

May 30, 1939.

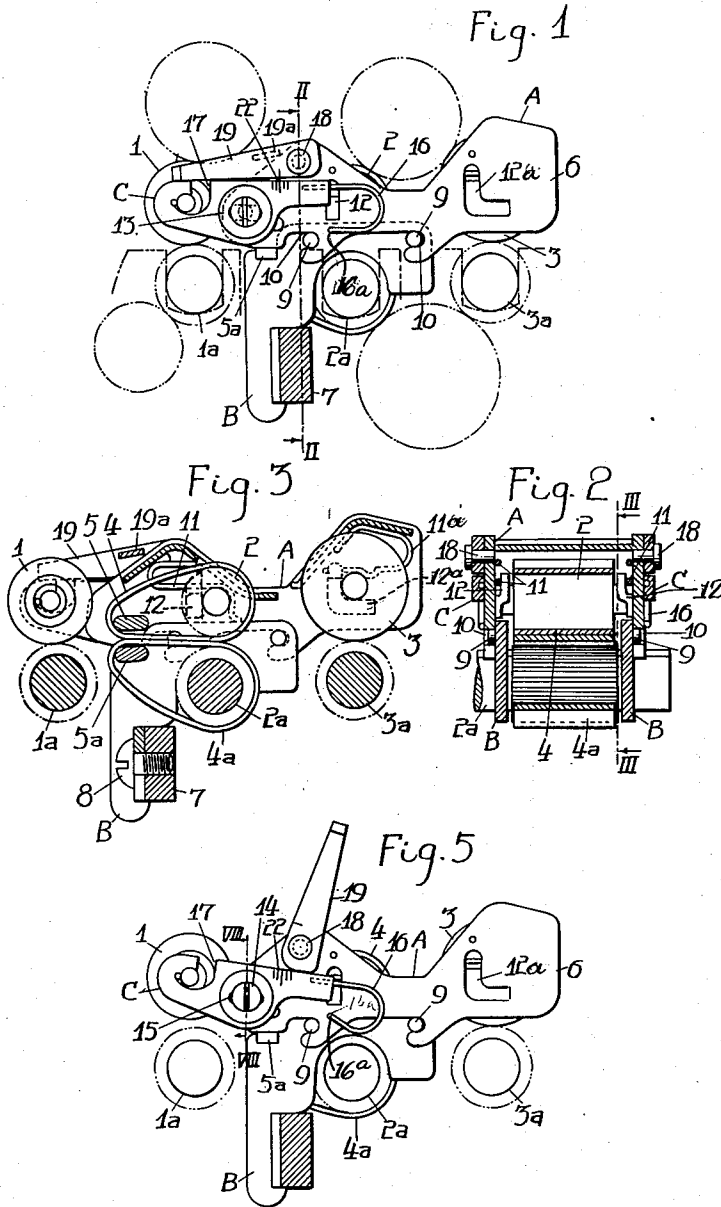
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2,160,545

DRAFTING APPARATUS FOR SLIVERS FOR THE PRODUCTION OF SPUN YARNS

Filed Feb. 12, 1937

2 Sheets--Sheet 1



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2 Sheets-Sheet 2

Fig. 4

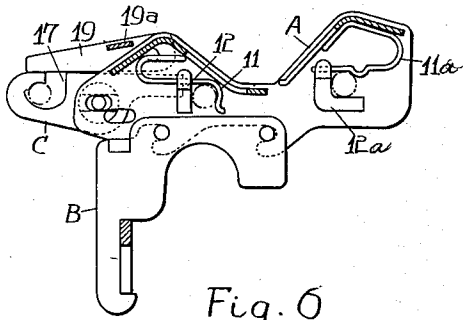


Fig. 6

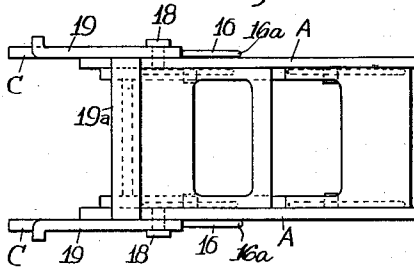


Fig. 8

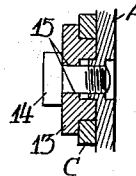
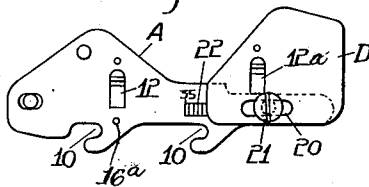


Fig. 7



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UNITED STATES PATENT OFFICE

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DRAFTING APPARATUS FOR SLIVERS FOR
THE PRODUCTION OF SPUN YARNS

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Application February 12, 1937, Serial No. 125,486
In Japan February 25, 1936

4 Claims. (Cl. 19—131)

This invention relates to improvements in an apparatus for drafting slivers for the production of spun yarns, particularly to improvements in a cradle for drafting rollers.

5 This application is a continuation-in-part of Patent No. 2,100,139 granted November 23, 1937.

The generally known drafting apparatus comprises back, middle and front rollers, each consisting of top and bottom rollers. The bottom rollers are held on journals provided on the machine frame and driven by external means, while the top rollers of two adjacent spinning units are made integral and mounted on a cradle which is placed on the necks of the bottom rollers, or detachably fixed or hinged to the frame of the machine, and a spring or weight is applied to each two adjacent top rollers or to the cradle so that the top rollers cooperate with their bottom rollers.

20 A cotton sliver passes between each pair of rollers while it is drafted and the surface speed of the front rollers is greater than that of the middle rollers and the surface speed of the latter is greater than that of back rollers.

25 A sliver sometimes is broken and winds up on the front bottom roller, so that the latter is required to be cleansed. In this case, in the ordinary case as above mentioned, two adjacent spinning units must be stopped.

30 The front top roller is generally made of leather while its bottom roller is made of fluted steel, therefore the top roller is worn down quickly and requires frequent replacement.

In view of these facts, it is advisable that the cradle should be made separately for each spinning unit, and the front top roller alone should be raised when a broken sliver is being wound on the bottom roller, otherwise the cradle itself is raised by the layers of sliver wound on the bottom roller and changes the working condition of the middle and back rollers. It is also advisable that the front top roller should be removed from its working position independently of the cradle, so that the working condition of the middle and back rollers are not affected in case the front bottom roller is cleansed or the front top roller is replaced with a new one.

When a sliver is broken, it is sometimes required that all the top rollers should be removed from the apparatus in order to resume the proper drafting condition. In a well known apparatus a spring or weight applied to each top roller is first removed and the top rollers are next removed from the cradle.

55 An object of this invention is to provide a cradle

for each spinning unit divided into two frame parts, top and bottom, and detachably interlocked together, all the top rollers being mounted on the top frame, and each end of the roller spindles being held on the top frame under the action of a spring which is provided on the top frame, whereby in case all the top rollers are required to be removed, it can be done by merely detaching the top frame of the cradle from the bottom one, having all the top rollers and their springs mounted thereon.

Another object of this invention is to provide a cradle for each spinning unit formed in two parts, top and bottom, and detachably interlocked together, the top part being further divided into two parts, front and main parts, the front part being pivotally fixed to the main one and kept in its proper position by the action of a spring, the front top roller being mounted on the front part so that the front part can be swiveled about its pivot to raise its front end against the spring when a broken sliver winds up on the front bottom roller.

Another object of this invention is to provide a cradle for each spinning unit comprising two separate frames, top and bottom, and detachably interlocked together, the top frame being further divided into three parts, front, main and rear, the front part being pivotally fixed to the main part and kept in its proper position by the action of a spring, the rear part being fixed to the main one, with the positions of the front and rear parts adjustable relative to the main part, and with the front, middle and back top rollers mounted on the front, main and rear parts, respectively.

The accompanying drawings show the preferred embodiment of this invention.

Figure 1 is a side elevation of the apparatus.

Figure 2 is a sectional elevation on the line II—II in Figure 1.

Figure 3 is a sectional elevation on the line III—III in Figure 2.

Figure 4 is the same view as that of Figure 3, the rollers and aprons being removed.

Figure 5 is the same view as that of Figure 1, but clearer rollers are removed and the front piece of the cradle takes its raised position.

Figure 6 is a plan of the cradle.

Figure 7 is an elevation of a cradle in a modified construction.

Figure 8 is a sectional view on the line VIII—VIII in Figure 5 to an enlarged scale.

Referring to Figure 1, 1 and 1a, 2 and 2a, and 3 and 3a are pairs of front, middle and back rollers, and the middle top and bottom rollers have,

respectively, small endless belts or aprons 4 and 4a over them, each extending to tensioners 5 and 5a.

The top rollers 1, 2 and 3, the tensioners 5 and 5a and the belt 4 are held on a cradle 6, which comprises top and bottom frames, A and B, detachably interlocked, the bottom frame B being detachably fixed with screws 8 to the frame 7 of the device.

The bottom rollers 1a, 2a and 3a are held in journals, not shown, on the frame, and are driven by external means in the usual manner. When the bottom member B is fixed to the frame, it bridges over the middle bottom roller 2a.

The bottom tensioner 5a is firmly held in a recess provided along the upper edge of the bottom frame, being pressed by the under edge of the top frame A when the latter is interlocked with the bottom frame B. The top and bottom frames

are interlocked by means of projections 9 provided on the upper part of the bottom frame and engaging with corresponding recesses 10 on the bottom edge of the top frame. Members 11 and 11a are sets of springs made of curved wire and

are provided at each inner side of the cradle to retain the ends of the middle and back roller spindles in contact with sets of projections 12 and 12a which serve as bearings for the roller spindles, that is, each end of the roller spindles

is held between the projection and the spring which presses the roller downwards so as to keep the top roller 2 or 3 in contact with the bottom roller 2a or 3a. The working pressure of each top roller can be adjusted by replacing the springs 11 and 11a with other springs of different strength.

The top frame A of the cradle is divided into two parts, front and main. The front part C is pivoted on a disc 13 which is fixed to the main part A by a screw stud 14. Since the disc has a slot 15 through which the screw stud extends, the position of the disc can be adjusted by releasing the pin 14 and shifting the disc relative to the stud so far as the slot allows. This can be seen from Figures 1, 5 and 8.

The front part C can be swiveled about the disc 13 as above mentioned, and a spring 16 with its one end bent and fixed to the main part A by insertion laterally through hold 16a in the latter and the other end inserted longitudinally in a hole of the part C serves to press the front top roller 1 in contact with the bottom roller 1a.

A pin 18 is provided on each side of the cradle in alignment, on which a U-shaped lever 19 is pivoted. The lever on each side of the cradle is secured to a cross member 19a so as to have both arms swivel as a single member on the studs 18.

The pivoted end of the lever 19 is cam shaped and in the lowered position as shown in Figure 1, the cam shaped end does not engage the part C, but in the raised position the end of the lever moves the rear end of the part C against the action of the spring 16 so that the part C rises at its front end as shown in Figure 5.

Each journaled end of the front top roller spindles is held in a curved recess 17 at the front end of the part C. When the roller is in the innermost position, which is the working position of the roller, it cooperates with the bottom roller 1a subject to the action of the spring 16, and is retained in the opening of the recess, by the lever 19.

The lever 19 when in its lowered position, covers the opening of the recess 17, to retain the top roller 1 in working position.

According to this invention, if a sliver is broken, for instance, and the removal of all the top rollers is required, the upper frame of the cradle should be detached from the bottom one. In this manner, all the upper rollers can be raised, keeping the rollers and the springs in their proper positions on the cradle, so that the rollers can be reset in their working positions by simply interlocking the upper frame with the bottom one.

In case a sliver is broken and winds on the front bottom roller, the front part of the cradle gradually swivels upwardly against the spring 16 independent of the other part of the cradle, without affecting the middle and back rollers. If the bottom roller is to be cleaned or the top roller is to be renewed, the lever 19 is raised as shown in Figure 5 whereby the part C is raised upwardly and the slot 17 opens to permit removal of the roller 1.

Figure 7 shows a modification of the cradle. In this modification, the rear part D of the cradle is made separately from the main part A, and connected therewith. 20 is a slot provided on the part D parallel to its lower edge and a stud 21 is secured to the part A extending through the slot so that when the stud is released the relative position of the parts A and D can be regulated. The relative positions of the parts A and C, and A and D can be determined by the marks 22. This means shows the adjusted positions of the front and middle rollers and middle and back rollers, such adjustment being required according to the length of fibers to be treated.

What I claim is:—

1. A cradle for draft spinning machines of the type having upper and lower coating rolls, said cradle comprising an upper draft roller carrying frame having pivotally connected sections, one of said sections having a roller removably supported in a slot formed in the side walls thereof, means for yieldingly supporting the roller in contact with its lower coating roller, and means for locking said roller in said slot.

2. A cradle for draft spinning machines of the type having upper and lower coating rolls, said cradle comprising an upper draft roller carrying frame having pivotally connected sections; one of said sections having a roller removably supported therein, the other section having a pivotally mounted means for locking said last-mentioned roller in or out of engagement with its lower coating roll.

3. A cradle for draft spinning machines of the type having upper and lower coating rolls, said cradle comprising an upper draft roller carrying frame having front and rear pivotally connected sections, said front section having a roller removably supported therein, the other section having cam means pivotally supported thereon for moving said front section roller into and out of engagement with its lower coating roller.

4. A cradle for draft spinning machines comprising three sections, front and rear upper sections and a lower section, said upper sections being pivotally connected, and detachably supported on said lower section, the upper front section being mounted for vertical movement about a horizontal axis, and means for raising and lowering said section about said axis.

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