

Aug. 25, 1925.

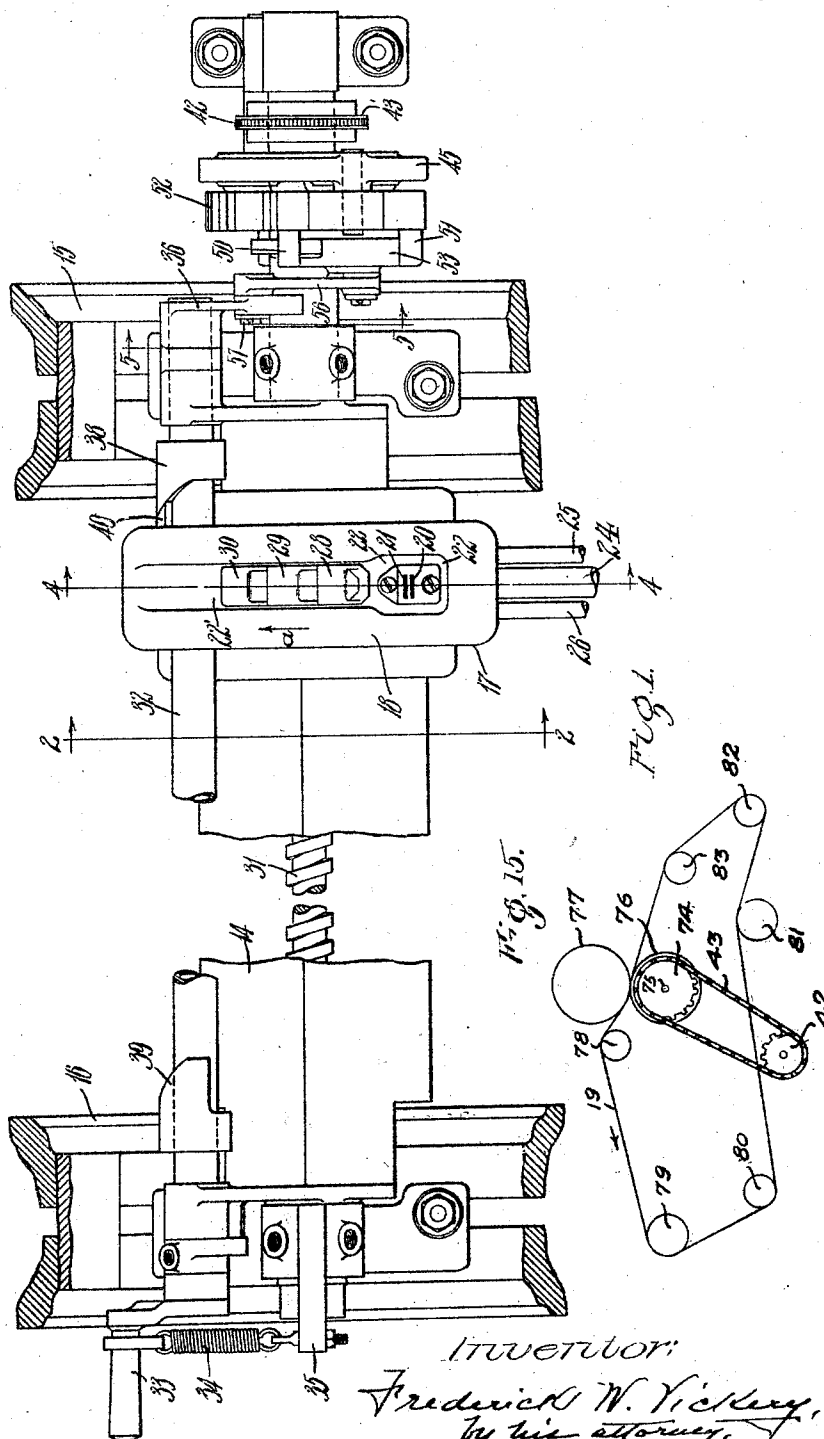
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F. W. VICKERY

FELT RECONDITIONING APPARATUS

Filed Feb. 8, 1924

4 Sheets-Sheet 1



Inventor:
 Frederick W. Vickery,
 by his attorney,
 Charles S. Gooding.

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FELT RECONDITIONING APPARATUS

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4 Sheets-Sheet 2

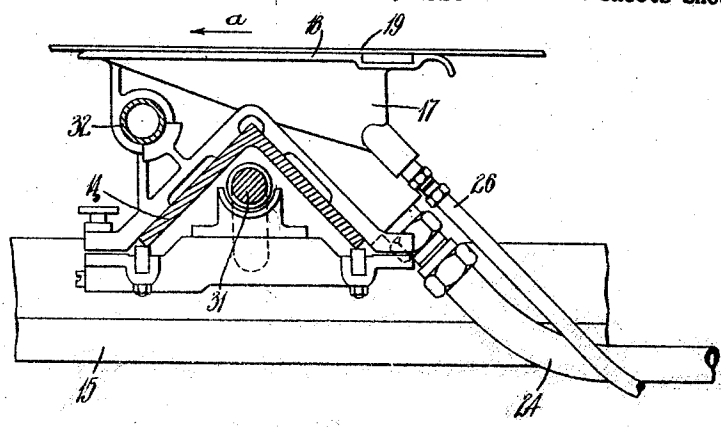


Fig. 2.

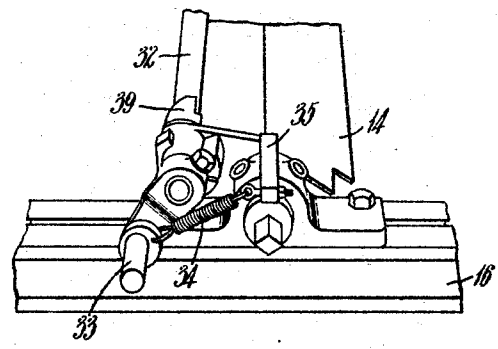


Fig. 3.

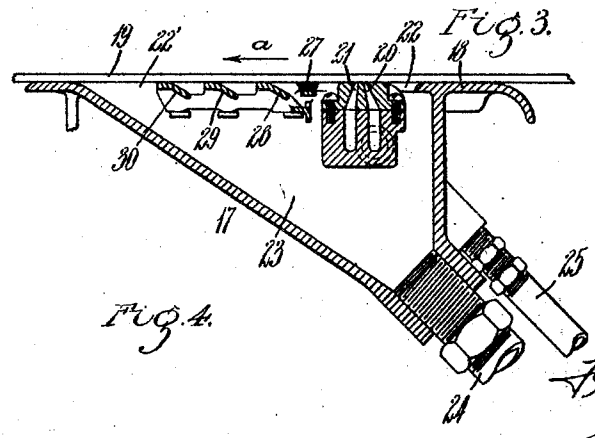


Fig. 4.

Inventor:
Frederick W. Vickery
by his attorney,
Charles S. Gooding.

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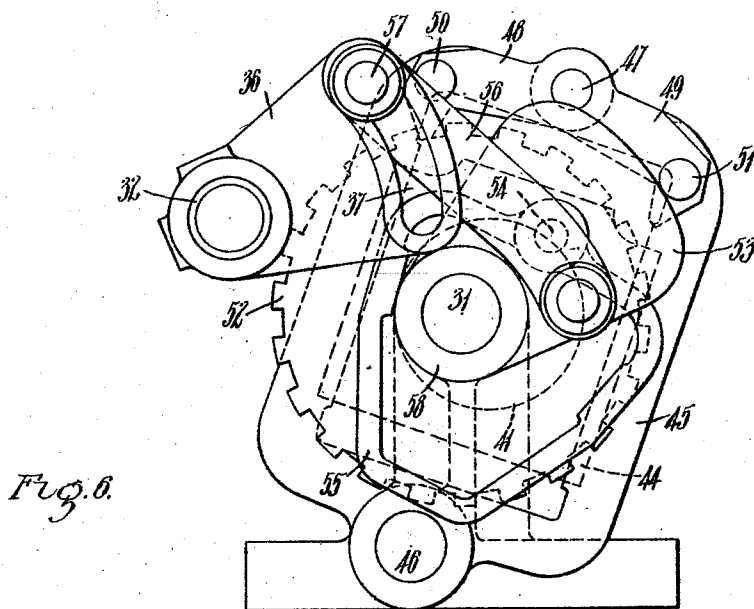
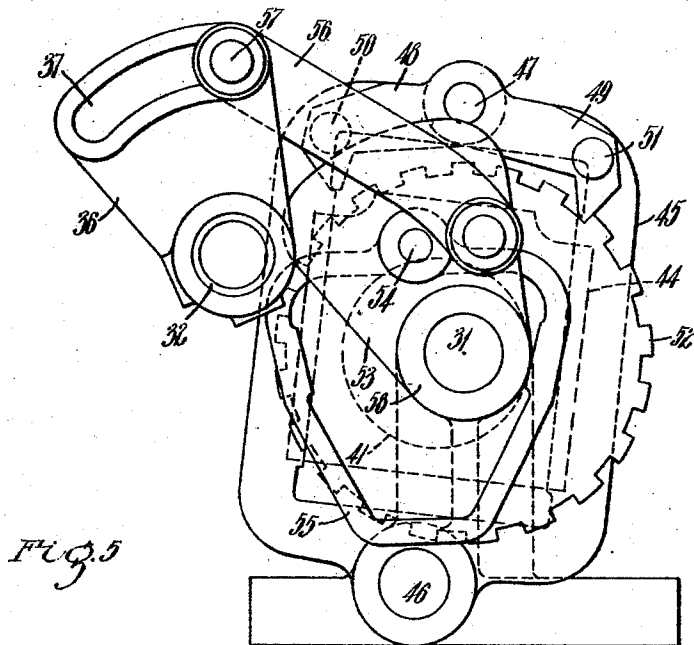
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4 Sheets-Sheet 3



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 Frederick W. Vickery,
 by his attorney,
 Charles S. Gooding.

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F. W. VICKERY

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FELT RECONDITIONING APPARATUS

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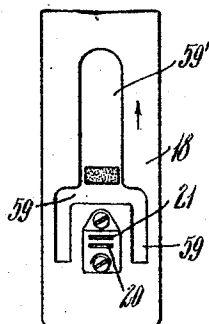


Fig. 7.

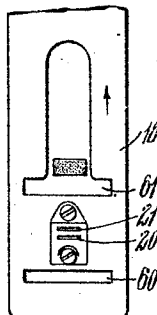


Fig. 8.

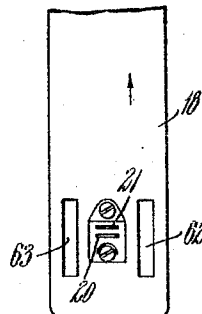


Fig. 9.

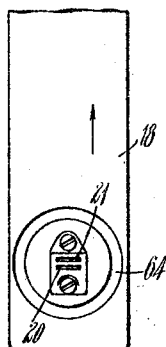


Fig. 10.

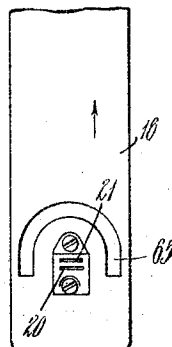


Fig. 11.

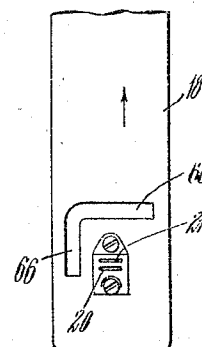


Fig. 12.

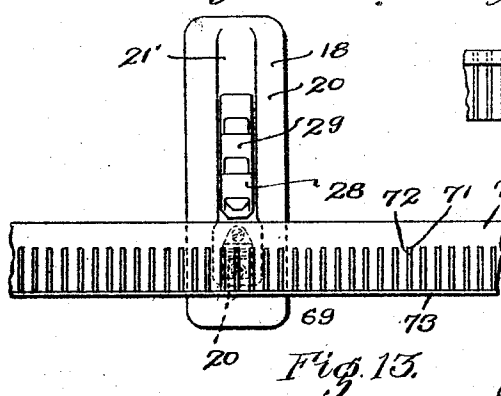


Fig. 13.

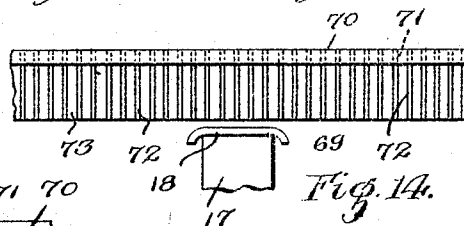


Fig. 14.

Inventor:
Frederick W. Vickery,
by his attorney,
Charles S. Gooding.

Patented Aug. 25, 1925.

1,550,993

UNITED STATES PATENT OFFICE.

FREDERICK W. VICKERY, OF LONDON, ENGLAND, ASSIGNOR TO VICKERY LIMITED,
OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

FELT-RECONDITIONING APPARATUS.

Application filed February 8, 1924. Serial No. 691,533.

To all whom it may concern:

Be it known that I, FREDERICK W. VICKERY, a subject of the King of England, residing at London, England, have invented
5 new and useful Improvements in Felt-Reconditioning Apparatus, of which the following is a specification.

This invention relates to an apparatus for reconditioning the transporting felt belt
10 of paper making machines.

In paper making machines, the felt belt conveys the paper pulp in wet form between press rolls. These rolls press both the felt and the web of paper, squeezing out the
15 water.

In paper machines of this class, after the felt belt has been used for a certain length of time it deteriorates, that is, the threads of the felt are pressed by the press rolls and are caused to assume a flattened shape. This
20 flattening of the threads of the belt closes the pores of the felt and interferes with the squeezing of the water by the press rolls out of the paper web and through the felt belt.
25 When this condition of affairs occurs, the character of the paper deteriorates. The deterioration of the felt belt is also partly due to dirt or other material which is left upon the felt belt by the paper web, but this
30 is not the principal difficulty leading to the above deterioration of the felt, and it is the main object of this invention to overcome the difficulty hereinbefore set forth, namely the deterioration of the felt belt by the flattening
35 of the threads and the consequent lateral spreading of the threads and filling up of the spaces or pores which would otherwise exist in the felt belt.

If the felt belt is not reconditioned, the
40 threads will return repeatedly to the press rolls in exactly the same relative positions, until all the elasticity is pressed out of them, and finally each thread takes a permanent
45 set making a continuous impervious mat so that the water cannot pass through the same. When this happens, the paper manufactured on the machine becomes what is known technically as "crushed" and it becomes necessary either to stop the machine and install
50 a new felt belt in order to restore the machine to its normal operative condition or to stop the machine and recondition the felt belt.

In order to overcome the flattening, widening and matting of the threads of the felt,

this invention contemplates disturbing this matted condition so as to restore the threads as far as possible to their original shape and position by causing them to change their
60 positions relatively to each other so that they will not all constitute flattened threads lying in a substantially horizontal plane.

In addition to the changing of the positions of the threads relatively to each other and correcting the flattened shape of the
65 same, this invention contemplates removing the dirt from the felt belt, in other words, the invention contemplates cleaning the belt as well as reconditioning it with respect to the flattened threads thereof.

To these ends the apparatus of this invention contemplates employing a narrow jet of water under pressure and directed
70 against one face of the felt belt with sufficient force to cause the water to pass through the felt and preferably the water employed
75 should be hot, and in order to secure this desirable condition of the water, the apparatus of this invention contemplates using a jet of steam in close proximity to the jet of
80 water.

In order to hold the belt in position to be operated upon by the jet of water and to cause the water to return through the belt, a suction device is employed which is provided with a port preferably substantially
85 surrounding the ports for the jets of water and steam. Suction is applied, which acting through the suction port in the opposite direction to the force of the jets of water,
90 holds the felt firmly upon a reconditioning member in which the suction, water and steam ports are provided. The reconditioning member includes means for supplying
95 water and steam under pressure to their respective ports, and also includes means for supplying suction to the suction port.

The reconditioning member with its ports and means for applying fluid under pressure and for applying suction as hereinbefore set forth is moved transversely of the felt belt
100 with the ports in close proximity to one surface of said felt belt and is moved very slowly as compared with the speed of the belt which is being reconditioned, the distance traveled by the fluid ejecting port
105 being approximately not greater than the distance across said port during a travel of the belt throughout its entire length.

It has been found that in order to pre-

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vent the threads of the felt belt from acquiring a permanent set it is necessary to disturb them very vigorously and it is not sufficient in order to attain this result merely to force a jet of cleaning fluid through the felt, but if the fluid can be caused to return sharply upon itself, it will exert a twisting or curling effect upon the threads of the belt, whereas a jet passing straight through the felt would merely thrust them aside.

The apparatus of this invention accomplishes this desirable result, that is, fluid, preferably water, heated, is forced through the belt in a limited area and is then drawn through the belt in the opposite direction by the suction device, and this causes a twisting or curling effect upon the threads which changes the relation of the threads to each other and overcomes the flattened condition hereinbefore referred to and at the same time the felt will be cleansed thereby.

It will be understood that in order that the belt should be reconditioned and have imparted to the threads thereof the twisting or curling effect hereinbefore referred to, that that portion of the belt which is being reconditioned must, during this reconditioning operation, be firmly held down against the upper face of the reconditioning member by the suction, and in order that this should be carried into practical operation, therefore, the suction port must be located adjacent to the ejecting and steam ports and upon at least two sides thereof and preferably should surround the same.

The invention consists in the improved method of reconditioning the felts of paper making machines and the apparatus for carrying said method into practical operation, all as hereinafter set forth and particularly as pointed out in the claims.

Referring to the drawings:

Figure 1 is a plan view partly broken away and shown in section of an apparatus embodying my invention.

Fig. 2 is a sectional elevation taken on line 2—2 of Fig. 1.

Fig. 3 is a perspective plan view of a portion of the apparatus of my invention.

Fig. 4 is a sectional elevation taken on line 4—4 of Fig. 1.

Figs. 5 and 6 are enlarged sectional elevations taken on the line 5—5 of Fig. 1, showing the mechanism for reversing the feed of the reconditioning members in two positions.

Figs. 7, 8, 9, 10, 11 and 12 are detail plan views illustrating different styles of reconditioning members, broken away.

Fig. 13 is a plan view and

Fig. 14 is a rear elevation of a portion of a water shield member.

Fig. 15 is a diagrammatic side elevation as viewed from the right of Fig. 1 of a portion of the felt reconditioning mechanism, the transporting felt belt and mechanism adapt-

ed to move the felt belt and to actuate the reconditioning member.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 15 and 16 are oppositely disposed side members of the frame of the apparatus connected together by a beam 14 which is of an inverted V-shape in cross section. Upon the beam 14 is slidably mounted a reconditioning member 17. The reconditioning member 17 is provided with a top plate 18 upon which the felt belt 19 rests. Said top plate is provided with a fluid ejecting port 20, a steam ejecting port 21 and a suction port 22. A chamber 23 connects with the suction port 22 and said chamber is connected by a pipe 24 with a suitable suction apparatus. The port 20 is connected by a pipe 25 to a source of water supply under pressure and the port 21 is connected by a pipe 26 to a steam supply. A brush 27 is supplied in the member 17 and projects upwardly through the suction port in alignment with and at the rear of the fluid and steam ejecting ports.

It will be noted that the suction port 22 in this embodiment of my invention entirely surrounds the fluid ejecting port 20 and steam port 21 and extends rearwardly therefrom in the form of a comparatively narrow extension 22', and in this narrow extension is located the brush 27 and transversely extending supports 28, 29 and 30. The reconditioning member 17 has a reciprocatory motion imparted thereto to carry the same entirely across while in contact with the surface of the belt 19 by a screw 31 which has screw-threaded engagement with said reconditioning member and is rotated by a pawl and ratchet mechanism which will now be described.

A shaft 32 is rotatably mounted in the frame of the machine and is provided at one end thereof with a crank arm 33 which is connected by a coil spring 34 to a stationary bracket 35. The opposite end of the shaft 32 has a segmental arm 36 fast thereto provided with a segmental slot 37.

Near each of its ends, the shaft 32 has cams 38 and 39 and the reconditioning member 17 is also provided with oppositely arranged cams 40. An eccentric 41 is rotatably mounted upon the frame of the machine, together with a sprocket wheel 42 which is fastened thereto. The sprocket wheel 42 is driven by a chain 43, see Fig. 15, from a sprocket 74 which is fastened to a shaft 75 to which is fastened one of the feed rolls 76 of a felt feeding mechanism ordinarily used and well known to those skilled in the art of paper making machines. The feed roll 76 co-operates with a feed roll 77 to feed the felt belt 19 in the direction of the arrows, see Fig. 15. The felt belt is guided by rolls 78, 79, 80, 81, 82 and 83.

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The eccentric 41 is rotatably mounted in a sliding block 44, see Figs. 5 and 6, which, in turn, is slidably mounted in a rocker frame 45, the rocker frame 45 being pivoted at 46 to the frame of the machine. The rocker frame 45 has pivotally connected to it at 47 a pair of oppositely disposed pawls 48 and 49, having laterally extending pins 50 and 51 respectively.

10 Immediately disposed in the plane of the pawls 48 and 49 is a toothed wheel 52 which is secured to the screw rod 31, and adjacent to the toothed wheel 52 and loosely mounted on the plain end of the screw 31 is a sector 15 53 which has pivotally connected to it at 54 a skeleton balance weight 55 which surrounds the end of the screw rod 31. The sector 53 is connected by a link 56 to the slotted segmental arm 36 of the shaft 32 by a pin 57 which projects into the seg- 20 mental slot 37.

The operation of the screw rotating mechanism is as follows:—Assuming that the reconditioning member 17 be at one side 25 of the machine and the reversing mechanism positioned as in Fig. 5 with the pawl 48 lifted by the sector 53 out of engagement with the teeth of the wheel 52; the sprocket wheel 42 is driven and the eccentric 41 will 30 revolve, moving the block 44 up and down in the rocker frame 45, and at the same time the rocker frame 45 will be rocked about its pivot 46 so that the pawl 49 will push the toothed wheel 52 the required distance and 35 then return to engage the next tooth, and during the forward movement of the pawl 49 the screw rod 31 will be rotated by reason of the toothed wheel 52, being fixed to it and this action continues until the recondi- 40 tioning member 17 has been moved by the screw rod 31 along the beam 14 entirely across the belt 19, whereupon the cam 40 on the member 17 will engage the cam 38 on the shaft 32 and will rock the shaft 32 at 45 the same time putting tension on the spring 34, the slot 37 in the arm 36 riding over the pin 57 of the link 56 until the pin 57 arrives at the end of the slot 37, whereupon the anchorage of the spring 34 to the crank 50 arm 33 will have passed the dead center line between the shaft 32 and the anchorage of the spring 34 to the bracket 35 and with the assistance of the cams 40 and 38, will rock the sector 53 to engage the pin 51 of 55 the pawl 49 and lift the pawl 49 out of engagement with the toothed wheel 52, whereupon the travel of the reconditioning member 17 will be stopped.

60 During this movement of the sector 53, the balance weight 55 will have swung across the vertical median plane of the sector 53 and said balance weight 55 will thereby assist in moving the sector 53 from the position illustrated in Fig. 5 to that illustrated 65 in Fig. 6, the sector being retained in the

proper position by the inside edge of the balance weight on one side resting against a collar 58 on the screw rod 31.

During this movement of the sector 53, the pawl 48 is released and engages the 70 toothed wheel 52, and the continued rotation of the sprocket wheel 42 will now cause the rocker frame 45 to compel the pawl 48 to act upon the toothed wheel 52 and move 75 it in the reverse direction to that in which it has hitherto been moving, and thus reverse the movement of the screw rod 31, and at the end of the movement of the reconditioning member across the belt 19 in the op- 80 posite direction to that in which it has been moved hitherto, the same reversing action, but in an opposite manner, with regard to the pawls 48 and 49, takes place and the ro- 85 tation of the screw rod 31 is again reversed, causing the reconditioning member 17 to be moved across the belt in the same direction as first hereinbefore described.

The screw thread on the screw rod 31 has such a pitch and the mechanism by which it is rotated bears such a relation to the 90 mechanism which feeds the felt belt that the reconditioning member will move across the belt a distance not greater than the distance across the ejecting port 20 measured trans- 95 versely of the belt 19, during a travel of the belt 19 throughout its entire length.

The reconditioning member 17 operates on the face of the belt 19 as it passes over the top 18 of said reconditioning member on the return or bottom run of the belt. Con- 100 sequently the felt belt can be changed as quickly and easily as if the reconditioning member were not installed or can be reconditioned without, in any way, interfering with the continuous operation of the paper 105 making machine.

The face of the felt belt 19 contacts with the upper face of the top 18 of the recondi- 110 tioning member 17, water is forced through the pipe 24 out of the fluid ejecting port 20 and through the transporting felt belt 19 and is heated by means of steam from the steam pipe 25 and steam port 21. The hot 115 water issues from the fluid ejecting port 20 in the form of a jet and is forced upwardly through the felt and caused to turn sharply upon itself and is drawn downwardly through the felt by the suction from the suction port 22 and thus a twisting or curl- 120 ing effect will be exerted upon the threads of the felt. The belt is firmly held against the top 18 adjacent to and around the fluid ejecting port and the steam port by the suc- 125 tion at the suction port 22 and after the belt has passed the ejecting port 20 and passes along the suction port extension 22', mois- 130 ture will be drawn out of the felt belt 19 so as to leave it comparatively dry.

The distance across the ejecting port referred to in the claims means the distance

across the ejecting port measured in the direction of its travel, or transversely of the felt belt. The term "felt" used in connection with the paper transporting belt is a technical term used in the paper manufacturing trade, but it is to be understood that this invention is not intended to be limited to a transporting belt made of felt as a belt made of some fabric other than felt may be reconditioned and cleansed by the device of this invention without departing from the spirit of my invention.

In Figs. 7 to 12 inclusive different embodiments of the suction port of this invention are illustrated. In each of these figures the arrow indicates the direction of feed of the belt. In each of the figures, 20 is the fluid ejecting port, 21 is the steam ejecting port and 18 is the top of the reconditioning member shown broken away.

In Fig. 7, 59 is the suction port and 59' the extension thereof. It will be noted in this form of the suction port that it extends on each side of the fluid and steam ejecting ports and also extends across the top 18 whereby the two side portions 59 and 59' are joined together, thus partly surrounding the fluid and steam ejecting ports relatively to the fluid ejecting port, therefore, the suction port, in this embodiment of my invention is in alignment with the ejecting port transversely of the belt. It is also in alignment with the ejecting port longitudinally of the belt.

In Fig. 8, 60 and 61 are two portions of the suction port, the portion 60 being located in advance of the ejecting and steam ports and the portion 61 located at the rear of said ports.

In Fig. 9, 62 and 63 are portions of the suction port located in alignment with the ejecting and steam ports transversely of the belt.

In Fig. 10, a circular suction port 64 is illustrated which entirely surrounds the fluid and steam ejecting ports.

In Fig. 11, a semi-circular suction port 65 is illustrated which partially surrounds the fluid and steam ejecting ports.

In Fig. 12, a suction port is illustrated consisting of a longitudinally extending part 66 joined to a transversely extending part 68. This suction port, as a whole, partly surrounds the fluid and steam ejecting ports and is similar to the suction port illustrated in Fig. 7 except that it does not have a rearwardly extending portion. From the foregoing illustrations of different forms of suction ports, it is evident that many variations in the suction port may be made without departing from the spirit of my invention, and I do not wish, therefore, to be limited to any particular form of suction port.

When the fluid is being forced through

the fluid ejecting port 20 and through the felt belt, it oftentimes shoots upwardly for several inches above the top of the belt, and in returning, is sprayed over a comparatively large area of the belt. In order to overcome this difficulty and confine the fluid to the suction area, a water shield 69 is provided which consists of a horizontal supporting member 70 which is supported at its opposite ends upon the frame of the machine, and is provided with slots 71 into which sheet metal plates 72 project, the sheet metal plates being fast to or integral with a plate 73. By reference to Fig. 14, it will be seen that as the fluid is ejected from the fluid port 20, it passes through the felt upwardly and above the same and will pass between adjacent plates 72 and will be prevented by said plates from spraying laterally over the felt, and will be prevented by the plate 73 from spraying longitudinally of the belt in one direction.

The general operation of the apparatus hereinbefore described is as follows:—The belt 19 is fed in the direction of the arrow *a*, Figs. 1, 2 and 4. The reconditioning member is positioned at one side of the belt with the fluid and steam ejecting ports immediately adjacent to one surface of the belt, suction is applied to the belt 19 at the suction port 22 and to the extension of the suction port 22' through the pipe 24, water is forced through the fluid ejecting port 20 and steam is forced through the steam ejecting port from the pipes 25 and 26 respectively. The hot water passes through the belt and upwardly above the belt, the spray from the same being prevented from falling on the belt outside the range of the suction by the water shield 69. The reconditioning member is fed transversely of the belt by the screw rod 31 as hereinbefore described at such a speed that the fluid ejecting port will not travel a greater distance than its width measured transversely of the belt during each travel of the belt throughout its entire length. When the reconditioning member has traveled transversely of the belt until the fluid and steam ejecting ports have traveled entirely across the belt, the direction of rotation of the screw rod 31 is reversed by the mechanism hereinbefore described, and the reconditioning member then travels backwardly across the entire width of the belt. Hot water is forced upwardly through the belt and is drawn backwardly down through the belt, thus disturbing the threads of the belt and changing their location relatively to each other so as to open up spaces between the threads which formerly were flattened and in close relation to each other, and also cleaning the belt.

While the apparatus hereinbefore described has embodied therein a port and means for supplying steam to heat the fluid

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or water, it is to be understood that my invention is not limited to this construction, as the apparatus is equally effective if hot water can be obtained from a source of supply and supplied to the fluid ejecting port, in which case the steam ejecting port and means for conveying steam thereto may be omitted.

While I have described in the foregoing specification and have set forth in many of the claims a suction device for causing the water to return through the felt belt for reconditioning the same, I may, without departing from the spirit of my invention, cause the water to be returned through the belt by the direct pressure of air, provided by means other than suction, as it is evident that instead of suction supplied by a suction port located beneath the belt, pressure of air may be supplied above the belt and thus drive the water downwardly through the belt and into the port, which I have referred to as a suction port, or the pressure of air may be applied to the upper surface of the belt, together with the suction port and suction applied thereat, without departing from the spirit of my invention.

I claim:

1. The method of reconditioning the transporting felt belts of paper making and similar machines which consists in forcing a jet of fluid through a felt belt while the belt is moving longitudinally thereof and in moving the jet transversely of the belt a distance not greater than the width of the jet during a travel of said belt throughout its entire length and in simultaneously subjecting the portion of the felt on opposite sides of that portion through which said fluid is being forced to the pressure of air, whereby the fluid is caused to return through the felt and the relative locations of the threads of the felt to each other are changed.

2. The method of reconditioning the transporting felt belts of paper making and similar machines which consists in forcing a jet of fluid and a jet of steam through a felt belt while the belt is moving longitudinally thereof and in moving the jet of fluid and the jet of steam transversely of the belt a distance not greater than the width of said jet of fluid during a travel of said belt throughout its entire length and in simultaneously subjecting the portion of the felt on opposite sides of that portion through which said fluid is being forced to the pressure of air, whereby the fluid is caused to return through the felt and the relative locations of the threads of the felt to each other are changed.

3. The method of reconditioning the transporting felt belts of paper making and similar machines which consists in forcing a jet of fluid through a felt belt while the belt is moving longitudinally thereof and in

moving the jet transversely of the belt a distance not greater than the width of the jet during a travel of said belt throughout its entire length and in simultaneously subjecting the portion of the felt on opposite sides of that portion through which said fluid is being forced to suction whereby the fluid is caused to return through the felt and the relative locations of the threads of the felt to each other are changed.

4. The method of reconditioning the transporting felt belts of paper making and similar machines which consists in forcing a jet of fluid and a jet of steam through a felt belt while the belt is moving longitudinally thereof and in moving the jet of fluid and the jet of steam transversely of the belt a distance not greater than the width of said jet of fluid during a travel of said belt throughout its entire length and in simultaneously subjecting the portion of the felt on opposite sides of that portion through which said fluid is being forced to suction, whereby the fluid is caused to return through the felt and the relative locations of the threads of the felt to each other are changed.

5. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to supply fluid under pressure at a fluid ejecting port, mechanism adapted to move a transporting felt belt longitudinally thereof with one face closely adjacent to said ejecting port, means to simultaneously supply air under pressure against the opposite face of said transporting felt belt on opposite sides of said fluid ejecting port, whereby said fluid may be caused to return therethrough and mechanism to move said port and air pressure means transversely across said belt a distance approximately not greater than the distance across said ejecting port during a travel of said belt throughout its entire length.

6. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to supply fluid under pressure at a fluid ejecting port, means to simultaneously apply suction at a fluid suction port on opposite sides of said fluid ejecting port, mechanism adapted to move a transporting felt belt longitudinally thereof with one face closely adjacent to said ejecting and suction ports and mechanism to move said ports transversely across said belt a distance approximately not greater than the distance across said ejecting port during a travel of said belt throughout its entire length.

7. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, a reconditioning member provided with a fluid ejecting port and a fluid suction port, means to supply fluid under pressure at said fluid

ejecting port and means to simultaneously apply suction at said suction port on opposite sides of said fluid ejecting port, mechanism adapted to move a transporting felt band longitudinally thereof with one face closely adjacent to said ejecting and suction ports and mechanism to move said reconditioning member and its ports transversely across said belt a distance approximately not greater than the distance across said fluid ejecting port during a travel of said belt through its entire length.

8. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to supply fluid under pressure at a fluid ejecting port, means to simultaneously apply suction at a fluid suction port on opposite sides of said fluid ejecting port, mechanism adapted to move a transporting felt belt longitudinally thereof with one face closely adjacent to said ejecting and suction ports, said ejecting port being in alignment with said suction port longitudinally of said belt and mechanism to move said ports transversely across said belt a distance approximately not greater than the distance across said ejecting port during a travel of said belt throughout its entire length.

9. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to supply fluid under pressure at a fluid ejecting port, means to apply suction at a fluid suction port, mechanism adapted to move a transporting felt belt longitudinally thereof with one face closely adjacent to said ejecting and suction ports, said ejecting port being in alignment with said suction port transversely of said belt and mechanism to move said ports transversely of said belt.

10. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to supply fluid under pressure at a fluid ejecting port, means to apply suction at a fluid suction port, mechanism adapted to move a transporting felt belt longitudinally thereof with one face closely adjacent to said ejecting and suction ports, said ejecting port being in alignment with said suction port transversely of said belt and mechanism to move said ports transversely of said belt a distance approximately not greater than the distance across said ejecting port during a travel of said belt throughout its entire length.

11. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to supply fluid under pressure at a fluid ejecting port, means to apply suction at a fluid suction port, mechanism adapted to move a transporting felt belt longitudinally thereof with one face closely adjacent to said eject-

ing and suction ports, said suction port being in alignment with and on opposite sides of said ejecting ports and mechanism to move said ports transversely of said belt.

12. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to supply fluid under pressure at a fluid ejecting port, means to apply suction at a fluid suction port, mechanism adapted to move a transporting felt belt longitudinally thereof with one face closely adjacent to said ejecting and suction ports, said suction port surrounding said ejecting port and mechanism to move said ports transversely of said belt.

13. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to supply fluid under pressure at a fluid ejecting port, means to heat said fluid, means to simultaneously apply suction at a fluid suction port on opposite sides of said fluid ejecting port, mechanism adapted to move a transporting felt belt longitudinally thereof with one face closely adjacent to said ejecting and suction ports and mechanism to move said ports transversely across said belt a distance approximately not greater than the distance across said ejecting port during a travel of said belt throughout its entire length.

14. An apparatus for reconditioning the transporting felt belt in a paper making machine having, in combination, means to supply fluid under pressure at a fluid ejecting port, means to supply heated fluid under pressure at a heated fluid ejecting port adjacent said fluid ejecting port, means to simultaneously apply suction at a fluid suction port on opposite sides of said fluid ejecting port, mechanism adapted to move a transporting felt belt longitudinally thereof with one face closely adjacent to said ports and mechanism to move said ports transversely across said belt a distance approximately not greater than the distance across said ejecting port during a travel of said belt throughout its entire length.

15. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to force fluid under pressure through said belt and means supported adjacent to said belt on the opposite side thereof to said fluid forcing means to prevent the fluid which has been forced through the belt from spraying laterally upon the belt beyond a predetermined area.

16. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to force fluid under pressure through said belt and a water shield located on the opposite side of said belt from said fluid forcing means

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and comprising a supporting member and a plurality of vertical plates on said supporting member terminating at their lower edges adjacent to one surface of said belt.

5 17. An apparatus for reconditioning the transporting felt belt of a paper making machine having, in combination, means to force fluid under pressure through said belt and a water shield located on the opposite side
10 of said belt from said fluid forcing means

and comprising a supporting member and a plurality of vertical plates on said supporting member terminating at their lower edges adjacent to one surface of said belt and a plate on said supporting member extending downwardly therefrom to which said vertical plates are fastened.

In testimony whereof I have hereunto set my hand.

FREDERICK W. VICKERY.