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3,003,176

APPARATUS FOR REMOVING LINT FROM ROLL DOCTOR

Filed Aug. 6, 1954

2 Sheets-Sheet 1

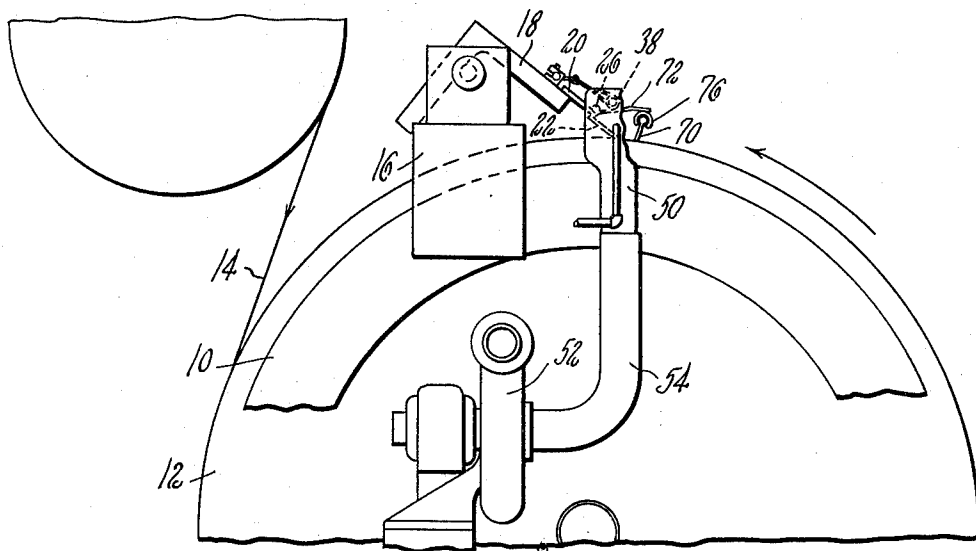


Fig. 1.

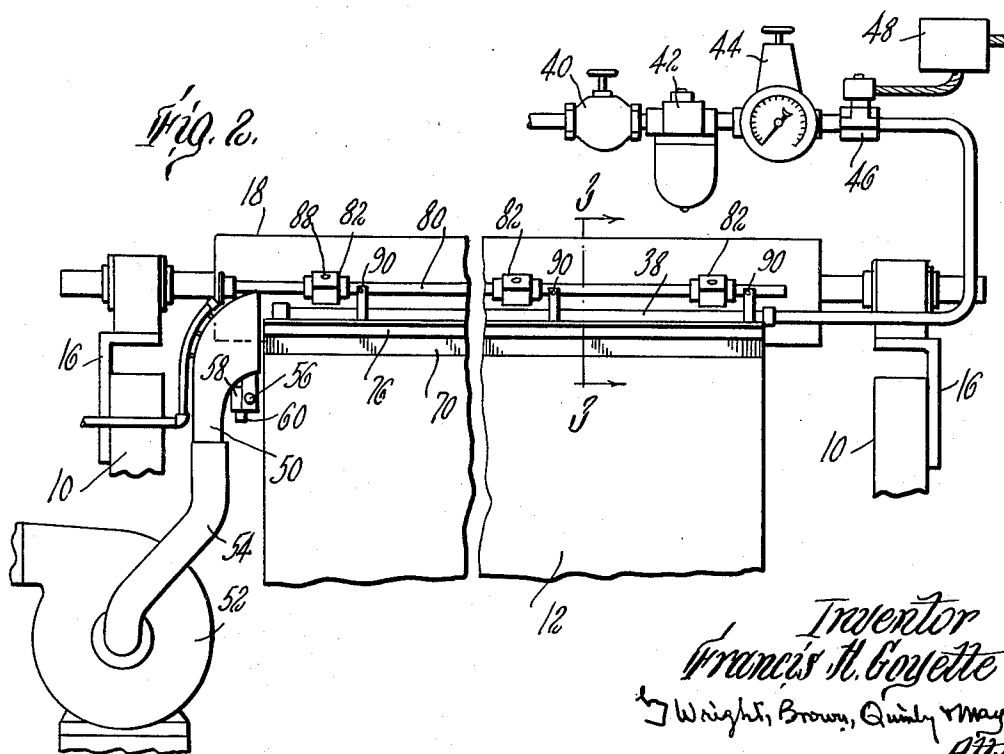


Fig. 2.

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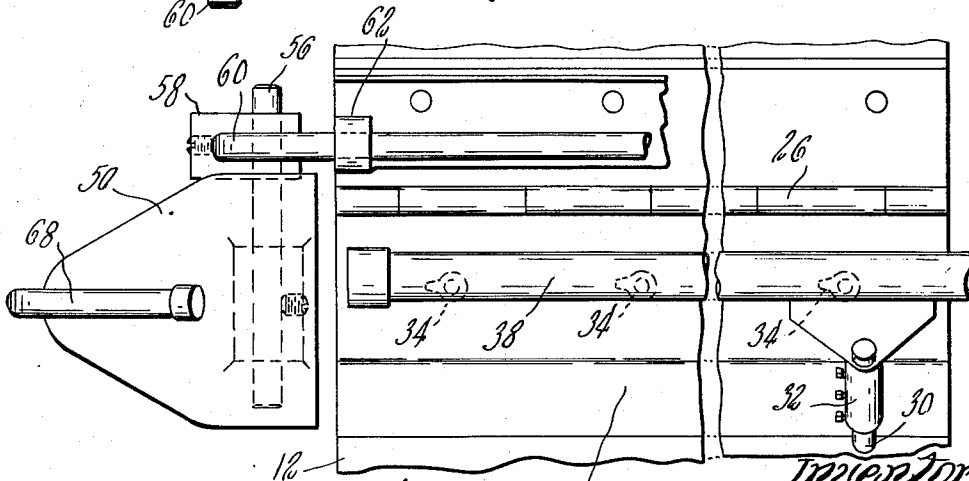
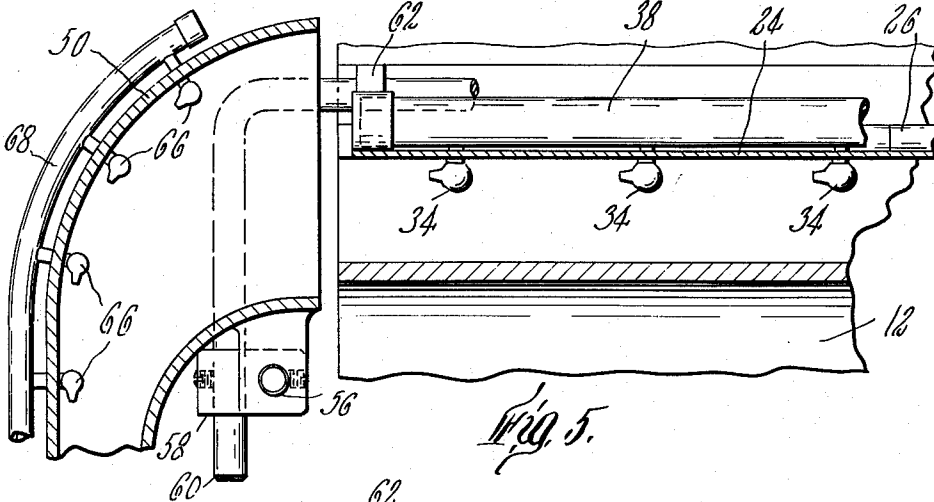
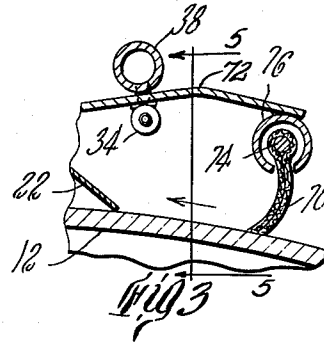
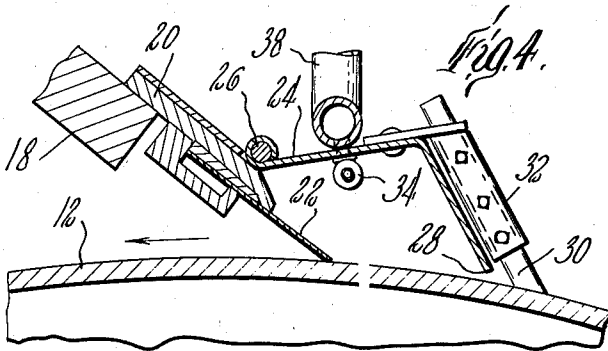


Fig. 6.

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APPARATUS FOR REMOVING LINT FROM ROLL DOCTOR

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1 Claim. (Cl. 15—256.5)

This invention relates to a means for preventing the accumulation of lint or fuzz on a doctor blade which scrapes the surface of a roll to which lint may adhere. Such rolls are found in paper-making machines and the like.

In a paper-making machine, for example, the sheet which is formed by felting together pulp fibers from an aqueous suspension of such fibers is progressively dried by passing over a succession of heated rolls. Although the surface of these rolls is very smooth, some individual fibers cling thereto and must be promptly removed or lumps will eventually be built up which will indent the pulp or paper sheet passing over the roll. To keep the roll surface clean a doctor blade is customarily employed which is held against the surface and scrapes it clear of any clinging fibers. While such fibers are supposed to be substantially dry by the time they reach the doctor, in actual practice some of them have sufficient moisture to stick and accumulate on the edge of the doctor blade. It is an object of the invention to provide effective means for keeping the blade clean by constantly removing therefrom the fibers that are picked up by the edge of the blade. According to the invention this is done by directing an intermittent or continuous blast of a gaseous medium such as air along the edge of the blade to dislodge any fibers clinging thereto, and to collect and remove the fibers thus dislodged. For this purpose a suitable hood is supported over the edge of the doctor blade with one or more jet nozzles therein directed along the edge of the blade toward one end of the roll. At that end of the roll a suction head is mounted to receive the air stream and the fibers entrained therein. For a more complete disclosure of the invention, reference may be had to the following description thereof, and to the drawings, of which—

FIGURE 1 is an end view of mechanism embodying the invention;

FIGURE 2 is a front elevation of the same;

FIGURE 3 is a fragmentary section on an enlarged scale on the line 3—3 of FIGURE 2;

FIGURE 4 is a sectional view of a modified form of the hood;

FIGURE 5 is a fragmentary sectional view of some of the structure shown in FIGURE 2, the section being taken on the line 5—5 of FIGURE 3; and

FIGURE 6 is a plan view of the structure shown in FIGURE 4.

In FIGURE 1 is shown a fragment of the frame 10 of a paper-making machine and part of a drying roll 12 over which passes a felted fiber sheet 14 in the process of being dried to form a paper sheet. Brackets 16 on the frame 10 at each side of the machine support a doctor back 18 to which is secured any suitable holder 20 for a doctor blade 22. The blade is of customary construction and its edge bears on the surface of the rotating roll 12 to scrape therefrom any particles of lint or other matter which may have been deposited on the surface of the roll by the pulp sheet 14. Some of the lint tends to accumulate on the edge of the blade. It is an object of the invention to keep the blade clear of lint during the operation of the machine. For this purpose a hood is mounted over the blade. As shown, the hood comprises a strip of metal

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72 extending from one end of the roll 12 to the other. One edge of the strip is hinged as at 26 to the blade holder 20. On the margin of the strip 72 at the other long edge thereof is a split tube 76 within which is a rod 74. A strip 70 of some flexible substance like felt or rubber is attached to the strip 72 by being doubled around the rod 74 as indicated in FIGURE 3. The lower edges of the flexible strip 70 bear on the surface of the roll 12 so that the doctor 22, the strip 72, the flexible strip 70 and a portion of the roll surface 12 enclose an elongated chamber which is open only at its ends. The hood may be supported by any convenient means by which it can also be swung back about the hinge 26 for ready access to the interior of the chamber enclosed by the hood. As indicated in FIGURE 2, a rod 80 is mounted in bearing blocks 82 on the doctor back 18. On the end of the rod 80 adjacent to the cowl 50 is a knob 86 by which the rod can be turned in its bearings when free to turn. One of the bearing blocks is split so that the bolt 88 by which the block is secured to the doctor back can be tightened to grip the rod 80 and hold it firmly in any position of angular adjustment. At suitable intervals along the rod 80 flexible tie means 90 are provided to connect the hood to the rod. Each of these tie means may consist of a metal strap one end of which is passed around the pipe 38, the other end of each strap being secured to a hook or eye 92 projecting from the rod 80. Relative adjustment of the rod raises or lowers the hood.

Mounted in the hood is a jet nozzle or a spaced series 30 of jet nozzles 34 which are arranged to direct gaseous jets in the same direction along the edge of the doctor blade 22, this direction being toward the left as viewed in FIGURES 5 and 6. These nozzles communicate with a supply pipe 38 which extends along the doctor just above the hood. The pipe 38 is connected to a source of compressed air (not shown) through a shut-off valve 40, a filter 42, a pressure regulator 44, and a solenoid-operated valve 46 which is controlled by an automatic timer 48. The timer may be one of any of the well-known devices of this kind for automatically controlling the solenoid-operated valve 46 so it can be opened for brief intervals which are spaced as desired, or can be held open continuously. For example, the timer may be adjusted to open the valve 46 for periods of one second at intervals of five seconds or so. Thus brief blasts of air are emitted from the nozzles 34 at frequent intervals, the intensity of the blast being determined by the setting of the pressure regulator 44. The blasts of air from the nozzles effectively dislodge from the edge of the doctor blade 22 any lint or fuzz which has collected thereon and sweeps such lint together with any dry fuzz which may already be air-borne to the discharge end of the hood (to the left in FIGURES 2, 5 and 6). This end of the hood is open. The other end may be open or closed as desired. The stream of air which flows out of the discharge end of the hood by reason of the jets from the nozzles 34 is received and sucked in by a receiving device comprising a suction cowl 50 opposite the discharge end of the hood, means such as a pump or blower 52 for maintaining an inflow into the cowl, and a pipe 54 connecting the cowl 50 to the suction end of the pump 52.

The cowl 50 may be supported in adjusted position by any suitable means such as a horizontal rod 56 secured thereto and to a block 58 which is secured to a bent rod 60. The latter is secured to the blade holder 20.

When the pump 52 is operating there is a strong in-draft of air into the cowl 50 so that the air stream issuing from the discharge end of the hood and the lint entrained by said stream are sucked into the cowl and through the pump 52.

I claim:

In combination with a revoluble roll, a doctor blade

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having a long edge bearing on the surface of said roll, and means including a blade holder for supporting said blade, apparatus for dislodging and removing from said edge fiber adherent thereto, said apparatus including a hood over said blade comprising a rigid strip and a flexible strip extending from one end of the roll to the other, said strips having mutually connected long edges secured together, the other long edge of the rigid strip being secured throughout its length to said blade holder, the other long edge of the flexible strip being in contact throughout its length with the surface of said roll, jet nozzles within the hood arranged to direct jets along the edge of the blade toward one end thereof, and means for supplying air under pressure to said nozzles.

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