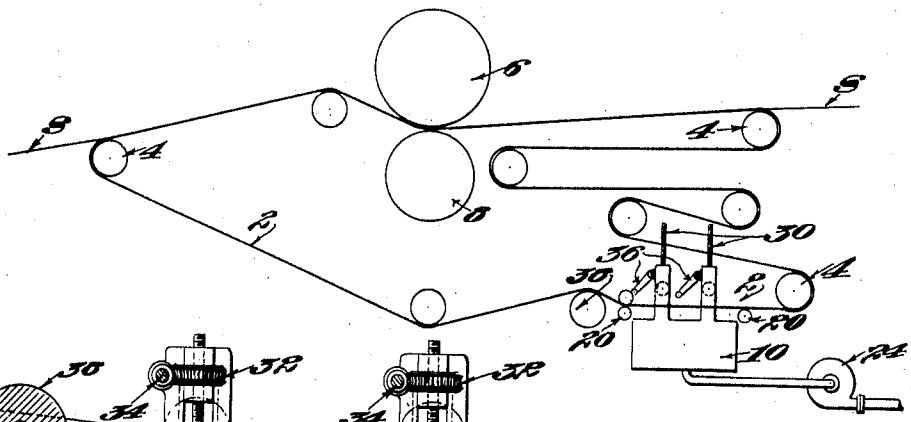
Jan. 5, 1926. 1,568,259

E. J. WILSON

METHOD AND APPARATUS FOR CLEANING FELTS

Filed Nov. 15, 1923

Fig. 1



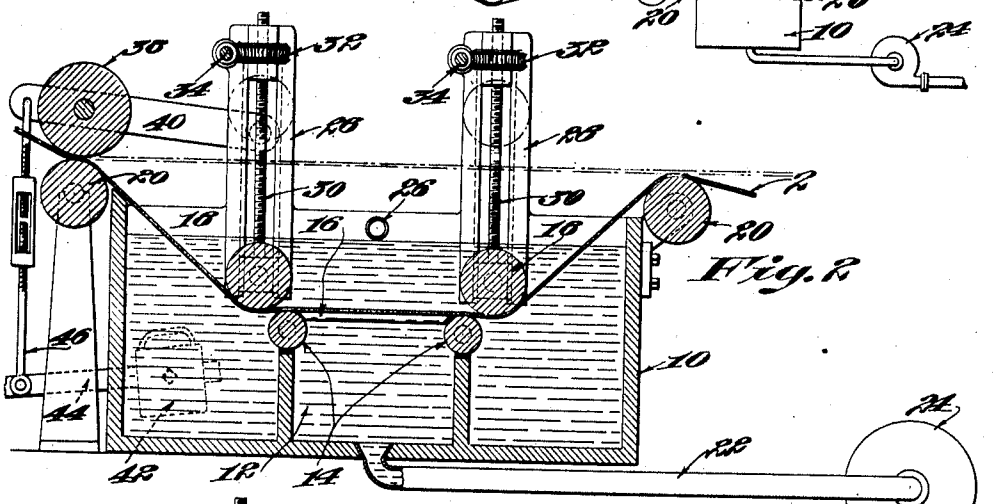
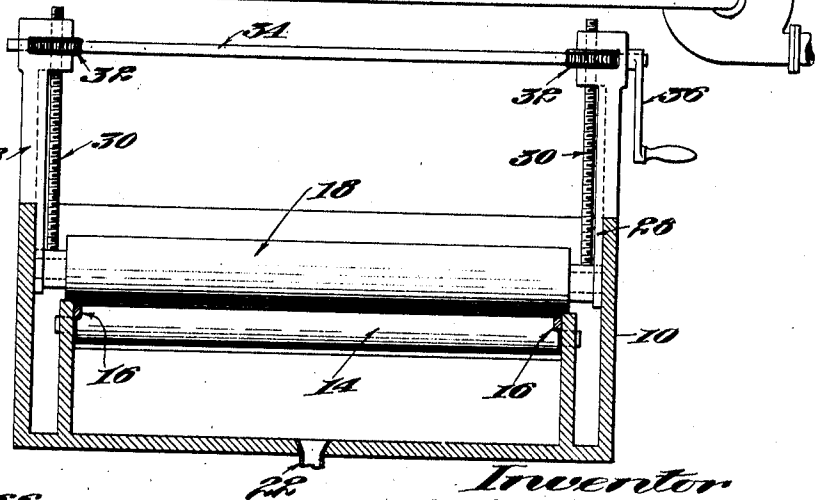


Fig. 2

Fig. 3



Witness
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UNITED STATES PATENT OFFICE.

EZEKIEL J. WILSON, OF EAST GREENBUSH, NEW YORK, ASSIGNOR TO F. C. HUYCK & SONS, OF RENSSELAER, NEW YORK, A CORPORATION OF NEW YORK.

METHOD AND APPARATUS FOR CLEANING FELTS.

Application filed November 15, 1923. Serial No. 674,887.

To all whom it may concern:

Be it known that I, EZEKIEL J. WILSON, a citizen of the United States, residing at East Greenbush, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Methods and Apparatus for Cleaning Felts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a method and apparatus for cleaning or washing paper making machine felts or other similar materials.

The invention may be utilized for cleaning and washing felts such as are used on paper making machines either during their use in the presses of the paper making machines or during the manufacture of the felts and may also be used for cleaning and washing other materials. Since one of the important fields for the invention is in cleaning the felts of paper making machine presses during their use in the presses, the invention will be further explained in connection with its application to such machines.

In accordance with the invention as applied to paper making machines, the felt travelling over the guide rolls of the press is at one point in its travel submerged in water or other cleaning liquid and a flow of the liquid through the felt from one side to the other is induced so that foreign matter which tends to clog the felt and impair its efficiency is quickly removed. The flow is preferably induced by creating a suction on one side of the submerged felt which forcibly draws the liquid through from the other side. The suction is also best applied to the side of the felt which is in contact with the paper stock during its passage through the press, since this is the side on which the foreign matter accumulates, and from which it may be most readily removed by a flow of liquid through the felt from the opposite side. The mechanism for subjecting the felt to this treatment may conveniently consist of a tank for containing the cleaning liquid and a suction box open to the tank below the surface of the liquid therein, and means for so guiding the felt that it closes the opening between the box and tank.

The invention is illustrated in the accompanying drawings in which Figure 1 is a diagrammatic view of a paper making machine press illustrating the application of the invention thereto; Figure 2 is a vertical longitudinal sectional view of a felt washer or cleaner embodying the invention; and Figure 3 is a transverse sectional view of the same.

As indicated in Figure 1, the presses of paper making machines are provided with a felt 2 which runs over guide rolls 4, one or more of which are adjustable so that the felt may be slackened or its tension adjusted. The web of paper stocks S is delivered by the couch rolls or by the preceding press onto the felt and is carried by it between the press rolls 6 and 8 which cooperate with the felt in removing a part of the water from the stock. From the felt the stock passes to the felt of the succeeding press, or to the rolls of the drier as the case may be, while the felt leads back over the guide rolls to receive the web of stock and carry it between the press rolls. During continued use of the felt, particles of fibre and other matter are carried into the stock-engaging side of the felt by the water squeezed out of the stock and gradually clog the felt and impair or destroy its efficiency. The felts must therefore be periodically cleaned and the present invention is particularly well adapted for this purpose and enables the felts of high speed machines to be cleaned and washed without removing them and without interrupting the operation of the machine.

In the embodiment of the invention shown in the drawings the means for cleaning the felt comprises a tank 10 for the water or other cleaning liquid and a suction chamber or box 12 within the tank, the top side of which is open to the tank below the level of the liquid therein. Guide rolls 14 for the felt are arranged at the upper side edges of the suction box and narrow guide strips 16 for the side edges of the felt are arranged between the rolls at the ends of the box so that when the felt is held in engagement with the rolls and guide strips it closes the top of the box. When the felt is to be cleaned, it is guided over and held in engagement with the rolls 14 and guides 16 by guide rolls 18 which deflect the felt down over the rolls 20 at the upper edges of the

tank and below the surface of the liquid in the tank. The felt when thus guided closes the opening between the suction box and tank so that the only communication between the tank and box is through the felt. The suction box is connected by a pipe 22 with a suction pump 24 which, when in operation, draws liquid from the suction box and thus induces a forcible flow of liquid from the tank to the suction box through the felt. This practically solid stream of liquid quickly removes the foreign matter from the felt and restores it to efficient working condition. The level of the liquid in the tank may be maintained through a supply pipe 26.

In order that the felt may run clear of the liquid in the tank, except during the period when the felt is being washed and cleaned, the guide rolls 18 are so mounted that they may be raised and lowered as indicated in Figure 2. For this purpose the bearings for the rolls are mounted in guideways 28 and are connected with the lower ends of vertical screw rods 30. The rods pass through nuts formed on worm wheels 32 which are engaged by worms on worm shafts 34. The shafts are provided with cranks 36 by which they may be operated to raise the rolls 18 into the dotted line position of Figure 2 when the washing and cleaning means is out of operation or may be lowered into the full line position when the felt is to be cleaned and washed. When the rolls are in raised position, the felt runs directly from a guide roll 4 on one side of the tank to a guide roll on the other side. When the felt is to be washed, this run of the felt is carried down and submerged in the tank by the downward movement of the rolls 18 and the flow of liquid through the submerged felt from one side to the other continues during the travel of the felt until it has been properly washed and cleaned. The surplus water or moisture may be removed from the felt after it emerges from the tank by squeeze rolls such as commonly employed on presses for such purpose. The upper squeeze roll indicated at 38 in Fig. 2 may conveniently be arranged to coqperate with the guide roll 20. As shown, the roll 38 is mounted in a lever 40 and is pressed onto the felt by a weight 42 mounted on a lever 44 which is connected with the lever 40 by a link 46.

As above indicated, a felt may be subjected to a similar treatment during its manufacture to remove the soap or other material used during the fulling operation and to wash and cleanse the felt preparatory to the stretching and drying. In such case, the felt will be caused to travel over the guide rolls which direct a portion of the felt down under the surface of the liquid in the tank and hold it in engagement with the rolls and guides of the suction box so that as the felt travels through the tank, a current of water or washing liquid will flow forcibly through from one side to the other. In this case the raising of the guide rolls or rolls which direct the felt down under the surface of the liquid in the tank is not required since the felt need not run free of the tank as in the press of the paper making machine. It will also be understood that the invention may be applied to the washing and cleaning of other fabrics or materials which are adapted to be cleansed by a current of liquid flowing from one side of the material to the other.

What is claimed is:

1. The method of cleaning the felt of a paper making machine or similar material which consists in causing it to travel through a body of liquid below the surface of the liquid and drawing the liquid therethrough by suction.

2. An apparatus for washing and cleaning paper making machine felts or similar materials comprising a tank for the cleaning liquid, a suction box opening into the tank below the surface of the liquid therein, and means for guiding the felt to close the opening between the suction box and tank.

3. An apparatus for washing and cleaning paper making machine felts or similar materials comprising a tank for the cleaning liquid, a suction box in the tank having an open side arranged to lie below the surface of the liquid in the tank, and means for guiding the felt across the open side of the suction box to close the same.

4. An apparatus for washing and cleaning paper making machine felts or similar materials comprising a tank for the cleaning liquid, a suction box having an open top arranged below the surface of the liquid in the tank, guide rolls for the felt at the upper side edges of the box, guides at the ends of the box between the rolls for supporting the side edges of the felt, and means for guiding and holding the felt in engagement with the rolls and guides.

5. An apparatus for cleaning a paper making machine felt during its travel through the machine comprising a tank for the cleaning fluid arranged between two of the felt supporting guide rolls of the machine, a suction box having an open side arranged below the surface of the liquid in the tank, and means for deflecting the felt into position to close the open side of the suction box.

6. An apparatus for cleaning a paper making machine felt during its travel through the machine comprising a tank for the cleaning fluid arranged below the felt between two of the felt supporting guide rolls of the machine, a suction box having an open top arranged below the surface of the liquid in the tank, and vertically ov-

able guiding means adjustable from the position to permit the travel of the felt free of the liquid in the tank to a position to deflect the felt into the tank and across the open top of the suction box to close the same.

7. An apparatus for washing and cleaning paper making machine felts or similar materials comprising two communicating liquid containing chambers, means for guiding the felt to close the opening between the two chambers, and means for causing a flow of liquid from one chamber to the other.

8. An apparatus for washing and cleaning paper making machine felts or similar materials comprising a tank, a box within the tank having one side opening into the tank below the surface of the liquid therein, means for guiding the felt to close the opening between the box and tank, and means for causing a flow of liquid through said opening and felt.

EZEKIEL J. WILSON.