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CLEARER ROLL CONSTRUCTION FOR TEXTILE MACHINES AND THE LIKE

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Fig. 1

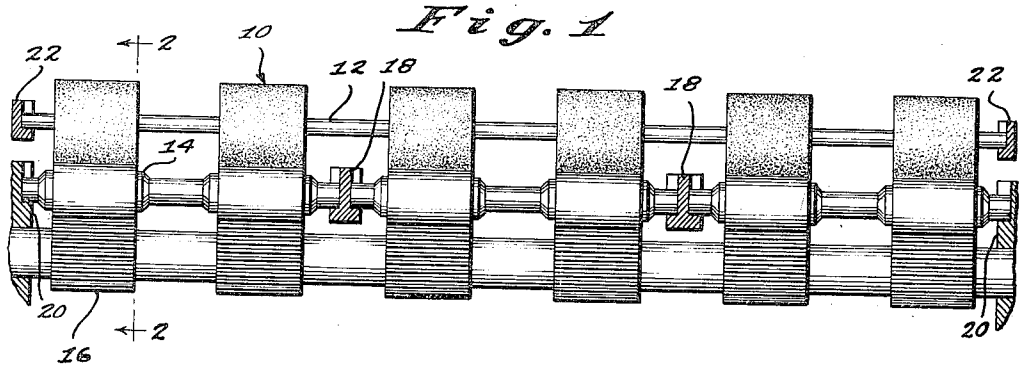


Fig. 2

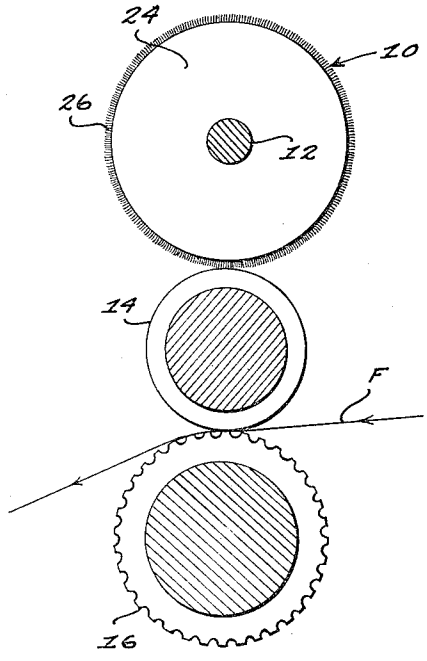
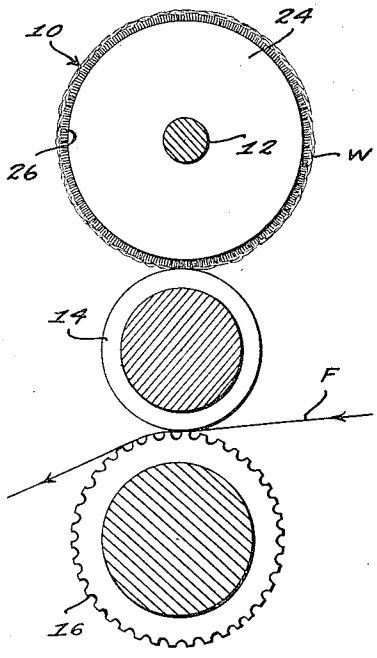


Fig. 3



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CLEARER ROLL CONSTRUCTION FOR TEXTILE MACHINES AND THE LIKE

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This invention relates to clearer or scavenger rolls of the type employed for picking up waste material such as loose fiber or broken ends during a process of fiber preparation, and more particularly to an improved form of clearer body for such rolls.

In the past, the clearer bodies of clearer or scavenger rolls have conventionally been formed of a substantially incompressible base material, such as wood or metal, covered with cloth, felt or roughened paper, or the like, to present a fibrous or napped surface having an affinity for waste material so as to obtain the desired pick up or clearing action. The clearing ability of such coverings depends on the fibrous nature of their surfaces and the degree to which the nap of these surfaces can be maintained during continued use.

Characteristically the nap on the clearer roll covering materials heretofore in use has tended to pack down during use because of the rigid bases on which they were mounted, and the result has been a rate of loss in clearing efficiency that was much more rapid than desirable. Attempts have been made to cure this difficulty through the use of woven pile fabric or plush cloths having a relatively resilient pile, but the nap of even these fabrics will pack down and lose its clearing effectiveness when used on a rigid base.

According to the present invention the above noted difficulty is obviated by employing a relatively soft and compressible body member on which to mount the pile covering in forming the clearer bodies, and further selecting the body member with a compressibility in relation to the aggregate stiffness of the pile elements in the covering thereon such that the body member is rendered yieldable under a force applied to the covering before any bending of the pile elements occurs. In this way the upright disposition of the pile elements is retained during use of the clearer roll, because the soft body member absorbs the force which tends to pack the pile elements down, while those clearers having rigid body members can only result during use in packing the pile elements down; and the clearer bodies are additionally rendered substantially easier to strip of waste material picked up thereon, because there is no opportunity for the waste material to become entangled by bent over pile elements as occurs when a rigid body member is used.

These and other features of the present invention are described in further detail below in connection with the accompanying drawing in which:

Fig. 1 is a fragmentary elevation partly in section, indicating the general arrangement of a top clearer roll embodying the present invention disposed for clearing action in relation to a stand of top drawing rolls;

Fig. 2 is an enlarged sectional detail taken substantially on the line 2—2 in Fig. 1; and

Fig. 3 is a further sectional detail corresponding to Fig. 2 but illustrating the manner in which waste material is picked up by the clearer bodies.

In the above noted drawings an embodiment of the present invention in a top clearer roll has been selected for purposes of illustration because particularly good results are obtained with such embodiments in comparison with the conventional top clearer rolls heretofore in use. It should be noted, however, that this selection is otherwise purely a matter of convenience in illustration and disclosure, and that the present invention is applicable similarly and equally well for use generally in forming textile clearer or scavenger rolls, such as under clearer rolls, back clearer rolls, topping rolls and the like.

Referring now in detail to the drawings, Fig. 1 shows a top clearer roll comprising clearer bodies **10** of the present invention spaced on a mounting shaft **12** for disposition in clearing contact with a stand of top drawing rolls **14** in the usual manner, the top drawing rolls **14** being supported by pocket bearings in adjacent frame structure and the related bottom drawing roll **16** being journalled therein as at **18** and **20**. Also, a bracket support for the top clearer roll mounting shaft **12** is represented generally in Fig. 1 at **22** arranged as is usual for providing a floating disposition of the clearer bodies **10** above the top drawing rolls **14**.

In Fig. 2, the clearer bodies **10** are illustrated in further detail as comprising a body member **24** invested with a pile covering **26**. As previously mentioned, it is this pile covering **26** that provides the clearing action by picking up loose fiber from the top drawing rolls **14** that adheres thereto from a fiber end as at F being drafted between the top and bottom drawing rolls **14** and **16**. The purpose of providing this clearing action is to prevent fouling of the top rolls **14** by this loose fiber during the drafting operation, the loose fiber being picked up instead by the pile covering **26** in the form of a mass of waste fiber material as at W in Fig. 3.

Stripping or removal of this accumulated waste fiber material W is necessary at more or less regular intervals because if the accumulation is allowed to become too great portions of the fiber mass tend to separate and fall into the fiber F being drafted to form the defects commonly referred to as "slubs." On the clearer rolls now commonly used, the pile elements are bent down severely during use, under the weight of the roll, and become entangled with the waste W which causes loss of clearing efficiency, more difficult removal of the waste W, and inferior wearing qualities.

As already noted, this difficulty is eliminated according to the present invention by forming the body member **24** of a relatively soft and compressible material, preferably sponge rubber, although foam rubber or other soft rubbers or comparable materials might also be used depending on the form of pile covering **26** employed; the object in any case being the provision of a body member **24** with sufficient compressibility in relation to the stiffness of the pile elements of the covering **26** so that the body member **24** is yieldable under a force applied at the covering **26** before the pile elements therein bend.

As to the pile covering **26**, this may be formed of a woven pile fabric, such as mohair, or a flocked pile fabric, or of discrete fiber flock, and we prefer the latter material. Rayon flock is well suited for this purpose and readily available and easily handled, but flock formed from any other material or synthetic fiber, such as cotton, wool, nylon, glass, and the like, might be used as desired. In employing either a pile fabric or fiber flock for the covering **26**, a flexible adhesive should be used to secure the cover-

ing **26** in place on the body member **24** so as not to mask the compressibility of the material from which the body member **24** is formed. An example of a suitable flexible adhesive for this purpose is:

	Pounds
Hycar 1032 (butadiene-acrylonitrile copolymer)	20.0
Sulfur	.4
Accelerator (butyl zincate)	.2
Antioxidant (agerite white)	.2
Zinc oxide	1.0
Durez 12687 (oil soluble phenolic resin)	2.0
Butyl acetate	78.0

In applying a pile fabric to the body member **24**, it need only be arranged as a cover wrapping and secured in place with the above noted flexible adhesive. Where fiber flock is used to form the pile covering **26**, however, it should be applied with flocking apparatus by which the discrete flock fibers can be disposed uprightly on the body member **24**. This can be done very readily with electrostatic flocking equipment of conventional types, the flexible adhesive first being coated on the body member **24** and the flock then being applied endwise by this equipment under an electrostatic influence to the adhesive coating before it has set up so that the fully developed adhesive will retain the flock fibers uprightly in place to form an active and durable nap on the body member **24**.

In the foregoing manner, the clearer bodies **10** may be provided according to the present invention with a balance between the yieldable backing of the compressible body member **24** and the relative stiffness of the pile elements forming the clearer cover **26** that allows adaption to a variety of clearing actions as desired for different conditions.

The present invention has been described above for purposes of illustration only and is not intended to be limited by this description or otherwise except as defined in the appended claims.

We claim:

1. A textile clearer or scavenger-roll adapted for picking up waste material such as loose fiber and broken ends during a process of fiber preparation, said roll comprising a body member composed entirely of sponge rubber and mounted on a shaft of relatively small diameter in relation to the diameter of said body member, said body member having a resilient pile covering thereon formed by discrete fiber flock of a vegetable origin and disposed uprightly on said body member, a flexible adhesive secured to the outer surface of said body member for retaining said flock in place at said surface, and said rubber body member being compressible in relation to the aggregate stiffness of the flock forming said pile covering in a degree such that said body member is yieldable before said pile covering yields, whereby the upright disposition of said pile covering is retained for effective clearing action during continued use.

2. A top roll clearer for a textile machine comprising a mounting shaft and a plurality of clearer bodies spaced on said mounting shaft for disposition in clearing contact with a stand of top drawing rolls, said clearer bodies comprising a relatively soft and compressible body member composed entirely of a soft rubber material and having a resilient pile covering thereon formed by rayon flock and disposed uprightly on said body member, a flexible adhesive secured to the outer surface of said body member for retaining said flock in place at said surface, and said rubber body member being compressible in relation to the aggregate stiffness of the flock forming said pile covering in a degree such that said body member is yieldable before said pile covering yields, whereby the upright disposition of said pile covering is retained for effective clearing action during continued use.

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