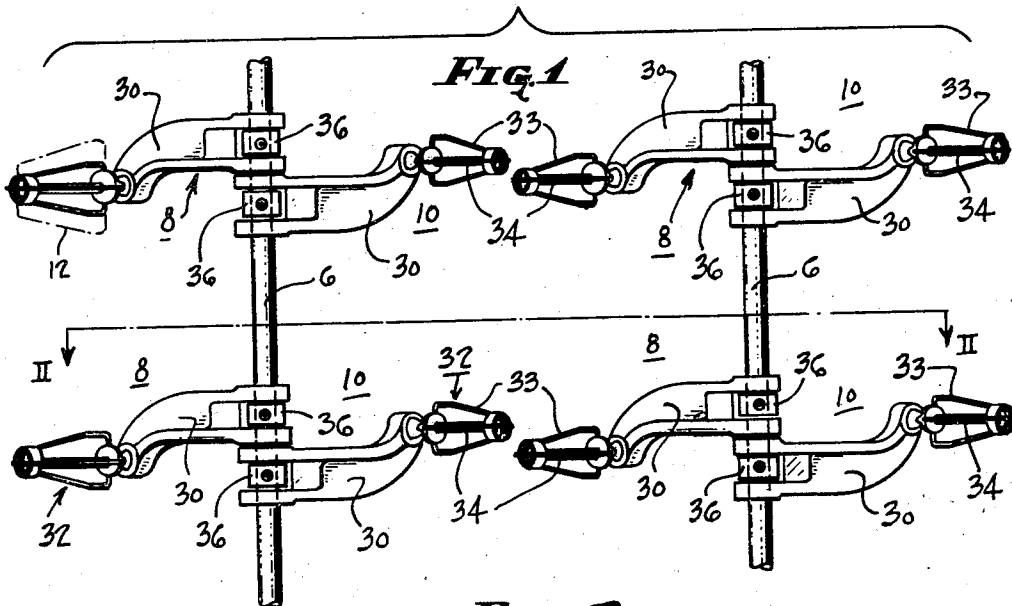


Fig. 2

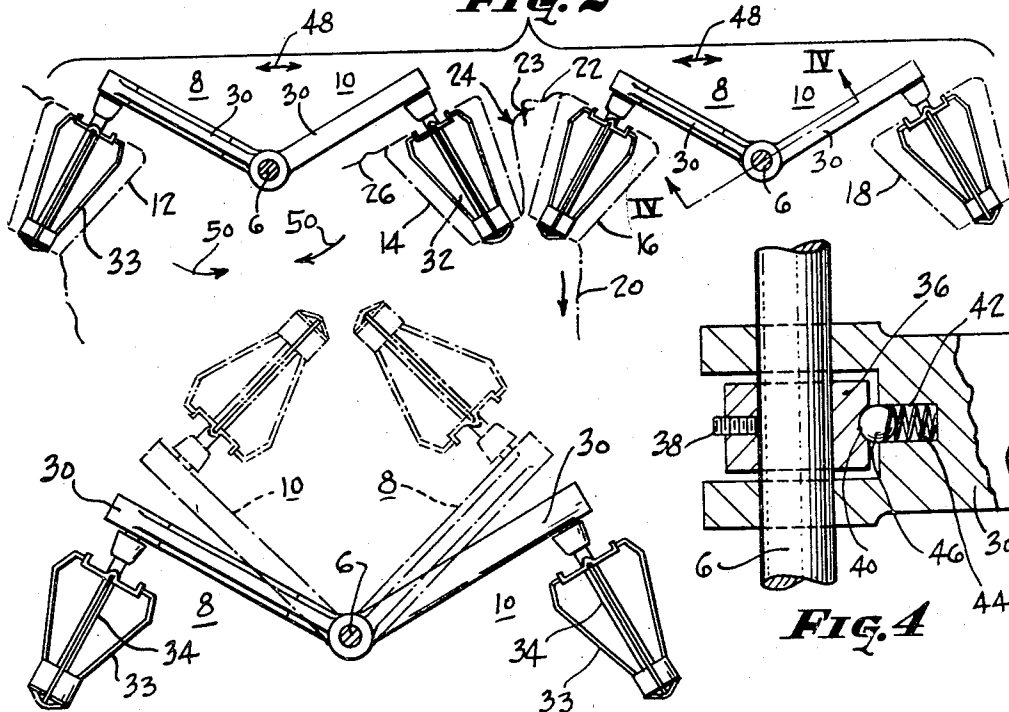


Fig. 3

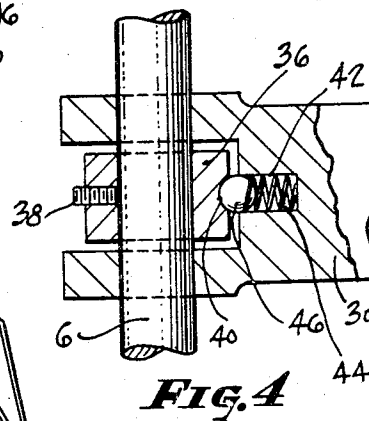


Fig. 4

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ARTICULATED BOBBIN HOLDER

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1 Claim. (Cl. 242—131)

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In the art of weaving, a creel is associated with a warping machine, and each such creel includes a plurality of holders for supporting the required number of paying-off bobbins.

In order to insure a continuous supply of thread from the paying-off bobbins to the weaving machine, the bobbins are grouped in pairs with the leading end of the thread on one of a pair of bobbins connected to the tension casting and, hence, to the warping machine, and with the other, or trailing, end of said thread connected to the leading end of the thread on the other of said pair of bobbins. By this arrangement, when the thread on the first of a pair of bobbins is used up, the second of said bobbins begins to pay off and, in the meantime, the attendant removes the empty first bobbin, puts a new loaded bobbin in its place, and ties the leading end of the thread on the newly-placed bobbin to the trailing end of the thread on said second bobbin, and so on.

The creels are usually elongated and are arranged back to back so as to form an aisle or alley therebetween, through which the attendant has access to the cone holders of the creel so as to replace empty bobbins with loaded ones.

In order to facilitate the work and thus enable an attendant to take care of two relatively large creels, it has been proposed to mount the bobbin holders for rotation about vertical axes to enable the attendant to rotate any desired bobbin holder from its normal position facing the tension casting or the warping machine to a position in which such holder will face toward the attendant, and will thus be more readily accessible.

It is, therefore, the main object of the invention to produce an improved articulated bobbin holder of the type set forth.

A further object is to produce an improved articulated bobbin holder which can be easily moved for the purpose set forth, but which is nevertheless held in its operative position with sufficient firmness to insure against accidental displacement of the holder.

A still further object is to produce a simple, inexpensive and durable articulated bobbin holder, which can be operated by being swung between two fixed positions without the use of any catches or other extraneous devices, and without the exercise of special strength or skill.

A still further object is to produce an articulated bobbin holder in which the operating parts are concealed so as to minimize the danger of entangling or snagging of the thread being paid off the bobbins.

These and other objects are attained by my

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invention as set forth in the following specification and as illustrated in the accompanying drawings in which:

Fig. 1 is a front fragmentary, elevational view of a portion of a creel provided with bobbin holders embodying the invention.

Fig. 2 is a horizontal sectional view on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary view, partly in top plan and partly in horizontal section, illustrating the manner of articulating a pair of bobbin holders.

Fig. 4 is an enlarged, fragmentary, sectional view on line 4—4 of Fig. 2.

In the drawings, there is illustrated a portion of a creel formed of a plurality of uprights 6 which may be of any desired height and which are firmly anchored to a suitable foundation or other support, not shown. The manner in which the uprights are anchored need not be shown, since any suitable means which will prevent displacement of rotation of the uprights may be used.

Each of the uprights 6 carries a plurality of vertically-spaced pairs of bobbin holders 8 and 10 which are adapted to support paying-off bobbins 12, 14, 16, 18, etc. The yarn on these bobbins is fed through suitable guides to tension castings and, hence, to the warping machine, in a conventional manner which need not be shown or described.

In practice, the bobbins are arranged in associated pairs and, as shown in Fig. 2, the leading end 20 of the thread on bobbin 16 is fed, in the direction of the arrow, to the tension casting and to the warping machine, and the trailing end 22 of the thread on the bobbin 16 is tied at 23 to the leading end 24 of the thread on the associated bobbin 14. When the bobbin 16 is empty and while the thread on the bobbin 14 is being paid out, the bobbin 16 is removed, a new, loaded, bobbin is placed on the holder, and the leading end of the thread on the new bobbin is connected to the trailing end 26 of the thread on the bobbin 14. When the bobbin 14 is empty, the process is repeated. By this arrangement, the bobbins of each pair of bobbins pay off thread in alternating order and thus insure a continuous thread supply to the warping machine.

Each of the bobbin holders 8 and 10 is formed of a supporting movable arm 30 and a cone or bobbin-engaging element 32. The structure of the element 32 is not claimed herein and is, therefore, not described in detail. It is now merely pointed out that the element 32 includes a resilient or compressible cage 33 mounted on a shank 34 disposed at a substantially right angle to the

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arm 30. The cage 33 is preferably conical and, because it is compressible, it is adapted for frictionally engaging tubes, bobbins, cones or other thread packages. In order words, the cage 33 can expand or contract, within a given range, so as to accommodate bobbins, cones, etc., of different sizes.

The arms 30 of each associated pair of holders are mounted for independent rotation about the axis of the uprights supporting the holders, as shown in Fig. 3. For this purpose, each of the arms 30 is mounted as follows: A collar 36 is secured to the upright 6 by a set screw 38, the outer end of which extends beyond the circumference of the collar, as shown in Fig. 4. The inner end of the arm 30 is forked to form a yoke or ball, and apertures are provided through the yoke for the passage of the upright 6 therethrough. The apertures in the yoke are not big enough to permit passage therethrough of the fixed collar so that the collar 36 serves to locate the arm 30 on the upright. In assembling the apparatus, a collar is placed between the limbs of the yoke, the upright is passed through the registering apertures provided in the collar 36 and in the limbs of the yoke, and the set screw 38 is tightened to fix the collar on the upright. This prevents movement of the holder longitudinally of the upright but permits the supporting arm 30 to rotate about the axis of the upright.

In order to provide an operating position for the holder and still permit rotation of the arm relative to the upright, the collar is provided with a rounded recess seat 40, and the portion of the inner end of the arm 30 which is between the limbs of the yoke is provided with a recess 42 which houses a compression spring 44. A ball 46 positioned between the spring and the collar 36 completes the assembly.

By this arrangement, the ball 46, pressed by the spring 44, will at all times frictionally engage the collar 36 and will thus prevent free or unintended rotation of the arm 30 relative to the upright 6. The seat 40 is so located that when the ball 46 engages said seat, the corresponding arm 30 will occupy one of the positions shown in Fig. 2, it being understood that when the arm 30 is rotated in either direction relative to the upright 6, the ball 46 will be out of registration with the seat 40 and will ride on the collar 36. The registration of the ball 46 with the seat 40 locates the normal operating position of the arm 30 relative to the upright 6 and also insures against unintended movement of the arm from said position.

Operation

As shown in Figs. 2 and 3, the attendant moves back and forth, in the direction of the arrows 48, or behind a creel formed of any desired number of uprights set up in a row, and constantly replaces empty bobbins with loaded ones in the manner above set forth. In order to do this with bobbin holders embodying the invention, the operator grasps the desired arm and rotates it in such a fashion as to cause the particular

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cone holder to face the operator or toward the back of the creel. In this position, the empty bobbin is replaced by a loaded one and the arm 30 is pushed back to the position of Fig. 2.

For example, when the bobbin on the holder 10 is empty, the arm 30 of this holder is rotated, in counterclockwise direction, from the solid to the dotted line position of Fig. 3 and, after the empty bobbin has been replaced with a loaded one, the arm 30 is pushed back from the dotted to the solid line position. When the bobbin on the holder 8 is empty, the same operation, but in reverse order, is carried out, all as shown in solid and dotted lines in Fig. 3.

In the event that one or both of the arms 30 are rotated in the direction of the arrows 50 in Fig. 2, the projecting ends of the set screws will abut the inner ends of the arms 30 and will serve as stops to limit the movement of the holders in the directions of the arrows or towards a meeting point in front of the creel.

From the foregoing, it will be seen that by my improved construction, the bobbin holders are provided with a fixed operating position and are movable without any skill and with little effort to a position in which empty bobbins may be easily and rapidly replaced with loaded ones. Also, it will be noted that the springs are wholly concealed and that the accessible surfaces are smooth and uninterrupted, so as to minimize the danger of entanglement and swaging, and that no extraneous and separately operable parts are employed for locking or for permitting movement of the holders.

What I claim is:

In a creel, a fixed upright, a bobbin holder including a supporting arm and a bobbin-engaging element carried at one end of said arm, and means for positioning said holder on, and permitting rotation of said holder relative to, said upright, said means comprising a yoke formed at the other end of said arm, a collar between the limbs of said yoke, there being registering apertures in said collar and in said limbs of said yoke for passage therethrough of said upright and the outside diameter of said collar being greater than the diameter of the apertures in said limbs of said yoke, means for fixing said collar on said upright, a wall structure forming a rounded seat in the exterior of said collar, there being a recess formed in the end of said arm adjacent said yoke, a coil spring in said recess, and a ball intermediate said spring and said collar for yieldably pressing said ball against said collar to resist movement of said arm relative to said upright, said seat being so located with reference to said upright that when said ball engages said seat said arm will occupy a first, predetermined position in which said holder and the bobbin thereon will face toward one side of said creel, said arm being rotatable to a second position in which said holder and the bobbin thereon will face toward the opposite side of said creel to enable an operator to remove bobbins from or to replace bobbins on said holders.

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