J. F. HERCHER.

PROCESS OF MAKING MOTTLED OR VARIEGATED PAPERS.

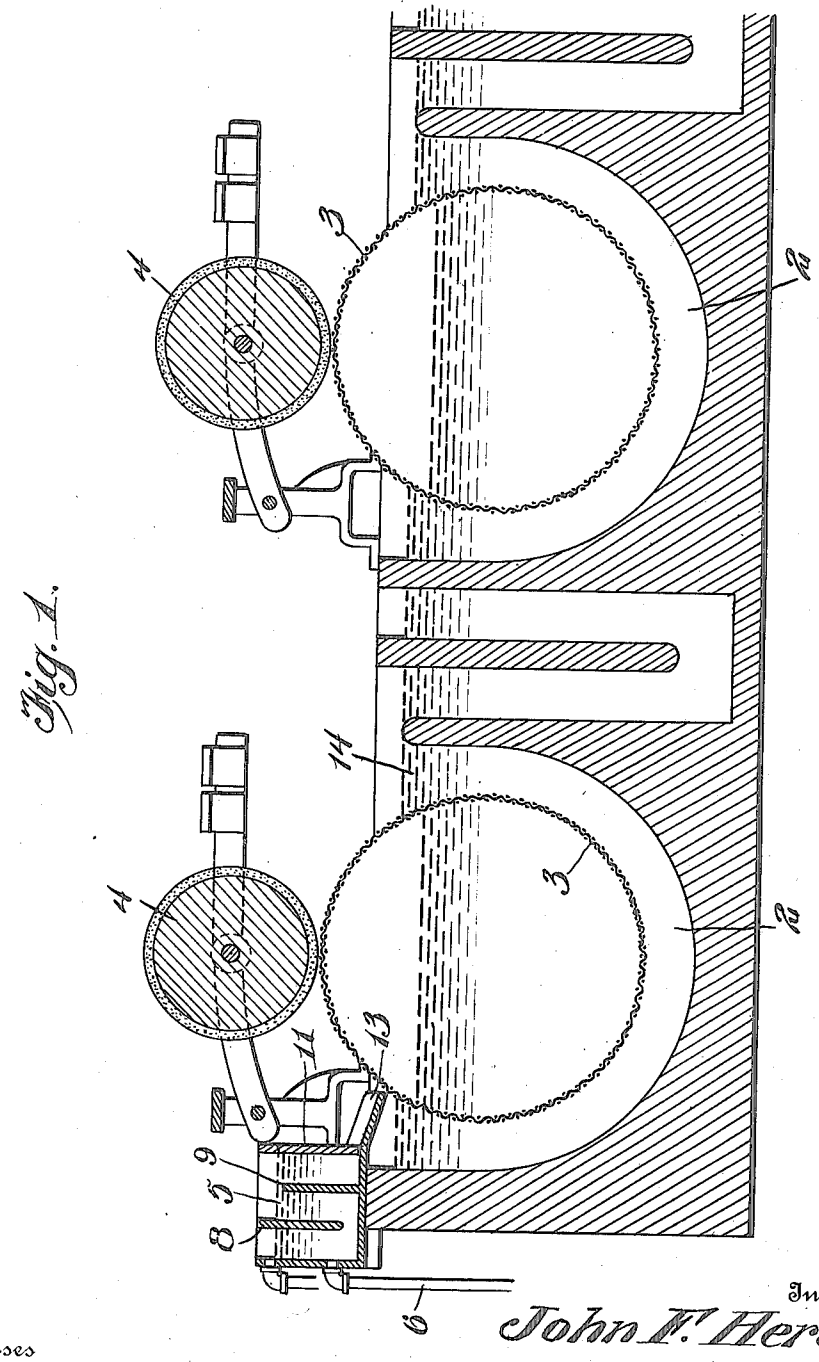
APPLICATION FILED AUG. 17, 1915.

1,180,149.

Patented Apr. 18, 1916.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

L. R. Heinrichs

A. C. Hines.

Inventor

John F. Hercher

By Victor J. Evans

Attorney

J. F. HERCHER.

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Fig. 3.

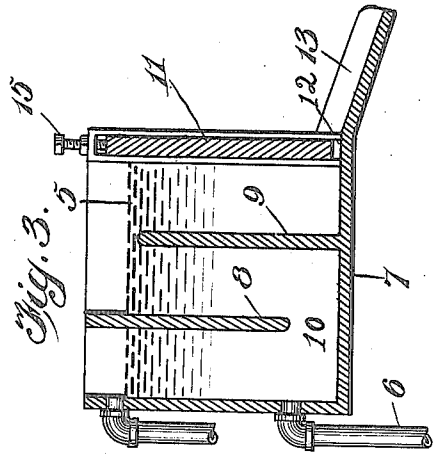
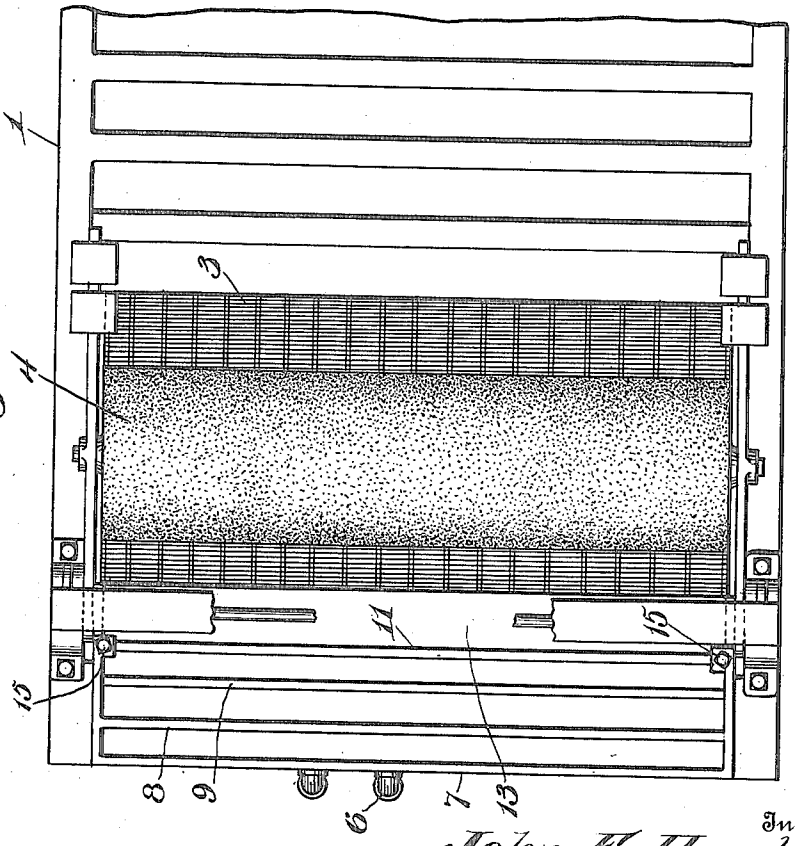


Fig. 2.



Witnesses

L. R. Heinrichs

A. A. Hines.

Inventor

John F. Hercher

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

JOHN F. HERCHER, OF NEENAH, WISCONSIN.

PROCESS OF MAKING MOTTLED OR VARIEGATED PAPERS.

1,180,149. Specification of Letters Patent. Patented Apr. 18, 1916.

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To all whom it may concern:

Be it known that I, JOHN F. HERCHER, a citizen of the United States, residing at Neenah, in the county of Winnebago and State of Wisconsin, have invented new and useful Improvements in Processes of Making Mottled or Variegated Papers, of which the following is a specification.

This invention relates to a process of making mottled or variegated paper, and particularly to a process of making paper of this kind upon paper making machines of the cylinder type.

The object of the invention is to provide a process whereby mottled or variegated paper may be made directly upon the screen mold of a cylinder machine in a simple manner, and at a cost exceeding slightly, if any, the cost of production of ordinary unmottled or unvariegated paper, and without the labor and expense of making mottled or variegated paper according to ordinary proccesses.

In the accompanying drawing;—Figure 1 is a longitudinal section through a portion of a cylinder paper making machine, showing one form of mechanical means for carrying my process into practice. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical section on an enlarged scale through the hopper or flow box and adjacent portions of the forming cylinder and couch roll, showing the relative arrangement of parts.

Referring to the drawing, 1 designates a paper making machine of the cylinder type, which may be provided with any desired number or sets of paper making devices, each consisting of a vat 2, forming cylinder 3 and couch roll 4, together with the usual elements coöperating therewith. In this type of machine the pulp or stock is contained with water in the vat 2, the stock or pulp being taken up in the form of a thin layer by the wire surface of the forming screen or mold 3, the water flowing from the stock through the wire of the screen and being pumped from the interior of the cylinder, producing a suction which causes the paper to adhere to the surface of the roll. The web of paper then comes in contact with the couch roll and is stripped from the forming cylinder and carried forward for the finishing operations in the usual way.

My method consists in supplying to the descending surface of the screen mold, just before it enters the ordinary stock in the vat, a mottling stock composed of pulp combined with coloring material and water, which pulp is drawn closely against and caused to adhere to the screen by the suction due to the partial vacuum within the screen. This colored pulp accordingly forms a layer around the surface of the screen, which then takes up the secondary layer of ordinary stock in the usual way, two layers being thus combined and intermingling to form the web or sheet of paper, which is stripped from the cylinder and subjected to the finishing operations in the usual way. As a result, a paper having a mottled or variegated appearance is produced in a single, complete and continuous operation, at a cost exceeding, but little, if any, the cost of making ordinary white or colored paper, and without the necessity of passing the paper through the machine a second time, the paper produced being also homogeneous throughout.

As shown in the present illustration, the mottling stock 5 consisting of suitably colored pulp and water, is supplied through a pipe 6 into a flow box or hopper divided into a series of compartments by partitions 8 and 9. The partition 8 extends downward and terminates above the bottom of the box to provide a passage 10 which causes a down flow of the stock, which then travels upward and over the partition 9 which terminates below the normal level of the stock in the box or hopper, the pulp then flowing downward between the partition 9 and a gate or controller 11, and through a discharge passage 12 between the bottom of the box and the lower edge of the gate and finally down an inclined chute or flume 13, over which it flows and by which it is directed in a thin film or stream against the surface of the forming roll 3. The chute or flume 13 is arranged to apply the mottling stock to the screen surface of the roll 3 at a point just above the level of the ordinary stock 14 in the vat 2, on the descending side of the screen as it revolves, and the amount of the mottling stock which may be supplied, and the resulting thickness of the mottling layer, may be varied by regulating the depth of the passage 12 by adjusting the gate 11 through the medium of an adjusting screw or screws 15. The mottling stock applied to the screen surface of the roll 3 is drawn

against the roll by the suction within the roll, and is then carried by the rotation of the roll through the stock 14, the pressure of the water keeping the mottling stock against the surface of the screen, which takes up at the same time an external layer of the stock 14, the operation then being carried out in the usual way as in the ordinary process of paper making.

It will thus be seen that by the process described a layer of mottling stock is first deposited against the surface of the screen, which is kept in contact therewith first by the suction within the screen and thereafter by the pressure of the ordinary stock, and then taking up upon the surface of the screen a layer of ordinary stock, the commingling of the stocks causing the production in a single complete operation of a paper of a mottled variegated appearance. This paper, also, is of single thickness and homogeneous in character throughout, and therefore possesses many advantages over ordinary mottled or variegated paper, made of one thickness of ordinary stock, and a different thickness of mottled stock, as is the usual custom in making such papers upon a cylinder machine. Furthermore, my improved process produces a mottled or variegated paper at much less than the cost of manufacture of mottled papers prepared in the usual ways.

I claim:—

1. The process of making mottled or variegated paper upon a cylinder machine, which consists in depositing a layer of mottling stock upon the surface of the screen, and thereafter coating the screen with ordinary stock, and finishing in the usual way.

2. The process of making mottled or variegated paper upon a cylinder machine, which consists in applying a layer of mottling stock to the screen surface of the cylinder mold prior to the submergence of such surface in the ordinary stock in the vat, depositing a layer of ordinary stock upon the screen by rotating the screen in the usual manner through the vat, and then finishing the paper in the usual way.

3. The process of making mottled or variegated paper upon a cylinder machine, which consists in applying to the unsubmerged portion of the screen surface of the descending side of the cylinder mold a layer of mottling stock, varying the feed of the mottling stock to regulate the thickness of the mottling layer, revolving the screen through the vat to take up a layer of regular stock superposed upon the mottling stock, mingling said stocks, stripping the paper thus formed from the cylinder mold, and then finishing the same in the usual manner.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. HERCHER.

Witnesses:

SILAS BULLARD,

H. E. BULLARD.