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SLIVER ACCUMULATOR

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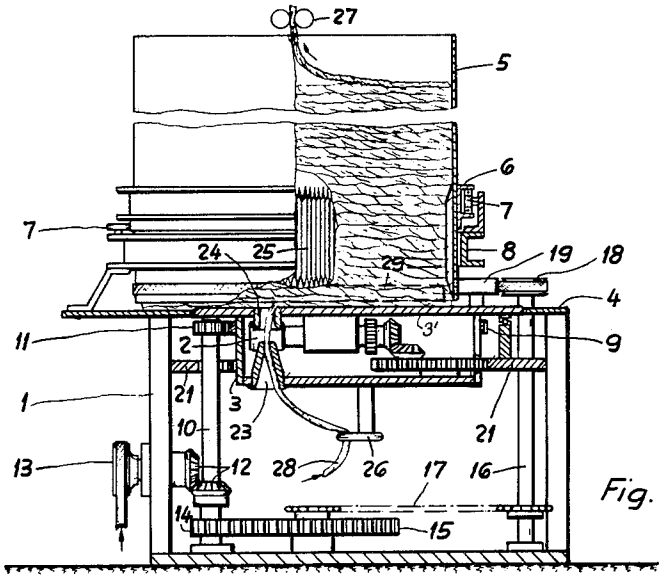

Fig. 1

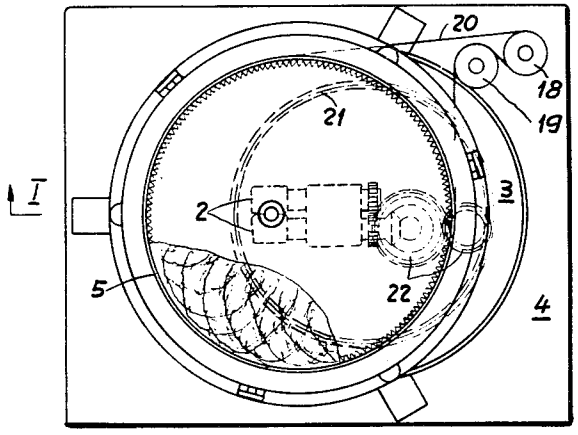

Fig. 2

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SLIVER ACCUMULATOR

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7 Claims. (Cl. 19—159)

The present invention relates to a sliver accumulator which is interposed between two continuously operating preparatory spinning machines, one machine delivering sliver into the accumulator and the second machine receiving sliver from the accumulator, for example, as shown in Patent No. 3,029,477.

Sliver accumulators interposed between two preparatory spinning machines for accumulating sliver received from the first machine, upon stoppage of the second machine and continuing to deliver sliver to the second machine upon stoppage of the first machine, are usually provided with a sliver carrier supporting loops of sliver which are placed by a coiler onto the sliver carrier. The sliver loops slide on the carrier towards the second machine which may continue to receive sliver from the carrier upon stoppage of the first machine. Sliver accumulators of this type require much space and are expensive.

It is an object of the present invention to provide an improved sliver accumulator which is compact, requires a minimum of space, is reliable in operation and requires little supervision.

The sliver accumulator according to the invention is formed by a cylindrical or tubular container rotatable around its longitudinal axis and placed eccentrically adjacent to a coiler which deposits sliver on a circle which is within the circle formed by the sliver container at all relative positions of the sliver container and the coiler. The latter is preferably placed beneath the tubular container and means are provided on top of the tubular container for withdrawing sliver therefrom and delivering the sliver to the location where the sliver is further processed. This arrangement affords a much greater accumulating capacity than conventional sliver accumulators storing the sliver in the form of loops hanging on a carrier, because with the arrangement according to the invention the sliver is placed in spiral windings in the sliver container whereby the windings are closely adjacent and rest on each other without forming unused spaces in the container. With the apparatus according to the invention the sliver is deposited in the rotating sliver container in a manner similar to that of depositing sliver in conventional cans. Due to the increased capacity of the sliver accumulator according to the invention one of the two machines between which the accumulator is arranged may be stopped for one to two hours, for example, to correct operating irregularities.

The novel features which are considered characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, and additional objects and advantages thereof will best be understood from the following description of an embodiment thereof when read in connection with the accompanying drawing wherein:

FIG. 1 is a vertical part-sectional illustration of a sliver accumulating apparatus according to the invention, the section being made along line I—I of FIG. 2.

FIG. 2 is a plan view of the accumulating apparatus shown in FIG. 1.

Referring more particularly to the drawing, numeral 1 designates a frame supporting a coiler 3 provided with

two rollers 2 forming a nip receiving a sliver 28 and rotating in opposite directions for transporting the sliver through the coiler. The coiler moves the sliver in an upward direction in contradistinction to conventional can presses wherein the coiler moves the sliver in a downward direction. Above the coiler and a horizontal plate surrounding same is a rotatable, cylindrical sliver container 5 which is placed eccentrically relative to the coiler 3. The coiler deposits the sliver on a circle which is within the circle formed by the cylindrical wall of the container 5 at all possible positions of the outlet of the coiler.

The container 5 has a lower end adjacent to a horizontal platform 3' forming part of the coiler 3 and rotating therewith. The platform 3' is surrounded by a stationary platform 4. An annular U-shaped rail 6 is placed around the outside of the lower part of the container 5. The rail 6 serves as a guide for a plurality of horizontal and vertical rollers 7 which are supported by a stationary annular support 8 resting on the plate or platform 4.

The coiler 3 has an annular element on which an externally toothed ring gear 9 is mounted. The ring gear 9 is driven by a pinion 11 mounted on a main drive shaft 10. The latter is rotated through bevel gears 12 driven by a pulley 13 which is preferably driven by and operates synchronously with the preparatory spinning machine from which the sliver 28 emerges. A pinion 14 also mounted on the shaft 10 drives a gear wheel 15 which drives by means of a chain 17 a vertical shaft 16 whose upper end is provided with a belt pulley 18. The latter drives a belt 20 tensioned by a tension pulley 19 and placed around the cylindrical container 5 for rotating the container.

A stationary internally toothed ring gear 21 is operatively connected to a set of gears 22 including bevel gears for rotating the rollers 2 in opposite directions. The nip of the roller pair 2 receives sliver through a condenser or inlet 23 and discharges sliver into an outlet 24.

The lower inside portion of the container 5 is provided with a ribbed, knurled or grooved element 25 whose inside diameter is somewhat smaller than that of the container 5. A sliver guide ring 26 is eccentrically connected to the bottom of the coiler 3 for rotation therewith. Adjacent to the upper end of the container 5 is a pair of rollers 27 rotated in opposite directions, for example, by the machine, not shown, which receives sliver from the sliver accumulator. The sliver extends between the two rollers 27 and is drawn thereby out of the container 5.

The device operates as follows:

The sliver 28 emerging from a preparatory spinning machine is guided by the guide 26 and passes therefrom through the inlet condenser 23 into the nip formed by the rollers 2 which transport the sliver in an upward direction through the outlet 24 onto the platform 3' and into the container 5. Spiral deposition of the sliver is effected in a similar manner as is the case in conventional can presses. In order to facilitate formation of a plane spiral on the platforms 3' and 4, when starting the apparatus, a press disc 29 rests on the sliver. When the sliver deposited in the container 5 reaches a certain elevation it is somewhat compressed in radial direction by the element 25 whereby rotation of the fibre spirals by the rotating container is assured. When the sliver deposited in the container 5 reaches a suitable height the free end of the disc 29 is removed and the sliver which rests on top of the accumulated sliver is inserted between the rollers 27 which transport the sliver from the accumulator toward the second preparatory spinning machine. If operation of the machine supplying the sliver is stopped the pulley 13 is at a standstill and so is the coiler 3. The roller pair 27 which is driven by the second machine which is not stopped continues to supply accumulated sliver to the

second machine. Should the second machine be stopped, sliver is accumulated in the container **5** due to continued operation of the first machine and the coiler **3**.

We claim:

1. In combination with two continuously operable preparatory spinning machines, one of which delivers sliver and the second receives sliver delivered by the first machine:

a sliver accumulating apparatus interposed between said two machines and receiving sliver from the first machine and delivering sliver to the second machine, including:

a coiler receiving sliver from the first machine,

a rotatable vertical cylindrical container placed above and eccentrically relative to said coiler and having a bottom end placed to receive the sliver discharged from said coiler through said bottom end, and

means placed at the top end of said container for withdrawing the sliver from said container and delivering the sliver to the second machine.

2. In combination with two continuously operable preparatory spinning machines, one of which delivers sliver and the second receives sliver delivered by the first machine:

a sliver accumulating apparatus interposed between said two machines and receiving sliver from the first machine and discharging sliver to the second machine, including:

a rotatable coiler receiving sliver from the first machine, and

a rotatable vertical cylindrical container placed eccentrically above said coiler and having a lower end receiving the sliver discharged by said coiler through said lower end, the sliver being discharged through the upper end of said container.

3. In the combination defined in claim **2** and wherein said coiler includes a platform rotatable with the coiler, an inlet receiving sliver from the first machine, and an outlet for discharging sliver onto said platform.

4. In the combination defined in claim **2** and wherein said coiler includes a platform rotatable with the coiler for supporting the sliver emerging from said coiler, the lower end of said container being adjacent to said platform.

5. In the combination according to claim **4** and wherein the inside of at least the lower portion of said container is knurled.

6. In the combination according to claim **4** and wherein the inside of at least the lower portion of said container is substantially vertically grooved.

7. In the combination according to claim **4** and wherein the inside of said container has a lower portion having an inside of a smaller diameter than the rest of the inside of said container, the inside of said lower portion being grooved.

References Cited by the Examiner

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