

April 10, 1962

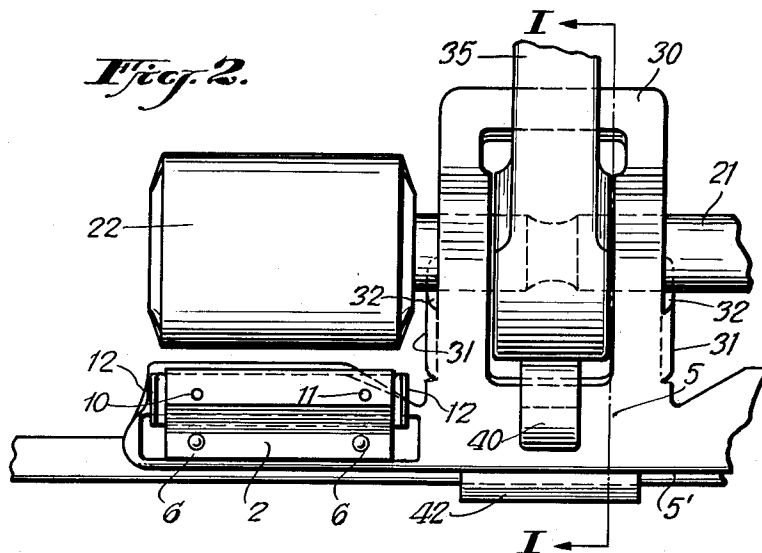
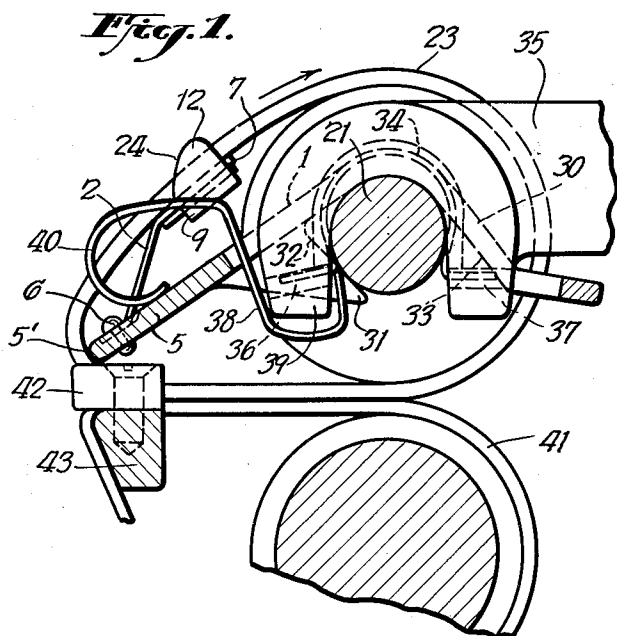
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3,028,636

CRADLE FOR TOP ROLLS OF DOUBLE APRON DRAFTING ARRANGEMENTS

Filed April 12, 1960

4 Sheets-Sheet 1



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Fig. 3

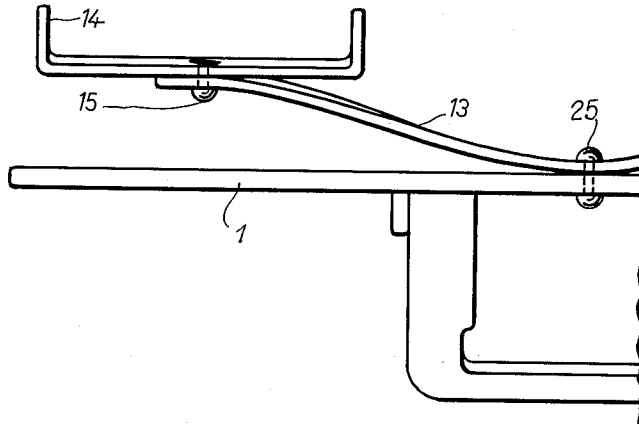
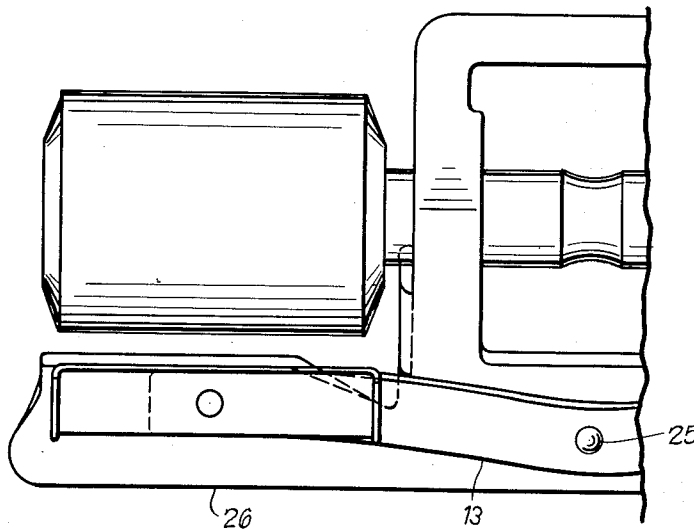


Fig. 4



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Fig. 5

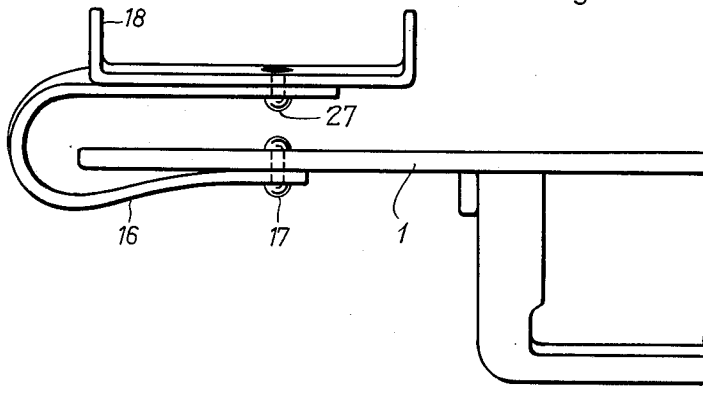
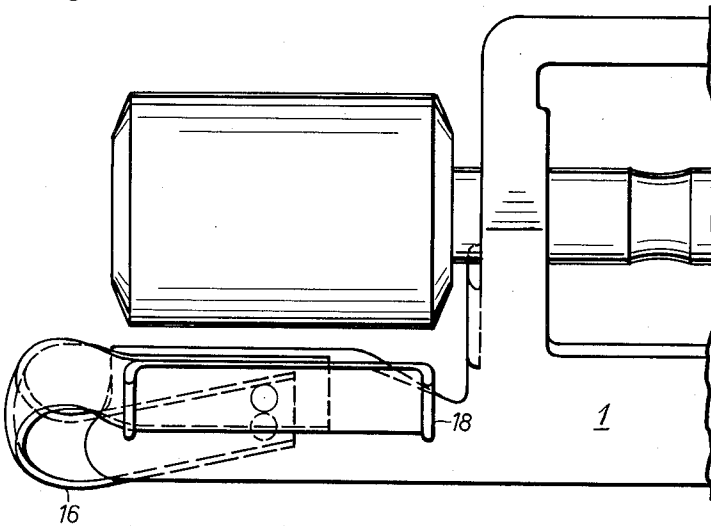


Fig. 6



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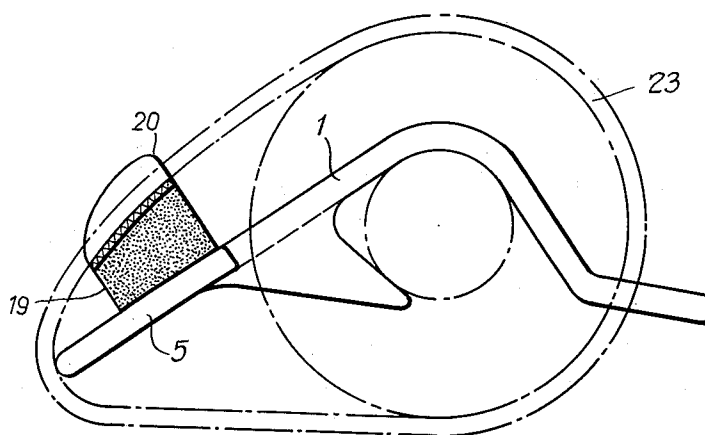
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Fig. 7



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3,028,636

CRADLE FOR TOP ROLLS OF DOUBLE APRON DRAFTING ARRANGEMENTS

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5 Claims. (Cl. 19—250)

The present invention relates to a cradle for top rolls of double apron drafting arrangements in spinning machines.

The present application is a continuation-in-part application of my copending application Serial No. 625,348, filed November 30, 1956, now abandoned, which is a continuation-in-part of my application Serial No. 579,848, filed April 23, 1956, now abandoned, the latter application having been continued in continuation-in-part application Serial No. 763,689, filed September 26, 1958, which matured to Patent No. 2,941,262 on June 21, 1960.

The guidance of the fibres in a double apron drafting arrangement is the better the more exactly the dimensions of the aprons can be correlated to the spacing conditions between the top rollers and the cradle, particularly the reversal bar of the latter. In order to obtain and maintain uniform guide conditions in a spinning machine, tolerances of only a few tenths of a millimeter as to the lengths of the apron have been found to be absolutely essential. To so exactly manufacture the aprons is very expensive and difficult.

It is an object of the present invention to provide a tensioning or positioning device for the upper aprons of the drafting arrangements in spinning machines which affords use of less exactly manufactured aprons without impairing the guide conditions for the fibres.

It is conventional to tension the lower aprons by suitable tensioning devices. However, no tensioning devices for the upper aprons have been made known which can be removed together with the cradle and which do not affect the parallelism of the reversal bar of the upper cradle with respect to the rotation axis of the top roll, as is the case, for example, in a conventional arrangement in which the upper apron is tensioned by pressing the reversal bar forward in the direction of the movement of the fibres.

The tensioning device for the upper apron according to the invention overcomes the aforescribed shortcomings.

In the device according to the invention, a resilient element is mounted on a cradle of the type, for example, as disclosed in Patent No. 2,941,262, the element acting on the run of the apron which does not guide fibres, thereby tensioning the apron.

The increased tension of the upper apron produced by the new device makes it possible to use double apron drafting arrangements for working long fibre staple. The relatively little stiffness of long upper aprons as they are required for long staple drafting arrangements causes billowing and an insufficient guide effect of the upper apron. If the apron is tensioned according to the invention, such billowing is entirely prevented.

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 embodiments thereof when read in connection with the accompanying drawing, in which:

FIG. 1 is a cross sectional view of a cradle equipped with a tensioning device according to the invention, the section being taken along line I—I in FIG. 2.

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FIG. 2 is a top view of the left half of the cradle and tensioning device shown in FIG. 1.

FIG. 3 is a front view of a portion of a cradle provided with a modified tensioning device according to the invention.

FIG. 4 is a plan view of the device shown in FIG. 3.

FIG. 5 is a front view of the left half of a cradle provided with a third modification of a tensioning device according to the invention.

FIG. 6 is a plan view of the device shown in FIG. 5.

FIG. 7 is a cross sectional view of a cradle provided with a tensioning device according to the invention.

Like parts are designated by like numerals in the several figures of the drawing.

Referring more particularly to FIGS. 1 and 2 of the drawing, numeral 1 designates a main cradle portion resting on an axle 21 connecting the two bosses 22 of a top roll, only one boss being shown. The cradle 1 of which only a part is shown in FIG. 2 is made of one piece and includes a reversal bar 5 having a rounded front edge 5' on which the run of an apron 23 is reversed. The cradle has a central mounting or bearing portion including a bracket 30 laterally extending from the bar 5 and partly surrounding the top roll axle 21. The bracket includes axle retaining flaps 31 which are individually provided with a plane bearing surface 32 whose plane is disposed at an angle with respect to a plane bearing surface portion 33 of the bracket 30. The planes of the bearing surfaces 32 and 33 are parallel to the front edge 5' of the reversal bar 5. The bracket 30 is made of resilient material and is not permanently deformed by the slight bending required for moving the axle 21 between the surfaces 32 and 33 when the axle 21 is mounted on or removed from the cradle 1. The nose bar or reversal bar 5 is held in down position by conventional means, for example, a spring 34 received in a suitable recess of a saddle 35 for the top roll assembly. The spring 34 has ends inserted in recesses 36, 37 in the saddle 35 and is provided with an extension 38 laid around the forward end 39 of the saddle and having a looped end 40 slightly pressing against the top of the reversal bar 5. This prevents lifting of the bar 5 and rotation of the cradle 1 in the direction of movement of the apron 23. For proper spacing of the reversal bar 5 from the lower aprons 41 a spacer element 42 is mounted on a reversal bar 43 for the lower aprons between the latter, the reversal bar 5 resting on the element 42.

The cradle 1 is provided with a tensioning plate spring 2, the lower part of which is inserted in a longitudinal recess in the upper side of the reversal bar 5 and made fast thereon by means of rivets 6. Other means, such as spot welding, may be used instead of rivets. The upper part 7 of the spring 2 has a surface over which the apron 23 slides, the part 7 being so bent that this surface substantially coincides with the running direction of the upper run of the apron 23. As is obvious from FIG. 1, the apron 23 is uniformly tensioned by means of the plate spring 2. The apron is laterally guided by a U-shaped guide piece 9 which is welded to the underside of the portion 7 of the spring 2 as is indicated in FIG. 2 by two spot welds 10 and 11. In order to reduce accumulation of spinning room fly, the upright flaps 12 of the guide piece 9 have an inclined front edge 24 at the side where the apron 23 enters the guide piece. This causes transport of the loose fibres, projecting beyond the sides of the apron, by the apron over the flaps 12.

The spring 2 is somewhat less wide than the apron 23 which is substantially as wide as the covering of the top roll 22. Therefore, the marginal portions of the inside surface of the apron are free, i.e., do not contact the spring 2. Therefore, the fibres adhering to the edge of the apron are not wiped off by the transverse portion of

the guide piece 9 but are moved upward and out by the guide piece. This prevents accumulation of fly.

Instead of providing an independent spring for each apron according to FIGS. 1 and 2, a single plate spring 13 may be riveted to the center of the cradle 1 by a rivet 25, the spring 13 having two arms which gradually rise from the cradle 1, as shown in FIGS. 3 and 4. Each arm of the spring 13 extends somewhat beyond the middle of the respective apron. The arms are somewhat twisted toward the reversal edge 26 of the cradle 1. An apron guide 14 is mounted on the end portion of each arm and made fast by a rivet 15. The guides 14 have the same configuration as the guides 9 in FIGS. 1 and 2. The inclination of the guides is determined by the twist of the arms of the spring 13. Instead of the rivet 15 any other suitable connection may be used.

FIGS. 5 and 6 illustrate an embodiment of the invention in which a plate spring 16 is provided for each apron, the springs being connected to the underside of the reversing portion of the cradle 1 by rivets 17 and being looped around the lateral ends of the cradle. The free end of each plate spring 16 is twisted to support an apron guide 18 in the desired position. The guide pieces 18 are connected to the springs by rivets 27 or other suitable means.

The embodiment of the invention shown in FIG. 7 produces the desired tensioning or positioning of the apron without the use of plate springs. A resilient pressure body 19 made of sufficiently elastic sponge rubber as is now available is mounted to the top of the reversal portion 5 of the cradle 1, preferably by an adhesive as is now also available. On the top of the body 19 a guide element 20 is mounted, preferably also by an adhesive. The element 20 which has a similar configuration as the element 9 in FIGS. 1 and 2 is preferably made of a synthetic material which offers little friction of the rubber apron 23.

Without departing from the scope of the invention, the tensioning devices shown in FIGS. 1 to 6 may be mounted to the cradle by means of an adjustable screw instead of a rivet so that the tensioning effect can be adjusted.

I claim:

1. In a cradle for the top aprons of a double apron drafting arrangement of a spinning machine comprising a main cradle portion including a reversal bar, a bracket laterally extending from said reversal bar and being adapted to rest on the axle interconnecting the two bosses of a top roll, and two endless aprons of unchangeable length extending around the top roll and the reversal bar, said bracket forming a bearing for the top roll axle, said bearing including two substantially plane bearing surfaces placed at an angle with respect to each other and in fixed parallel relation to the line of contact of the aprons with said reversal bar: resilient apron positioning means connected to said main cradle portion and including two end portions, each end portion abutting against and slidingly engaging the upper run of one of said top aprons for accurately positioning the lower run of the respective apron between the top roll and the reversal bar.

2. In a cradle for the top aprons of a drafting arrangement of a spinning machine comprising a main cradle portion including a reversal bar, a bracket laterally extending from said reversal bar and being adapted to rest on the axle interconnecting the two bosses of a top roll, and two endless aprons of unchangeable length extending around the top roll and the reversal bar, said bracket forming a bearing for the top roll axle, said bearing including two bearing surfaces placed in fixed parallel relation to the line of contact of the aprons with the reversal bar: two apron positioning elements, each element having a first portion mounted on said main cradle portion, each positioning element including a second portion slidingly engaging the upper run of one of said aprons, and a resilient intermediate portion extending between said first portion and said second portion for pressing the second portion against the respective apron for accurately positioning the lower run of the respective apron between the top roll and the reversal bar.

3. In a cradle as defined in claim 2 and wherein said second portion includes lateral guides for laterally guiding the upper run of the respective apron.

4. In a cradle as defined in claim 2 and wherein said first portion and said intermediate portion are formed by a plate spring.

5. In a cradle for the top aprons of a double apron drafting arrangement of a spinning machine comprising a main cradle portion including a reversal bar, a bracket laterally extending from said reversal bar and being adapted to rest on the axle interconnecting the two bosses of a top roll, and two endless aprons of unchangeable length extending around the top roll and the reversal bar, said bracket forming a bearing for the top roll axle, said bearing including two substantially plane bearing surfaces placed at an angle with respect to each other and in fixed parallel relation to the line of contact of the aprons with said reversal bar: two apron positioning means connected in spaced relation to said main cradle portion, each positioning means having a resilient portion made of sponge rubber and a portion having a smooth surface abutting against and slidingly engaging the upper run of one of said top aprons for accurately positioning the lower run of the respective apron between the top roll and the reversal bar.

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