Feb. 2, 1954

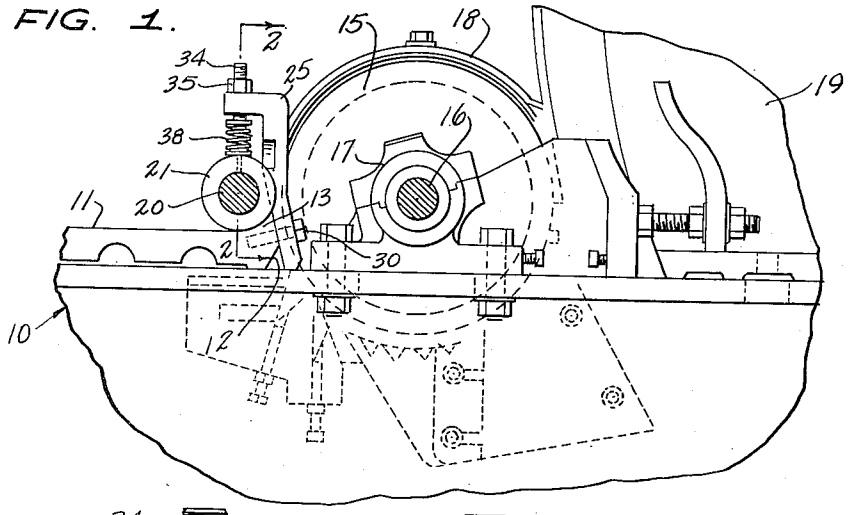
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2,667,665

FEED ROLL MOUNTING FOR CARDING MACHINES

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FIG. 1.



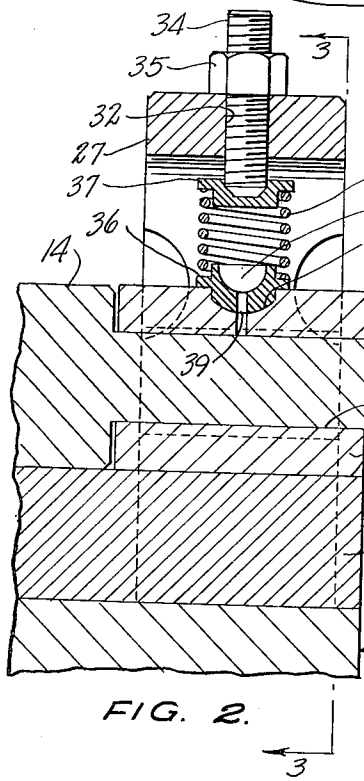


FIG. 2.

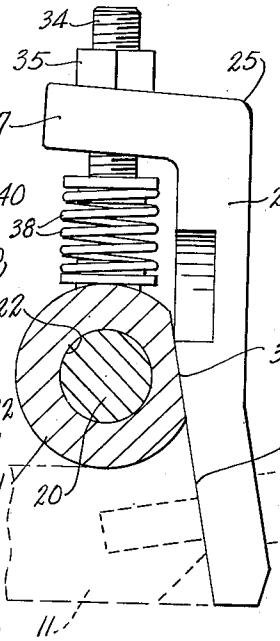


FIG. 3.

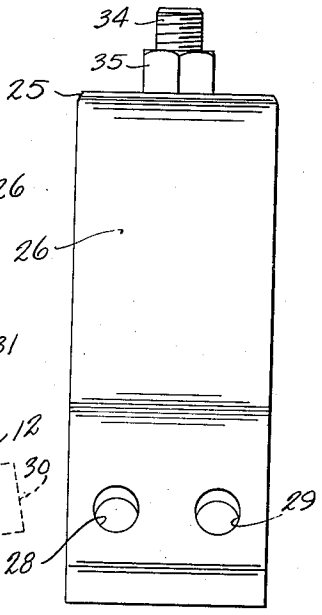


FIG. 4.

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FEED ROLL MOUNTING FOR CARDING MACHINES

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4 Claims. (Cl. 19—105)

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This invention relates to a feed roll mounting for a fiber carding machine and more particularly to a mounting which substitutes spring pressure for the weights presently used to apply pressure to the feed roll.

It is among the objects of the invention to provide an improved feed roll mounting which can be substituted for the existing feed roll mounting in a fiber carding machine with no material modification of the machine construction; which provides movable bearings for the arbors at the ends of the feed roll to permit movement of the feed roll toward and away from the associated feed plate and supports the feed roll against movement along the feed plate and the bearings against rotation; which provides adjustable compression springs resiliently urging the feed roll toward the feed plate; which does not interfere in any way with the operation of the feed roll; and which is simple and durable in construction, economical to manufacture and easy to install, and positive and effective in operation.

Other objects and advantages will become apparent from a consideration of the following description and the appended claims in conjunction with the accompanying drawing wherein:

Figure 1 is a somewhat diagrammatic side elevational view of a fragmentary portion of a fiber carding machine showing a feed roll mounting illustrative of the invention operatively applied to the machine;

Figure 2 is a fragmentary cross sectional view on an enlarged scale on the line 2—2 of Figure 1;

Figure 3 is a cross sectional view on the line 3—3 of Figure 2; and

Figure 4 is a rear elevational view of a bracket constituting an operative component of the feed roll mounting.

With continued reference to the drawing, the numeral 10 generally indicates the frame of a carding machine and the numeral 11 designates a feed plate mounted on and extending transversely of the frame and provided with a beveled discharge end 12 having an upwardly projecting tapered lip 13. A feed roll 14 extends transversely of the frame 10 and is disposed above the feed plate 11 and adjacent the lip 13 at the discharge edge of the feed plate. A lickerin roll or cylinder 15 is disposed within and extends transversely of the frame adjacent the discharge edge 12 of the feed plate 11 and this lickerin cylinder has a coaxial shaft 16 supported in bearings, as indicated at 17, mounted on the frame 10. A cover 18 extends from a location adjacent the lip 13 of the feed plate over the upper portion

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of the lickerin cylinder and a carding cylinder 19 extends transversely of and is journaled on the frame adjacent the side of the lickerin cylinder 15 remote from the feed plate 11.

As fiber carding machines are well known to the art, the above brief description and the fragmentary illustration of the machine as shown in Figure 1 is considered sufficient for the purposes of the present disclosure.

The fiber lap is carried on a supporting shaft or beam spaced from the side of the feed roll 14 remote from the lickerin cylinder 15 and this lap is fed under the feed roll, that is, between the feed roll 14 and the feed plate 11 to the lickerin cylinder from which it is fed to the carding cylinder 19. The feed roll is driven by suitable means, such as link chains and chain sprockets, not illustrated, connected to the ends thereof and not only the speed of this cylinder but the pressure with which it bears on the lap disposed between itself and the feed plate is important in controlling the feeding of the fiber to the carding cylinder.

The feed roll is provided with coaxial arbors of reduced diameter projecting one from each end thereof, one such arbor being shown in the accompanying drawing and designated at 20. A bearing sleeve 21 of cylindrical shape has a coaxial bore 22 extending therethrough and rotatably receives the arbor 20. There is, of course, a similar bearing sleeve receiving the arbor at the other end of the feed roll.

In the present construction of carding machines the bearing 21 is mounted in a bracket and subjected to the force of a weighted lever which exerts downward pressure on the feed roll toward the feed plate 11. Such a weighted lever tends to exert a substantially constant downward force on the feed roll or even a diminishing force as the feed roll is raised upwardly away from the feed plate. It has been found that this arrangement is not only expensive and cumbersome but that better results are obtained by exerting an increasing downward force on the feed roll as the latter is moved upwardly away from the feed plate.

The present invention provides brackets disposed one at each end of the feed roll and one of which is illustrated in the accompanying drawing and generally indicated at 25. This bracket is of elongated, rectangular cross sectional shape and includes a first leg 26 and a second leg 27 joined at one end to the leg 26 and projecting substantially perpendicularly from the latter at one end thereof. The leg 26 is materially longer

than the leg 27 and at its end remote from the leg 27 it overlaps the beveled discharge edge 12 of the feed plate 11 and is provided in its portion overlapping the edge of the feed plate with transversely spaced apart apertures 28 and 29. Stud bolts 30 extend one through each of the apertures 28 and 29 in the bracket and are threaded into tapped recesses in the feed plate to rigidly secure the bracket to the feed plate at the corresponding end of the latter with the leg 26 of the bracket upstanding from the feed plate. The lower portion of the leg 26 is inclined relative to the upper portion, as is clearly illustrated in Figure 3, so that, while the lower portion of this leg has a flat surface in contact with the edge surface of the feed plate, the upper portion of the leg has its front and rear surfaces substantially perpendicular to the plane of the top surface of the feed plate and the leg 27 is disposed above the feed plate and substantially parallel to the latter.

The bearing 21 has a flattened side 31 which bears against the front surface of the inclined lower portion of the bracket leg 26, that is, the surface of the bracket leg adjacent the feed plate 11 and the engagement of the flattened surface of the bearing with the flattened adjacent surface of the bracket leg at the corresponding ends of the feed roll guide the bearing 21 in its movements toward and away from the feed plate 11 and also maintain the bearing against rotation with the corresponding arbor 20 of the feed roll in case there should be any frictional resistance to rotation of the arbor in the bearing sleeve.

The leg 27 of the bracket 25 is provided with a substantially centrally disposed tapped hole 32 and the bearing sleeve 21 is provided with a rounded recess 33 substantially in vertical alignment with the tapped hole 32. A stud 34 is threaded through the tapped hole 32 and held in adjusted position relative to the bracket leg 27 by a lock nut 35 threaded onto the stud at the top side of the bracket leg 27 and a spring seat or abutment 36 is seated in the recess 33 in the bearing sleeve 21. An upper spring seat or abutment 37 is seated on the lower end of the stud 34 which is the end of this stud nearest the bearing sleeve 21 and a coiled compression spring 38 is compressed between the upper and lower spring abutments 37 and 36 and exerts a downward pressure on the bearing sleeve 21 and on the corresponding end of the feed roll 14 toward the top surface of the feed plate 11.

A lubricant hole 39 extends through the lower spring abutment 36 and the portion of the bearing sleeve 21 between the recess 33 and the arbor 20 and the lower abutment 36 is formed in its upper side to provide a cup 40 for holding a suitable bearing lubricant, such as lubricating oil.

The end mounting illustrated in the accompanying drawing and described above is duplicated at the other end of the feed roll so that both ends of the feed roll are supported in place and resiliently urged toward the upper surface of the feed plate 11. The direction of rotation of the feed roll and its feeding action on the fiber lap between itself and the feed plate 11 is such as to maintain the bearing sleeve pressed firmly against the adjacent sides of the corresponding brackets so that there is no tendency for the feed roll to move longitudinally of the feed plate.

While the compression springs will tend to increase the pressure on the feed roll as it moves further away from the associated feed plate, the rate of these springs and the force exerted thereby can be selected to provide the most effective pressure on the feed roll for the proper feeding of the lap to the lickerin and carding cylinders.

The mountings of the present invention can be substituted for the feed roll mountings present on an existing carding machine with no material modification of the machine construction and provide a more solid mounting for the feed roll with better control of the feed roll pressure. It is to be noted that the downward pressure exerted on the feed roll by the springs can be adjusted by threading the studs 34 in the proper direction through the tapped holes in the corresponding upper bracket legs.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims, are, therefore intended to be embraced therein.

What is claimed is:

1. In combination with a carding machine feed plate and a feed roll disposed above said feed plate and adjacent the discharge edge of the latter and having arbors projecting coaxially one from each end thereof, a mounting for said feed roll comprising mounting assemblies disposed one at each end of the feed roll and each including an angle bracket having first leg disposed against the discharge edge of said feed plate and extending upwardly therefrom, and a second leg extending substantially perpendicularly from said first leg above said feed plate and inwardly of the discharge edge of the latter, means securing said first bracket leg to said feed plate, a bearing sleeve of cylindrical shape having a bore extending longitudinally therethrough receiving the corresponding feed roll arbor and having a flattened side portion engaging the side of said first bracket leg adjacent said feed plate, said second bracket leg having a tapped hole therein and said bearing sleeve having a recess therein substantially in vertical alignment with said tapped hole, a stud threaded through said tapped hole, a lower spring abutment seated in said recess, an upper spring abutment seated on the lower end of said stud, and a compression spring disposed between and in engagement with said upper and lower spring abutments.

2. In combination with a carding machine feed plate and a feed roll disposed above said feed plate and adjacent the discharge edge of the latter and having arbors projecting coaxially one from each end thereof, a mounting for said feed roll comprising mounting assemblies disposed one at each end of the feed roll and each including a bracket connected at one end to said feed plate at the discharge end of the latter and extending upwardly from said feed plate, a bearing sleeve of cylindrical shape having a bore extending longitudinally therethrough receiving the corresponding feed roll arbor and having a flattened portion engaging the side of said bracket adjacent said feed plate, an upper spring abutment adjustably mounted on said bracket above said bearing sleeve, a lower spring abutment mounted on said bearing sleeve substantially in vertical alignment with said upper spring abutment, and a compression spring compressed between said upper and lower spring abutments.

3. In combination with a carding machine feed plate and a feed roll disposed above said feed

plate and adjacent the discharge edge of the latter and having arbors projecting coaxially one from each end thereof, a mounting for said feed roll comprising mounting assemblies disposed one at each end of the feed roll and each including a bracket connected at one end to said feed plate at the discharge end of the latter and extending upwardly from said feed plate, a bearing sleeve of cylindrical shape having a bore extending longitudinally therethrough receiving the corresponding feed roll arbor and having a flattened portion engaging the side of said bracket adjacent said feed plate, an upper spring abutment adjustably mounted on said bracket above said bearing sleeve, a lower spring abutment mounted on said bearing sleeve substantially in vertical alignment with said upper spring abutment, and a compression spring compressed between said upper and lower spring abutments, said bracket being of elongated, rectangular cross sectional shape and having a flat side adjacent said feed plate.

4. In combination with a carding machine feed plate and a feed roll disposed above said feed plate and adjacent the discharge edge of the latter and having arbors projecting coaxially one from each end thereof, a mounting for said feed roll comprising mounting assemblies disposed one at each end of the feed roll and each including a bracket connected at one end to said feed plate

at the discharge end of the latter and extending upwardly from said feed plate, a bearing sleeve of cylindrical shape having a bore extending longitudinally therethrough receiving the corresponding feed roll arbor and having a flattened portion engaging the side of said bracket adjacent said feed plate, an upper spring abutment adjustably mounted on said bracket above said bearing sleeve, a lower spring abutment mounted on said bearing sleeve substantially in vertical alignment with said upper spring abutment, and a compression spring compressed between said upper and lower spring abutments, said lower spring abutment having a cup formation in its upper side and there being a lubricating hole extending from said cup formation through said lower spring abutment and said bearing sleeve to the corresponding arbor.

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