

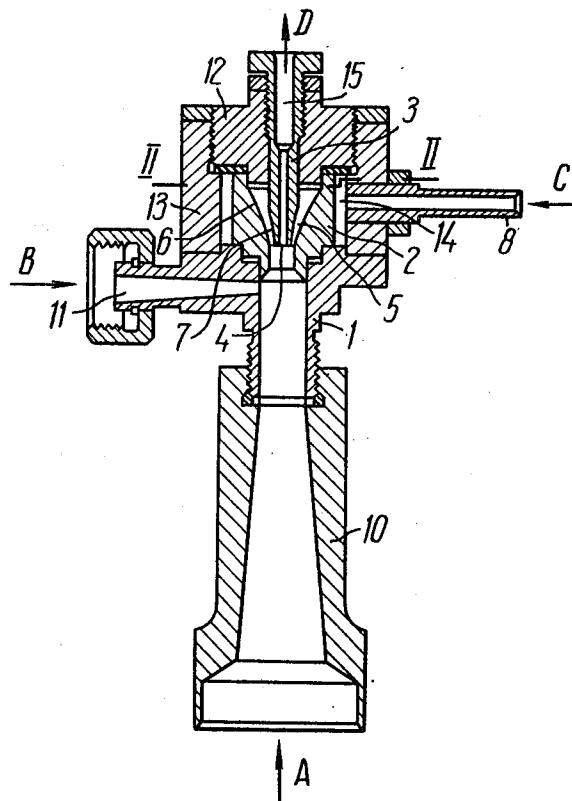
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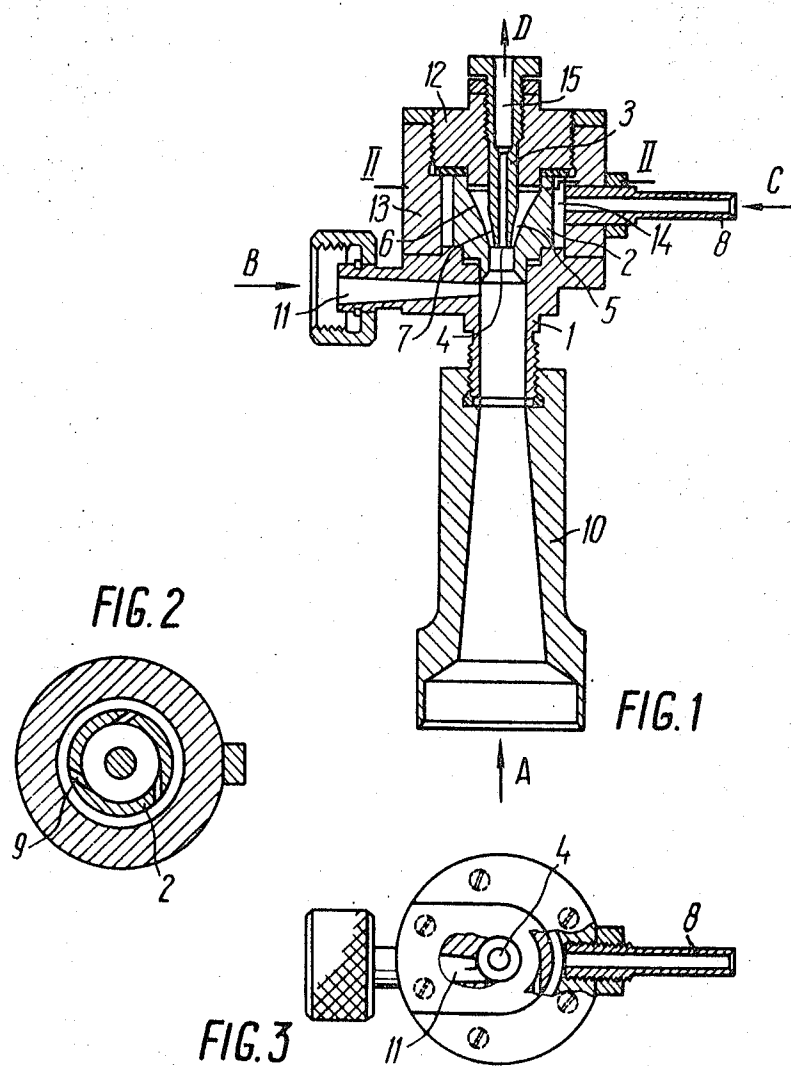
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[54] **DEVICE FOR TWISTING YARN**
3 Claims, 3 Drawing Figs.

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 [51] Int. Cl. D01h 7/00
 [50] Field of Search. 57/34 (B),
 58.89, 58.95

ABSTRACT: A yarn-twisting device is provided in which twisting single fibers fed into a spinning chamber is carried out by using the energy of an air vortex. The device is provided with means for creating an intensive vortical air current and a means ensuring a fine adjustment of aerodynamic spinning conditions.





DEVICE FOR TWISTING YARN

The present invention relates to yarn-producing units and more particularly to a device for producing yarn with twisting and winding performed in two separate operations.

The present invention is most efficient for producing condenser yarn and yarn from medium staple cotton.

Known in the present state of the art are units for producing yarn with twisting and winding performed in two separate operations, in which twisting of single fibers fed into the spinning chamber is carried out by means of the energy of an air vortex and the yarn is delivered through the outlet hole of the chamber.

In devices of this kind tangent channels for feeding compressed air enter directly into the spinning chamber (see, for example, German Pat. No. 1,115,163).

Such a device for creating an intensive vortical air current is not efficient enough and requires great consumption and high pressure of compressed air.

Moreover, only a coarse adjustment of the air vortex intensity may be achieved in this device by vary the parameters of the air being fed into the chamber, such a coarse adjustment being inadequate.

The present invention aims at the provision of a device for producing yarn by an aerodynamic method at a reduced consumption and lower pressure of compressed air.

An important object of the present invention is the provision of a yarn-producing device allowing fine adjustment of the spinning aerodynamic conditions and thus ensuring a high production rate of quality yarn.

The above and other objects are achieved in a device for twisting yarn in which twisting of single fibers fed into the spinning chamber is effected by applying the energy of an air vortex, the yarn being delivered from the outlet hole, and according to the invention a funnel is arranged at the outlet hole so that an annular channel is formed therearound, whose walls are bodies of revolution and a vortical air current is passed through said channel.

It is expedient to make the channel narrow in the direction of the airflow.

Due to the provision of the channel and its specific shape it is possible to obtain a greater intensity of air current as compared with the intensity of the air current in the known devices provided certain airflow rates are properly maintained.

In the device of the invention the funnel may be mounted so as to be axially displaceable.

Such an adjustment ensures variation of the channel cross-sectional area at the outlet of the air current into the spinning chamber, so that a fine adjustment of the aerodynamic spinning conditions is possible.

For a better understanding of the invention, there is given hereinbelow a description of an exemplary embodiment thereof with reference to the accompanying drawing, in which:

FIG. 1 is a longitudinal sectional view of the device according to the invention;

FIG. 2 is a section taken along line II-II of FIG. 1;

FIG. 3 is a view along arrow A in FIG. 1 partly broken away and in section and with parts omitted.

The device for producing yarn comprises a spinning chamber 1 (FIG. 1) into which separate fibers are fed (the direction of fiber movement is indicated by arrow B), a bushing 2 and a funnel 3.

The funnel 3 is arranged at an outlet hole 4 of the chamber 1 so that an annular channel 5 is formed around the funnels, the walls 6 and 7, of channel 5 being bodies of revolution. The

vortical air current fed through a pipe connection 8 (the direction of compressed airflow is indicated by arrow C) passes through the channel 5.

The bushing 2 is provided with tangential channels 9 (FIG. 2) through which the air from the pipe connection 8 enters the channel 5. The bushing may be made integral with the spinning chamber, said channel narrowing in the direction of the air current flowing therethrough.

Such an embodiment makes it possible when certain airflow rates and pressures are maintained to obtain a considerably more intensive vortical air current as compared with other devices known heretofore.

The funnel 3 (FIG. 1) is mounted to be axially displaceable which allows variation of the cross-sectional area of the channel 5 at the inlet of the air current into the spinning chamber 1, thus ensuring fine adjustment of the aerodynamic spinning conditions.

The spinning chamber 1 is attached to a branch pipe 10 (FIG. 1) connected to a fan (not shown in the drawing) serving to create suction in the chamber 1.

The fibers are fed into the chamber 1 via a channel 11 (FIG. 3) disposed tangentially to the spinning chamber 1. The funnel 3 (FIG. 1) is screwed into a bushing 12 fixed in a body 13.

The device operates as follows:

Compressed air is supplied under pressure via the pipe connection 8 into a compressed air chamber 14, from where it passes, through the tangential channels 9 into the annular channel 5 where it is intensively whirled and under the effect of suction in the chamber 1 is drawn into the latter. The air current whirling at a great circumferential speed in the chamber effects twisting of separate fibers supplied via the channel 11 and their formation into yarn.

The produced yarn is delivered along the channel 15 of the funnel 3 (the yarn delivery is indicated by arrow D) and wound into a package.

In case it is necessary to adjust the aerodynamic spinning conditions, the funnel 3 is shifted in the bushing 12, thus changing the cross-sectional area of the channel 5 and, consequently the intensity of the air vortex.

I claim:

1. A device for twisting yarn comprising: a stationary chamber, said chamber having an inlet for the introduction of single fibers, said chamber having an outlet hole for discharge of twisted yarn, means for directing flow of air through said chamber and into said hole, means for producing a vortical air current in said chamber to twist the fibers, the latter means comprising a funnel at said outlet hole having an axial bore for outlet of the twisted yarn, a bushing surrounding said funnel, said bushing and funnel having facing surfaces which are bodies of revolution and define an annular channel around said funnel leading to said chamber in coaxially surrounding relation to said outlet hole, a compressed air chamber surrounding said bushing, means for directing compressed air into said compressed air chamber, said bushing having tangential channels leading from said compressed air chamber to said annular channel whereby compressed air can flow from said compressed air chamber to said annular channel where the air is intensively whirled and thence into said chamber to effect twisting of the fibers and their formation into yarn, said annular channel narrowing in the direction towards said chamber and thus in the direction of airflow in said annular channel.

2. A device as claimed in claim 1 comprising means supporting said funnel and bushing for relative axial displacement to vary the size of said annular channel.

3. A device as claimed in claim 1 wherein said facing surfaces of the funnel and bushing are conical.