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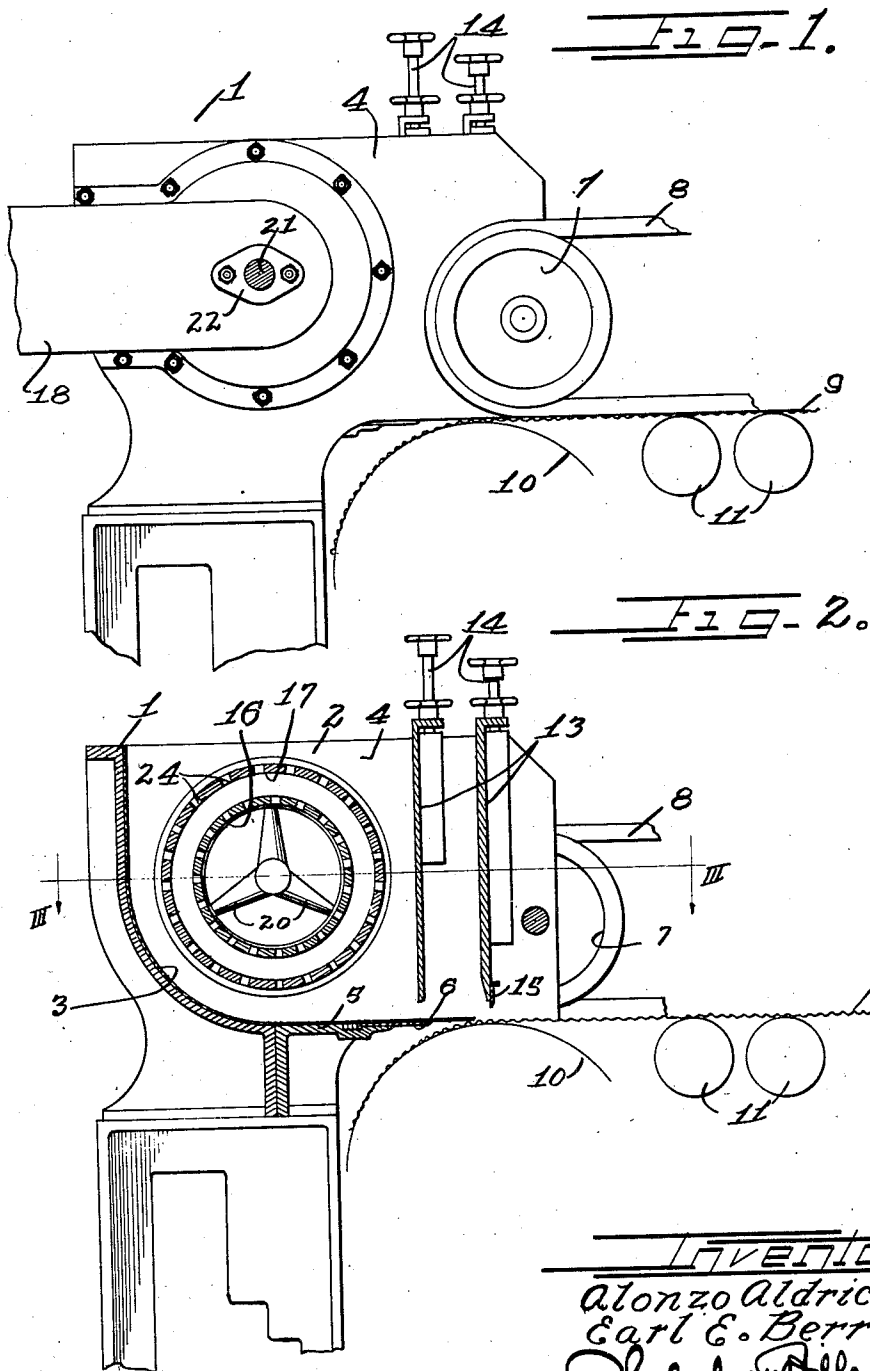
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STOCK FLOW DEVICE

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2 Sheets-Sheet 1



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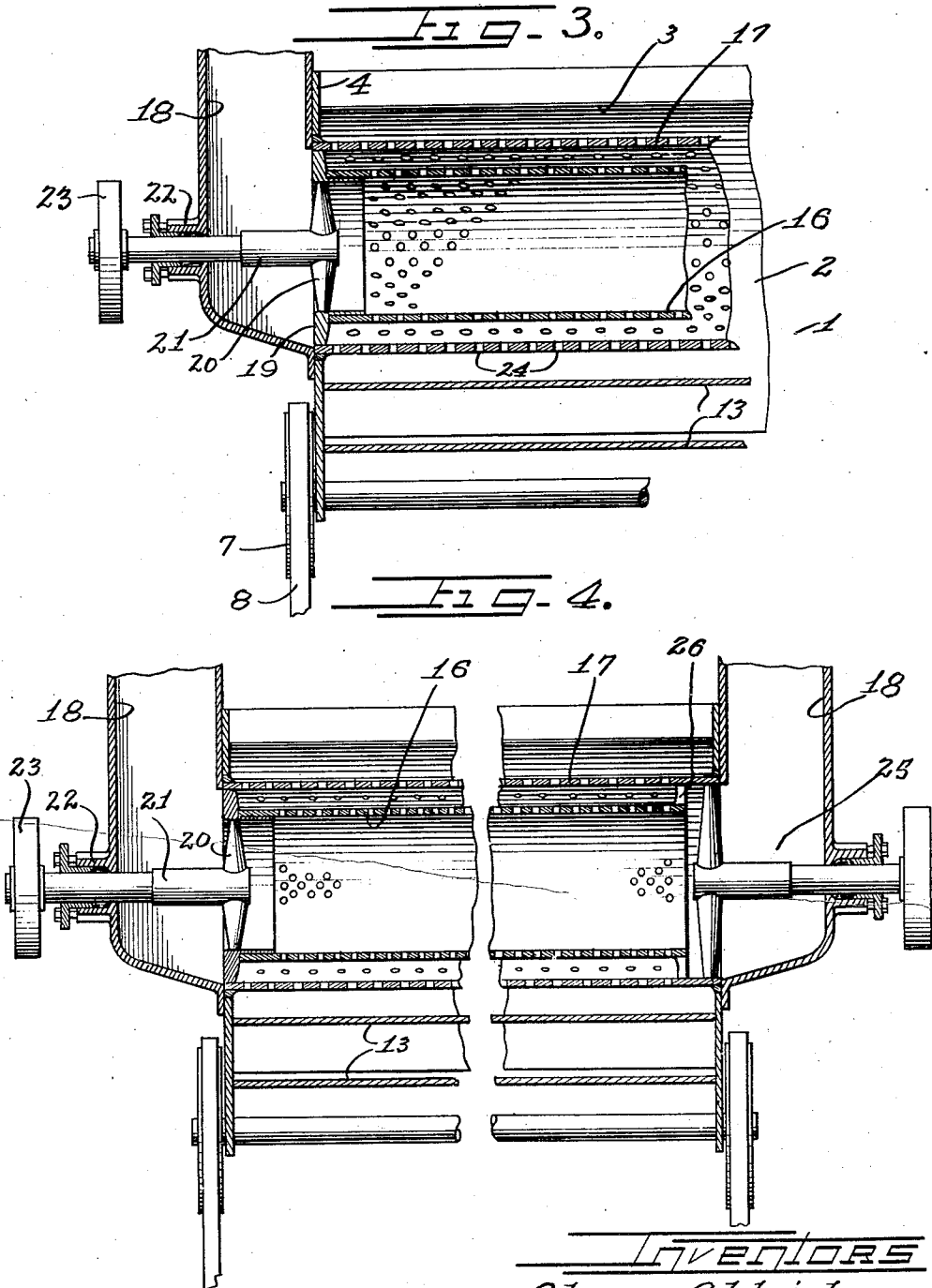
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## UNITED STATES PATENT OFFICE

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## STOCK FLOW DEVICE

Application filed January 10, 1931. Serial No. 507,804.

This invention relates to a stock flow device and more particularly to a device for distributing and evening the flow of stock onto the forming portion of a Fourdrinier paper machine.

It has heretofore been considered necessary to have a rather large flow box with a plurality of staggered baffles or other devices for effecting an even distribution of the pulp in the stock with an elimination so far as possible of eddy currents. The purpose is also to interfere with the tendency of the fibers to all point in the direction of flow of stock onto the machine, since this tendency results in the formation of paper having distinctly less strength in a direction across the machine than in a direction with the machine, but the use of the usual types of flow boxes, baffles and the like does not satisfactorily accomplish this purpose.

It is therefore an object of this invention to provide a stock flow device that is simple in construction and operation and which effectively distributes the stock and evens its flow prior to reaching the forming wire.

It is a further object of this invention to provide a compact type of flow box with a flow evener of novel construction for effecting the uniform distribution and the even flow of stock onto the machine.

It is a further important object of this invention to provide a plurality of concentric perforated cylinders that may or may not be relatively rotated through which the stock is introduced and allowed to flow onto the paper machine.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

This invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a front fragmentary elevational view of a head box and flow evener embodying the principles of our invention.

Figure 2 is a longitudinal sectional view of the same.

Figure 3 is a sectional view taken substantially on line III—III of Figure 2.

Figure 4 is a similar sectional view of a modified form of our invention.

As shown on the drawings:

The reference numeral 1 indicates as a whole a flow box of particular construction, in which is mounted a flow evening device indicated generally by the reference numeral 2. The flow box 1 is provided with an arcuate rear shaped wall 3 and side walls 4, the rear wall 3 having a forwardly extending plane portion 5 provided with an apron 6. The usual deckle pulleys 7 are mounted from the outside of the side walls 4 for supporting deckle straps 8. A forming wire 9 is trained around a breast roll 10 and over the usual table rolls 11 to receive the stock as it flows out over the apron 6 under slices 13 supported from the side walls 4 of the flow box. The slices 13 may be of any desired construction and one or more may be employed. As here illustrated, two slices are shown with adjustable mechanisms 14 for raising or lowering them and the outermost slice is provided with a flexible lip 15.

As shown in Figures 1 to 3 inclusive, the flow evener 2 comprises a pair of concentric perforated cylinders 16 and 17, the outer cylinder 17 being stationarily supported from the side walls 4 of the flow box and the inner perforated cylinder 16 being rotatably mounted therein. Stock is admitted into the interior cylinder 16 from one or both ends thereof by means of a conduit, or conduits 18. At one end of the inner cylinder 16, there is provided a flanged sleeve 19 to which the cylinder is secured and to which is also secured by means of a spider 20 a driving shaft 21. Said driving shaft 21 extends through a packing gland 22 formed about a suitable opening in the conduit 18 and carries on its extended end a pulley or other driving means 23.

Both of the rolls or cylinders 16 and 17 are provided with a plurality of spaced apertures 24 equally distributed over the effective surfaces of said cylinders and so proportioned with respect to area as to effect a uniform distribution of the stock throughout the

width of the flow box. The inner cylinder 16 may or may not be rotated. Both cylinders are closely adjacent to but spaced from the rear wall 3 of the flow box and the rear-most slice 13, with the result that the stock flowing through the apertures 24 has but little chance to settle out prior to its flow under the slices 13 onto the forming wire 9. In passing through the apertures 24, the fibers become uniformly mixed with the water in which they are suspended and any knots or bunches of fibers are broken up before flowing out into the head box 1. The passage of the stock through the plurality of apertures also results in preventing the fibres from assuming a common direction and thus results in the formation of a stronger sheet in and across the machine direction.

In Figure 4 there is shown a slight modification of our invention, according to the construction of which both the inner and outer cylinders can be independently revolved, either together or in opposite directions. Inner cylinder 16 is open at both ends so that stock is free to flow thereinto from either conduit 18 placed at opposite ends thereof. The outer cylinder 17 is provided at one end, that opposite the driving end of the inner cylinder 16, with a driving means, indicated generally by the reference numeral 25 similar in all respects to that previously described. The end of the inner cylinder 16 adjacent the driving mechanism 25 is spaced from the outer cylinder 17 by means of spacing members or lugs 26. Stock entering through the conduit 18 on the same side of the flow box as the driving mechanism 25 enters either the inner cylinder 16 or between the inner and outer cylinders 16 and 17, respectively. There is thus a thorough mixing of the fibers and a uniform distribution of the stock in its passage through the perforations of the two cylinders into the flow box.

We are aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and we, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

We claim as our invention:

1. In a head box for a paper machine, a tubular member extending transversely of said head box and having openings for the uniform distribution of the stock the width of said head box and means for introducing stock into the interior of said tubular member.

2. In a head box for a paper machine, a rotatably mounted perforated roll and means for introducing stock into the interior of said roll from an end thereof for outward flow through the perforations.

3. In a head box for a paper machine, a perforated roll and means for introducing stock into the interior of said roll from an end thereof for outward flow through the perforations.

4. In a head box for a paper machine including the slice thereof, a rotatably mounted perforated roll ahead of and closely adjacent to the slice and means for introducing stock into the interior of said roll from an end thereof for outward flow through the perforations.

5. In a head box for a paper machine, a tubular member extending transversely of said head box and having openings for the uniform distribution of the stock the width of said head box and means for introducing stock into the interior of said tubular member from both ends thereof.

6. In a Fourdrinier paper machine, a flow box comprising an apron, a slice and a plurality of concentric perforated cylinders through which stock is introduced into said flow box ahead of the slice.

7. In a Fourdrinier paper machine, a flow box comprising an apron, a slice and a plurality of rotatable concentric perforated cylinders adjacent said slice through which stock is introduced into said flow box ahead of the slice.

8. A flow device for a paper machine comprising a head box having an arcuate shaped rear wall, a pair of concentric perforated cylinders adjacent said rear wall and means for introducing stock into the interior of said cylinders.

9. A flow device for a paper machine comprising a head box, a pair of concentric perforated cylinders, means for driving one of said cylinders and means for introducing stock into the interior of said cylinders.

10. A flow device for a paper machine comprising a head box having an arcuate shaped rear wall, a pair of concentric perforated cylinders adjacent said rear wall, means for introducing stock into the interior of said cylinders through the ends thereof, and a slice positioned adjacent to and ahead of said cylinders.

11. A stock flow evener comprising a pair of concentric perforated cylinders, the inner cylinder having an open end for the admission of stock:

12. A stock flow evener comprising a pair of concentric perforated cylinders, the inner cylinder having an open end for the admission of stock and means for rotating said inner cylinder.

13. A stock flow evener comprising a pair of concentric rotatably mounted cylinders having open ends for the admission of stock and perforations for the discharge of said stock and means for rotating said cylinders.

14. A stock flow evener comprising a pair of concentric rotatably mounted cylinders

having open ends for the admission of stock and perforations for the discharge of said stock, conduits connected to opposite open ends of said cylinders respectively and means for independently rotating said cylinders.

15. A stock flow evener comprising a pair of concentric rotatably mounted cylinders having open ends for the admission of stock and perforations for the discharge of said stock, conduits connected to opposite open ends of said cylinders respectively and means extending through said conduits for independently rotating said cylinders.

16. A flow evener comprising a tubular member having an adit for stock at an end thereof and an exit so positioned and proportioned as to deliver said stock uniformly the full effective width thereof.

17. A flow evener comprising a tubular member having an adit for stock at an end thereof and perforations so positioned and proportioned as to deliver said stock uniformly the full effective width thereof, means for revolving said tubular member and an outer concentric perforated tubular member.

18. A flow evener comprising a tubular member having an adit for stock at an end thereof and perforations so positioned and proportioned as to deliver said stock uniformly the full effective width thereof, means for revolving said tubular member, an outer concentric perforated tubular member and means for independently rotating said outer tubular member.

19. A flow device for a Fourdrinier machine comprising a head box having a concave rear wall, a slice, a plurality of rotatably mounted perforated cylinders between said rear wall and slice and having openings at opposite ends for the admission of stock.

20. A flow device for a Fourdrinier machine comprising a head box having a concave rear wall, a slice, a plurality of rotatably mounted perforated cylinders between said rear wall and slice and having openings at opposite ends for the admission of stock and means for independently rotating said cylinders.

In testimony whereof, we have hereunto subscribed our names at Beloit, Rock County, Wisconsin.

ALONZO ALDRICH.  
EARL E. BERRY.