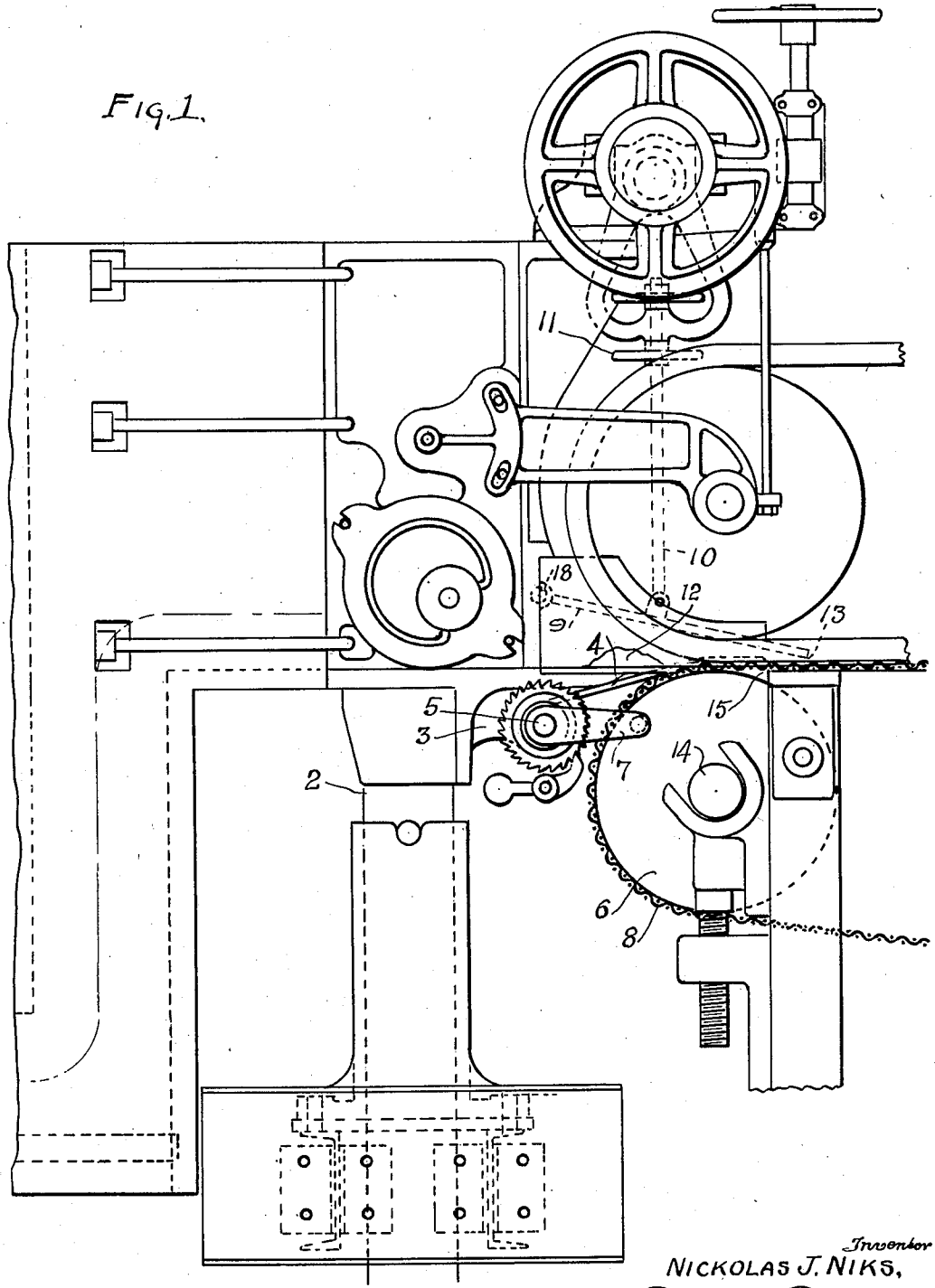
Sept. 13, 1927. 1,641,987

N. J. NIKS

PAPER MACHINE AND METHOD OF MAKING PAPER

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Fig. 1.




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FIG. 2.

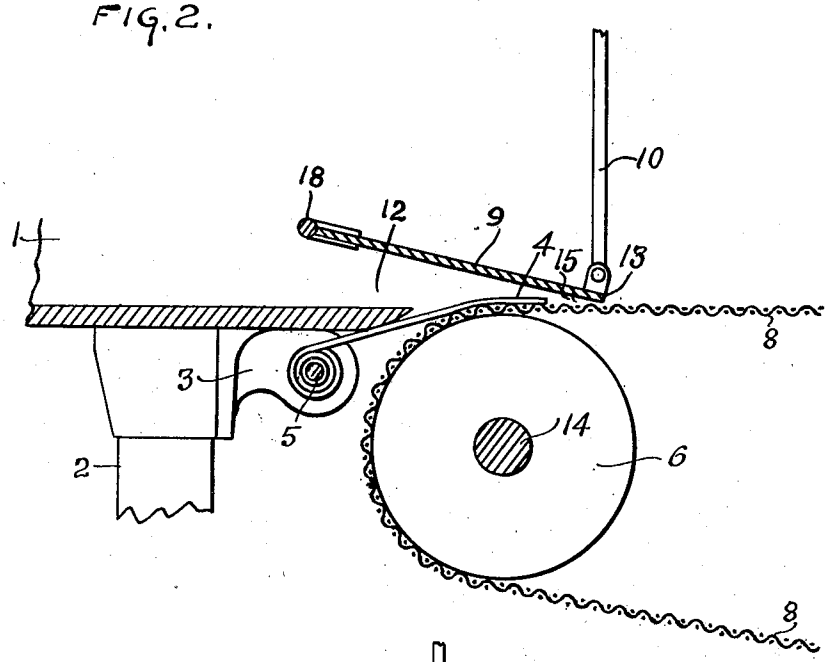
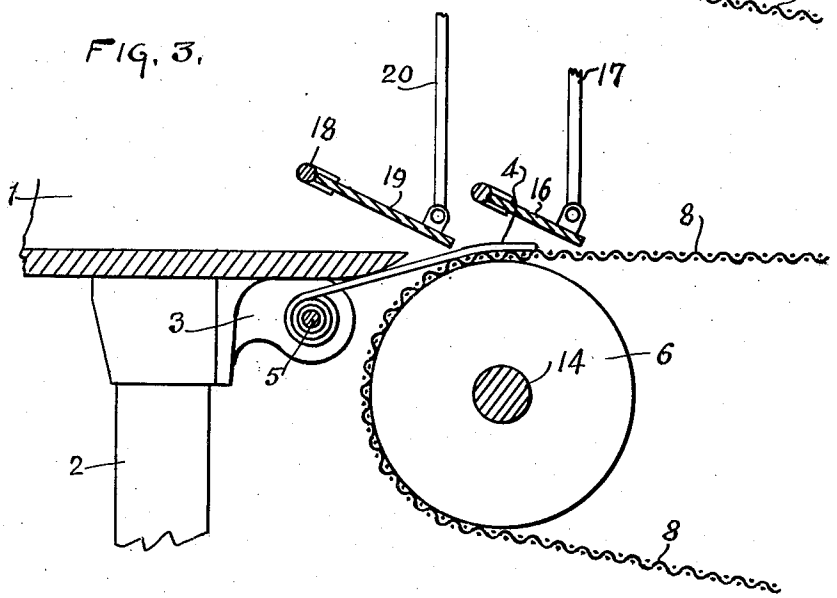



FIG. 3.




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# UNITED STATES PATENT OFFICE.

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## PAPER MACHINE AND METHOD OF MAKING PAPER.

Application filed October 27, 1926. Serial No. 144,596.

My invention relates to paper machines and in particular to a slice for a paper machine and to a method of making paper.

It is my object to provide a slice, the free end of which will be located adjacent the screen and beyond the breast roll center and beyond the end of the apron so as to provide a space between the end of the apron and the end of the slice on the wire in which the stock can accumulate, so that the water can drain off through the screen prior to the stock making its exit upon the wire beyond the slice.

It is a further object to provide in combination with such a slice an apron that moves with the wire in its vibration.

It is a further object to provide a slice of such a character in combination with a second slice which is located on the other side of the breast roll center over the apron.

Referring to the drawings:

Figure 1 is a side elevation of the complete machine at the stock box end;

Figure 2 is a diagrammatic view of the single slice construction;

Figure 3 is a diagrammatic view of a dual slice construction.

Referring to the drawings in detail, 1 is a stock box from which the stock makes its exit in the usual manner. A support 2 is provided for supporting, through the bracket 3, an apron 4, which is on the spindle 5. Thus, the apron moves with the main frame and the breast roll 6 as the parts are vibrated in the usual manner. A handle 7 is used to adjust the position of the apron on the wire 8.

A slice 9 is provided adjustably supported by the rod 10 which is controlled by a hand wheel 11. Customarily, there are a number of such rods and hand wheels adjusting the slice clear across the machine.

The stock enters a space, designated 12, beneath the slice 9 which is pivoted on the rod 18 supported in the frame of the machine. The stock passes on to the apron 4 and thence on to the wire between the end of the apron and the end of the slice 13. It will be noted that this area on which the stock first moves is to the right hand of the breast roll center 14 so that water can pass from the stock through this space which is designated 15 before the stock passes on to the screen. In some instances, it is desirable to use two slice boards. In Figure 3 is illustrated one form of this apparatus. The slice designated 16 is suspended by the rods 17 of which there may be any desired number in the usual manner and is adjustably positioned thereto. A second slice is mounted on the rod 18, such slice being designated 19 and it is controlled by the rod or rods 20. It will be noted that the end of this second slice 19 is to the left hand side of the breast roll center, while the end of the slice 16 is to the right hand, there being a space between the apron 4 and the end of the slice 16 so that the stock can be delivered on to the wire before passing under the slice 16.

The stock is delivered on to the apron 4 and thence it is delivered on to the wire before it passes on to the second slice 16.

With such an arrangement, more water than is customary can be used in the stock with resulting economy. This allows this excess water to drain off quickly and the use of a greater quantity of water improves the quality of the paper. It is possible to run longer fibers when using a greater quantity of water. The amount of water released can be adjusted by adjusting the apron. By allowing the water and stock to touch before going under the slice, the stock has both sides caused to be alike before being spread in the final condition by the slice. This preliminary distribution is not effected by the slice with the result that the paper coming from the machine is not subject to the condition known as "flowering", which is a group of mottled marks that has a tendency to mar the paper on one side, the under side.

By my invention, I am enabled to eliminate this condition of "flowering" and to produce uniform paper with a similar appearance on both sides.

The best explanation that I know of for this condition of uniformity for the paper on both sides is the release of the water through the screen before the final spreading of the stock, and it is delivered therefore in final condition upon the screen. By allowing the stock to drain in its unspread condition before passing under the slice, I am enabled to control this condition and produce uniform paper.

By using my apron in such a combination, which moves with the screen, I am enabled to prevent streaks so that the entire combination gives uniform paper under all conditions.

It will be understood that I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions and uses.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a paper machine, a wire, a breast roll support for said wire and a slice having its end extending such a point on the wire that the stock engages with the wire prior to passing under the slice so that the stock water can drain through the wire before the stock passes under the slice, said slice being positioned at an acute angle with respect to the wire, whereby an area of increased pressure is formed between the slice wire and apron.

2. In a paper machine, a wire, a breast roll support for said wire and a slice having its end extending to such a point on the wire that the stock engages with the wire prior to passing under the slice so that the stock water can drain through the wire before the stock passes under the slice, and an apron resting on said wire so positioned that the stock flows on the apron before reaching the wire between the end of the apron and the end of the slice, said slice being positioned at an acute angle with respect to the wire, whereby an area of increased pressure is formed between the slice wire and apron.

3. In a paper machine, a wire, a breast roll support for said wire and a slice having its end extending to such a point on the wire that the stock engages with the wire prior to passing under the slice so that the stock water can drain through the wire before the stock passes under the slice, and an apron resting on said wire so positioned that the stock flows on the apron before reaching the wire between the end of the apron and the end of the slice, said apron being arranged to vibrate with said wire, said slice being positioned at an acute angle with respect to the wire, whereby an area of increased pressure is formed between the slice wire and apron.

4. In a paper machine, a wire, a breast roll support for said wire and a slice having its end extending to such a point on the wire that the stalk engages with the wire prior to passing under the slice so that the stock water can drain through the wire before the stock passes under the slice, and an apron resting on said wire so positioned that the stock flows on the apron before reaching the wire between the end of the apron and the end of the slice, said apron being arranged to vibrate with said wire, and means to adjustably position said apron with respect to said slice to adjust the area of the wire upon which the stock will first be delivered before passing under the slice, said slice being positioned at an acute angle with respect to the wire, whereby an area of increased pressure is formed between the slice wire and apron.

5. In a paper making machine, a wire, a breast roll, a slice on one side of the breast roll and a slice on the other side of the breast roll, both of said slices being arranged at acute angles with respect to the direction of movement of the wire, whereby areas of increased pressure will be formed on either side of the breast roll center.

6. In a paper making machine, a wire, a breast roll, a slice on one side of the breast roll and a slice on the other side of the breast roll, and an apron adapted to pass beneath the first slice and terminate on the wire before reaching the second slice, whereby the stock may drain through the wire before passing under the second slice, each of said slices being positioned at an acute angle with respect to the apron and the wire.

7. In a paper making machine, a wire, a breast roll therefor, an apron mounted on said wire having its free end beyond the center of the breast roll in the direction of movement of the wire, and a slice positioned with its end over the wire and beyond the end of the apron whereby the stock will engage with the wire before passing under the slice beyond the end of the apron and can drain through the wire after it has passed over the top of the breast roll, said slice being positioned at an acute angle with respect to the wire.

8. In a paper making machine, a wire, a breast roll therefor, an apron mounted on said wire having its free end beyond the center of the breast roll in the direction of movement of the wire, and a slice positioned with its end over the wire and beyond the end of the apron whereby the stock will engage with the wire before passing under the slice beyond the end of the apron and can drain through the wire after it has passed over the top of the breast roll, said apron being adapted to move with said wire synchronously, said slice being positioned at an acute angle with respect to the wire.

9. In a method of making paper, delivering stock on to a wire, allowing the stock to partially drain through the wire and passing the stock under the slice after having so partially drained and creating an area of increased pressure between the end of the apron and the end of the slice to force the water in the stock through the wire at an increased rate over the rate of its passing through the wire after it leaves the slice.

10. In a method of making paper, depositing stock upon an apron, delivering stock from the apron on to a wire to permit draining through said wire, and passing the stock beneath the slice after a brief period of draining and forcing the water from the stock at an increased rate between the end of

the apron and the end of the slice when it will drain normally after it passes beneath the slice.

11. In a method of making paper, passing the stock on an apron under a slice, allowing the stock to spread on said apron, delivering the stock from the apron on to a wire, allowing it to partially drain and move said stock under a second slice and creating under each slice areas of increased pressure for removing large quantities of water from the stock before it passes on the wire.

In testimony whereof, I affix my signature.

NICKOLAS J. NIKS.