

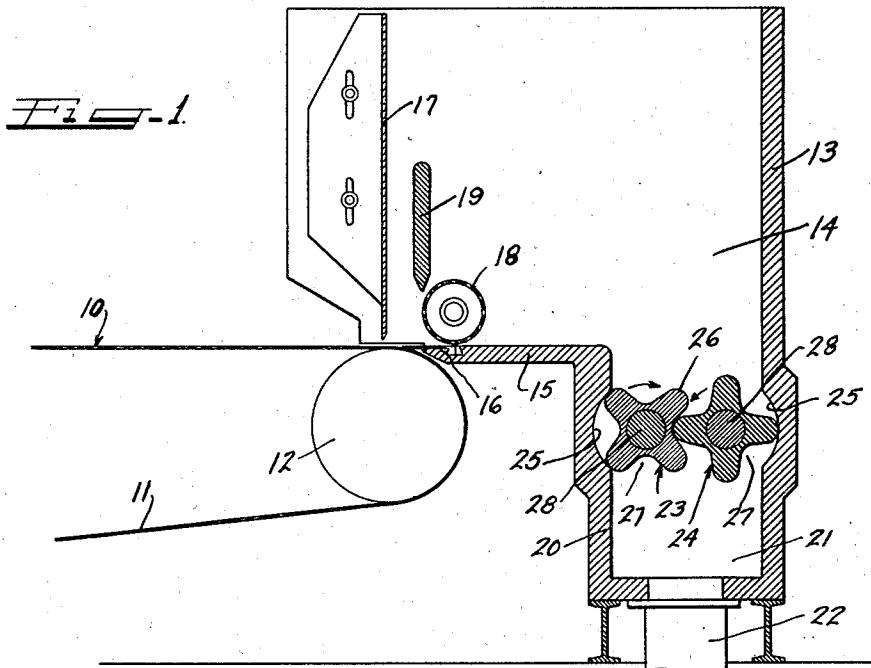
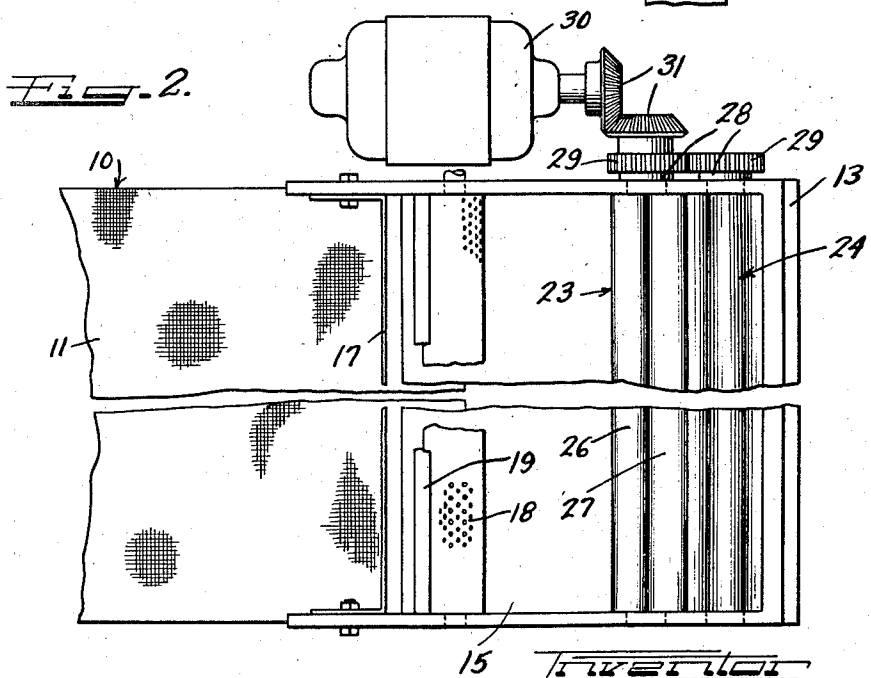
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STOCK DISTRIBUTOR

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## UNITED STATES PATENT OFFICE

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## STOCK DISTRIBUTOR

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3 Claims. (Cl. 92—44)

This invention relates to a stock distributor for paper making machines adapted to uniformly distribute paper stock across the entire width of the paper machine.

Specifically the invention relates to a meter type stock distributor for paper making machines composed of intermeshing fluted rollers or gears extending across the width of a paper making machine in back of the slice or inlet to the paper machine forming wire for metering stock uniformly across the width of the machine.

It has always been quite a problem in the paper industry to distribute stock flowing from a pipe uniformly across the width of the entire forming surface of the paper machine so that the paper web made from this stock will be uniform throughout its entire area.

The present invention now provides a simple meter type distributor which will spread stock flowing from a conduit across the full width of the paper machine and will insure uniformity in distribution across the entire width of the machine. The distributor of this invention includes a pair of fluted rollers or gears which are submerged in stock fed from a pipe to the feed box of the paper machine.

These rollers or gears can conveniently be rotatably mounted in a passageway receiving stock from a single supply pipe. The rollers will dam off flow of stock through this passageway so that, when they are not rotating, no stock can flow out of the passageway. However, when the rollers are rotated, they will uniformly meter the stock along their entire length from the passageway into the supply chamber for the forming wire from which chamber the stock is immediately deposited onto the forming wire. The rollers can be driven at regulated speeds so as to accurately control the flow of stock and, since the stock can only flow out of the passageway by being carried in the pockets of the rollers, the stock must be uniformly spread across the entire width of the passageway. By forming the passageway and the length of the rollers as wide as the forming surface of the paper machine, uniform spreading of the stock across the entire width of the forming surface is insured.

It is, then, an object of the invention to provide a meter type stock distributor for paper machines.

A further object of the invention is to provide a simple device for spreading stock uniformly across the width of a paper making machine.

Another object of the invention is to provide a stock distributor for paper making machines

which spreads stock received from a conduit such as a pipe across the width of the machine.

A specific object of the invention is to provide a stock distributor composed of a pair of intermeshing fluted rollers providing pockets for metering stock in a uniformly spread condition.

Other and further objects of the invention will be apparent to those skilled in the art from the following detailed description of the annexed sheet of drawings which, by way of preferred example only, illustrates one embodiment of the invention.

On the drawing:

Figure 1 is a fragmentary vertical cross-sectional view of a head box and forming wire of a Fourdrinier type paper making machine equipped with a stock distributor in accordance with this invention.

Figure 2 is a top plan view of the paper making machine shown in Figure 1.

As shown on the drawing:

The reference numeral 10 designates generally a Fourdrinier type paper making machine including a forming wire 11 trained around a breast roll 12 and a head box 13 disposed behind the breast roll end of the wire and defining a chamber 14 with a bottom wall 15 carrying an apron 16 projecting onto the upper run of the wire 11. A slice 17 is mounted across the open front of the chamber 14 to provide a front wall therefor and stock is discharged under the slice and over the apron 16 onto the forming wire. If desired a rectifier roll 18 can be mounted in the chamber 14 to cooperate with a baffle 19 for quieting the flow of stock before it is discharged under the slice 17 onto the wire.

The box 13 can have a sump or well portion 20 defining a passageway 21 to the chamber 14. This passageway 21 receives stock from an inlet pipe 22 opening into the bottom of the passageway.

In accordance with this invention, fluted rollers 23 and 24 are rotatably mounted in the passageway 21 and extend completely across the width of the passageway. The passageway is commensurate in width with the chamber 14 and the chamber 14 is as wide as or wider than the forming wire 11.

The walls of the well portion 20 of the box 13 can have segmental cylindrical depressions 25 therein for partially receiving the rolls 23 and 24. Each roll 23 and 24 has a plurality of teeth or ribs 26 defining pockets 27 therebetween. These ribs 26 will ride in closely spaced relation to the hollowed out portions 25 of the passageway walls and, as best shown in Figure 1, a rib of

one roll will seat in a pocket of the other roll so that flow of stock between the rolls is dammed off or sealed. The fluted rolls thus act similarly to a gear pump.

The rolls have axles 28 which are rotatably mounted in the side walls of the well portion 20 and, as shown in Figure 2, the axles are geared together by means of gears 29 at at least one end thereof. A variable speed motor 30 can be connected through any suitable driving arrangement, such as bevel gears 31, with the gears 29 for driving both of the rolls 23 and 24 in the directions indicated by the arrows in Figure 1.

Stock discharged into the passageway 21 from the pipe 22 will be under sufficient head pressure to be flowed upwardly against the bottoms of the rolls 23 and 24 and, when these rolls are rotating, the pockets 27 thereof will meter the stock through the cut-out portions 25 of the well into the chamber 14.

Since the pockets 27 extend across the full width of the passageway 21 the stock must be uniformly spread across the full width of the passageway so that, when it is discharged into the chamber 14, it is in a uniformly distributed condition and can flow directly onto the forming wire 10 for the production of a uniform web.

The meter type distributor of this invention can be used in many different types of stock inlets such as the open top head box type illustrated in the drawing, a closed type of head box such as the illustrated type with a closed cover, or any other open slice or closed slice type of stock inlet.

In operation the chamber 14 will be partially filled with stock to maintain a desired head pressure behind the slide 17 in order to produce a spouting velocity under the slice. The meter rolls are thus submerged in stock and efficiently spread the stock from a central inlet uniformly across the width of the paper making machine.

The rolls 23 and 24 will mesh with each other without rubbing so no wedging effect is produced on the stock as it is passed through the distributor. The stock is trapped off and carried from the under side of the metering rolls to a chamber in back of the slice, and the same amount of stock is distributed to every place in this chamber.

It will, of course, be understood that various details of the invention may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim as my invention:

1. A stock inlet for a Fourdrinier type paper making machine which comprises a box defining a chamber for a pond of stock, a slice in said box for controlling discharge of stock from said pond onto the forming surface of a Fourdrinier type paper machine, said chamber being at least as wide as the width of the paper machine forming surface, said box having a depending well

portion as wide as the chamber but shorter than the chamber in a front to rear direction, a pair of intermeshing fluted rollers rotatably mounted in said well portion and extending across the entire width thereof, said box having front and rear walls cooperating with the ribs of the rollers to prevent leakage of stock from the pond into the well, a stock supply conduit discharging into the well beneath the rollers, and means for rotating said rollers to meter stock received into the well from said conduit into the pond above the well in a uniformly spread condition.

2. A stock distributor and inlet for paper making machines which comprises a feed box defining a stock chamber, a paper machine forming wire positioned adjacent the chamber to receive stock therefrom, a slice on said box controlling stock flow from the chamber to said wire, said stock chamber having a width at least as wide as the stock receiving forming area of said forming wire, means defining a passageway to said chamber as wide as the chamber, a stock feed pipe for flowing stock to said passageway, a pair of elongated intermeshed toothed rollers in said passageway extending across the width of the passageway between said chamber and said feed pipe, said means defining the passageway having walls in constant sealing engagement with at least one tooth of each roller to cooperate with the intermeshed teeth for sealing the chamber from the feed pipe, said walls also cooperating with the teeth of said rollers to define isolated pockets along the full width of the passageway, and means for rotating the rollers in opposite directions to receive stock from the feed pipe thereagainst, spread the stock along the length thereof, trap off increments of stock in the pockets thereof, and convey the trapped-off increments to the chamber in metered quantities.

3. A stock spreading and distributing apparatus for paper making machines which comprises means defining a chamber for a pond of stock, means controlling discharge of stock from said chamber onto the forming surface of a paper machine, a conduit for introducing stock into said chamber, a pair of intermeshed toothed rollers extending across the full width of the chamber between said conduit and said means controlling discharge of stock from the chamber, said rollers being mounted in said chamber in sealing relation with the means defining the chamber and with each other and cooperating with the means defining the chamber to provide pockets between the teeth thereof for metering stock from the conduit to the chamber portion behind the means for discharging stock from the chamber, and means for rotating said rollers in opposite directions to trap off and carry stock in the pockets thereof whereby the stock will be uniformly distributed across the entire width of the chamber and will be metered from the conduit to the stock pond.

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