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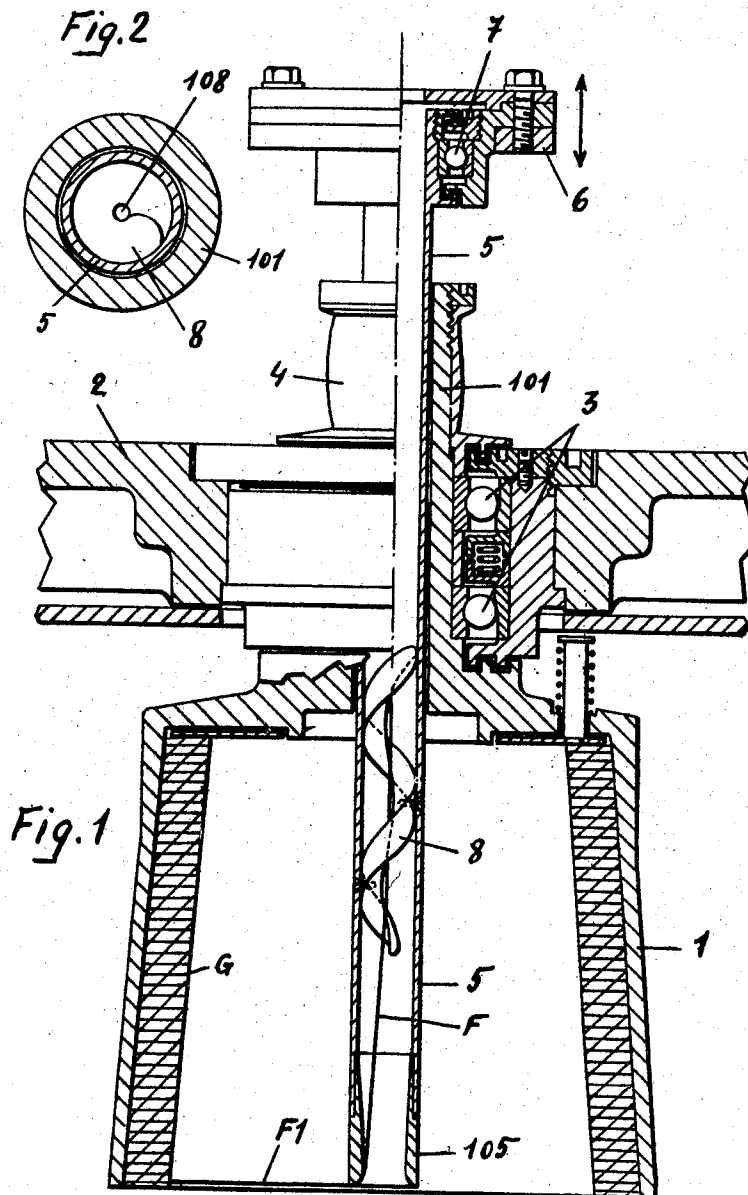
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CENTRIFUGAL CAN SPINNING UNITS

Filed Jan. 17, 1956

2 Sheets-Sheet 1.



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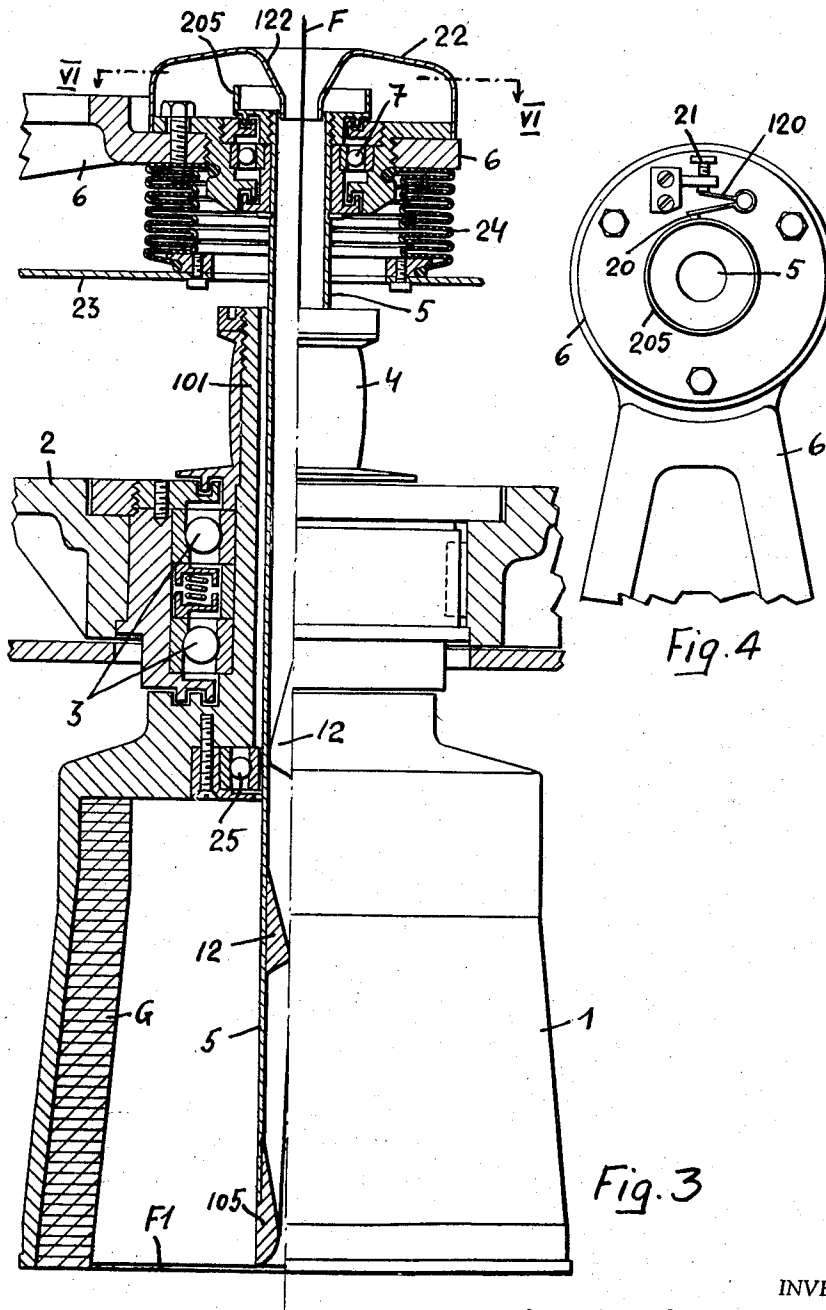
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1

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CENTRIFUGAL CAN SPINNING UNITS

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5 Claims. (Cl. 57—77)

This invention relates to centrifugal can-spinning units, to be fitted on frames particularly adapted for spinning long and coarse fibers such as hemp, flex, jute, sisal and the like, and which comprise a rapidly rotating centrifugal spinning can and a tubular thread guide projecting into said can.

In the conventional spinning cans provided with a non-rotatable thread guide, when, for some reason, a thick and strong threaded cannot pass freely between the draw head and the spinning can, and does not break, due to the rapid revolution of the spinning can, the spun thread which had been coiled against the can wall is uncoiled and winds itself upon the thread guide. In such events the spinning must be interrupted, the can must be emptied and the thread which was wound on the thread guide must be taken away. These operations necessitate long interruptions in the spinning operation.

This re-winding of the thread on the thread guide is particularly detrimental in spinning frames provided with suspended spinning cans. In fact, in these frames the thread guide passes through the neck of the spinning can, whereby a reciprocating motion is imparted to either the guide or the can. Thus, if during such reciprocating movement the thread winds itself on the thread guide, a thread bead is formed on said guide, which comes either to abut against the spinning can bottom or becomes tightly clamped within the can neck and causes heavy mechanical damages.

The coiling of the thread on the thread guide comes to happen particularly often in can spinning frames in which the thread guide is provided with friction surfaces, which serve for smoothing and equalizing the thread. In fact, as these frames serve for spinning strong and rough fibres, it happens sometimes that knots, fiber lumps or the like come to be entangled between the friction surfaces and thus interfere with the free passage of the thread.

Now, according to the invention, these drawbacks are overcome by constructing the thread guide in such a manner as to provide, at least at its outlet end, an outer wall which is rotatably mounted about the thread guide axis and can be driven by the spinning can indirectly, viz. by the thread section which is tensioned between the thread guide and the spinning can. By this means, the rotatably mounted outer wall of the thread guide does not rotate while the spinning process is regular, but it is driven by the same spinning can through the thread, as soon as the passage of the thread through the thread guide is braked, as by knots, or lumps on the thread.

According to a second embodiment, the outer wall of the thread guide is coupled directly with the spinning can and thus rotates always with this latter during the normal spinning.

The rotatable outer wall of the thread guide can be either integral with the inner wall, and in this case the whole thread guide is rotatably mounted, or the thread guide proper is fixed, at least in its upper section, while its outer and/or lower tubular part is rotatably mounted.

2

The invention will be better understood from the following specification of some preferred embodiments, which are reported only by way of non limiting example in the attached drawings, in which:

5 Figure 1 is a longitudinal section through a first embodiment of the invention;

Figure 2 is a cross section through the neck of the spinning can shown in Figure 1;

10 Figure 3 shows one half in axial section and one half in side view a variation of the embodiment shown in Figure 1, and

Figure 4 is a plan view on line VI—VI of Figure 3 and shows the top part of the thread guide.

15 In the drawings, 1 is a bell-like centrifugal spinning can which is provided at its top with a neck 101 by means of which it is suspended to ball or like bearings 3. The can is driven by means of belt pulley 4 fastened to an upper part of said neck 101.

20 In the embodiment shown in Figures 1 and 2, through the can neck 101 a tubular thread guide 5 is inserted which extends into the can 1 and is idly mounted on ball or like bearings 7 fastened in a vertically reciprocating supporting bar 6.

25 The inside of the thread guide 5 is provided with friction surfaces which serve for equalizing and smoothing the thread during its spinning and for keeping same in its middle.

30 According to Figures 1 and 2 these friction surfaces consist of a coreless helical rib 8 which leaves in correspondence of its axis a substantially narrow bore 108 (see Fig. 2). The thread F to be spun passes through said bore 108 and thus it comes into contact with the inner edges of the helical member 8, and thus it is smoothed and the outstanding fibers are caused to adhere to the thread. This smoothing is particularly useful by the centrifugal spinning of long and rough fibers and particularly whenever substantially thin threads should be produced.

35 The thread guide 5, during the normal spinning, does not revolve, but is only reciprocated. If however the sliver F presents some knot or bulging portion which cannot pass freely through the axial passage 108 of the helical rib 8, and the thread, due to its strength, does not break, the rotatable thread guide 5 is entrained in rotation by the spinning can 1 in the same direction and at substantially the same speed as this latter by means of the radial thread section F1 extending between the guide 5 and the thread part G coiled within the spinning can 1 and thus the said coiled thread G cannot be uncoiled and rewound on the thread guide 5.

40 The embodiment shown in Figures 3 and 4 correspond substantially to that shown in Figure 1 but the friction members consist of ribs 12 projecting at short intervals from many sides at least to the thread guide axis. In order to avoid, during normal spinning, entrainment of the thread guide by the spinning can, a brake is provided which, in the embodiment as shown, comprises a cylindrical flange 205 fitted at the upper end of the outer rotatable member 5 of the thread guide and a braking shoe 20 which is pressed, as by a V-shaped leaf spring 120 against said flange 205. The force of this spring 120 may be regulated by a screw 21, so as to avoid that the thread guide rotates under normal spinning conditions, but is caused to rotate together with the spinning can whenever the thread, due to the pressure of some bulging part, cannot pass freely through the thread guide.

45 In order to avoid that the sliver being spun frictionally engages the top edge of the thread guide, an inlet member 22 is fitted whose funnel-shaped central portion 122 opens into the top of the thread guide bore. The upper section of the thread guide may be protected at the outside by a bellows-like flexible sleeve 24 arranged

between the upper supporting bar 6 and a sheet metal guard 23 arranged above the pulley 4.

In some cases it may be convenient to arrange a further bearing 25 near the bottom of the spinning can, in order to better support the thread guide.

Of course, it is possible to fit a brake even to the embodiments shown in Figures 1 and 2.

It may be mentioned also that the thread guide might be made of two straight axially aligned sections of which only the lower section viz. the part which projects into the can, is rotatably mounted so as to revolve in the same direction and substantially at the same speed as the spinning can, in order to avoid uncoiling of the thread coiled within the can and recoiling thereof of the thread guide.

We claim:

1. In a centrifugal can-spinning unit comprising: a bell-like rotatably suspended centrifugal spinning can having a closed top with an axial bore; means for driving said can at selected high speed, movable supporting means reciprocal towards or away from said spinning can, a straight tubular thread guide mounted on said supporting means and slidably traversing said axial bore and projecting in part into said spinning can, at least the part of the straight thread guide which projects into the said can being idly rotatable, thread-engaging friction surfaces in said rotatable thread guide part, and said tubular guide being traversed by a bore provided with ribs extending from many different sides at least to the thread guide axis.

2. In a centrifugal can spinning unit according to claim 1, means for rotatably mounting the whole straight thread guide on said movable supporting members.

3. In a centrifugal can-spinning unit comprising: a bell-like rotatably suspended centrifugal spinning can having a closed top with an axial bore; means for driving said can at selected high speed, movable supporting means reciprocal towards or away from said spinning can, a straight tubular thread guide mounted on said supporting means and slidably traversing said axial bore and projecting in part into said spinning can, at least the part of the straight thread guide which projects into the said can being idly rotatable, thread-engaging friction surfaces in said rotatable thread guide part, and the driving connection between said straight thread guide and the said spinning can being established by the thread section tensioned between the thread guide outlet and the thread coiled in the spinning can so that the rotatable part of said thread guide is rotated each time said tension becomes excessive due to a hindrance to the free passage of the thread through the thread guide.

4. In a centrifugal can-spinning unit comprising: a bell-like rotatably suspended centrifugal spinning can having a closed top with an axial bore; means for driving

said can at selected high speed, movable supporting means reciprocal towards or away from said spinning can, a straight tubular thread guide mounted on said supporting means and slidably traversing said axial bore and projecting in part into said spinning can, at least the part of the straight thread guide which projects into the said can being idly rotatable, thread-engaging friction surfaces in said rotatable thread guide part, the driving connection between said straight thread guide and the said spinning can being established by the thread section tensioned between the thread guide outlet and the thread coiled in the spinning can so that the rotatable part of said thread guide is rotated each time said tension becomes excessive due to a hindrance of the free passage of the thread through the thread guide, and means for braking the rotation of said rotatable thread guide part.

5. In a centrifugal can-spinning unit comprising: a bell-like rotatably suspended centrifugal spinning can having a closed top with an axial bore; means for driving said can at selected high speed, movable supporting means reciprocal towards or away from said spinning can, a straight tubular thread guide mounted on said supporting means and slidably traversing said axial bore and projecting in part into said spinning can, at least the part of the straight thread guide which projects into the said can being idly rotatable, thread-engaging friction surfaces in said rotatable thread guide part, the driving connection between said straight thread guide and the said spinning can being established by the thread section tensioned between the thread guide outlet and the thread coiled in the spinning can so that the rotatable part of said thread guide is rotated each time said tension becomes excessive due to a hindrance of the free passage of the thread through the thread guide, means for adjustably braking the rotation of said rotatable thread guide part, said means comprising a drum-like part fastened to said rotatable thread guide part, a fixed spring brake having a shoe urged into contact with said drum, and means for adjusting the force of said spring brake.

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