Jan. 15, 1963 W. STAHLECKER ET AL 3,072,974

DRAWING MECHANISM FOR SPINNING MACHINES

Filed Sept. 21, 1959 2 Sheets-Sheet 1

Fig. 1

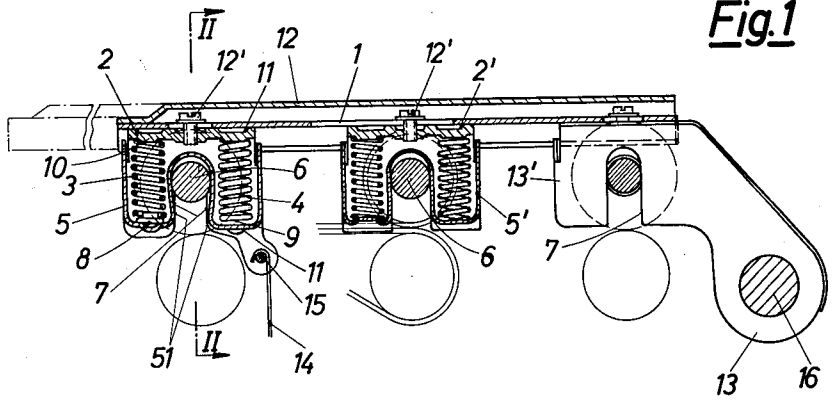


Fig. 3

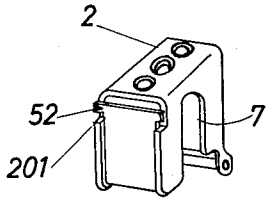


Fig. 2

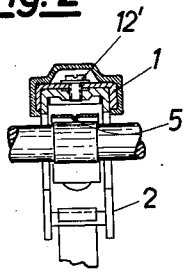
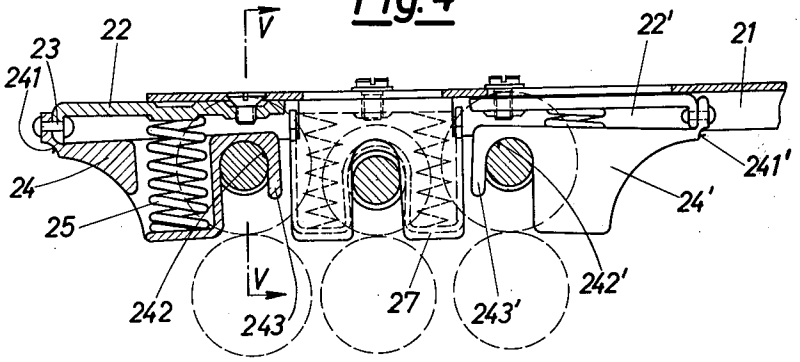


Fig. 4



INVENTORS
WILHELM STAHLECKER
HANS STAHLECKER

BY Dicke, Craig & Freudenberg
ATTORNEYS

Jan. 15, 1963 W. STAHLECKER ET AL 3,072,974

DRAWING MECHANISM FOR SPINNING MACHINES

Filed Sept. 21, 1959 2 Sheets-Sheet 2

Fig. 5

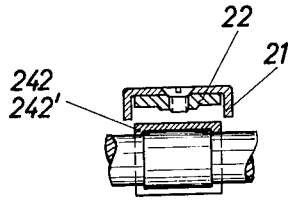
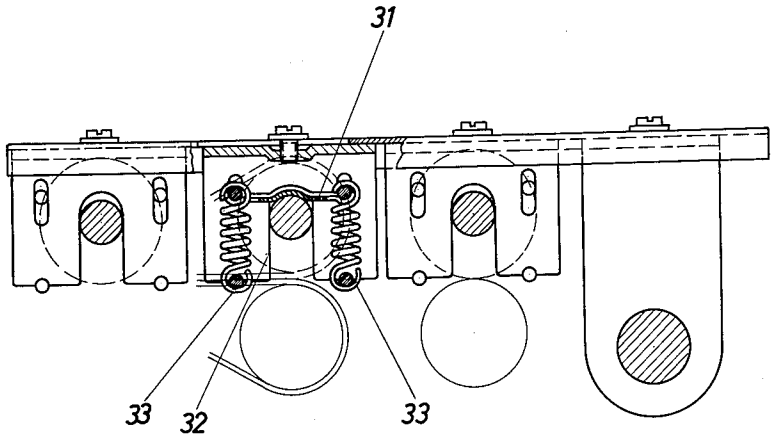


Fig. 6



INVENTOR.
WILHELM STAHLECKER
HANS STAHLECKER
BY Dicke, Craig & Freudenberg
ATTORNEYS

United States Patent Office 3,072,974 Patented Jan. 15, 1963

3,072,974

DRAWING MECHANISM FOR SPINNING MACHINES

Wilhelm Stahlecker, Ross-Steige 28, Tieringen, near Balingen, Wurttemberg, and Hans Stahlecker, Haldenstrasse 20, Suessen, Wurttemberg, Germany

Filed Sept. 21, 1959, Ser. No. 841,051
Claims priority, application Germany Sept. 23, 1958
11 Claims. (Cl. 19—281)

The present invention relates to a drawing mechanism for spinning machines in which the loading means for the top rollers are slidably adjustable on an arm extending above the drawing mechanism.

The drawing mechanisms of some of the spinning machines known prior to this invention were already provided with upwardly pivotable arms for carrying the supporting brackets of the pressure rollers which, in turn, were equipped with means for loading the same. These loading means of the known drawing mechanisms were disposed above the shafts of the pressure rollers so as to be either vertically above the same or to act upon intermediate arms. Since the load acting upon the individual pressure roller was supported at a point above the center of gravity of the roller, the position of equilibrium of the forces was very unsteady and it was therefore necessary to provide the loading device with special securing means. This also made the pivotable arm of such a height that it became impossible to employ cleaning rollers which span more than two spindle positions which are of great importance for the proper operation of each drawing mechanism.

It is an object of the present invention to provide a drawing mechanism which overcomes the above-mentioned deficiencies. For this purpose the invention provides the loading means for the top or pressure rollers in the form of springs which are disposed laterally of the shaft of the pressure roller and either in front of or behind the same or at both points. This manner of arranging the loading means permits the pivotable arm to be made of such a low height that it is possible to provide cleaning rollers which span many spindle positions although the cleaning rollers abut the top rolls since the arm, being of low height, will lie beneath the shaft of the cleaning rollers. A further advantage of the arrangement according to the present invention is that the load acting upon the pressure rollers is in a stable equilibrium with the opposing forces so that very little, if any, friction occurs at the supporting brackets of the pressure rollers.

These and additional objects and advantages of the present invention will become further apparent from the following detailed description of several preferred embodiments thereof, particularly when the same is read with reference to the accompanying drawings, in which:

FIGURE 1 shows, partly in cross section, a side view of a drawing mechanism according to one embodiment of the invention;

FIGURE 2 shows a cross section taken along line II—II of FIGURE 1;

FIGURE 3 shows a perspective view of a top-roller guide bracket according to FIGURE 1;

FIGURE 4 shows, partly in cross section, a side view of a drawing mechanism according to a modification of the invention;

FIGURE 5 shows a cross section taken along line V—V of FIGURE 4; while

FIGURE 6 shows, partly in cross section, a side view of a drawing mechanism according to a further modification of the invention employing draw springs.

Referring to the drawings, FIGURES 1 to 3 illustrate the drawing mechanism according to the invention in which the top-roller supporting arm consists of a U-shaped

rail 1 on which the supporting brackets 2, 2' of the top or pressure rollers are mounted so as to be adjustable by screws 12' in the longitudinal direction of rail 1. These brackets 2, 2' which may be made of sheet steel, cast iron or plastic contain compression or loading springs 3 and 4 and load-transmitting yokes 5, 5'. Each bracket 2, 2' is provided with guide slots 7 in which a shaft 6 of a top roller is mounted. Yokes 5, 5' may extend downwardly to the drawing plane extending between the top and bottom rollers. Loading springs 3 and 4 may be supported, for example, by spring caps 8 and 9 and projections 10 and 11. As shown, for example, on yoke 5' in FIGURE 1, the spring caps 8 and 9 may, however, be omitted if guiding projections for the springs are impressed into the yoke. As illustrated in FIGURE 3, the two arms of each supporting bracket 2 are provided with stop surfaces 201 with which laterally projecting tabs 52 on yoke 5 are adapted to engage to determine the lowest position of the yoke. If made of a suitable shape, the yoke may also serve as a retainer of the top roller to prevent the latter from dropping out of slots 7 when rail 1 is pivoted upwardly. As shown only on the front bracket 2 at the left side of FIGURE 1, this may be attained, for example, by making yoke 5 of resilient material and by snapping the same over shaft 6 of the top roller so that the distance between the two inner yoke arms 51 below shaft 6 will be reduced. Although the loading springs are preferably provided in the form of coil springs 3 and 4, they may also be of any other suitable type, for example, cup springs.

The covering member 12 which covers rail 1 and has a central, upwardly arched portion may be drawn forwardly, as indicated in FIGURE 1 in dotted lines, and serves in this position as an extended lever to permit the entire arm to be pivoted more easily into the loading position or to unload the pressure rollers. When shifted inwardly, this member 12 covers the setscrews 12' on brackets 2, 2'. The pivotable arm carrying the pressure rollers and consisting of rail 1 and a bracket 13 may be retained in its operative position by a resilient band 14 engaging over a pin 15 or by any other suitable retaining device as known in the art which may be provided on the arm, for example, at the rear supporting bar 16. The pivotable bracket 13 may also serve as a supporting bracket 13' for supporting the rear top roller.

FIGURES 4 and 5 illustrate a modification of the top-roller supporting arm which permits the rollers to be disposed at a very close distance from each other. A rail 22 or 22' which is secured to a U-shaped arm 21 carries the top-roller supporting brackets 24 and 24' which consist of plastic, for example, nylon, or any other suitable elastic material and are secured to rail 22 or 22' by rivets 23 or by screws. The thickness of the material of brackets 24 and 24' is reduced at the points 241 and 241' so as to be able to bend like hinges at these points. Spring 25 presses the brackets 24 and 24' downwardly so that the top rollers will be loaded.

Supporting bracket 27 is slidably adjustable on arm 21 in a similar manner as in FIGURE 1 and provided with a load-transmitting yoke and loading springs. There is no necessity for specially guiding the top rollers in the brackets 24 and 24' if the shafts of the rollers are tightly fitting into the bearing parts 242 and 242' of brackets 24 and 24'. When the pressure rollers are being inserted, the lateral arms 243 and 243' will bend elastically in the outward direction and will thereafter again assume the position as shown in FIGURE 4.

FIGURE 6 shows a further modification of the supporting arm in which the compression springs as provided in the first two embodiments are replaced by draw springs 33 which are attached to supporting bracket 32 and to a bridge member 31 serving as a load-transmitting element.

Although our invention has been illustrated and described with reference to the preferred embodiments thereof, it is to be understood that it is in no way limited to the details of such embodiments, but is capable of numerous modifications within the scope of the appended claims.

The invention having thus been fully disclosed, what we claim is:

1. In a drawing mechanism for spinning machines having top and bottom rollers, a pivotal loading arm above said top rollers, means for rotatably mounting said top rollers on said arm and for slidably adjusting at least one of said top rollers along said arm, and loading means for pressing said top rollers toward said bottom rollers comprising springs mounted at least at one side laterally of the shaft of each of said top rollers, and extending substantially within an area delimited on top and bottom by planes running parallel to the drafting plane and touching the surface of the top rollers on the top and bottom thereof.

2. A drawing mechanism as defined in claim 1, in which said loading springs are compression springs.

3. A drawing mechanism as defined in claim 1, in which said loading springs are draw springs.

4. A drawing mechanism as defined in claim 1, in which said loading springs are coil springs.

5. A drawing mechanism as defined in claim 1, in which said loading means further comprise load-transmitting yokes acted upon by said springs to act upon the shafts of said top rollers.

6. A drawing mechanism as defined in claim 5, in which said load-transmitting yokes also form brackets for supporting said top rollers.

7. A drawing mechanism as defined in claim 6, wherein said pivotable support arm includes a pivotable support which is formed by one of said brackets.

8. A drawing mechanism as defined in claim 6, in which said brackets consist of a resilient plastic.

9. A drawing mechanism as defined in claim 6, in which the material of said brackets is reduced in thickness at one particular point so as to be elastically bendable at said point like a hinge.

10. In a drawing mechanism for spinning machines having top and bottom rollers, a pivotable loading arm above said top rollers, means for rotatably mounting said top rollers on said arm and for slidably adjusting at least one of said top rollers along said arm, loading means for pressing said top rollers toward said bottom rollers comprising springs mounted at least at one side laterally of the shaft of each of said top rollers and extending below the shafts of said top rollers approximately to the drafting plane and load-transmitting yokes acted upon by said springs to act upon the shafts of said top rollers, said load-transmitting yokes forming brackets for supporting said top rollers, a member covering said loading arm and slidable thereon in the longitudinal direction, and a set screw for adjusting at least one of said brackets with a top roller thereon in the longitudinal direction of said arm, said covering member when shifted in one direction covering said set screw and when shifted in the other direction extending said loading arm to permit the latter to be more easily raised and lowered relative to said bottom rollers.

11. In a drawing mechanism for spinning machines having top and bottom rollers and shafts therefor, a supporting means for said top rollers including a pivotal supporting arm and brackets attached to said supporting arm, said brackets having supported therein the shafts of said top rollers, the top rollers being supported by said brackets adjacent said arm, said brackets being adjustable in the longtiudinal direction of the supporting arm, loading means for pressing said top rollers toward said bottom rollers comprising load-transmitting yokes mounted within said brackets and acting against said top roller shaft and springs mounted between said brackets and said yokes, said springs being mounted on at least one side of the shaft of each of said top rollers and having a substantial portion thereof extending below the axis of rotation of said top rollers and approximately to the drafting plane, whereby the height of the supporting arm is reduced and greater stability thereof is provided.

References Cited in the file of this patent

UNITED STATES PATENTS

2,675,587	Raible et al.	Apr. 20, 1954
2,677,858	Kuehn et al.	May 11, 1954
2,819,497	Dausch	Jan. 14, 1958
2,867,852	Dausch	Jan. 13, 1959
2,870,487	Dausch	Jan. 27, 1959