

[54] **DEVICE FOR ORIENTING AND ISOLATING ELONGATED WOUND TEXTILE MEMBERS**

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[57] **ABSTRACT**

Device for orienting and isolating elongated textile members, such as cops, for example, includes a receptacle having a circular cross section and at least one insert rotatably mounted in the receptacle and having a surface inclined with respect to the receptacle wall, the rotary insert and the receptacle wall defining a gap therebetween at least over a major part of the periphery thereof, the gap being smaller in width than the diameter of textile members that are to be oriented and isolated.

6 Claims, 4 Drawing Figures

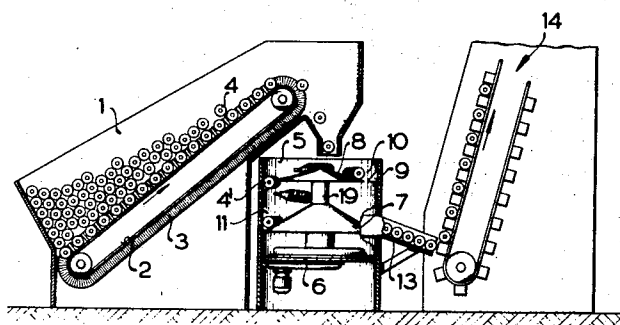
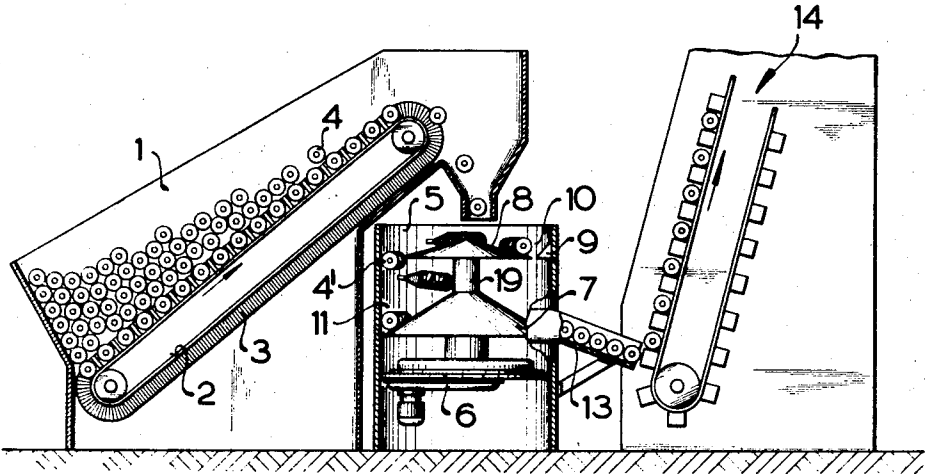
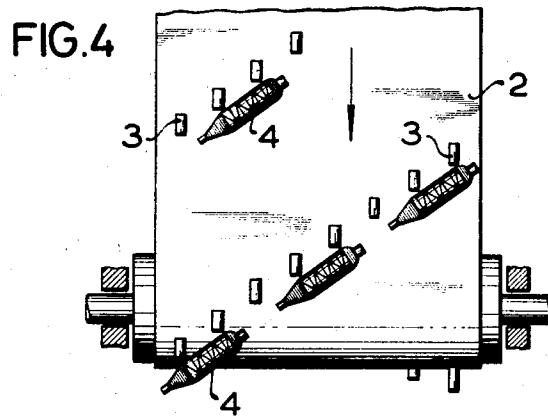
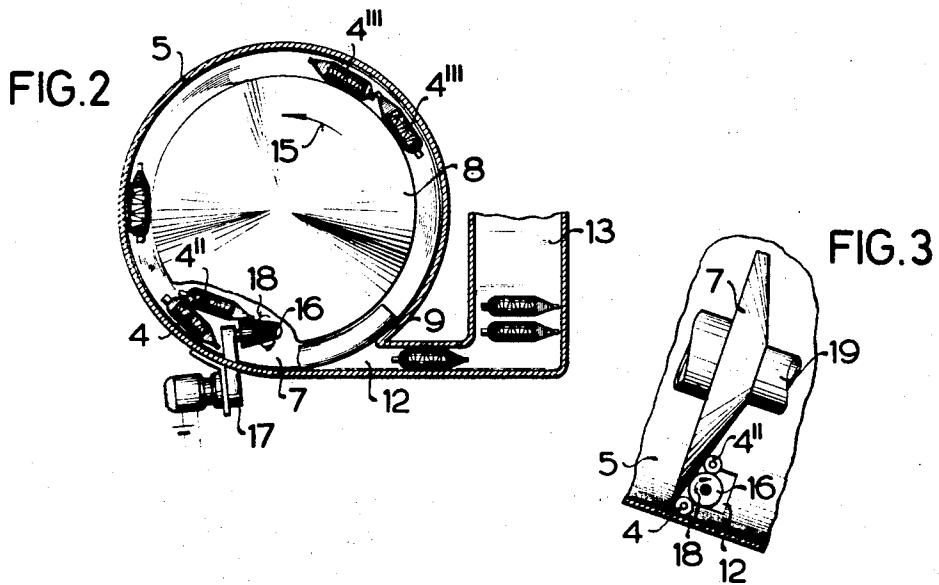


FIG. 1





DEVICE FOR ORIENTING AND ISOLATING ELONGATED WOUND TEXTILE MEMBERS

My invention relates to device for orienting and isolating elongated textile members, such as cops especially, which serve advantageously for supplying the same to automatic quick traverse winding frames.

Devices of this general type have the objective of automatically supplying winding frames with cops or automatic weft winding machines with empty cores for the wound coils. The devices of this general type which have been known heretofore are provided with a lengthy guiding stretch or course, additional means being located downstream of the guiding stretch which isolate the longitudinally guided textile members and deliver them to further processing machines. In devices of this general type the guiding stretch or course must be especially lengthy because care must be taken that a specific reserve of textile members that are to be supplied should be located along the guiding stretch and because the guiding of textile members located one behind the other in the longitudinal direction thereof requires an especially large amount of space. A further disadvantage of the heretofore known device of this general type is that the textile members which closely follow one another along the guiding stretch can slide telescopically into one another.

Devices for orienting and isolating elongated textile members have also been known heretofore wherein, by means of a helically wound screw conveyor, empty coil cores are advanced upwardly out of a tub and the increasing advancing elevation thereof contributes to the isolation of the cores. Such devices can operate only with relatively slow speeds because there is a very great danger of damaging the cores amidst the large quantity of cores due to the helically-shaped worm conveyor. Such a device is especially not useable for orienting and isolating cops because of the possible damage to the layers of yarn wound on the cores of the cops.

It is accordingly an object of my invention to provide device for orienting and isolating elongated textile members, such as, cops especially, which affords a careful, rapid and safe orienting and isolating of the textile members with a minimum of space.

With the foregoing and other objects in view, I provide in accordance with my invention, device for orienting and isolating elongated textile members, such as cops, for example, comprising a receptacle having a circular cross section, and at least one insert rotatably mounted in the receptacle and having a surface inclined with respect to the receptacle wall, the rotary insert and the receptacle wall defining a gap therebetween at least over a major part of the periphery thereof, the gap being smaller in width than the diameter of textile members that are to be oriented and isolated.

The circular receptacle affords the advantage of a space saving construction because a straight guiding stretch of a length corresponding to the periphery of such a receptacle would require approximately three times the length thereof. By providing at least one rotary insert having a surface inclined with respect to the wall of the receptacle and which, for example, can have the shape of a frustum of a cone or the like, and whose spacing from the receptacle wall at least over a major part of the periphery thereof is smaller in width than the diameter of the textile members that are to be

oriented, a guide channel is formed by the receptacle wall and the contour of the rotary insert. The cops dropping onto the rotating insert, whose frustoconical cross sectional contour can be of concave, convex or hemispherically curved construction, pass over the inclined or sloping surface thereof under the cooperative action of centrifugal force and into this guiding channel wherein they assume a position perpendicular to the radius of the receptacle. This position of the cops affords the further advantage that the predominantly conical cop cores, if they are guided along in quantity one behind the other at the receptacle wall, cannot, because of their angular position with respect to one another, slide telescopically point to base within one another so as to be wedged tightly therewithin, as is the case for a straight guiding stretch of the type found in the conventional devices.

By disposing several rotary inserts above one another within the receptacle, in accordance with a further feature of the invention, a graduation or grading in the operation of the orienting and isolating function of my device can be attained. In accordance with a further feature of the invention, and in order to release the textile members, the width of the gap between the rotary insert and the stationary receptacle wall is greater at a predetermined location along the periphery thereof than the diameter of the textile members. A graded or stepwise drop of the individual cops downward to a lowermost rotating insert is thereby achieved.

For further advancing the cops, that are oriented and are revolving between the receptacle wall and the rotary insert, to processing machines, in accordance with another feature of my invention, I provide an opening in the receptacle wall at a predetermined location thereof through which the textile members are dischargeable from the receptacle. In accordance with a further feature of the invention, a duct extends from the opening tangentially to the circular receptacle wall in order to permit an especially easily oriented discharge of the individual cops from the interior of the receptacle.

In accordance with still another feature of the invention, I provide a plurality of inserts disposed above and adjacent one another, the inserts being driven at varying rotary speeds and/or rotary directions. Grades or steps in the speed at which the textile members are supplied to further processing winding machines can thereby be controlled. For this purpose, the lowermost insert may be provided with a disc-like shape and be disposed directly below the insert located above the same. In accordance with a concomitant feature of the invention, I provide at a marginal region of the insert and above the same a rotary member having a rotary axis extending substantially in the rotary direction of the insert, the rotary member having a surface facing the insert and spaced therefrom a distance greater than the diameter of a textile member but not exceeding twice the diameter of the textile member. Due to this construction, in an especially effective manner, jamming of cops disposed parallel to one another in the vicinity of the discharge opening of the receptacle can be prevented. The rotary member permits passage of cops which are guided longitudinally at the receptacle wall while flinging or hurling the cops disposed parallel thereto a direction toward the center of the rotary and

possibly conically shaped insert, so as to thereby obtain for those cops a new and more favorable position in the guiding channel. In accordance with an added feature of the invention, and in order to more surely engage the rejected cops, the surface of the rotary member is provided with longitudinal ribs.

The means for feeding the device for orienting and isolating elongated textile members, such as cops especially, in accordance with my invention can be effected in different ways. In accordance with a specific feature of the invention, I provide a conveyor belt for supplying the textile members to the circular receptacle, the conveyor belt ending above the receptacle and extending at the other end thereof into a case containing a disarray of the textile members. In accordance with still another feature of the invention, the surface of the conveyor belt is provided with entrainers offset from one another in the longitudinal direction of the conveyor belt so that they form diagonal rows with respect to the lateral edges of the conveyor belt. By means of such an arrangement of the entrainers, a continuous advancement of the textile members can be effected even for a very wide conveyor belt and, during the conveying operation, an additional isolating effect is achieved while feeding the cops to the receptacle wherein they are oriented and isolated.

Other features which are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in device for orienting and isolating elongated wound textile members, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention, however, together with additional objects and advantages thereof will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

FIG. 1 is a schematic longitudinal sectional view of a device for orienting and isolating elongated wound textile members in accordance with my invention;

FIG. 2 is an enlarged fragmentary top plan view, partly in section, of FIG. 1 showing the receptacle thereof;

FIG. 3 is a fragmentary view partly in section of the receptacle of FIG. 2; and

FIG. 4 is a fragmentary plan view of the conveyor belt shown on the left-hand side of FIG. 1 and having entrainers disposed thereon diagonally with respect to the side edges of the conveyor belt.

Referring now to the drawing and first, particularly, to FIG. 1 thereof, there is shown a device for orienting and isolating elongated wound textile members which includes a case 1 having a base formed by an inclined endless conveyor belt 2. The conveyor belt 2 is provided with entrainers 3 disposed thereon diagonally with respect to the side edges of the belt 2 (note FIG. 4). Textile members, in the form of cops 4 in the illustrated embodiment, by way of example, are transported by the conveyor band 2 into a receptacle 5 formed with a circular cross section, wherein they are suitably

oriented and isolated. A transmission system 6 is mounted within the receptacle for driving a pair of inserts 7 and 8 in the illustrated embodiment. As can be seen in FIG. 1, the inserts 7 and 8 are a pair of upwardly pointing conical members. In the embodiment of FIG. 1, the conical inserts 7 and 8 are mounted on telescoping shafts that are rotated by a motor M through the transmission system 6 at different rotary speeds. The rotary direction of the insert 8 can be the same as that of the inserts 7 or can be opposite thereto. It can be readily seen that the cops 4 initially drop from the conveyor belt 4 onto the insert 8 and slide from the latter into a guide channel 10 formed by a projection 9 extending from the wall of the receptacle 5 and the insert 8. The cop 4' passes directly through a relatively larger gap at a predetermined location between the part of the stationary receptacle 5 and the rotary insert 8 so as to drop down onto the insert 7 located therebeneath, wherefrom it again slides into a guide channel 11 formed by the part of the stationary receptacle 5 and the bevel or sloping surface of the insert 7. From the guide channel 11, the cops pass through an opening 12 in the wall of the receptacle 5, as shown in FIG. 2, and onto a storage table 13, and can be taken over from there individually by an elevator 14, only partially shown in FIG. 1, and subsequently supplied therefrom to a nonillustrated conventional automatic quick traverse winding frames or the like.

In the view of FIG. 2, the circular receptacle 5, the upper insert 8 and the wall projecting 9 located above the vicinity of the opening 12 formed in the wall of the receptacle 5, and which serves to prevent the cops 4 from falling down onto the lower insert 7 at this location, are readily discernable. FIG. 2 also clearly shows that the cops 4 are guided in the direction of the arrow 15 along the stationary wall of the receptacle 5 toward the opening 12 formed therein. A rotary member 16 provided with longitudinally extending ribs on the surface thereof is mounted at a marginal region of the inserts 8 above the latter and is rotatably driven in the direction of the arrow 18 by a motor through a transmission system 17. Cops which are disposed parallel to one another and which run up to the opening 12 can be effectively separated from one another by the rotary member 16 so as to thereby prevent blocking of the opening 12. The position of the cop 4'' in FIG. 2 illustrates how it can be engaged by the rotary member 16 and flung or hurled inwardly along the bevel or sloping surface of the insert 7. FIG. 3 shows how the cop 4 can pass unhindered in the direction toward the opening 12 in the space defined by the rotary member 16, the stationary part or wall of the receptacle 5 and the insert 7. The cops 4 pass through the opening 12 onto a storage table 13 and from there to an elevator 14 shown in FIG. 1.

The cops 4''' closely following one another as shown in FIG. 2 clearly shown that a telescopic sliding of the cop cores within one another and thereby a binding or jamming of the cops is prevented in the device of my invention due to the disposition of the cops 4''' at right angles to the radius of the circular receptacle 5 which causes axes of the cops 4''' to be disposed at an angle to one another.

In the course of isolating and orienting cops, over a period of time, more or less long thread ends loosen

from the cops and, as individual threads or strands or cord-like shapes are disposed around edges at the vicinity of the discharge opening 12, about the rotary member 16 or about the columns or shafts 19 carrying the inserts 7 and 8. Such accumulations of thread ends can also occur at the reversing locations of the case 1 or of the elevator 14. In order to avoid disturbing effects of these threads ends, severing means in the form of non-illustrated scissors, cutting edges or the like can be disposed in the vicinity of the aforementioned locations.

In the fragmentary top plan view of a conveyor belt 2 shown in FIG. 4, the entrainers 3 are readily discernable as being disposed in offset relationship to one another in the longitudinal direction of the conveyor belt 2 so as to form diagonal rows with respect to the lateral edges of the conveyor belt 2. It is also believed readily apparent from FIGS. 1 and 4 that a thus disposed row of entrainers causes the cops 4 which are advanced upwardly by the conveyor belt 2 to be fed in succession and not simultaneously to the receptacle 5.

I claim:

1. Device for orienting and isolating elongated textile members, such as cops, for example, comprising a receptacle having a circular cross section, a plurality of inserts mounted above one another in said receptacle and being rotatable at varying rotary speeds, at least one of said inserts comprising an upwardly pointing, substantially conical member having a surface inclined with respect to the receptacle wall, said rotary inserts and said receptacle wall defining a gap therebetween at least over a major part of the periphery of said receptacle wall, said gap being smaller in width than the diameter of textile members that are to be oriented and isolated.

2. Device for orienting and isolating elongated textile members, such as cops, for example, comprising a receptacle having a circular cross section, a plurality of inserts mounted above another in said receptacle and being rotatable in different rotary directions, at least one of said inserts comprising an upwardly pointing, substantially conical member having a surface inclined with respect to the receptacle wall, said rotary inserts and said receptacle wall defining a gap therebetween at least over a major part of the periphery of said receptacle wall, said gap being smaller in width than the diameter of textile members that are to be oriented and isolated.

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3. Device according to claim 2, wherein said inserts are also rotatable at varying rotary speeds.

4. Device for orienting and isolating elongated textile members, such as cops for example, comprising a receptacle having a circular cross section, and at least one insert comprising an upwardly pointing, substantially conical member rotatably mounted in said receptacle and having a surface inclined with respect to the receptacle wall, said rotary insert and said receptacle wall defining a gap therebetween at least over a major part of the periphery of said receptacle wall, said gap being smaller in width than the diameter of textile members that are to be oriented and isolated, and a rotary member located in said receptacle at a marginal region of said insert and above the same, said rotary member having a rotary axis extending substantially in the direction of rotation of said insert, said rotary member having a surface facing said insert and spaced therefrom a distance greater than the diameter of the textile members that are to be oriented and isolated by the device but not exceeding twice the diameter of the textile members.

5. Device according to claim 4, wherein the surface of said rotary member is formed with longitudinal ribs.

6. Device for orienting and isolating elongated textile members, such as cops for example, comprising a receptacle having a circular cross section, and at least one insert comprising an upwardly pointing, substantially conical member rotatably mounted in said receptacle and having a surface inclined with respect to the receptacle wall, said rotary insert and said receptacle wall defining a gap therebetween at least over a major part of the periphery of said receptacle wall, said gap being smaller in width than the diameter of textile members that are to be oriented and isolated, a conveyor belt for supplying the textile members to said circular receptacle, said conveyor belt ending above said receptacle and extending at the other end thereof into a case containing a disarrayed quantity of the textile members, said conveyor belt being provided on the upper surface thereof with groups of individual entrainers offset from one another in the longitudinal direction of said conveyor belt so as to form a diagonal row of each group of said entrainers with respect to the lateral edges of said conveyor belt.

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