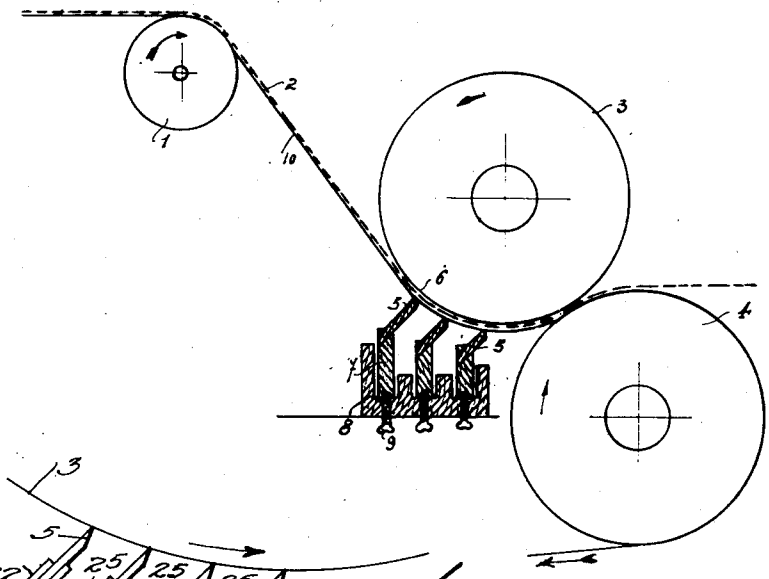
Aug. 16, 1927. 1,638,975

V. ANTOINE

MEANS FOR ELIMINATING WATER FROM THE PULP ON THE WIRE OF PAPER MAKING MACHINES

Filed Aug. 8, 1925 2 Sheets-Sheet 1

Fig: 1



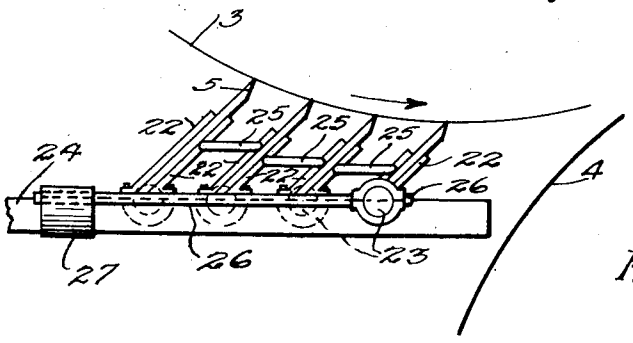


Fig: 2

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Fig: 3

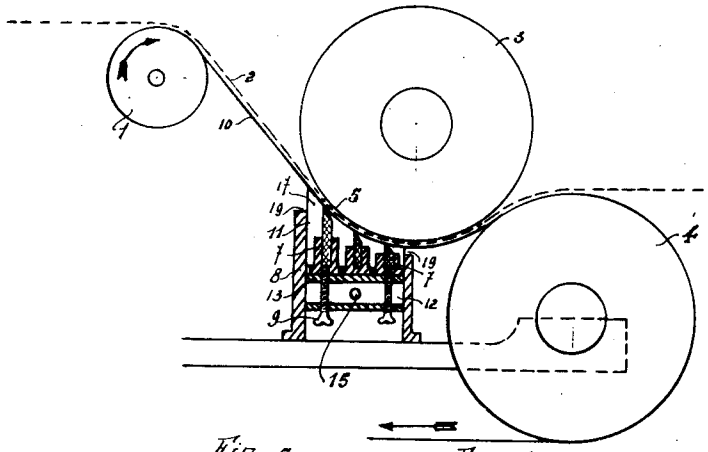


Fig: 5

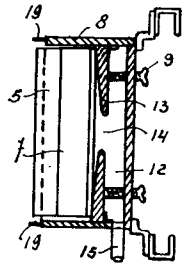


Fig: 4

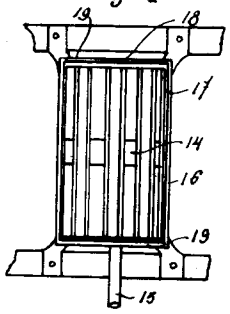


Fig: 6

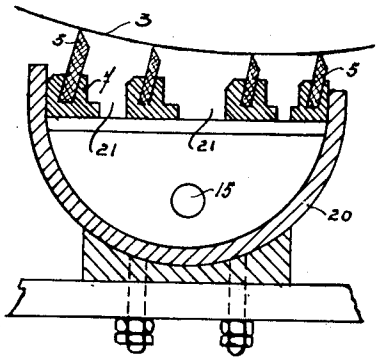
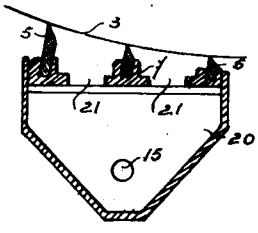


Fig: 7



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Patented Aug. 16, 1927. 1,638,975

UNITED STATES PATENT OFFICE.

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MEANS FOR ELIMINATING WATER FROM THE PULP ON THE WIRE OF PAPER-MAKING MACHINES.

Application filed August 8, 1925, Serial No. 48,938, and in Belgium August 12, 1924.

This invention relates to improved means for eliminating water from the pulp on the wire of a paper making machine.

As is well known a large proportion of the water in the pulp must be removed before the web leaves the couch rolls; a considerable proportion is simply drained away through the wire; a further part is withdrawn by the suction boxes, and some more is expressed by the pressure of the couch rolls. But if the couch rolls are allowed to squeeze out too large a proportion the banked-back water disturbs the fibres with resulting deterioration of the paper.

According to the present invention the proportion of water left to be squeezed out between the couch rolls is reduced by causing the tensioned wire to wrap itself upon a roll in advance of the point of squeeze of the couch rolls and by applying wiping means to the under side of the wire where it is so wrapped on the roll to lead away the water which is expressed by the pressure between the wire and the roll.

The wipers may be flexible blades, brushes or the like applied with a preferably regulable pressure to the wire. Their action may be supplemented by suction; for instance by mounting them in a chamber which makes joint with the wire wrapped upon the roll and which is connected with a suction pump.

Constructions according to the invention are shown by way of example in the accompanying drawings in which:—

Figure 1 is a diagram of a simple form of the invention.

Figure 2 is a similar construction in which regulable pressure of the wipers on the wire is obtained by the use of a weight.

Figure 3 is a vertical section of a construction in which the action of the wipers is supplemented by suction.

Figure 4 is a plan and

Figure 5 is a longitudinal section of the chamber in which the wipers are mounted.

Figures 6 and 7 show modified forms of this chamber.

In Figures 1, 2 and 3 the wire 2 passes over a guide and tension roll 1 and between the usual couch rolls 3 and 4 and is tensioned by lowering the couch roll 3. The wire is wrapped upon an arc of the roll 3 in advance of the point of nip of the couch rolls.

In this arc of contact with the roll there are applied to the lower side of the wire flexible rubber blades 5 bevelled or reduced in thickness at their edge 6 which bears upon the wire. These blades are fastened upon laths 7 adjustably mounted in recesses in the support 8 on regulating screws 9. Fig. 1 shows three such blades in use and Fig. 2 shows four.

In operation the wire 2 carries the layer of pulp 10 upon it to the roll 3, and there the pulp is squeezed between the wire and the arc of the roll upon which it is wrapped. The water thus expressed might hang by surface tension to the under side of the wire were it not for the presence of the wipers 5 touching these. The water runs down them, so that there is considerably less water in the pulp when it is nipped between the couch rolls. Consequently greater pressure may safely be applied to the couch rolls as well as to the succeeding presses as the quantity of water expressed by them will not be so great as to disturb the fibres of the pulp. The web will therefore pass the rolls free of variation in thickness, it will be better felted, will have a less tendency to adhere to the upper couch roll, and the wire marks will be less pronounced. The water mark, the ruling of wove or laid paper, or other ornamentation will therefore stand out better. This invention also increases the speed of the paper manufacturing operations and results in a paper well suited for the subsequent processes of glazing, sizing, etc. since a more thorough and uniform felting of the fibres is accomplished.

As shown in Figure 2 the wipers 5 may be caused to adjust themselves automatically to the surface of the wire by mounting them in supports 22 fastened on shafts or pivots 23 which can turn in the side members 24 of the frame carrying the wipers, connecting them together by links 25, and exerting a torque on all the shafts by means of a sliding weight 27 on a lever 26 secured to one of them. By shifting the weight 27 the pressure of the wipers on the wire can be varied.

In the construction of Figures 3, 4 and 5 the support 8 is constructed as a suction chest comprising a chamber 11 in which are mounted the wiper laths 7, and a lower chamber 12 below the bottom 13 of the chamber 11 through which is an opening 14. A pipe 15 connected to suction means not shown opens into the chamber 12. The long sides 16 of the suction chest have flexible

edges 17, for example in the form of strips of rubber or leather fastened to the sides of the vessel and contacting with the wire. The ends 18 have aprons 19 shaped at their upper edge to the roll on which the wire is wrapped. The bottom 13 of the upper chamber 11 is preferably sloped towards the opening 14 as indicated in Figure 5 to facilitate the outflow of water.

The suction chest may be of any other desired form, for instance cylindrical as shown in Figure 6 or rectangular with a conical bottom as shown in Figure 7. In Figure 6 the suction chest consists of a half pipe 20 containing the wiper supports 7 spaced apart so that the water may escape through the openings 21 between them into the lower part of the chest where it is drained off through 15. The suction chest is mounted in the way shown in Figure 3 so that its suction is applied to the part of the wire wrapped upon the roll 3 in advance of the passage of the wire through the nip of the rolls.

The rubber wipers 5 may be replaced in some cases by long narrow brushes, the ends of their hairs brushing over the lower surface of the travelling wire; or they may be replaced by slats or blades carried upon a shaft rotating in the opposite direction to the roll 3 so as to throw back the water expressed. In these cases as in the construction above described there may be openings 21 between the brushes or other wiping means through which the water can escape.

While reference has been made herein only to the water to be expressed from the pulp, it will be understood that a certain quantity of air also is expressed with the water.

What I claim is:

1. In a paper making machine in combination with the wire and the couch rolls, means for tensioning the wire in advance of the point of squeeze of the couch rolls and wiping means contacting with the tensioned wire whereby the water expressed from the pulp by pressure between the wire and the roll is led away.

2. In a paper making machine, in combination with the wire and the couch rolls, a roll on which the wire is wrapped in advance of the point of squeeze of the couch rolls and wiping means contacting with the tensioned wire in its arc of wrapping to lead away the water expressed from the pulp by pressure between the wire and the roll.

3. In a paper making machine, in combination with the wire and the couch rolls, wipers bearing upon the under side of the wire where it contacts with the upper couch roll in advance of the point of squeeze of the couch roll.

4. In a paper making machine in combination with the wire and the couch rolls, wipers bearing upon the under side of the wire where it contacts with the upper couch roll and suction means supplementing the action of the wipers.

5. In a paper making machine in combination with the wire and the couch rolls, wipers bearing upon the under side of the wire, a chamber in which the said wipers are mounted, the said chamber having flexible edges making joint with the wire, and suction means acting in the said chamber.

6. In a paper making machine, in combination with the wire and the couch rolls, wipers bearing upon the under side of the wire in advance of the point of squeeze of the couch rolls, means whereby the pressure of the wipers upon the wire may be adjusted and supporting means for the said wipers.

In testimony whereof I have affixed my signature.

VICTOR ANTOINE.