May 9, 1950 T. T. BUNCH 2,506,772

COP-CARRYING DEVICE FOR BRAIDING MACHINES

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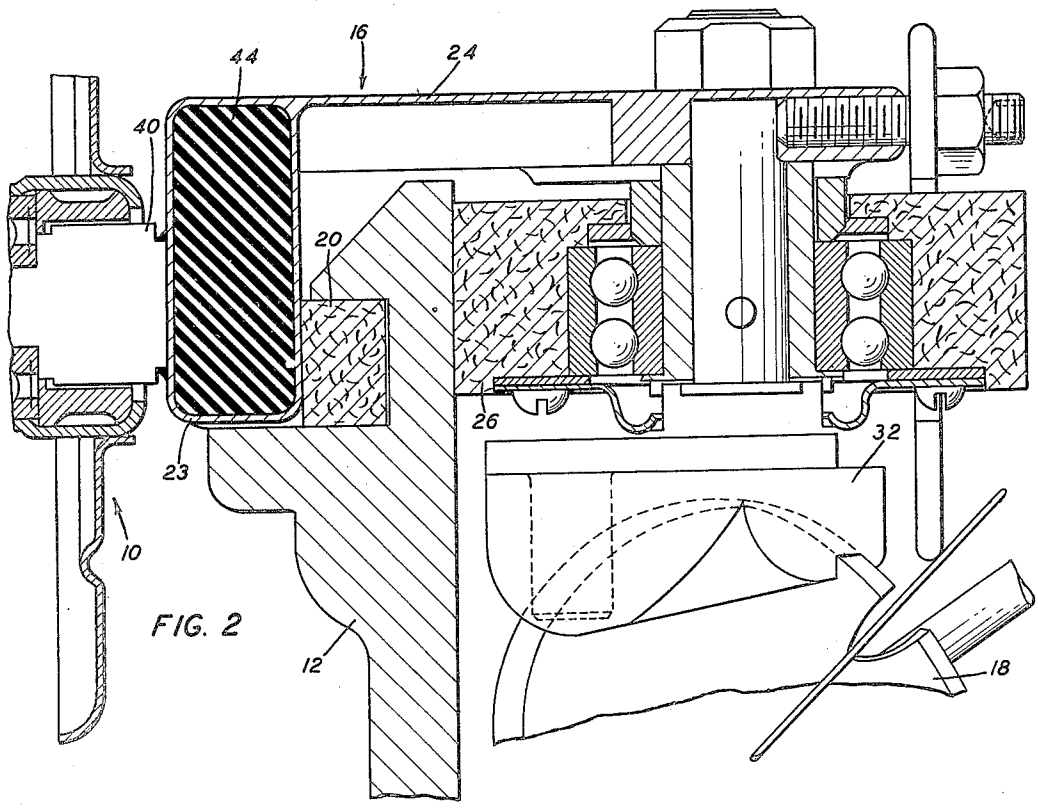


FIG. 2

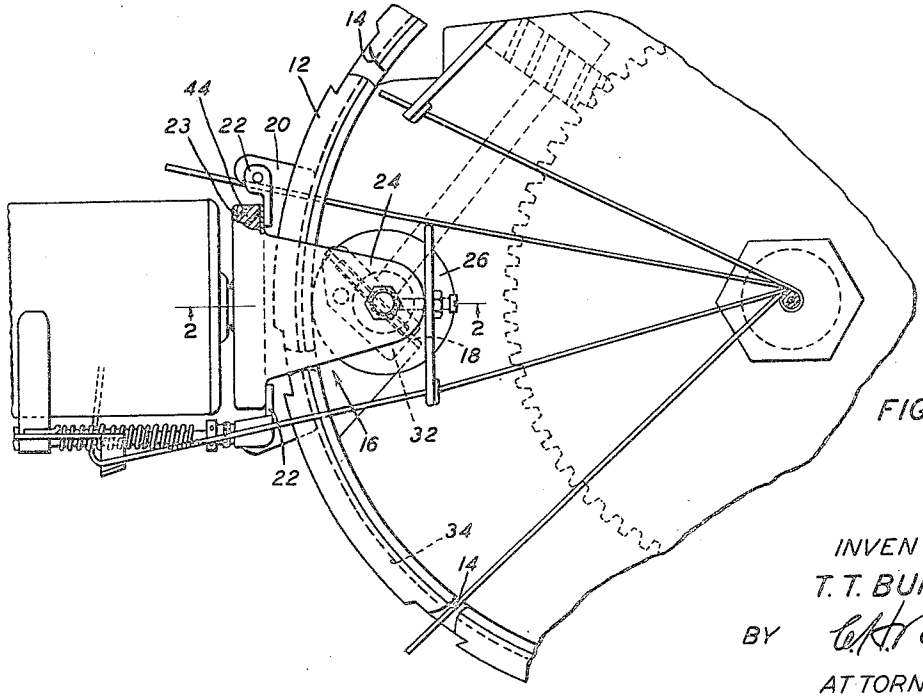


FIG. 1

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COP-CARRYING DEVICE FOR BRAIDING MACHINES

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5 Claims. (Cl. 87—55)

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This invention relates to cop-carrying devices for braiding machines, and has for one of its objects the provision of new and improved cop-carrying devices for braiding machines.

A further object of the invention is the provision of new and improved cop-carrying devices for braiding machines which include vibration-damping means to eliminate fatigue failure of the devices.

In the manufacture of filamentary articles wherein tubular sleeves are formed by braiding a plurality of strands together, cops of such strands are rotated in opposite directions by two groups of cop holders of a braiding machine. In a machine of one type, one of the groups of cop-holders is rotated around an annular guide track, and this group of cop-holders is carried along the guide track by carriers which travel on the guide track. The guide track is provided with a series of slots to provide clearance for the strands of the other group of cop-holders during the interweaving of the strands, and as the carriers are moved over the slots at high rates of speed, vibrations in the carriers and the cop-holders are set up. These vibrations sometimes are great enough to cause fatigue failure of the cop-holders and carriers during a high speed operation thereby causing considerable damage to the braiding machine.

A cop-carrying device illustrative of certain features of the invention includes a cop-holder, a spring for supporting the cop-holder, and an element composed at least partially of vibration-damping material fastened to the spring to damp vibrations thereof.

A complete understanding of the invention may be obtained from the following detailed description of a cop-carrying device forming a specific embodiment thereof, when read in conjunction with the appended drawings, in which:

Fig. 1 is a fragmentary, top plan view of a cop-carrying device illustrative of certain features of the invention, and

Fig. 2 is an enlarged, fragmentary, vertical section taken along line 2—2 of Fig. 1.

Referring now in detail to the drawings, a plurality of cop-holders, illustrated by cop-holder 10, of a braiding machine are moved around an annular guide track 12 having strand-clearing slots 14—14 therein by carriers illustrated by a carrier 16, which are moved along the guide track by mutilated discs, illustrated by a mutilated disc 18. Except for certain features of the cop-holders and the carriers, the braiding machine is substantially identical with those disclosed and

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claimed in G. E. Henning Patent 1,895,462 and G. E. Henning Patent 1,895,463, to which patents reference is made for disclosures of the general features of the machine.

The carrier 16 includes a fiber guide shoe 20 (Fig. 2) carried by lugs 22—22 projecting from a tubular container 23 formed integrally with a channel-like bridge 24. The bridge is connected to a fiber roller 26 and a slotted fiber driving shoe 32. The mutilated disc 18 pushes the driving shoe 32 to move the carrier 16 along the guide track 12 (Fig. 1) at a high rate of speed, and, as the carrier is moved along the guide track, the shoe 20 slides along an outwardly facing groove 34 formed in the guide track, and the roller 26 rolls along the inside of the guide track. When the shoe 20 and the roller 26 are moved past the slots 14—14 in the guide track, vibrations are set up in the shoe, the roller and the bridge 24, all of which are strong enough to not be subject to damage from the vibrations.

The cop-holder 10 includes a mounting arbor 40 (Fig. 2) welded to the tubular container 23, which is formed from flexible spring material and is open at the ends thereof. The container 23 is filled with a filler 44 composed of a cured polymerized chloroprene compound or a similar cured elastomer material, such as a vulcanized rubber or synthetic rubber-like compound, which is highly elastic and which also possesses a high coefficient of internal friction. The filler 44 is sufficiently elastic to permit the spring container to flex from vibrations transmitted thereto by the bridge, but damps the vibrations of the container so much that the vibrations of the container and the mounting arbor 40 are only a small fraction in magnitude of the vibrations which would be set up if the filler were not present.

Operation

In the operation of the braiding machine, the cop-holder 10 and the carrier 16 are moved along the guide track 12 at a high rate of speed, which causes much vibration in the bridge 24. The bridge causes the container 23 to vibrate but the magnitude of the vibrations of the container are kept small by the filler 44, which absorbs a large proportion of the energy of the vibrations. Hence, the cop-holder 10 is vibrated only to a small extent so that there is no danger of fatigue failure thereof. Thus, the risk of fatigue failure as a factor limiting the speed of the braiding machine is eliminated.

The container 23 prevents any vibration of the cop-holder 10 in a plane horizontal, as viewed in

Fig. 2, and transverse to the radius of the braiding machine, which vibration would be detrimental to the braiding operation, but permits damped vibration in a plane vertical and radial with respect to the machine, in which plane the greatest component of the vibrations of the bridge **24** occurs.

The container **23** and the filler **44** prevent the transmission of shocks from the bridge **24** to the cop-holder **10** and also tend to prevent transmission of vibrations to the cop-holder. The container and the filler form a damped resilient connection between the bridge and the cop-holder so that fatigue failure of the elements of the cop-holder are prevented. This damped resilient connection also damps reaction shocks from the cop-holder to the bridge and from the shoe **20** to the cop-holder so that risk of fatigue failure of the elements of the carrier **16** is eliminated.

What is claimed is:

1. A cop-carrying device, which comprises a carrier, a spring formed into a tube and secured to the carrier at one point on the periphery of the spring, a cop-holder fastened to the spring at a second point on the periphery of the spring, whereby the spring fastens the cop-holder resiliently to the carrier, and a filler composed of vibration-damping material mounted in the spring in contact therewith for dissipating vibrational forces on the spring.

2. A cop-carrying device, which comprises a carrier, a spring formed into a tube and secured to the carrier at one point on the periphery of the spring, a cop-holder fastened to the spring at a second point of the spring, a cop-holder fastened to the spring at a second point on the periphery of the spring, whereby the spring fastens the cop-holder resiliently to the carrier, a filler composed of vibration-damping material mounted in the

spring in contact therewith for dissipating vibrational forces on the spring, and a guide shoe carried by the spring.

3. A cop-carrying device for a braider, which comprises a rigid cop-holder, an open-ended, tubular spring for supporting the cop-holder at one portion of the periphery of the spring, a revolvable carrier, a bridge for connecting the spring to the carrier, and a mass of a cured elastomer compound fitting tightly into the tubular spring for damping vibrations of the spring.

4. A cop-carrying device for a braider, which comprises a rigid cop-holder, an open-ended tubular spring for supporting the cop-holder at one point of the periphery of the spring, said spring having lugs formed thereon, a revolvable carrier, a bridge for connecting the spring to the carrier, a mass of vibration-damping material fitting tightly into the tubular spring for damping vibrations of the spring, and a guide shoe secured to the lugs on the spring.

5. A cop-carrying device for a braider, which comprises a rigid cop-holder, an open-ended, tubular spring for supporting the cop-holder at one portion of the periphery of the spring, a revolvable carrier, a bridge for connecting the spring to the carrier, and a mass of a cured polymerized chloroprene compound fitting tightly into the tubular spring for damping vibrations of the spring.

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