United States Patent [19]

Sanders

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[45] **May 22, 1973**

[54] **SCRAPER MEMBER FOR DRAFTING SYSTEM**

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[73] Assignee: **Deering Milliken Research Corporation,** Spartanburg, S.C.

[22] Filed: **July 16, 1971**

[21] Appl. No.: **163,174**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 857,767, Sept. 15, 1969, abandoned.

[52] **U.S. Cl.** **15/256.53**

[51] **Int. Cl.** **D01h 5/64**

[58] **Field of Search** 15/256.53, 256.52, 15/256.51, 256.5; 19/245, 262, 264, 265, 263

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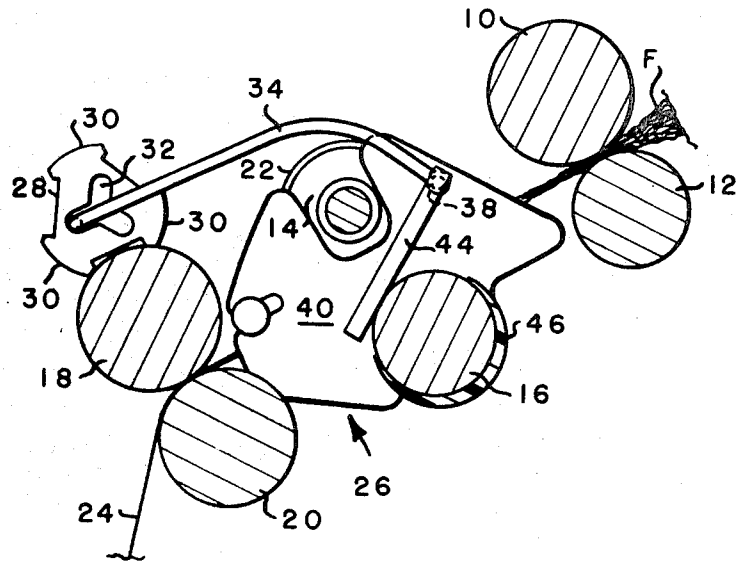
[57] **ABSTRACT**

An intermittently actuated scraper member for one of the front rolls of a drafting system to scrape lint from such roll to prevent the accumulation of lint, trash, etc., thereon, thereby eliminating the cause of lap ups on such roll.

4 Claims, 8 Drawing Figures



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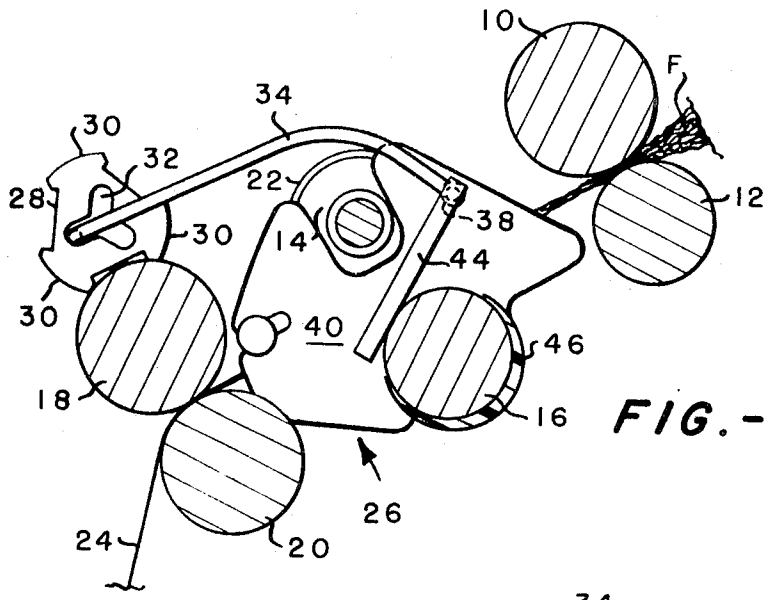

FIG.-1-

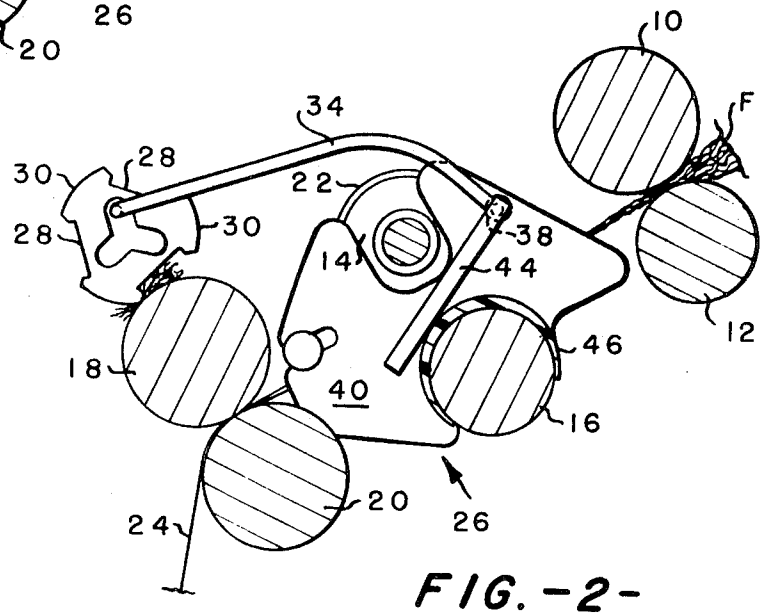

FIG.-2-

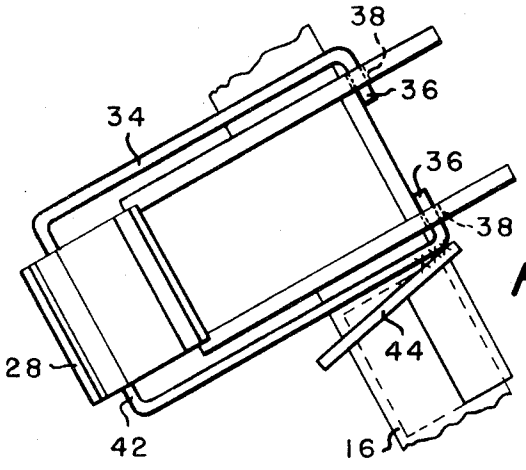

FIG.-3-

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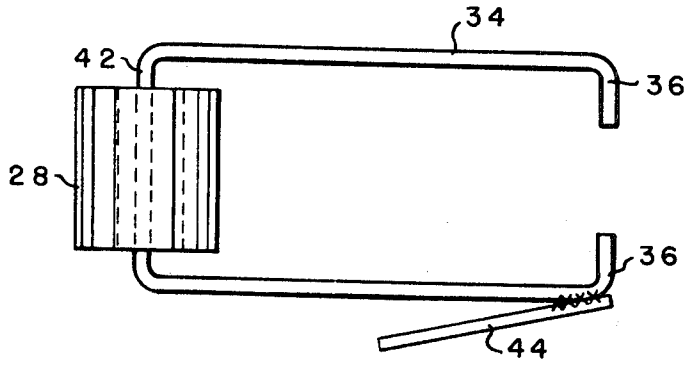

FIG.-4-

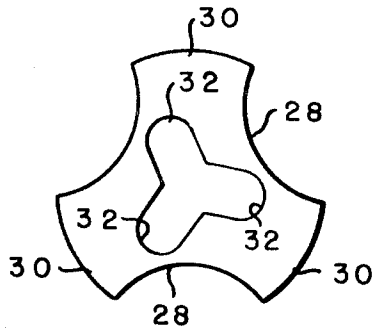

FIG.-5-

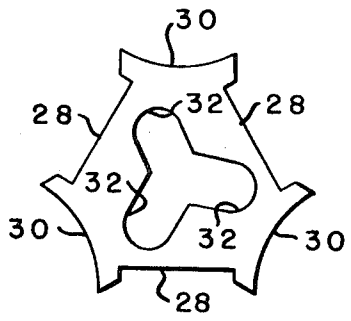

FIG.-6-

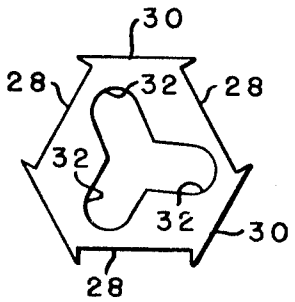

FIG.-7-

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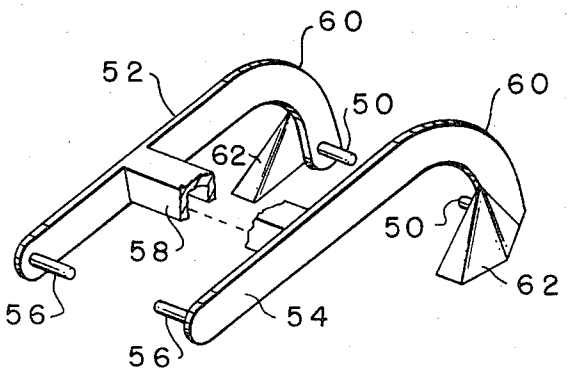

FIG. -8-

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SCRAPER MEMBER FOR DRAFTING SYSTEM

This is a continuation-in-part of U. S. Pat. application Ser. No. 857,767, filed Sept. 15, 1969 now abandoned.

There are numerous devices on the market today directed to the cleaning of drafting systems in order to prevent lap ups and ends down but these devices do not attack the problem directly. The best time to prevent a lap up or an ends down is prior to the build up of the condition that causes the lap up or ends down. Therefore, the disclosed invention is directed to a device to prevent the accumulation of lint, trash, etc., on the rolls of a drafting system which causes the occurrence of a lap up or an ends down.

It is therefore an object of the invention to prevent the accumulation of lint, trash, etc., on the rolls of a drafting system.

Another object of the invention is to provide an efficient, inexpensive device to clean the lint, trash, etc., off of at least one roll of a drafting system to prevent the build up of fibers thereon.

Other objects and advantages of the invention will become clearly apparent as the specification proceeds to describe the invention with reference to the drawings, in which:

FIG. 1 represents a cross-sectional schematic view of the new and improved drafting system;

FIG. 2 is a view similar to FIG. 1 showing the scraper being raised relative to the top front roll;

FIG. 3 is a top view of the lower middle roll of the drafting system with the top rolls removed;

FIG. 4 shows the scraper member per se;

FIGS. 5–7 show various scraper modifications; and

FIG. 8 illustrates a modification of the top roll clearer shown in FIGS. 1–7.

Looking now to the drawings, and especially to FIGS. 1 and 2, a running mass of staple fibers F is passed in conventional manner successively between pairs of drafting rolls **10, 12, 14, 16, 18** and **20** with each of the middle pair of rolls **14** and **16** having an endless fiber control apron **22** thereabout. From the nip of front drafting rolls **18** and **20,** the fiber F is twisted and taken up by a conventional ring and traveler bobbin spinning system (not shown).

As is well known in the art, a front roll lap occurs when fibers being drafted wrap around either of the rolls **18** or **20** causing the yarn end **24** to come down and in extreme cases, cause damage to the drafting apron **22** and the drafting cradle **26.** Normally, a few fibers will lap the roll and then more and more accumulate and wrap around the roll to form the lap. To prevent this condition from occurring a scraper member **28** is provided in engagement with the top front roll **18.**

The scraper member **28** is preferably molded from those plastics which are readily moldable and which have good stability and wear characteristics, such as for instance, Delrin acetal resin, nylon and Bakelite. In the preferred form of the invention, the scraper **28** is molded with three projections **30** and a cavity which has three corresponding elongated finger positions **32** which extend longitudinally through the scraper.

The scraper member **28** is held in position by a U-shaped wire member **34** which has inturned projections **36** which are inserted in holes **38** in the side walls **40** of the cradle **26** to pivotally mount the scraper **28.** The bottom portion **42** of the U-shaped wire member **34** extends through the cavity of the scraper. Welded or otherwise secured to the wire member **34** is a cam follower portion **44** which extends outwardly and downwardly from the wire member for reasons hereinafter explained.

Snapped onto the lower middle roll between two drafting positions is a cam member **46.** The cam member **46** has a diameter slightly less than the diameter of roll **16** to insure a snug fit so that the cam member **46** will rotate with the roll **16.** It should be noted that the cam member is thicker in the middle than at the ends to insure proper contact with the cam follower portion **44.**

OPERATION

As discussed previously, the cam **46** rotates with the middle lower roll **16.** Upon each rotation of the roll **16,** the cam **46** will rotate in the position shown in FIG. **2** and engage the cam follower **44** causing it to rotate in the clockwise direction. Rotation of the cam follower **44** in the clockwise direction will cause the wire member **34** to pivot in this direction. Pivotal movement of the wire member **34** causes the wire member **42** to raise up and engage the upper side of the elongated finger portion **32.** As the wire member continues to pivot upwardly the scraper member **28** will rise upwardly away from the roll **18.** As the scraper member rises, the scraper member will rotate in the clockwise direction since the inward projections **36** act against the bottom of the finger portion **32** like an eccentric shaft and the weight of the scraper member **28** will cause it to rotate as indicated in FIG. **2.** As the scraper member **28** rotates in a direction opposite to the rotation of the top front roll **18** the front edge of the projection **30** will scrape lint, trash, etc., from the surface of the roll. As the wire member **34** reaches the extreme upward position the scraper **28,** preferably, will be lifted off the roll slightly to allow the dislodged lint, trash, etc., to fall off the roll. As the cam **46** continues to rotate, the scraper member **28** will be lowered onto the roll **18** once again with two adjacent edges of two adjacent projections **30** resting on the roll. When the scraper member **28** initially comes to rest on the roll, the portion **42** will move downwardly to the centerline position of the scraper member **28** whereat the rotation of the roll **18** will cause the scraper member **28** to be moved to the position shown in FIG. **1** wherein the bottom of the finger portion **32** engages the wire member portion **42** ready for another cycle. Since the middle lower roll rotates continuously, it is obvious that the cam **46** will continuously raise and lower the scraper member **28** to allow the scraped lint, trash, etc., to fall away from the drafting area. It should be noted that the scraper **28** will scrape the roll in the position shown in FIG. **1** as well as when it has been lifted to the position shown in FIG. **2.**

FIGS. **5–7** show various configurations and shapes of the scraper member **28.** FIG. **5** shows the projection **30** with a convex surface while FIG. **6** shows the projections **30** with a concave surface which will conform to the radius of curvature of the roll **18.** FIG. **7** illustrates a projection **30** which has a flat surface.

FIG. **8** shows a modification of the top roll clearer shown in FIGS. **1–7,** except, preferably, this clearer is molded from a suitable plastic such as that used for the scraper member **28.** In the modified top roll clearer the scraper member **28** will be used to scrape the lint, trash off the top front roll of the drafting system.

The top roll clearer of FIG. **8** is generally similar to that of FIGS. **1–7** in that pins **50** are molded to the arms **52** and **54** and are inserted in holes **38** of the cradle **26** to pivotally mount the scraper **28** (not shown in FIG. **8**). Molded to the front inside portion of the arms **52** and **54** are pins **56** which project into the hollow interior of the scraper member **28** to hold the scraper member **28** in operative position on the top front roll **18** of the drafting system. To hold the arms **52** and **54** in a fixed spaced relationship a support bar **58** is molded thereto. At the end of the curved portions **60** of the arms **52** and **54** are molded cam followers **62** which when engaged by the cam will pivot the top roll clearer upward. There are two cam followers **62** so that, depending on the particular spinning frame, the actuating cam can be located on one side or the other of the drafting system.

It is obvious that the herein disclosed improved drafting system provides for continuous cleaning of the drafting rolls of a drafting system to prevent the build up of fibers, trash, etc., to eliminate or alleviate the possibility of a lap up. The improved drafting system is simple in construction and can be provided with a minimum amount of capital expenditure per spindle.

Although I have described in detail the preferred embodiments of my invention, I contemplate that many changes may be made without departing from the scope or spirit of my invention, and I desire to be limited only by the claims.

That which is claimed is:

1. A scraper for a textile handling system comprising: a scraper member having at least one projection thereon, a cavity in said scraper member, a U-shaped member having a closed end and two open ends, said two open ends having pin members connected thereto extending inwardly towards one another and engaging said cavity in said scraper member and a cam follower means operably associated with said U-shaped member for engagement by a cam.

2. The scraper of claim **1** wherein said cam follower means includes arm members connected to and extending from said U-shaped member in a direction away from the open ends of said U-shaped member and having a cam follower connected to the end of at least one of said arm members.

3. The structure of claim **2** wherein pin members are connected to each of said arm members.

4. A scraper for a textile handling system comprising: a scraper member having at least one projection thereon, a cavity in said scraper member, a U-shaped member having a closed end and two open ends, said cavity in said scraper member extending through said scraper member, said closed end of said U-shaped member being located in said cavity and a cam follower means operably associated with said U-shaped member for engagement by a cam, said open ends of said U-shaped member being turned inwardly towards each other.

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