June 23, 1936. A. AEBERLI 2,045,338

STRETCHING MECHANISM FOR STRETCHING TEXTILE FIBERS FOR MULES, RING SPINNING, AND STRETCHING MACHINES

Filed Dec. 22, 1933

Fig. 1

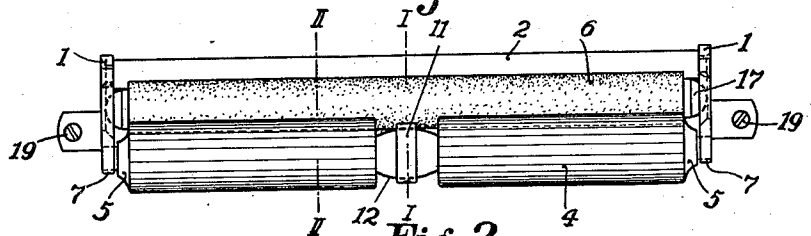


Fig. 2

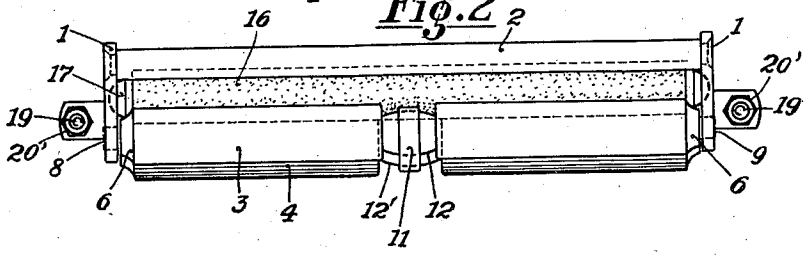


Fig. 3

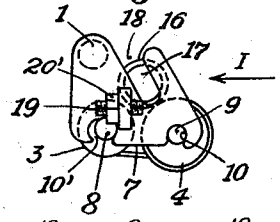


Fig. 6

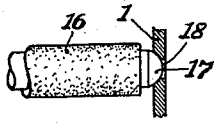
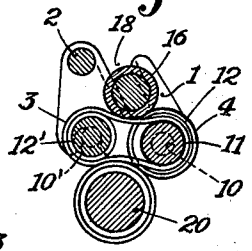


Fig. 4



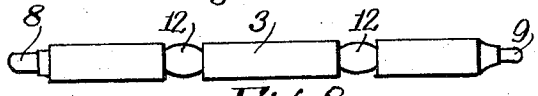


Fig. 8.

Fig 5

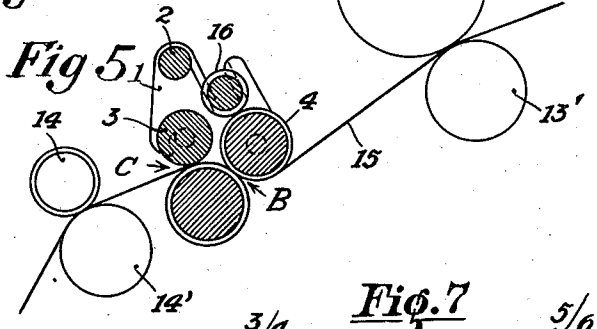
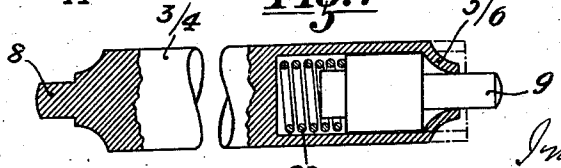


Fig. 7



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STRETCHING MECHANISM FOR STRETCHING TEXTILE FIBERS FOR MULES, RING SPINNING, AND STRETCHING MACHINES

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Application December 22, 1933, Serial No. 703,612
In Switzerland January 2, 1933

6 Claims. (Cl. 19—130)

This invention relates to a stretching mechanism for stretching textile fibers for mules, ring spinning and stretching machines, consisting substantially of two stretching cylinders mounted in side plates connected by a cross piece and a clearer roller, said stretching cylinders being in positive rotary connection with one another by means of a driving element.

In the known stretching mechanisms of this type the cross-sectional reduction of the stretching cylinders at the points, at which they join the journals, is entirely without transition. The stretching cylinders extend at both sides very close to the side plates, so that only a narrow gap remains at each side between these plates and the end faces of the stretching cylinders. Moreover, the side plates serving as bearings for the stretching cylinders in the known stretching mechanisms of the type in question are constructed in such a manner that the stretching cylinders laterally cover the side plates almost entirely, that is approximately within the range of the whole end faces.

It has been found, that the dust and spinning fly penetrate into the narrow gaps between the side plates and the end faces of the stretching cylinders and winds on the journals, whereby jammings are caused, which may lead to irregularities in the circumferential speed of the stretching cylinders or even to stopping thereof.

In the stretching mechanism according to the invention these and other objections are overcome in that the stretching cylinders are fitted at both ends with a neck tapering towards the journals and that each of the side plates are so constructed that the lower edge of each side plate intersects the bores for accommodating the stretching cylinder journals so that the bores are open in downward direction, at least one journal of each stretching cylinder being axially shiftable and held in operative position by resilient means.

An embodiment of the invention is illustrated by way of example in the accompanying drawing, in which:—

Fig. 1 shows in rear elevation the stretching mechanism viewed in the direction of the arrow I of Fig. 3.

Fig. 2 is a front view of the mechanism.

Fig. 3 is a side elevation of Fig. 1.

Fig. 4 shows the stretching mechanism in cross section taken on the longitudinal central plane I—I of Fig. 1.

Fig. 5 is a cross section on line II—II of Fig. 1.

Fig. 6 is a detail.

Fig. 7 shows a stretching cylinder partly in longitudinal section and on a larger scale.

Fig. 8 is a view of a modified form of stretching cylinder.

In the drawing two side plates 1 are connected by a transverse piece 2. Stretching cylinders 3 and 4 are journalled in the side plates 1, the cylinder 4 having a fluted surface. 13 and 13' designate two rear cylinders and 14, 14' two front cylinders. 15 is the fiber band to be stretched. It enters the stretching mechanism at B and leaves it at C.

The stretching cylinders 3, 4 have necks 5, 6 respectively each tapering towards the coordinate journal. The side plates are formed with recesses constituting sockets or bearings 10 and 10' which open through the lower edges 7 of the side plates and receive the journals 8 and 9 of the cylinders. By having the bearings formed with the restricted mouths at their lower ends as shown in Figure 3, the journals 8 and 9 will be prevented from slipping out of the bearings but the bearings can be cleaned without it being necessary to remove the stretching cylinders. At least one of the journals 9 of each of the stretching cylinders 3, 4 is axially shiftable and securely held in operative position by resilient means 22 (Fig. 7). The stretching cylinders 3, 4 can be removed from the rigidly connected side plates 1 or from the bores therein by inwardly pressing this shiftable journal 9.

The bores 10' of the stretching cylinder 3 as shown in Figure 3 are elongated transversely of the side plates whereby the cylinder 3 can be shifted in its bearings and maintained in parallel relation to the fluted cylinder 20. By this arrangement, the fibers will be guided and maintained under uniform pressure, this being of great important for the production of first class uniform material. Shifting of the cylinder 3 away from the cylinder 4 will also tighten the belt 11 which imparts rotary motion from one cylinder to the other.

The stretching cylinders 3, 4 have each a portion 12, 12' respectively of oval cross section for accommodating the driving belt 11. The driving belt 11 is stretched over the cylinders 3 and 4 so that through the driving of the cylinder 4 the cylinder 3 is also driven. The stretching cylinders rest on a fluted cylinder 20 which drives the likewise fluted stretching cylinder 4. It will be observed that the cylinders 3 and 4 are arranged on opposite sides of a plane passing vertically through the axis of the cylinder 20 and in alinement with said axis. Because of this ar-

rangement, these rollers tend to move downwardly over the surface of the cylinder **20** and thus to separate and stretch the belt **11**, the bearings for the cylinder **3** being shaped to permit such separation. In the case of very long stretching cylinders **3**, **4**, two driving belts are preferably employed, which each run on one of the turned portions of oval cross section of its stretching cylinder. A cylinder so formed is illustrated in Fig. 8.

A clearer roller **16** bearing merely on the fluted stretching cylinder **4** exerts by gravity at the same time also a loading effect on the driving element **11** stretching the same and maintaining the element **11** under such tension as to rotate the stretching cylinders under constant driving effect. The clearer roller **16**, which is provided with rounded journals **17** one at each end, is mounted in slots **18** in the side plates **1** which have further directly at the bearing points of the clearer roller cup-shaped recesses along the slots **18**, as shown in Figs. 4 and 6, so that an easy rotation of the clearer roller **16** is ensured and at the same time pulling in of the spinning fly into the bearing is prevented.

The side plates **1** have outwardly directed projections each carrying an adjusting screw **19** and a nut **20'** for adjusting the position of the device in the machine frame and on the fluted cylinder **20**, so as to lengthen or shorten the clamping distance as desired. The stretching mechanism is therefor so mounted that its frame together with the pressure cylinders and the clearer roller will be shiftable backwards and forwards as a complete unit and adapted to be removed from the machine frame like an ordinary upper cylinder.

By the arrangement of the necks gradually tapering towards the journals jamming, owing to the spinning fly, is avoided. The freeing of a great portion of the end faces of the stretching cylinders due to the raised edges **7** of the side plates **1** also renders it difficult for the spinning fly to collect. Moreover, as already mentioned, cleaning is greatly facilitated at the bearing points open in downward direction, and as the spinning fly cannot collect, electromagnetic currents between the rotating parts are avoided.

Owing to the axial shiftability of a journal of each stretching cylinder these cylinders **3**, **4** can be easily inserted and removed.

The fluting of one stretching cylinder **4** advantageously increases the adhesion between this cylinder and the fluted cylinder **20** and therefore exerts a very favorable effect on the drawing in of the fibre band **15**. The adhesion between the stretching cylinder **4** and the fluted cylinder **20** is still further increased by the clearer roller **16** arranged above the stretching cylinder **4** and pressing by gravity on to the stretching cylinder. It is thus possible, to obtain a preliminary retardation between the pair of pulling in cylinders **13**, **13'** and the stretching cylinder **4** and the fluted cylinder **20**, and to distort the so-called twister in.

Reference has been made to stretchable belts **11** of known type. Stretchable rubber belts are satisfactory in some climates but where the climate is such as to affect rubber injuriously, well known spiral wire belts may be employed and of course the inventor does not wish to be limited with respect to the type of belt employed.

I claim:—

1. Stretching mechanism for stretching textile fibers for mules, ring spinning and stretching machines, comprising in combination two side plates having recesses formed therein constituting sockets, a transverse frame rigidly connecting said side plates, two stretching cylinders, and a clearer cylinder journaled in said side plates, a driving element adapted to rotate said stretching cylinders, journals one on each end of each of said stretching cylinders journalled in the sockets of said side plates and one of said journals being axially shiftable, a tapered neck on each end of each of said stretching cylinders tapering towards its coordinate journal and providing clearance between the cylinders and the inner faces of the side plates, the sockets for accommodating said stretching cylinders having restricted mouths opening through the lower edges of the side plates, and resilient means adapted to maintain said axially shiftable journal in operative position.

2. A stretching mechanism as specified in claim 1, comprising in combination with the side plates, the stretching cylinders and the driving element, a pressure roller on which rests said stretching cylinders, an endless belt forming said driving element, certain of said sockets being elongated transversely of the side plates, and one of said stretching cylinders being displaceable in the elongated sockets to change the distance between this cylinder and the other stretching cylinder and accommodate itself to the fibre band, and at the same time to stretch said belt.

3. A stretching mechanism as specified in claim 1, in which the side plates, the stretching cylinders and the clearer roller form a complete unit adapted to be shifted backwards and forwards in and to be inserted and removed from the machine frame like an ordinary upper cylinder.

4. A stretching mechanism as specified in claim 1, comprising in combination with the stretching cylinders, the clearer roller and the side plates, which all together form a complete unit, a fluted cylinder under said stretching cylinders, outwardly extending projections on said side plates, adjusting screws, and adjusting nuts on each of said projections adapted to adjust the position of said unit in the machine frame and on said fluted cylinder to varying the clamping distance as desired.

5. A stretching mechanism as specified in claim 1, in which said stretching cylinders have each a turned extension of oval cross section and said driving element comprises two endless belts each running on one extension of said stretching cylinders.

6. A stretching mechanism as claimed in claim 1, comprising in combination with side plates, clearer roller and stretching cylinders, a driving element in the form of an endless belt, said clearer roller resting partly on one of said stretching cylinders and partly on the belt to effect stretching said belt, said side plates having cup-like longitudinal slots, hemispherical ends on said clearer roller engaging in such slots, said slots being milled to correspond to the radius of the ends of said clearer roller.

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