Nov. 22, 1960 E. C. SCANLON 2,960,905

BRAIDING MACHINE BOBBIN CARRIER

Filed Aug. 18, 1959 3 Sheets-Sheet 1

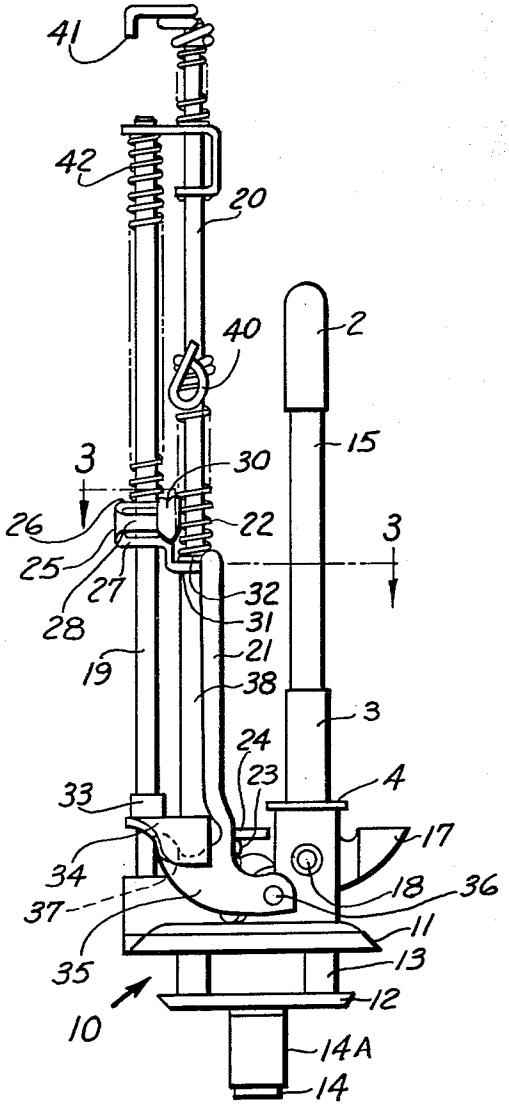


FIG. 1

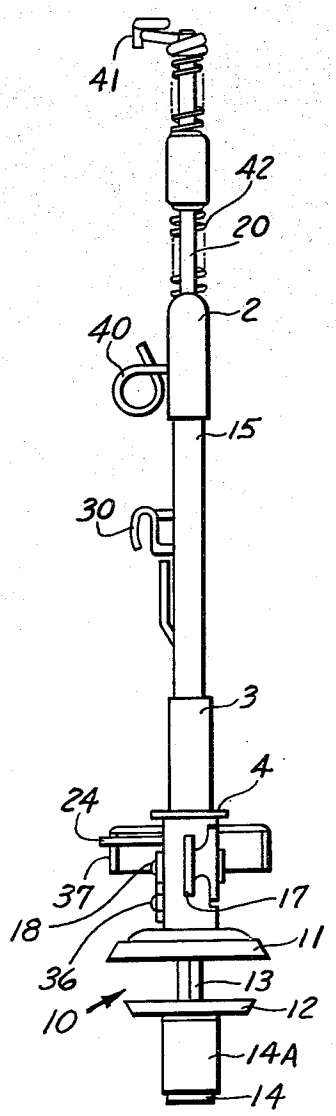


FIG. 2

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BRAIDING MACHINE BOBBIN CARRIER

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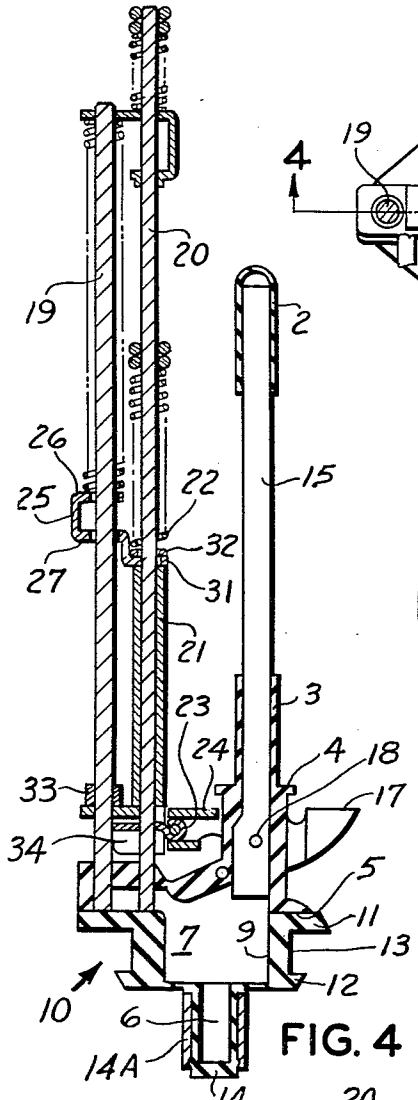


FIG. 4

FIG. 3

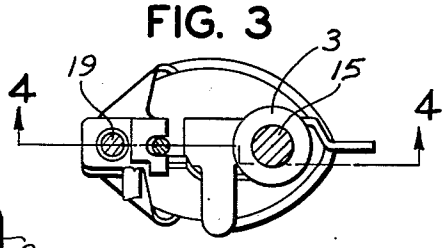
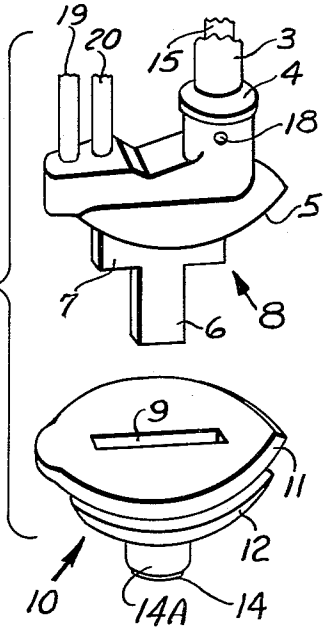


FIG. 5



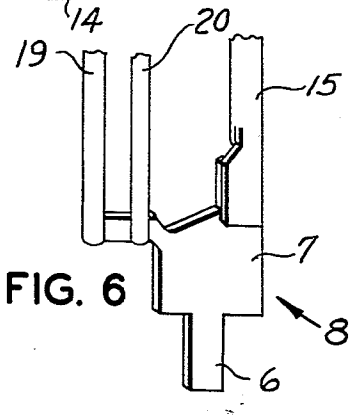


FIG. 6

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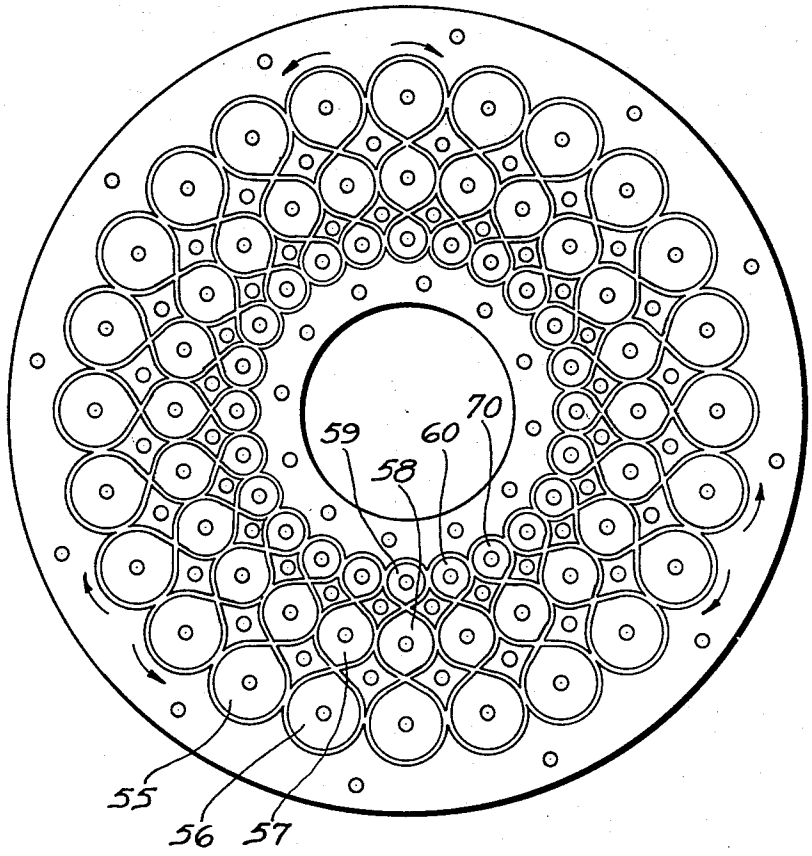


FIG. 7

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BRAIDING MACHINE BOBBIN CARRIER

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4 Claims. (Cl. 87—55)

This invention relates to braiding machines and more particularly to an improvement in the bobbin carriers thereof.

One of the objects of the present invention is to provide an improved bobbin carrier for braiding machines of the type wherein a series of bobbin carrier units for the yarn packages travel in two defined continuous tracks around horn gears arranged in a circle. The tracks following approximately the pitch lines of the gears which cross each other at each point where the gears intermesh. Accordingly, a plurality of concentric circles of horn gears are provided, with each gear in the outer circle intermeshing with a gear in the inner circle or with a gear in an intermediate circle which meshes with a gear in the inner circle. Where there are several intermediate circles, a gear in an outer intermediate circle engages with a gear in an inner intermediate circle. Thus the bobbin carrier travels a tortious path which causes great wear on its channel section. As the channel section wears the bobbin carrier becomes noisy. With a plurality of bobbin carriers in action on each braiding machine and with a great number of braiding machines in a room; a din is created which is sheer noise. The noise effects the efficiency and health of the workers in addition to indicating rapid deterioration of the carrier channel section.

The present bobbin carrier construction was created to reduce noise, reduce wear and to reduce the cost of replacing the worn part and reduce the time it takes to replace a worn part. Thus returning a braider machine to production more quickly then is now possible and in the process create a pleasant noise free atmosphere in which to work.

Other objects of the present invention will become apparent in part and be pointed out in part in the following specification and claims.

Referring to the drawings in which similar characters of reference refer to like parts:

Figure 1 is a side elevational view of the new and improved braiding machine bobbin carrier.

Figure 2 is a right hand end elevational view of Figure 1.

Figure 3 is a plan view partly in section, taken along line 3—3 of Figure 1.

Figure 4 is a transverse cross sectional view taken along line 4—4 of Figure 3.

Figure 5 is a fragmentary exploded perspective view of the channel section and thread tension and bobbin carrier shafts.

Figure 6 is a fragmentary perspective view of the carrier seat.

Figure 7 is a diagrammatic view showing the paths of the bobbin carriers in a braiding machine.

With reference to the drawings, reference numeral 10, generally designates the channel section or base of the yarn carrier having upper flange 11 and lower flange 12 with a web 13 connecting the same for guiding and supporting the yarn carrier and tension means in the sinuous path in the raceway of the braiding machine, the same

being driven by the usual gears engaging the stud 14 provided with a roller 14A. In the present invention channel section or base 10 is provided with an elongated slot 9 for purposes which will presently appear. Channel section or base 10 is fabricated from nylon molded into the desired channel shape, thereby greatly reducing the weight of the base. A carrier of light weight permits a higher running speed and thereby improves the operating efficiency of the braiding machine.

A carrier seat, generally indicated by reference numeral 8, is provided consisting of a T-shaped steel blade having a cross arm 7 and a leg 6. A package spindle 15 is secured to cross arm 7 as by spot welding, brazing, or the like. A pair of guide standards 19, 20 are secured to cross arm 7 as by welding or brazing. A nylon sheathing is molded around the base of spindle 15 and the base of guide standards 19, 20 to form the carrier seat 8 having a channel section or base 10 engaging surface 5, a package seat 4 and a package bearing 3. Cross arm 7, leg 6, and the bases of spindle 15 and guide standards 19, 20 form an anchoring means to which the nylon sheathing is permanently secured. A companion nylon package bearing 2 is provided upon the upper end of spindle 15.

A yarn package (not shown) is mounted upon spindle 15 to rest upon package seat 4 and engage nylon bearings 2, 3 and be governed in its rotation by a latch member 17 pivoted by means of a stud 18 to spindle 15. The stud 18 passes through the plastic sheathing surrounding spindle 15 in this area to provide additional means to secure the sheathing to spindle 15. Guide standards 19, 20 secured to cross arm 7 are horizontally aligned with spindle 15.

The thread tensioning mechanism herein illustrated is the same as that shown and described in United States Patent No. 1,970,390 issued to Frank Mossberg on August 14, 1934, and is used by way of illustration and not limitation. It is used to give one illustration of a complete bobbin carrier.

A latch lift 21 is slidable upon the rod or standard 20 and is forced downwardly by means of a spring 22, encircling the rod 20. The latch lift has a finger 23 to engage beneath the lip 24 of the latch member 17 to raise the same in controlling the let-off action of the yarn. A tension weight member 25 is formed into a U shape having portions 26 and 27 provided with openings to receive the guide standard or rod 19 and slide therealong, and from a bridge portion 28 of this weight there extends a finger 30 in the form of a hook beneath which the yarn extends. This weight is also provided with an arm 31 which engages the lip 32 of the latch lift 21 to raise the same, and also provides an abutment for purposes hereinafter mentioned.

A stop 33 slidably engages the rod 19 and is provided with a flange 34 which when in lowered position, will engage the stop mechanism of the machine to arrest the portion thereof; and in order that this stop member may be lifted to inoperative position, a support member 35 is pivoted at 36 on the base. A finger 37 of support member 35 engages beneath the stop 33, while an arm 38 extends upwardly from the member 35, as shown in Figure 1, generally vertically and rests against the abutment surface of the arm 31 of the weight to prevent its swinging in a vertical plane about the pivot 36, whereby the stop member 33 is held in raised or inoperative position.

In operation, yarn extends from the package (not shown) through the pigtail guide 40 beneath the tension weight guide hook 30 outwardly through the pigtail guide 41 mounted on the top of rod 20 which extends above the rod 19, the weight being slidable along the rod 19 under action of the tension spring 42 to supply the suffi-

cient amount of tension of the yarn, it being understood that as the tension weight is raised by the yarn to substantially the position illustrated in Figure 1, that it will raise the latch lift **21** and latch **17** to permit rotation of the package upon package seat **4** and package bearings **2** and **3**, and thereby supply additional yarn for use, whereupon the weight will slide along its guide rods to take up this slack, the same being always in contact with the arm **38** to maintain it substantially in vertical position and thus cause the member **35** to support the stop **33**. The nylon package bearings **2**, **3** and nylon seat **4** reduce the drag on the package and therefore upon the yarn to greatly improve the effectiveness of the tensioning mechanism just described.

Figure 7 shows diagrammatically the paths of bobbin carriers in a braiding machine with three co-axial circles of horn gears in which each bobbin carrier unit travels around the outer half of an outer circle gear **55** (Figure 7) then around approximately a quarter of the inner circumference of the next outer gear **56** (Figure 7) then around approximately a quarter of the outer circumference of the intermediate gears **57** in engagement with said gear **56**, then around approximately one quarter of the inner circumference of the next intermediate gear **58**, then around approximately one third of the inner circle gear **59** with which the gear **58** is in engagement, then around the next inner circle gear **60** to the outer circumference of the next inner circle gear **70**. The bobbin carrier then travels from the inner circle of gears to the outer circle in a similar manner.

The friction generated upon channel member **10** in its tortious path of travel would cause the plastic sheath to accumulate heat and thereby wear out quickly. T-shaped steel blade is provided with a leg **6** which projects into slot **9** to absorb and dissipate the heat from the plastic channel member **10** and thereby reduce wear and increase the use of a plastic channel member **10** into a useful and satisfactory life or wear period. In addition channel member **10** is easily attached to and removed from steel leg **6**. Carrier engaging seat **5** rests upon upper flange **11** by weight or force of gravity. Slot **9** accommodating cross arm **7** and leg **6** provides an anchorage against lateral and transverse separation during the operation of the bobbin carrier. The roller **14A** reduces the friction normally encountered by the rigid stud **14**.

Having shown and described a preferred embodiment of the present invention, by way of example, it should be realized that structural changes could be made and other examples given without departing from either the spirit or scope of this invention.

What I claim is:

1. A bobbin carrier for a braiding machine comprising a channel section fabricated from nylon material and consisting of an upper flange, a lower flange and a web connecting the upper and lower flanges, said channel section having an elongated slot, a carrier seat consisting of a metallic blade and a nylon sheathing, and a package spindle fixed to said metallic blade, two guide standards in vertical alignment with each other and with said package spindle fixed to said metallic blade in spaced relation, said nylon sheathing molded around the base of said package spindle, the two guide standards and the top portion of said metallic blade to form said carrier seat engageable and disengageable with the upper flange, said metallic blade removably engaging said enlongated slot to position said spindle and two guide standards in predetermined position upon said channel section and to remove heat from said channel section as said channel section travels in the braiding machine.

2. A two part base for a braiding machine bobbin carrier consisting of a first part molded nylon channel section provided axially with an elongated T-shaped slot and a top surface, a second part carrier seat comprising a T-shaped steel blade formed as a cross arm and a leg, a spindle fixed to one end of said cross arm, two guide standards in spaced relation fixed to the other end of said cross arm, a nylon sheathing molded to the top section of said cross arm and to said spindle and two guide standards at the juncture of said cross arm, and forming a channel section engaging surface which removably engages said top surface of said channel section, said cross arm and leg removably engaging said elongated T-shaped slot to removably secure said T-shaped steel blade in the elongated T-shaped slot in said nylon channel section, said cross arm and leg engaging the elongated T-shaped slot by force of gravity.

3. A two part base for a braiding machine bobbin carrier consisting of a first part plastic fabricated channel section having a lower flange, an upper flange, a web connecting said upper flange and lower flange, a stud projecting downwardly from said lower flange, and a smooth top surface provided on said upper flange, said channel section having an elongated T-shaped slot, a second part comprising a carrier seat having a T-shaped steel blade formed as a cross arm and a leg, a spindle fixed to one end of said cross arm, two guide standards in spaced relation fixed to the other end of said cross arm, and a plastic sheathing molded to the top section of said cross arm and to said spindle and two guide standards in the area where the spindle and two guide standards are fixed to said cross arm, a channel section engaging surface formed as the bottom surface of said plastic sheathing, the lower section of said cross arm and said leg removably engaging said elongated T-shaped slot, said channel section engaging surface resting with the force of gravity upon said smooth top surface, said T-shaped steel blade located in said channel section removing the heat created through friction in said upper flange, lower flange and web through conductivity as said channel section travels through the braiding machine.

4. A two part base for a braiding machine bobbin carrier consisting of a first part fabricated from a non-metallic material into a channel section having a lower flange, an upper flange, a web connecting said upper flange and lower flange, a stud projecting downwardly from said lower flange, a roller, means to rotatively mount said roller to said stud, said channel section having an elongated T-shaped slot with the bottom of said T-shaped slot located in said stud, a second part comprising a carrier seat having a T-shaped metallic blade formed as a cross arm and a leg, a vertical spindle fixed to one end of said cross arm, two vertical guide standards in spaced relation fixed to said cross arm, and a non-metallic sheathing covering approximately the top half of said cross arm and the base of said spindle and the base of said two guide standards, the sheathing forming a bearing and a bobbin seat on said spindle, said carrier seat engaging and disengaging said upper flange, the lower half of said cross arm and said leg removably engaging said elongated T-shaped slot with the bottom of said leg located in the bottom of said elongated T-shaped slot, said T-shaped metallic blade through conduction removing frictionally generated heat from said channel section and said carrier seat and providing means to place said carrier seat in predetermined position upon said channel section.

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