

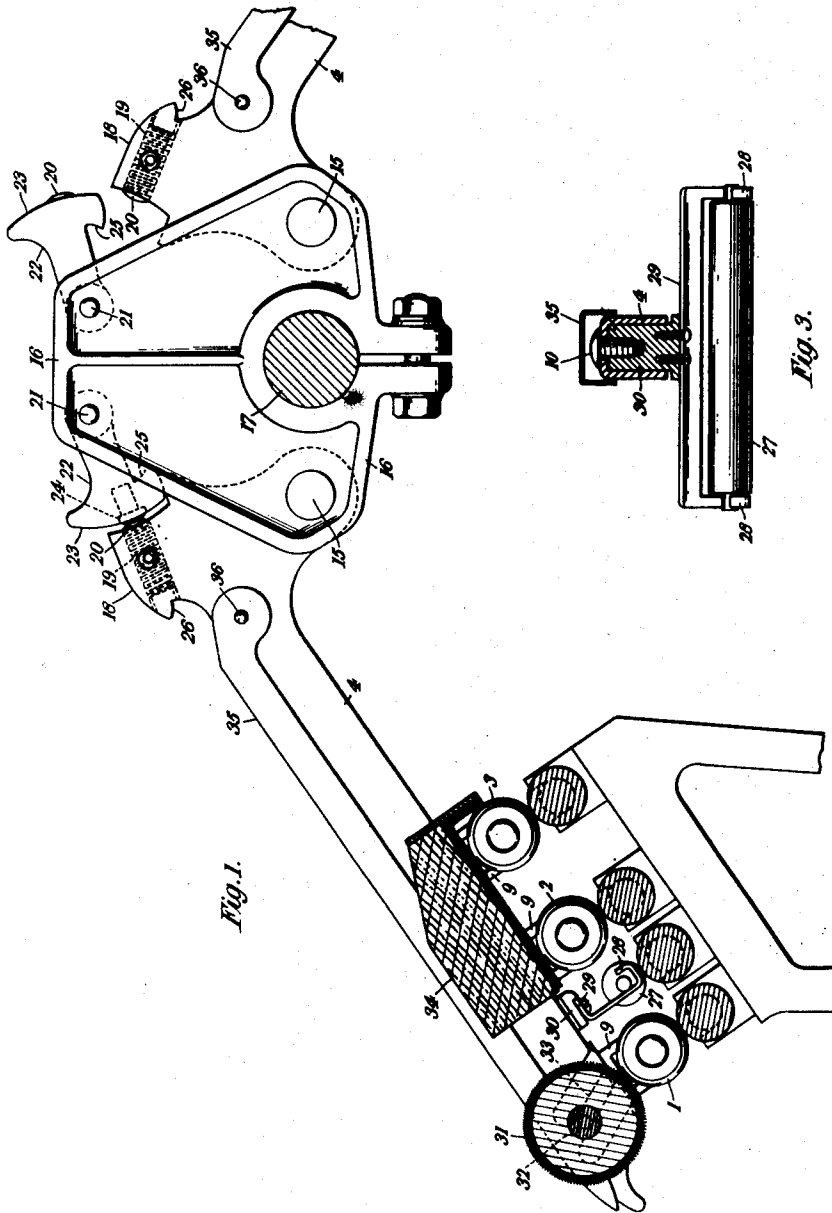
July 14, 1953

J. J. HAYTHORNTHWAITE ET AL  
MEANS FOR SUPPORTING AND LOADING THE TOP  
ROLLERS OF TEXTILE DRAFTING APPARATUS

2,644,988

Filed Oct. 19, 1950

2 Sheets-Sheet 1



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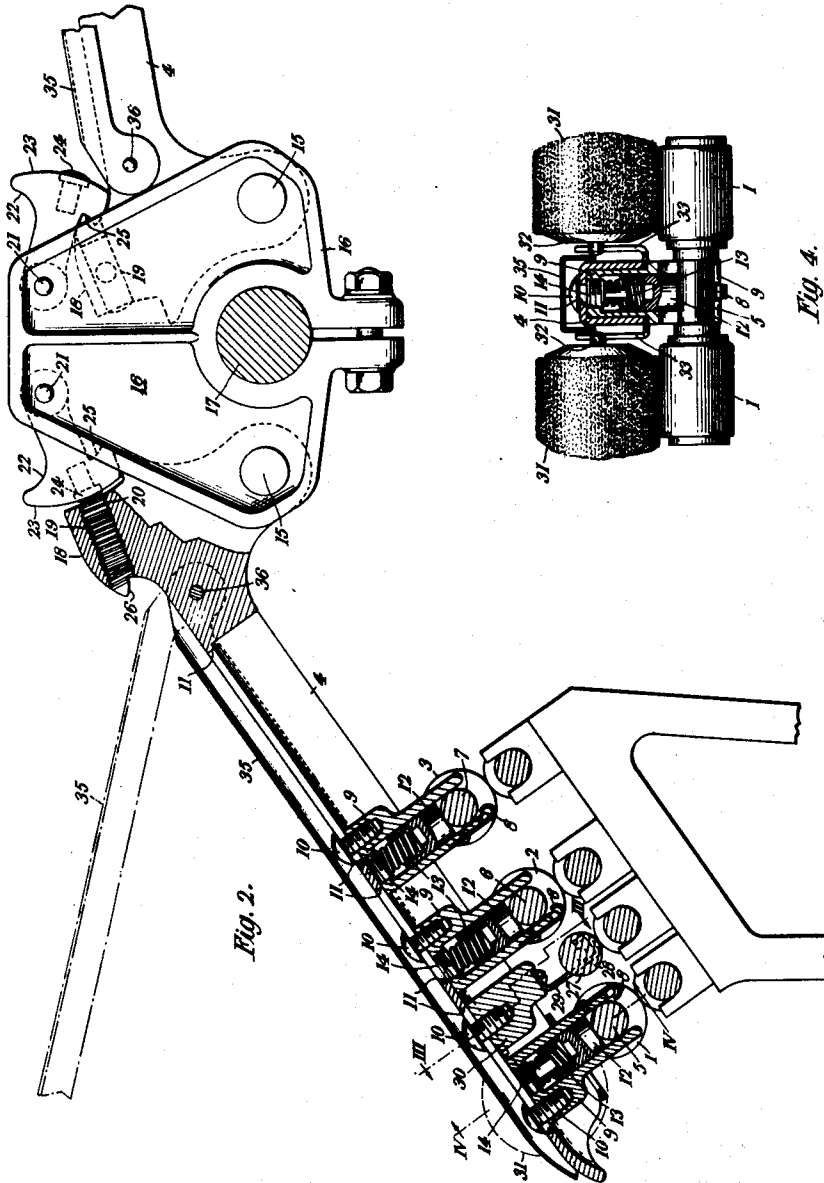
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## UNITED STATES PATENT OFFICE

2,644,988

MEANS FOR SUPPORTING AND LOADING  
THE TOP ROLLERS OF TEXTILE DRAFT-  
ING APPARATUSJames Jackson Haythornthwaite and James Cal-  
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10 Claims. (Cl. 19—135)

1

The invention has reference to the support and loading of the upper rollers of textile drafting apparatus, such as forms part of a drawing or spinning machine, the object being to provide improved supporting and loading means as an alternative to the hitherto conventional arrangement in which the upper rollers are carried in cap-bars pivoted at the rear of the roller-stand and pressed upon the lower rollers by the downwardly acting mass of heavy weights suspended beneath the roller-stand upon stirrup-like members connected to saddles arranged to bear upon the upper surfaces of the roller arbors.

According to the invention the upper rollers of a textile drafting apparatus are mounted at their arbors in a common supporting arm which is pivoted upon a fixed support, which support also carries an abutment pivoted at a point spaced from the roller supporting arm pivot, said arm being arranged in its operative position to bear against said abutment at a point located above the plane containing the pivotal axis of the arm and the centre of mass of the arm (together with the rollers and other ancillary members carried thereby), such that the pressure exerted between the abutment and the arm imparts a downwardly acting loading force to the upper drafting rollers. In the case of a spinning or twisting machine, the roller-supporting arm and the abutment are both pivoted at different points in a common vertical plane upon a fixed member of the frame, at the rear of the roller-stand.

The part of the roller-supporting arm which bears against the abutment is conveniently furnished with an inset arranged to make contact with a bearing face on the abutment, said inset being adjustable for the purpose of regulating the loading pressure exerted on the arm. Further features of the invention may consist in the provision of resilient cushions through which the loading pressure is transmitted to the upper drafting rollers, and of detents respectively upon the roller-supporting arm and the abutment which can be engaged to retain the arm when raised to the inoperative position, e. g. for cleaning purposes.

The manner in which the invention may be carried into effect is hereinafter described with reference to the accompanying drawings in relation to the application of the invention to the drafting apparatus of a spinning frame. In said drawings Fig. 1 is a fragmentary end view of the apparatus, Fig. 2 is a section thereof along the longitudinal axis of a roller-supporting arm, Fig. 3 is a detail as viewed on the line III—III

2

of Fig. 2, illustrating the manner of supporting an auxiliary pressure roller, and Fig. 4 is a detail as viewed on the line IV—IV of Fig. 2, depicting the internal construction of the bearings of the upper drafting rollers and the mounting of the front roller clearers.

In the particular embodiment here described the upper drafting rollers are made in aligned pairs joined as a unit by a common arbor; the rollers may be fixed on the arbor which is arranged to rotate in the bearing of the supporting arm, or they may be rotatably mounted (preferably by means of ball- or roller-type anti-friction bearings) upon an arbor which is merely carried by the bearing without rotating therein.

The apparatus comprises in respect of each set of such double-roller units, that is the front rollers 1, the intermediate rollers 2, and the back rollers 3, an individual roller-supporting arm 4, the respective arbors 5, 6 and 7 being retained by a spring clip 8 in a bearing mounted on the underside of the arm 4. The arm 4 is of inverted channel-section, and each such bearing comprises a bifurcated housing 9 between the limbs of which the arbor of the roller is received, and which is secured between the flanges of the arm by means of a set-screw 10 which passes through a slot 11 in which it is free to slide when slackened, so that the inter-spacing of the several rollers may be varied to suit different staple lengths of the fibrous material under treatment. Within each such housing 9 is a slidable cylindrical pressure pad 12 which is urged yieldably against the roller arbor by a spring 13 compressed between the base of a socket in the pad 12 and an adjustable set-screw 14 screwed into a tapped hole in the housing 9, each assembly of the parts 12, 13 and 14 constituting a resilient cushion between the arm 4 and the respective roller.

Each roller-support arm 4 is pivoted at its rear extremity upon a pin 15 fixed in a bracket 16 which is rigidly mounted upon a rail 17 extending longitudinally throughout the machine at the rear of the roller-stand and which forms part of the stationary framework of the machine. The arms 4 are of elbowed formation, the elbow 18 providing a mounting for an inset contact-member consisting of an adjustable screw-threaded pin 19 having a hardened head 20 which faces rearwardly. Also carried upon each bracket 16, by a pivot 21 located in a position off-set from the arm pivot 15, is a movable abutment 22 consisting of a short lever having at its free end a convex end-face 23 in which is embedded a

3

hardened steel pin 24, and the arrangement is such that when the roller-support arm 4 is moved down to the operative position of the rollers, as shown in Figs. 1 and 2 (full lines), the head 20 of the inset pin 19 in the elbow of the arm 4 bears against the head of the pin 24 in the abutment 22. Said two pins 19 and 24 and the pivot 21 of the abutment 22 are now in alignment, but the point of contact between said pins is displaced above the plane which contains the axis of the pivot 15 and the centre of mass of the arm 4 and the several components mounted thereon, and due to the resilient cushion 12, 13, 14 at each roller arbor, the pressure with which the abutment 22 presses against the elbow 18 of the arm 4 acts to load the rollers 1, 2, 3 with the requisite weighting pressure, such pressure being variable to suit particular requirements by an appropriate adjustment of the pin 19, and the separate slight adjustment of each bearing screw 14.

To release the roller loading and raise the roller support arm 4, the latter is depressed slightly against the pressure of the springs 13, until the head of the pin 19 clears the pin 24, when the abutment 22 may be raised as shown at the right-hand side of Fig. 1 to enable the arm 4 to swing upwards and rearwardly. The underside of the abutment lever 22 and the upper side of the elbow 18 of the arm 4 are respectively provided with detents 25 and 26 which engage each other to retain the arm in the raised position. The aforesaid spring clips 8 prevent the rollers 1, 2, 3 from dropping out of their bearings but are yieldable to permit the removal of the rollers if necessary.

Where, as in the embodiment illustrated in the drawings, the apparatus comprises a light presser roller, e. g. the roller 27, this may be retained loosely by means of the spaced depending hooked ends 28 of a cross-bar 29 fixed at its mid-point to a block 30 attached by a screw 10 to the arm 4 between the bearings of the rollers 1 and 2 (Fig. 3).

The clearer roller 31 for the front roller 1 is carried by its arbors 32 between two slotted brackets 33 which are mounted on adjacent arms 4 in the manner illustrated in Fig. 4, said brackets 33 being secured between the underside of the arms 4 and the housings 9. Clearer rolls for the other upper drafting rollers may be mounted in like manner, or a stationary pad type of clearer may be used, as shown at 34.

A cover-plate 35 is conveniently pivoted at 36 to the upper surface of the roller-support arm 4 to prevent "fly" from lodging upon the bearings of the rollers.

What we claim as our invention and desire to secure by Letters Patent is:

1. A textile drafting apparatus comprising, in combination, a fixed support, and arm pivotally supported thereon, upper drafting rollers mounted in common at their arbors or journals in said arm, a rigid abutment pivoted on the fixed support at a point spaced from the roller supporting arm pivot, said arm being arranged in operative position to bear directly against said abutment at a point located above the plane containing the pivotal axis of the arm and the combined centre of mass of the arm together with the rollers and ancillary components carried by the arm, such that the pressure exerted between the abutment and the arm imparts a downwardly acting force to the upper drafting rollers.

2. A textile drafting apparatus comprising, in

4

combination, a fixed support, an arm pivotally supported thereon, upper drafting rollers mounted in common at their arbors or journals in said arm, a rigid abutment pivoted on the fixed support at a point spaced above the roller-supporting arm pivot, said arm being arranged in its operative position to bear directly against said abutment at a point so located with respect to the pivotal axis of said arm as to bring about a turning moment about said axis, imparting a downwardly acting loading force to the upper drafting rollers.

3. A textile drafting apparatus as claimed in claim 1, in which yielding means are provided for urging the upper and lower drafting rollers toward one another, and comprising, in the part of the roller-supporting arm which bears against the abutment, an inset contact member the setting of which is adjustable for varying the loading pressure exerted on the arm.

4. A textile drafting apparatus as claimed in claim 1, wherein the roller-supporting arm incorporates resilient means for cushioning the loading pressure applied to the upper drafting rollers.

5. A textile drafting apparatus as claimed in claim 1, comprising detents upon the roller-supporting arm and the abutment adapted for releasable inter-engagement to retain the arm when raised out of the operative position.

6. A textile drafting apparatus as claimed in claim 1, wherein the roller-supporting arm is of inverted channel formation and the upper drafting rollers are supported therein by bearings mounted slidably between the flanges of the arm, and comprising means for securing said bearings to the arm in a variety of alternative positions according to the required interspacing of the rollers, and means for retaining the rollers in their bearings when the arm is raised whilst being yieldable to release individual rollers as required.

7. A textile drafting apparatus as claimed in claim 1, wherein the bearing of each roller comprises a bifurcated housing receiving the arbor of the roller, a pressure pad arranged to bear downwardly on the roller arbor, and a spring compressed between said pad and an adjustable set-screw.

8. A textile drafting apparatus as claimed in claim 1, wherein yielding means are provided for urging the upper and lower drafting rollers toward one another, there being in the part of the roller supporting arm which bears against the abutment, an inset contact member the setting of which is adjustable for varying the loading pressure exerted on the arm, the inset contact-member being constituted by a screw-threaded pin mounted with its head projecting rearwardly from an elbowed part of the roller-supporting arm, and wherein a pivoted lever, constituting the abutment for the arm, has a convex surface in which is provided a projection against which the head of said pin bears when the arm is in the operative position.

9. A textile drafting apparatus as claimed in claim 1, wherein the roller-supporting arm is of inverted channel formation and the upper drafting rollers are supported therein by bearings mounted slidably between the flanges of the arm, and comprising means for securing said bearings to the arm in a variety of alternative positions according to the required interspacing of the rollers, and means for retaining the rollers in their bearings when the arm is raised whilst

5

being yieldable to release individual rollers as required, and a slotted bracket, retained by the fixing of the bearing of a roller to the arm, for supporting a rotatable clearer for such roller.

10. A textile drafting apparatus as claimed in claim 1, wherein the roller supporting arm is of inverted channel formation and the upper drafting rollers are supported therein by bearings mounted slidably between the flanges of the arm, and comprising means for securing said bearings to the arm in a variety of alternative positions according to the required interspacing of the rollers, and means for retaining the rollers in their bearings when the arm is raised whilst being yieldable to release individual rollers as required, 15 and a cover-plate pivoted to the upper surface of the roller-supporting arm.

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6

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