

July 10, 1962

J. NOGUERA

3,043,083

RING SPINNING FRAMES

Filed Feb. 24, 1960

2 Sheets-Sheet 1

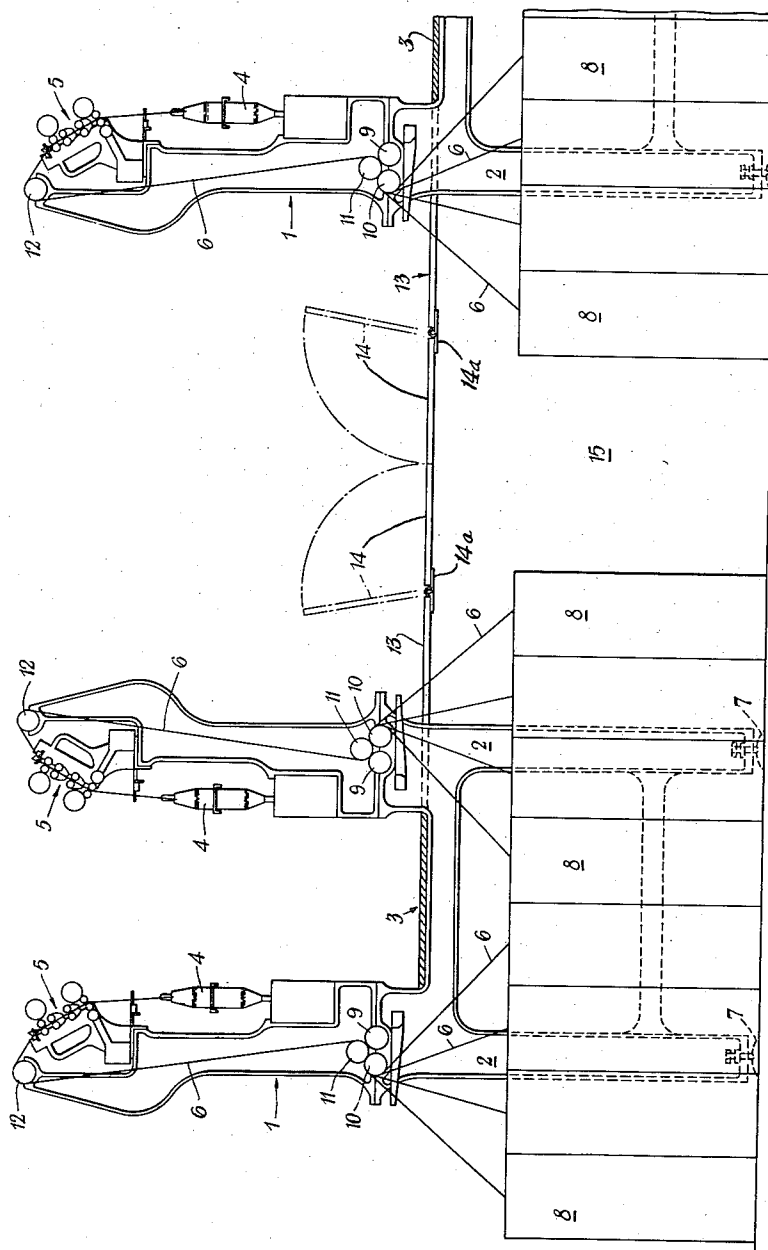


FIG. 1

July 10, 1962

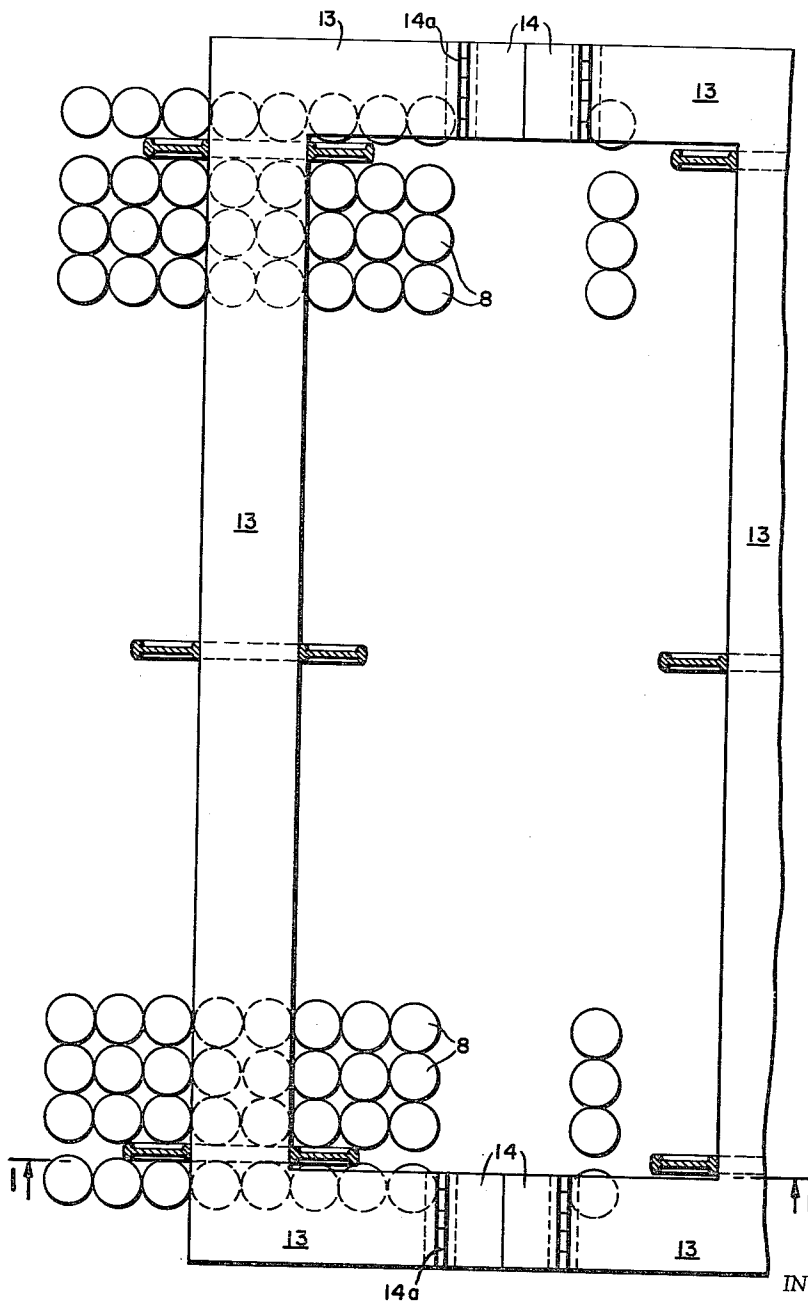
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2 Sheets-Sheet 2



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FIG. 2.

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1

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RING SPINNING FRAMES

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Filed Feb. 24, 1960, Ser. No. 10,788

Claims priority, application Great Britain Feb. 27, 1959
7 Claims. (Cl. 57—36)

This invention relates to ring spinning frames.

By the adoption of modern drafting equipment on ring spinning frames and on speed frames it has now become possible to produce yarn with the use of only one passage of speed frame instead of the three or four speed frame passages which were normally needed some 25 years ago. Another modern trend in cotton spinning is to make larger sliver packages at the draw frame and so effect additional economies in time and labour. The sliver packages, commonly in the form of cans having an axial length of some 36", have been increased from a 9" diameter to 12" or even 14" diameter. With these larger cans the machines have to be stopped much less frequently for doffing and fewer piecings are necessary.

The improved drafting means and techniques which have followed the introduction of the now very well known Casablancas high draft system have, in fact, resulted in the availability of drafting equipment which is capable of performing a sufficient draft in a single operation to convert sliver from the draw frame directly into yarn on the ring frame. This has opened up the possibility of eliminating the speed frame stage altogether, thereby enabling even greater economies to be achieved: the desirability of employing modern large sliver packages, however, introduces serious space and accommodation problems at the ring frame which, in practice, have not so far been satisfactorily solved.

Several attempts have been made to spin yarn direct from sliver, one consisting in providing a ring frame with a line of spindles down one side only (i.e. half the usual number) and storing the sliver cans on the other side of the frame. This arrangement has been found, however, to have many disadvantages including the relatively high cost of the machines, the uneconomical use of floor space and the necessity for the machine operator to walk excessively long distances in order to tend the usual number of machine sides.

It has also been proposed to modify the draw frame in order to pack slivers into very small cans which can be placed in the ring frame creel instead of the usual bobbins or, alternatively, to make special sliver bobbins on the draw frame which can be creeled on the ring frame. These proposals have, however, all been found to have the double disadvantage of requiring a change in the draw frame, which substantially lowers sliver production, and requiring the use of sliver packages which, for one reason or another, need to be doffed and pieced much more frequently than modern techniques demand.

The idea of accommodating sliver cans on one floor of the building and ring frames on the floor above has also been tried, but has been found to require elaborate coordination systems and to introduce considerable problems arising from the tendency of the sliver to disintegrate during its comparatively long travel from can to ring frame.

A main object of the present invention is to provide a ring frame capable of producing yarn direct from sliver in an efficient and economical manner.

Accordingly the invention provides a ring spinning frame wherein two rows of spindles, each with associated drafting mechanisms, are arranged in inwardly facing relationship on opposite sides of an elevated gangway plat-

2

form beneath which sliver packages can be accommodated and along which an operator can walk for the purpose of tending both spindle rows.

In order that the invention may be clearly understood and readily carried into effect, an embodiment thereof will now be described in detail with reference to the accompanying drawing in which:

FIGURE 1 is a vertical transverse sectional view taken on line 1—1 of FIGURE 2 of a ring spinning frame and a part of an adjoining similar frame constructed in accordance with the present invention, and

FIGURE 2 is a top plan view of a portion of the apparatus shown in FIGURE 1 with the frames, spindles and roller omitted and parts shown in section.

Referring now to the drawing, a ring spinning frame 1 is shown on the left-hand side of FIGURE 1 and part of a second adjoining frame 1 is shown on the right of the figure. Since, however, the two frames are of substantially identical construction, detailed reference will only be made in the following description to the left-hand frame, and corresponding parts of the two frames which appear in the drawing will be given the same reference letters.

The ring spinning frame 1 is provided with mounting legs 2, which serve to lift the frame well above ground level, and has an elevated gangway platform 3, also supported by the legs, and extending down the centre of the frame from one end to the other. Two similar spindle rows 4, each with associated drafting equipment 5 of well-known form, are disposed respectively along opposite sides of the gangway, above the platform 3, in inwardly facing relationship, i.e. with the two sets of drafting equipment working inwardly towards one another in feeding sliver 6 to the spindles 4. The drafting equipment 5 for each spindle row is conveniently constituted, as shown, by lines of co-operating drafting rollers some of which carry endless bands, the roller lines being mounted above the spindles which they serve and being off-set slightly towards the outer sides of the frame.

The drafting equipment 5 and spindles 4 may be driven in various known ways, the spindle drive being, however, of a compact nature such as can be obtained by the use of small tensioned belts or of helical gearing.

The support legs 2 for the frame, which preferably have level adjusting pads 7 at their lower ends, are of sufficient height, and the gangway platform 3 sufficiently elevated, to enable sliver cans 8 of some 3 ft. or more in axial length to be accommodated on end beneath the gangway platform. In this way storage space for the cans is provided within the area covered by the frame itself, inclusive of the gangway, and the floor space required to accommodate cans outside the area of the frame is thereby reduced to acceptable limits.

For the purpose of delivering the sliver 6 from the cans 8 to the drafting mechanisms serving the respective spindle rows, each side of the frame is provided with upper and lower sliver assisting means. The lower sliver assisting means extend along opposite sides of the frame at a level slightly above the gangway platform 3 and substantially vertically below the drafting mechanisms served thereby. Each such sliver assisting means in the illustrated embodiment consists of two lines of driven lower rollers 9 and 10 working in conjunction with self-weighted top rollers 11 each of which is arranged to rest on two slivers.

The two lower rollers 9 and 10 can be connected with an electrical system so that if a sliver breaks, or runs out, a top roller establishes contact with the lower rollers and produces some visual indication, such as the illumination of a red bulb, to draw the operator's attention to what has happened. Alternatively, of course, some form of stop motion could be arranged to operate automatically as a result of contact between the upper and lower rollers.

The upper sliver assisting means are in the form of single rollers 12 which extend along opposite sides of the frame and are situated behind and slightly above the drafting mechanisms served thereby. These upper rollers 12 are driven at a speed which properly assists the slivers 6 on their paths into the drafting mechanisms.

The gangway platform 3 through the centre of the frame will preferably be continued by transverse platforms 13 at each end to link up with gangway platforms 3 through the centre of adjoining frames, so that an operator can attend to an allotted number of frames without having to negotiate steps in the process. If desired, the transverse platforms 13 between adjoining frames may be provided with flaps 14 hinged as at 14a to the platforms 13 to permit a ready access to the rows of cans 8 at normal floor level. Clearly it will be desirable to provide a gangway 15 between rows of cans serving adjoining frames, which can be conveniently reached through the hinged flaps 14 for the purpose of changing the cans.

In the employment of the ring frame of the invention, it is envisaged that spinning operators will attend only to the spinning part of the machine and would therefore normally remain in or on the elevated gangway platforms. Another operative might then attend to the replacement of empty cans and it may be found preferable, instead of replacing individual cans when required, to change all the cans of a frame at the same time irrespective of whether or not the sliver therein has been wholly used up.

I claim:

1. A ring spinning frame having support legs, an elevated central operator's gangway platform extending lengthwise along the frame and carried by the said support legs, said platform being sufficiently high above ground level to enable sliver cans to be stored on end therebeneath, two spindle rows extending along opposite sides of said platform at a higher level than the latter, two

rows of drafting mechanisms disposed in inwardly facing relationship with one row above each said spindle row and means for delivering sliver from stored cans beneath the platform to said drafting mechanisms.

2. A ring spinning frame as claimed in claim 1 in which said platform is at a height greater than 3 ft. above floor level.

3. A ring spinning frame as claimed in claim 1 wherein the support legs are provided at their lower ends with level adjusting pads.

4. A ring spinning frame as claimed in claim 1 wherein upper and lower sliver assisting means are provided along each side of the frame to assist the feeding of sliver from cans housed below the level of the platform to the drafting mechanisms serving the respective spindle rows.

5. A ring spinning frame as claimed in claim 4 wherein each lower sliver assisting means comprises two lines of driven lower rollers working in conjunction with self-weighted top rollers each of which is arranged to rest on two slivers.

6. A ring spinning frame as claimed in claim 5 wherein the upper sliver assisting means consist of single driven rollers which extend along opposite sides of the frame behind and slightly above the associated drafting mechanism.

7. A ring spinning frame as claimed in claim 1 wherein the gangway platform is continued by a transverse platform at each end of the frame to link up with gangway platforms extending between adjoining similar frames, the transverse platforms between adjoining frames being preferably provided with hinged flaps whereby cans stored therebeneath can be conveniently reached.

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