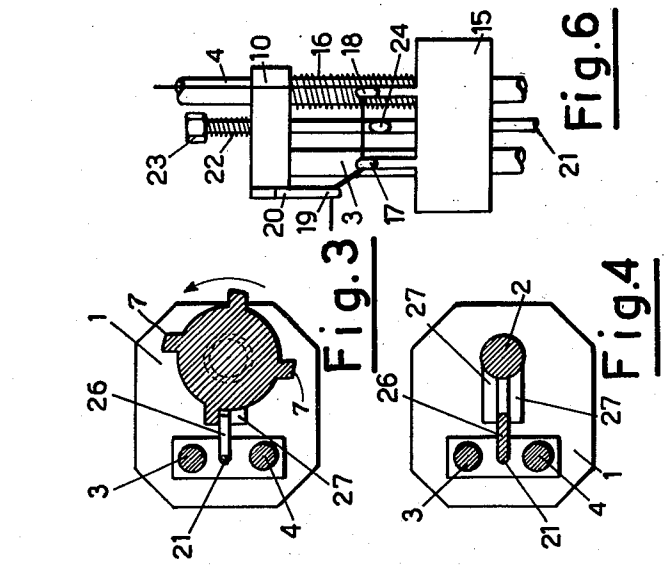
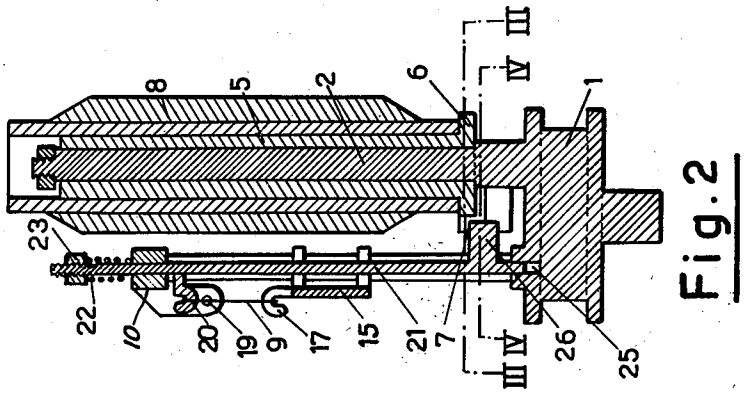
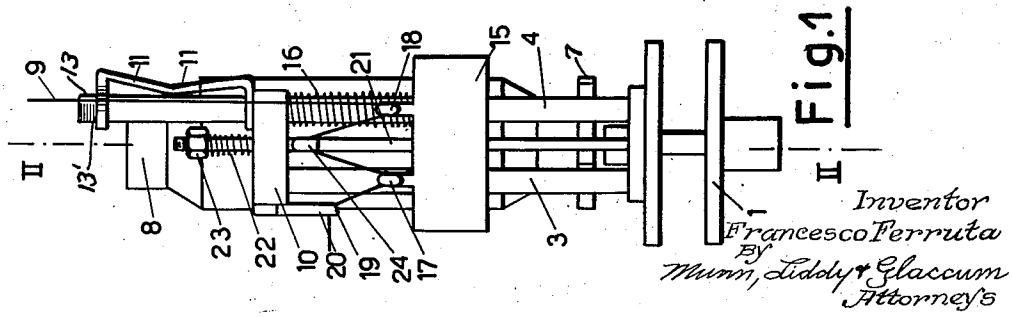
Dec. 18, 1951 F. FERRUTA 2,579,142

CARRIER FOR BRAIDING MACHINES

Filed April 9, 1948 2 SHEETS—SHEET 1

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CARRIER FOR BRAIDING MACHINES

Filed April 9, 1948 2 SHEETS—SHEET 2

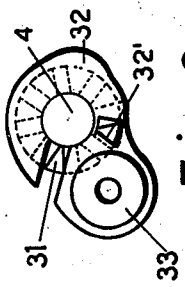


Fig.9

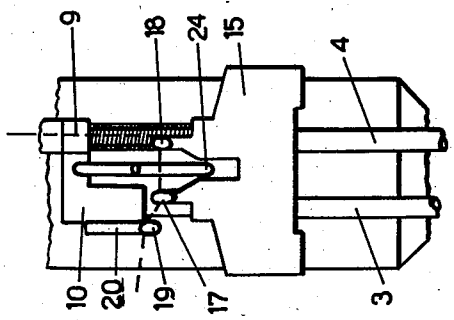


Fig.8

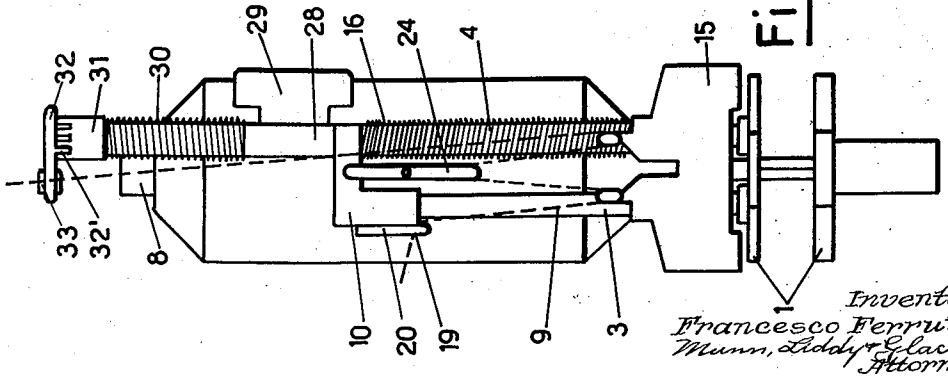


Fig.7

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# UNITED STATES PATENT OFFICE

2,579,142

## CARRIER FOR BRAIDING MACHINES

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6 Claims. (Cl. 87—22)

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The present invention refers to carriers for braiding machines, and more particularly to devices for providing a practically constant tension of the thread fed by the spool on the carrier.

One of the objects of the present invention is to provide a carrier for braiding machines in which the thread tension is kept at a practically constant value by a thread tension member the travel or displacement of which is particularly reduced.

Another object of the invention is to provide a carrier for braiding machines in which the danger of breaking the thread due to friction with the thread tension member or the sudden variation of thread feeding rate is considerably reduced with respect to the known carriers.

Still another object of the invention is to provide a carrier for braiding machines in which the friction caused on the thread by the thread tension member can assume different rates in correspondence to different positions of the thread tension member depending upon the thread tension.

Another object of the invention is to provide a carrier for braiding machines having a particularly reduced height owing to the reduced stroke of the thread tension member. The above and other objects of the invention will appear more clearly from the following detailed description of some embodiments of the same given by way of examples with reference to the attached drawings in which:

Fig. 1 is a front view of a carrier according to the invention;

Fig. 2 is a sectional view of Fig. 1 through line II—II;

Fig. 3 is a sectional view of Fig. 2 through line III—III;

Fig. 4 is a sectional view of Fig. 2 through line IV—IV;

Fig. 5 is a plan view of a detail of Fig. 1;

Fig. 6 is a fragmentary modification of Fig. 1;

Fig. 7 is a front view of another form of carrier according to the invention;

Fig. 8 is a fragmentary view of the former with the thread tension member in a different position;

Fig. 9 is a plan view of a detail of Fig. 7.

The carrier shown in Figs. 1 to 5 comprises a base 1 having a vertical spindle 2 and spaced vertical short and long standards 3 and 4, respectively. A sleeve 5 is mounted for rotation on the spindle 2. The sleeve 5 has a flange 6 on its lower end, said flange having four radial projections or teeth 7 constituting a ratchet wheel.

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A spool 8 having thread 9 is mounted on the sleeve 5. A block 10 is fixed on the upper end of the standard 3. The standard 4 projects upwardly through the block 10, the latter having a hole therein to accommodate the standard 4. For holding the block 10 in the correct position, use is made of member 11 consisting of a strip of spring metal providing a V shape main resilient portion 11' with lateral upper and lower end portions. The upper end portion of the member 11 has a slot 12 which receives the upper flattened extremity 13 of the standard 4, said upper end portion being entered in notch 13' in the standard 4, and being held therein by reason of the resiliency of the member 11' and the fact that the portion 11' bears on the standard 4 as shown in Fig. 1. A hole 14 in the upper end portion of the member 11 serves as a thread guide in a manner to be explained.

A slide 15 disposed below the block 10 is arranged for up and down movement on the standards 3 and 4. A helical spring 16 surrounds the standard 14 interposed between the block 10 and the slide 15. The slide 15 has two thread guides or hooks 17 and 18. A hole 19 in a depending lug 20 on the block serves as a third thread guide.

The block 10 has a hole therein to slidably accommodate a vertical rod 21. The rod 21 carries a thread guide or hook 24. The lower end of the rod 21 is received in a hole 25 in the base 1. A latch 26 is formed on the rod 21 near its lower end. The latch 26 is disposed between and acted on by wings 27 on the spindle 2. The latch 26 cooperates with the projections 7 on the flange 6 when the rod 21 is moved upwardly by the spring 22, and said latch is disengaged from cooperation with the projections 7 when the rod 21 is forced downwardly by the reaction of the spring 22.

The thread 9 fed from the spool passes through the hole 19, then through the thread guides 17, 24, 18 and 14 to the braiding which is being made.

As it is apparent from the drawing, the slide 15 recovers the excess of thread length during the operation of the carrier and its displacement is the half of the variation of the thread length, due to the path of the thread as shown.

When the slide 15 is near to its uppermost position, the tension of the thread and the corresponding reaction of the spring 16 overcome the reaction of the spring 22 and the rod 21 is lowered causing the latch 26 to disengage from the ratched 6—7, so that the spool turns and delivers a further length of thread.

Fig. 6 shows a variation of the arrangement of

the thread guide 24. In this case the position of this thread guide is below the uppermost position of the thread guides 17 and 18, so that, when the slide 15 rises due to the tension of the thread, the thread guide 24 is relieved from the thread and rises under the action of the spring 22; with this arrangement, of course, the position of the latch 26 on the rod 21 is such as to engage with the ratchet 6—7 when lifted and to disengage therefrom when lowered.

The carrier represented by Figs. 7 and 8 differs from the former ones in that the rod 21 and the latch device are missing and the thread guide 24' is fixed on the piece 10 and is so low as to be relieved from the thread when the slide 15 with the thread guides 17, 18 is in its uppermost position, the thread tension being adjusted in this case by a brake device. When the position of Fig. 9 is reached, the friction on the thread, which has left the guide 24', is considerably diminished and the thread tension overcomes the brake resistance.

The brake device consists of a sleeve 28 loose on the standard 4 and bearing a shoe 29 urged against the thread on the spool 8 by the action of a torsion spring 30 one end of which is fixed to the sleeve 28 and the other end is fixed to a crown bush 31. One of the indentations of said crown bush 31 engages a projection 32' of a plate 32 dovetailed in the top portion of the standard 4 so that the torque of the crown bush urges the plate 32 into engagement with the standard 4, while the plurality of such indentations affords a quick and easy means for obtaining an accurate regulation of the braking action through the spring 30.

Said spring 30, being both under compression and torsion provides for the braking force, keeping the crown bush 31 in engagement with the plate 32 and the plate 32 is forced in connection with the standard 4.

The plate 32 is provided with an eyelet 33 acting as the final thread guide.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. In a carrier for braiding machines a thread spool spindle mounted on a base, a standard on said base, a slide on said standard having two thread guides, three thread guides supported by said standard, for guiding the thread said thread passing through the first of said three guides, then through the first of said two guides, then through the second of said three guides, then through the second of said two guides, and then through the third of said three guides, and resilient means cushioning the upward movement of said slide.

2. In a carrier for braiding machines a thread spool spindle mounted on a base, a standard on said base, a slide on said standard having two thread guides, and three thread guides carried by said standard one of which is positioned below said first mentioned thread guides when said slide is in its uppermost position, and resilient means cushioning the upward movement of said slide.

3. In a carrier for braiding machines a thread spool spindle provided with a ratchet and mounted on a base, a standard on said base, a slide on said standard having two thread guides, three thread guides supported by said standard, said thread passing through the first of said three guides, then through the first of said two guides, then through the second of said three guides, then through the second of said two guides, and then through the third of said three guides, two of said three guides being fixed on said standard and the third being slidable in a direction parallel to said standard, a spring urging said third guide in an upward direction, and a latch engaging said ratchet and operatively connected with said slidable guide.



4. In a carrier for braiding machines a thread spool spindle provided with a ratchet wheel and mounted on a base, a standard on said base, a slide on said standard having two thread guides, three thread guides supported by said standard, said thread passing through the first of said three guides, then through the first of said two guides, then through the second of said three guides, then through the second of said two guides, and then through the third of said three guides, two of said three guides being fixed on said standard and the third being slidable in a direction parallel to said standard, a spring actuated latch to engage said ratchet wheel and connected to said slidable guide, the tension of the thread acting on said last mentioned guide to disengage the latch from the ratchet wheel.

5. In a carrier for braiding machines a thread spool spindle provided with a ratchet wheel and mounted on a base, a standard on said base, a slide on said standard having two thread guides, three thread guides supported by said standard two of which are integral therewith and the third being slidable in a direction parallel to said standard, a spring urging said slidable guide upward to a position below said first mentioned thread guides when said slide is in its highest position, a latch operatively connected with said slidable thread guide and engaging said ratchet wheel when said slidable thread guide is moved down by the thread.

6. In a carrier for braiding machines a thread spool spindle provided with a ratchet wheel and mounted on a base, two vertical rods on said base having different lengths, a piece resting on the end of the shorter standard and provided with a hole for the longer standard, a slide having two thread guides and sliding on said standard below said piece, helical springs on said standards between said piece and said slide for urging the latter downwardly, two thread guides supported by said piece one of which is vertically slidable with respect to said piece, a spring urging said slidable guide upwardly, a latch connected to said slidable guide and cooperative with said ratchet wheel, and a resilient member engaging the longer standard above said piece and comprising a further thread guide.

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