March 4, 1930. J. PFLIMLIN 1,749,393

DRAWING DEVICE FOR SPINNING FRAMES AND FOR PREPARING MACHINERY

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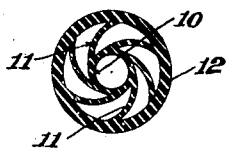



Fig. 1

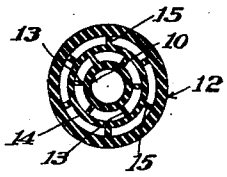



Fig. 2

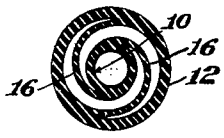



Fig. 3

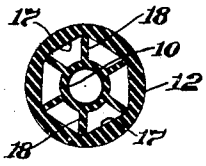



Fig. 4

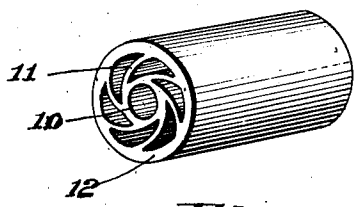



Fig. 5

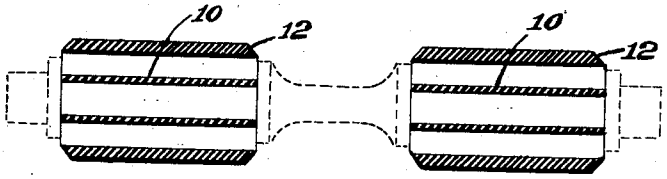



Fig. 6

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# UNITED STATES PATENT OFFICE

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## DRAWING DEVICE FOR SPINNING FRAMES AND FOR PREPARING MACHINERY

Application filed November 10, 1928, Serial No. 318,558, and in France and Great Britain May 29, 1928.

This invention relates to sliver or roving drawing devices devised for the drawing effected by spinning frames and the like, as also by preparatory machines and for drawing frames. More particularly it relates to an improvement in the construction of the upper or "floater" roller of the intermediate pair.

I have discovered that for the greatest efficiency the floater roller should be equipped with an elastic sleeve-like body having a sufficient thickness to provide a great resiliency and flexibility so that as a result of its weight (and supplementary weight if necessary) it is readily deformed so as to conform to the surface of the lower roller of the intermediate pair, the compressibility being in such degree that the lower roller is embraced upon a comparatively large part of its circumferential surface.

My present invention is particularly concerned with improving the elastic sleeve or body member of the floater roller especially when manufactured of rubber or like material. For perfect and durable elasticity pure Pará rubber is the most suitable material but if used in a solid form its resilience is insufficient to meet the exigencies of the main drawing with the ordinary weighting. Excessive weighting, sufficient to cause a solid rubber roll to embrace the lower intermediate roller to the desired extent, is detrimental to the good quality of the yarn and thread.

Accordingly the object of my invention is to produce a body sleeve for floater rollers of very elastic material, for example pure Pará rubber, having a construction that will insure an elongated or belt-like engagement of the sliver being drafted under usual weighting conditions. To the accomplishment of this object the resilient material of the body sleeve comprises an inner wall or hub designed to fit on the usual metal spindle, and an outer wall or skin separated from the hub by intermediate spacing members constructed and arranged to provide hollow compartments therebetween. The intermediate spacing members are in the form of longitudinal partitions preferably, but not necessarily, having a spiral relation to the hub providing for circular series of open cells between the inner and outer walls of the sleeve. The result is a sleeve-like cellular body of substantial thickness so readily compressible that ordinary weighting will cause the floater roller, of which this resilient body is the main element, to be deformed to such an extent as to contact with a relatively long arc of the surface of the lower roller.

The nature of my invention will best be understood from the following description of the accompanying drawings, in which:

Figure 1 is a cross-sectional view of the preferred construction of the floater roller sleeve;

Figs. 2, 3 and 4 are cross-sectional views of modified forms of the floater roller sleeve;

Fig. 5 is a view, in perspective, of the preferred form of the sleeve illustrated by Fig. 1; and

Fig. 6 illustrates, in longitudinal cross-section, a pair of the sleeves mounted on the usual metal spindle.

Referring first to Figs. 1 and 5 the sleeve is formed in a mould, the mould being designed to produce a tubular member having a cylindrical wall forming a hub 10, an outer concentric cylindrical wall forming a skin 12 that may be somewhat thicker than the hub wall, and relatively thin connecting longitudinal partitions 11. In this example the partitions 11 show as spirals in cross-section, their inner edges being joined tangentially to the outer surface of the hub and their outer edges being joined substantially tangentially to the inner surface of the skin. The partitions 11 are arranged symmetrically about the center of the sleeve and for sleeves from 20 mm. to 30 mm. in diameter six such partitions have been found sufficient in practice to maintain the cylindrical form while yet providing for the great suppleness and compressibility that must characterize the floater rollers. The hollow compartments or cells between the partitions have an outer width of slightly less than one-sixth of the inner circumference of the outer skin. Because of the circumferential overlapping of the partitions, due to their spiral arrangement, the cells overlap each other radially and a neu-

tralizing and progressive elastic support is given to the skin as the floater roller rotates providing for a uniform suppleness or compressibility throughout its circumferential surface.

This highly important characteristic of uniform compressibility at all points on the circumference of the sleeve may be secured by other arrangements of the partitions. For example in Fig. 2 the hub 10 may be spaced from the skin 12 by two series of radial partitions 13 and 15 extending outwardly from the hub and inwardly from the skin, respectively, both series being joined and supported by a central cylindrical partition 14. In this example the radial partitions 13 and 15 are staggered relatively to each other thereby providing for a radial overlapping of the open cells and a neutralization of the local stiffening effect on the skin of the radial partitions.

In the example illustrated by Fig. 3 spiral partitions 16 are employed less in number and consequently greater in length than the partitions 11 of Fig. 1, with an increased suppleness in the sleeve which may be required for certain mill conditions.

In the example illustrated by Fig. 4 simple radial partitions 18 are shown as substitutes for the spiral partitions 11 of Fig. 1. This form is somewhat less supple and to compensate for the stiffening at local points on the circumference resulting from the radial form of the partitions the sections 17 of the skin between each pair of partitions is made thicker than at the areas of connection of said partitions with the skin. Thus the depressibility of the elastic skin throughout its circumference is equalized.

The material preferably used for all of the examples described in pure Pará rubber which provides the inherent elasticity required to cause the sleeve to resume its cylindrical form after the progressive depression of its circumferential surface during its rotation in weighted contact with the lower intermediate roller. In practice the skin of the floater roller is depressed from 1 mm. to 1½ mm. while in contact with the lower intermediate roller thus spreading the contacting surface over a comparatively large part of the circumferential surface of the lower roller and consequently extending its control of the sliver passing through said rollers over a substantial distance in the direction of extent of the sliver. This better control of the sliver, by causing the fibres to be more evenly payed out, prevents them from being drawn forward in variable quantity resulting in uniform evenness in the drawn sliver as delivered from the rollers.

It will be understood by those skilled in the art that the rubber sleeve will be covered by a cot of some thin and flexible leather, as practiced in this art, to protect the rubber and to provide the floater roller with a surface best suited to engagement with the sliver and to draft the same with the greatest efficiency.

The nature and scope of my invention having been indicated, and its preferred embodiments having been specifically described, what is claimed as new, is:—

1. In drawing devices for spinning frames and preparing machinery, a sleeve for floater rollers formed of very elastic material and comprising a hub portion and an outer skin, the arrangement being such that the suppleness and compressibility of the floater is increased by providing hollow compartments between the hub and the skin.

2. In drawing devices for spinning frames and preparing machinery, a sleeve for floater rollers formed of very elastic material and comprising a hub portion and an outer skin, the arrangement being such that the suppleness and compressibility of the floater is increased by providing hollow compartments between the hub and the skin, together with means to maintain a substantially uniform compressibility about the whole circumference and throughout the length of the floater roller.

3. In drawing devices for spinning frames and preparing machinery, a sleeve for floater rollers formed of very elastic material, comprising a tubular hub, a tubular outer wall concentric with the hub, and connecting partitions between the hub and the outer wall, said connecting members, in transverse section, forming with the hub and the outer wall any geometrical design having a center of symmetry.

4. A deformable sleeve for floater rollers comprising concentric tubular portions the inner of which forms a hub and the outer of which forms a skin, said hub and skin being connected by longitudinally arranged partitions spaced apart to provide hollow compartments therebetween.

5. A deformable sleeve for floater rollers comprising two hollow cylinders differing in diameter, the smaller nested concentrically within the larger and being held in such position by longitudinal partitions extending from one cylinder to the other forming hollow compartments between them the relation of said partitions to each other being such that said compartments overlap each other radially.

6. A deformable sleeve for floater rollers comprising concentric tubular portions the inner of which forms a hub and the outer of which forms a skin, said hub and skin being connected by longitudinal partitions that are curved in a manner to connect tangentially with the hub and skin leaving hollow compartments therebetween.

7. As an integral article of manufacture a rubber sleeve for floater rollers compris-

ing a hollow cylindrical hub, partitions about the hub lying parallel to the axis of rotation but each curved in its own plane to present a spiral cross-section relative to said hub, and a cylindrical outer wall connecting the outer edges of said partitions.

8. A deformable sleeve for floater rollers comprising concentric tubular portions the inner of which forms a hub and the outer of which forms a skin, said hub and skin being connected by longitudinally arranged partitions spaced apart to provide hollow compartments therebetween, the wall of said skin being thicker between said partitions than at the areas of connection of said partitions with said skin.

In testimony whereof I signed hereunto my name.

JULES PFLIMLIN.