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H. M. BACON

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CARD FEED ROLL

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FIG. 1.

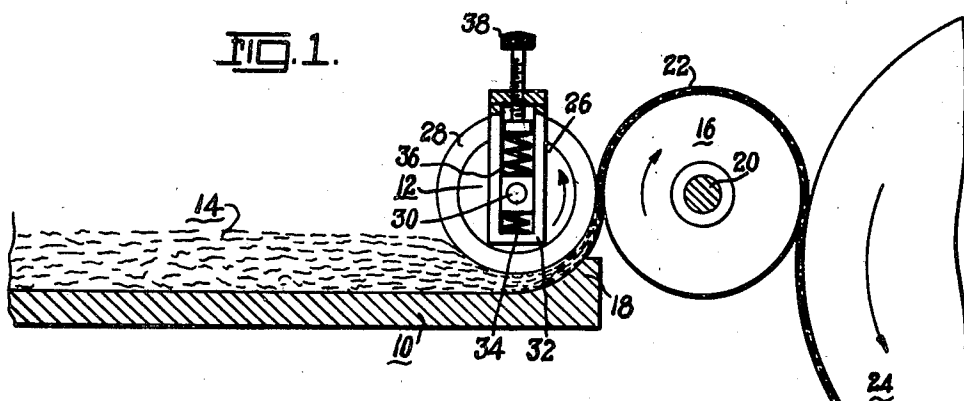


FIG. 2.

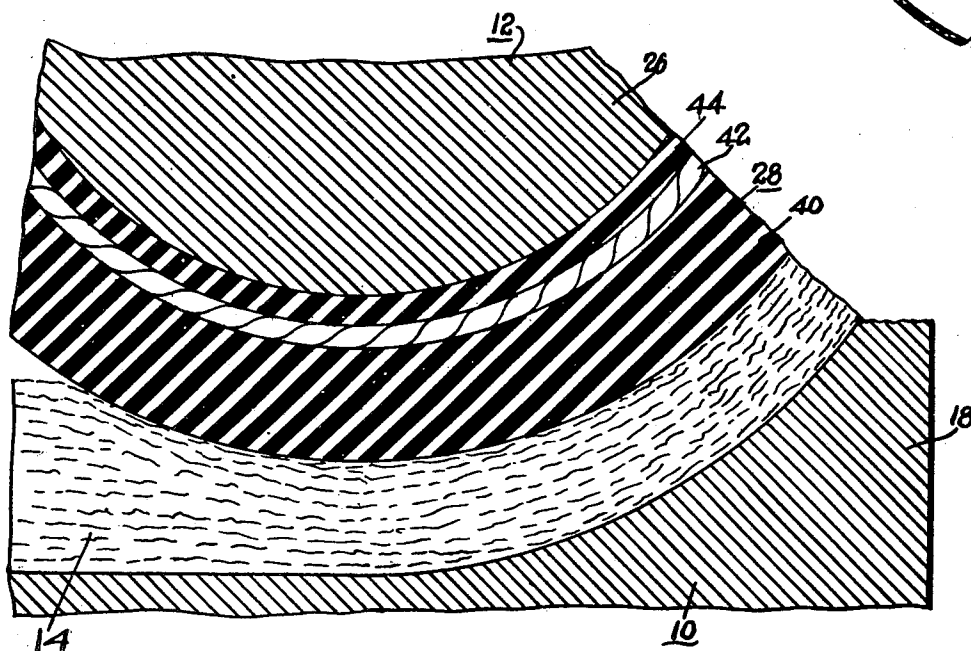


FIG. 3.

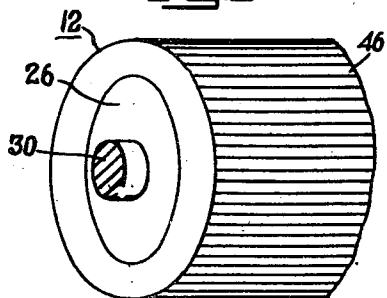
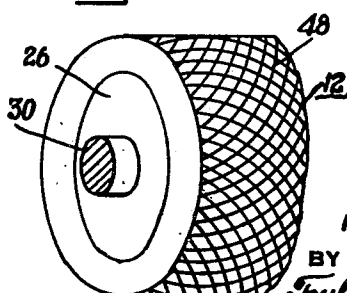


FIG. 4.



INVENTOR
HENRY M. BACON,

BY
Fulmin & Fulmin,
ATTORNEYS

UNITED STATES PATENT OFFICE

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CARD FEED ROLL

Henry M. Bacon, Dayton, Ohio, assignor to The Dayton Rubber Company, a corporation of Ohio

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6 Claims. (Cl. 19—105)

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This invention relates to method and apparatus for carding textile fibers. More particularly, this invention relates to an improved type feed roll for delivering the fibers to the licker-in roll of a carding machine.

Cards usually comprise a bed plate or feed table, a metal feed roll laying over the said bed plate, a licker-in roll for picking the fibers off the feed roll and a card roll which receives the fibers from the licker-in roll and delivers them to the next fiber working station.

The fibers are prepared in a machine called a picker and are laid on the feed table in the form of a blanket. The feed roll then moves them off the feed table and delivers them at a set rate to the licker-in roll which, having a higher surface feed than the feed roll, reduces the fibrous web to a thin film and lays it on the card roll.

In the case of metal feed rolls it is necessary that the roll be fluted or scored or have a surface roughened in some manner so as to provide the proper gripping force to pull the fibrous blanket from the feed table. However, a feed roll surface which satisfactorily grips the fibers without cutting them has a tendency to press valleys into the fiber blanket which thin out more than the rest of the fiber web as the licker-in roll draws the blanket from the said roll.

The irregularities introduced into the web by the feed roll are thus accentuated by the licker-in roll and passed to the card cylinder and eventually into the spinning machine where they influence the quality of the yarn. Inasmuch as one of the principal objects of spinning is to produce yarn having uniform density per unit length, the effect of a roughened metal roll is to detract from the yarn quality.

The fiber blanket deposited on the feed table is of varying density due to the nature of the fibers themselves and the picker. The usual type steel feed roll, having no cushion effect whatsoever, tends to create sections of increased density in the heavier portions of the picker lap while tending to increase the rate of delivery of the thinner sections thereof. The aforementioned drawing action of the licker-in roll in combination with this action of the feed roll thus aggravates the initial condition of varying fiber

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density to the detriment of the ultimate yarn product.

Steel rolls are also objectionable in that the flutes or scoring thereon become worn and the grip thereof on the fibers decreases, thus necessitating continuous adjustment of the pressure of the feed roll on the picker lap.

Furthermore, steel rolls exhibit very little traction in the case of certain fibers such as rayon even when bearing thereon under considerable pressure.

Accordingly, it is the primary object of this invention to provide a method of delivering the picker lap to the licker-in roll at uniform density.

It is another object to provide a feed roll for a card machine having improved fiber gripping characteristics.

It is another object to provide a card including an improved feed roll which delivers a substantially uniform web of fibers to a spinning machine.

It is another object to provide a feed roll for a card machine which will stay in adjustment for a greater length of time than the usual type feed roll.

These and other objects and advantages will become more apparent upon reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic view of a card;

Figure 2 is an enlarged section through the feed roll and the bed plate or feed table adjacent the licker-in roll; and

Figures 3 and 4 are perspective elevational views of portions of the feed roll of this invention showing different methods of preparing the surface thereof.

Referring to the drawings more in detail, 10 indicates a feed table or bed plate which may be formed of metal and 12 indicates the feed roll disposed thereover which transfers the blanket of fibers 14 to the licker-in roll 16.

The table 10 may be formed with an upturned end as at 18 so that the fibers are directed upwardly toward the roll 16. The roll 16 is mounted on a shaft 20 and is driven so as to have substantially greater surface speed than the roll 12 so that the fibers delivered thereto are drawn out into a relatively thin web as indicated at 22.

The web 22 is carried on the card cylinder 24 between and under a set of small moving flats

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(not shown). The surface of the card roll and the flats are composed of ground wire surface and this operation parallels the fibers and removes foreign material. This cleaned web is then removed from the card cylinder and delivered to the next operation which is drawing.

Returning to the feed roll 12, this will be seen to comprise a roll 26 having a covering 28 thereon and mounted on a shaft 30 which is adjustable in a frame 32 between the springs 34 and 36 so as to vary the pressure of the roll 12 on the picker lap 14. The springs 34 and 36 are adapted for cooperation with the adjustable screw 38 so that the said pressure may be precisely adjusted for various fibers and for various rates of speed.

Referring to Figure 2, the roll cover 28 is more particularly shown and it will be seen to comprise a rubber-like body 40 which may include a strengthening or tension section comprising cords 42 and may further, if found desirable, include a cushion layer at 44 for the purpose of facilitating the mounting of the cover 28 on the roller 26.

The body 40 and cushion section 44 may comprise rubber or any rubber-like material such as any of the synthetic rubbers which are suitable for this purpose. For example, I have found that various copolymers of butadiene are eminently satisfactory, having good fiber gripping characteristics and exhibiting a high degree of resistance to abrasion, wear and oils as well as being substantially moisture proof.

Should it be desired for certain types of fibers, the surface of the cover 28 may be lightly fluted as at 46 in Figure 3 or otherwise scored as at 48 in Figure 4. The surface may also be buffed or ground or abraded in order to produce any desired surface texture should it be found desirable. Likewise, the body 40 may be compounded to include certain solid materials which, as the surface of the cover 28 wears, will produce minute pores or pits in the said surface which give the cover the desired fiber gripping characteristics.

It will be understood that this slight roughening of the surface of the feed roll is not for the same purpose as the roughening of prior art metal rolls, but is to augment, when so desired, the fiber gripping properties of the resilient surface of my improved feed roll.

It will be apparent, upon reference to Figure 2, that the improved cushioned feed roll of this invention provides for a uniform flow of fibers to the lick-in roll 16 and, rather than aggravating conditions of variable density in the picker lap, tends to off-set these variations so that the final yarn or thread product of the subsequent spinning operations is of good quality, having uniform fiber distribution throughout.

It will also be apparent that the improved cushioned feed roll of this invention with an acid and oil resistant cover is adapted for use on fibers which have been dyed or otherwise treated and which would ordinarily detract from the card uniformity.

Also, the cushioned feed roll of this invention provides a ready means for carding fibers which exhibit very low friction to ordinary feed rolls. These fibers would include such synthetic fibers as nylon and rayon.

It will be understood that while there have been described herein certain specific embodiments of the invention, it is not intended thereby to have the invention limited to or circumscribed by the specific details of construction or arrangement of parts, materials or procedures herein described or illustrated in the drawing by way of example, in

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view of the fact that the invention is susceptible to modifications according to individual preference or conditions without departing from the spirit of this disclosure and the scope of the appended claims.

I claim:

1. In combination in a carding machine, a card cylinder, a lick-in roll, a feed table and a feed roll with a resilient cover thereon, means for supporting said feed roll over said feed table adjacent said lick-in roll and yieldably to and from said feed table, means for driving said lick-in roll at substantially the same surface speed as said card cylinder, means for driving the feed roll at substantially less surface speed, said construction promoting an even flow of fibers from said feed table to said lick-in roll whereby carding of the fibers to a tangle-free sheet is effected.

2. In combination in a carding machine, a card cylinder, a lick-in roll, a feed table and a feed roll with a resilient cover thereon, adjustable means for supporting said feed roll over said feed table adjacent said lick-in roll and yieldably to and from said feed table, means for driving said lick-in roll at substantially the same surface speed as said card cylinder, means for driving the feed roll at substantially less surface speed, said construction promoting an even flow of fibers from said feed table to said lick-in roll whereby carding of the fibers to a tangle-free sheet is effected.

3. In combination in a carding machine, a card cylinder, a lick-in roll, a feed table and a feed roll with a resilient cover thereon, adjustable means including a frame and an adjustable screw mounted in said frame for supporting said feed roll over said feed table adjacent said lick-in roll and yieldably to and from said feed table, means for driving said lick-in roll at substantially the same surface speed as said card cylinder, means for driving the feed roll at substantially less surface speed, said construction promoting an even flow of fibers from said feed table to said lick-in roll whereby carding of the fibers to a tangle-free sheet is effected.

4. In combination in a carding machine, a card cylinder, a lick-in roll, a feed table and a feed roll with a resilient cover thereon, means for supporting said feed roll over said feed table adjacent said lick-in roll and yieldably to and from said feed table, means for driving said lick-in roll at substantially the same surface speed as said card cylinder, means for driving the feed roll at substantially less surface speed, said construction promoting an even flow of fibers from said feed table to said lick-in roll whereby carding of the fibers to a tangle-free sheet is effected, said resilient cover including a rubber-like body.

5. In combination in a carding machine, a card cylinder, a lick-in roll, a feed table and a feed roll with a resilient cover thereon, means for supporting said feed roll over said feed table adjacent said lick-in roll and yieldably to and from said feed table, means for driving said lick-in roll at substantially the same surface speed as said card cylinder, means for driving the feed roll at substantially less surface speed, said construction promoting an even flow of fibers from said feed table to said lick-in roll whereby carding of the fibers to a tangle-free sheet is effected, said resilient cover including a rubber-like body, and a tension section surrounded by said rubber-like body.

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6. In combination in a carding machine, a card cylinder, a licker-in roll, a feed table and a feed roll with a resilient cover thereon, means for supporting said feed roll over said feed table adjacent said licker-in roll and yieldably to and from said feed table, means for driving said licker-in roll at substantially the same surface speed as said card cylinder, means for driving the feed roll at substantially less surface speed, said construction promoting an even flow of fibers from said feed table to said licker-in roll whereby carding of the fibers to a tangle-free sheet is effected, said resilient cover including a rubber-like body, a tension section surrounded by said rubber-like body, and an inner cushion layer surrounded by both said rubber-like

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body and said tension section.
HENRY M. BACON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

10 Number	Name	Date
1,567,896	Bates -----	Dec. 29, 1925
1,910,662	Willis -----	May 23, 1933
2,128,130	Farrar -----	Aug. 23, 1938
2,369,635	Bacon -----	Feb. 20, 1945

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