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1,998,381

PAPER MAKING MACHINE

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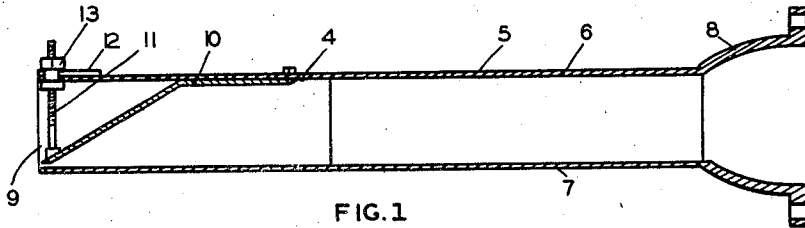


FIG. 1

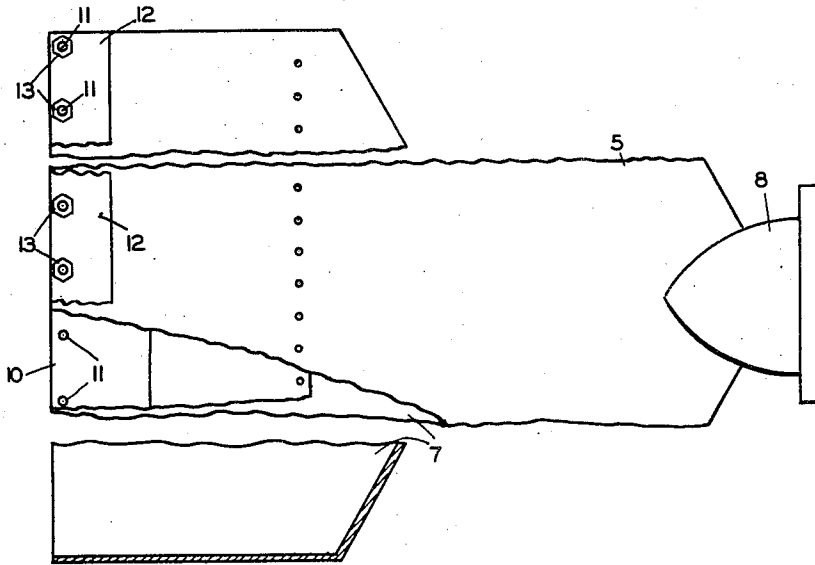


FIG. 2

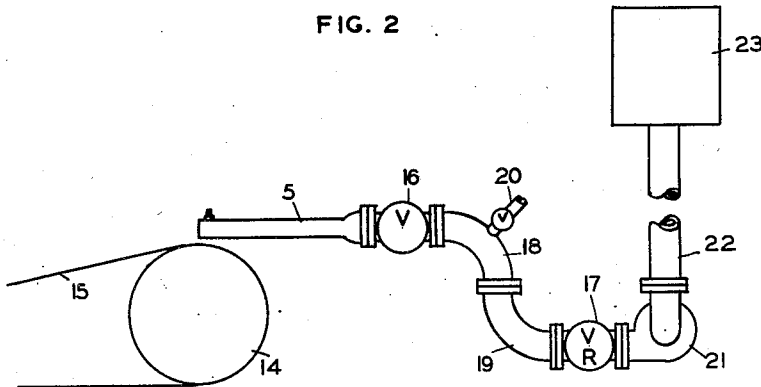


FIG. 3

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PAPER MAKING MACHINE

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1 Claim. (Cl. 92—46)

My invention relates to improvements in paper making machines especially to those of the Four-drinier type and generally to any paper making machine wherein paper wet stock is distributed on to a screen or roll to form a web.

The invention lies in that part of the machine known as the wet end, in other words, between the flow box and the breast roll.

The main object of the invention is to improve the distribution of the stock over the breast roll so as to insure an even web.

Another object is to prevent the formation of lumps and slime as collect in the conventional head box necessitating cleaning periods in the process.

A further object is to dispense with such components of the machine known as spray and shower pipes as well as rectifiers and to avoid stock currents, the cause of poor formation of and lack of uniformity of the web, due to volume weight in the head or flow box.

I arrive at these objects by the provision of a specially designed stock feeding nozzle adapted to feed the wet stock directly to the breast roll, fed at constant flow by a pump and constant pressure controlled by a pressure reducing valve, the pump serving as a mixer. The pump being at proximity of the nozzle insures perfect admixture or even distribution of the paper fibres in the stock. The nozzle already referred to which has a spread equal to the width of the breast roll and wire web has a narrow opening which is adjustable at intervals along its width to insure micrometer metering of the flow therefrom.

Detail of my system will be readily understood by having reference to the drawing appended hereto, in which:

Fig. 1 is a longitudinal sectional elevation of the nozzle;

Fig. 2 is a top plan view thereof partly in section; and

Fig. 3 is a schematic view showing the arrangement of the nozzle, control, valve, reducing valve and pump.

Similar figures of reference denote similar parts in all the views.

The nozzle, as detailed in Figs. 1 and 2, comprise in the present instance a broad box-like element 5, having a top 6 and bottom 7, which may reduce in width at the feeding end thereof, where it is provided with a connecting boss and flange 8. The front or distributing end 9 is provided with a cross-flexible plate 10 extending the full width, therefor, one side of which is fastened, by means of bolts or otherwise, to the top 5, as shown at 4, the other edge resting close to the bottom 7.

At regular intervals along the free edge of plate 10, are mounted vertically extending rods

11 threaded at their upper part, passing through perforations in line therewith in the upper plate 6, and also through a reinforcing plate 12 mounted at that point, as shown. Threaded to rods 11 are ends 13, so mounted in the said perforations as to be held against any longitudinal motion, so that on rotation of same the rod will either be lowered or raised depending on whether the end is rotated in a clockwise or anti-clockwise direction. In practice these adjusting rods and nuts may be located at every four inches, so that a very accurate adjusting of plate 10, as regards the lower edge, will be assured.

Referring to Fig. 3, 14 represents the breast roll and 15 the wire screen. The nozzle 5 is shown located so as to present its distributing end 9 directly over the roll 14. It is connected to a controlling valve 16 which in turn is connected to a pressure reducing valve 17, by means of suitable elbows 18 and 19, in order to arrive at the proper level. In elbow 18 the vent valve 20 is provided. Reducing valve 17 is connected to the mixing and feeding pump 21, which in turn is connected by suitable piping 22 to the screen flow box 23, which forms a usual component of the paper mixing machines now in use.

In operation, the stock coming from the beaters and screens supplies the screen flow box 23 from where the stock reaches pump 21 through pipes 22 where it is mixed and directed to the nozzle, at the predetermined pressure controlled by the reducing valve 17. The amount of stock flowing or fed to the breast roll is controlled by the operator by either opening or closing valve 16.

The manner in which the nozzle is adjusted is obvious it being necessary only to either raise or lower rods 11 by turning nuts 13, in order to regulate the flow of the stock according to any variation of thickness, which may be noticed on the paper web in line with the respective part of plate 10 under any respective rod.

While I have described my invention more or less strictly in accordance with the arrangements shown, and the construction of the nozzle as shown, it must be understood that constructional changes may be made in the nozzle to suit different installations of the mode of manufacture and that the arrangements of the various parts in the system, as shown in Fig. 3, may be located in different positions and altered to suit various requirements, such as will fall within the spirit of my invention as covered by my claim.

What I claim is:

In a paper making machine including a flow box and breast roll, a metering nozzle adapted to distribute paper stock over said breast roll and connected to said flow box, and a pump between said flow box and said nozzle.