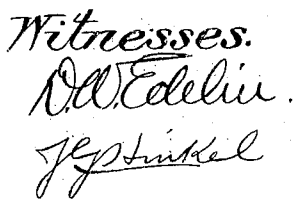


G. S. WITHAM, SR.
PULP STOCK SEPARATOR.
APPLICATION FILED OCT. 21, 1909.

2 SHEETS--SHEET 1.



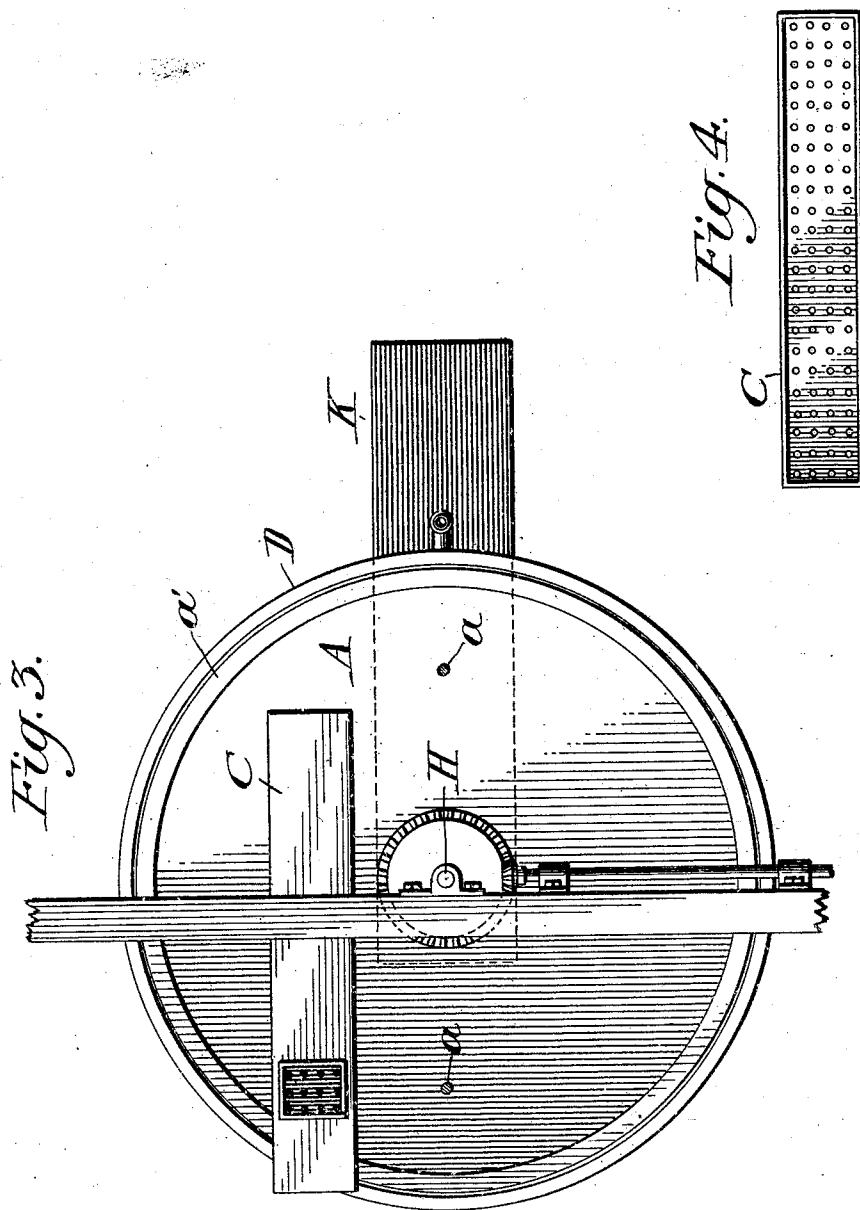
Inventor:
George S. Witham, Sr.
By his Attorneys,
Baldwin Wright

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954,154.

Patented Apr. 5, 1910.

2 SHEETS—SHEET 2.



Witnesses.
O. W. Edlin.
J. G. Stinkell.

Inventor.
George S. Witham, Sr.
By his Attorneys,
Baldwin Wright

UNITED STATES PATENT OFFICE.

GEORGE S. WITHAM, SR., OF SANDY HILL, NEW YORK.

PULP-STOCK SEPARATOR.

954,154.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed October 21, 1909. Serial No. 523,773.

To all whom it may concern:

Be it known that I, GEORGE S. WITHAM, Sr., a citizen of the United States, residing in Sandy Hill, in the county of Washington and State of New York, have invented certain new and useful Improvements in Pulp-Stock Separators, of which the following is a specification.

The object of my invention is to provide a simple and efficient apparatus for separating from the waste waters of paper and sulfite mills the paper stock which they contain.

It is well known that what is known as the "white water" used in the process of manufacturing pulp, sulfite or paper contains a certain percentage of fiber which, if it runs to the sewer, is lost to the mills. By my improvements this fiber or stock can be economically saved. In carrying out my invention I convey this waste liquid to a distributing trough having a perforated bottom which delivers to a stationary distributor, consisting of a circular board provided with an upwardly projecting flange at its edge, over which the pulp-containing water flows evenly to a separating cone composed of perforated metal plates or perforated sheet metal covered on the inside with fine wire cloth. This cone is connected by means of spiders with a centrally arranged vertical shaft which is rotated at such speed as to cause the fiber and some of the water to adhere to the wire cloth. Most of the water passes out through the cone while practically all the stock or pulp and some of the water is arrested by the cone and flows down on the inside thereof through its apex to a trough which conveys it to a riffler or to any suitable receptacle.

In order to prevent the perforated cone and the wire cloth from being clogged and to facilitate the passage of the stock to the bottom of the cone, I provide a spray pipe which projects jets of water from the outside against the cone while it is rapidly rotating. The spiders above referred to are so arranged as to provide obstructions or dams which arrest the downward passage of the stock temporarily, divert it and cause it to fall back upon the cone, thus materially facilitating the operation.

In the accompanying drawings, Figure 1

shows a vertical section through an apparatus embodying my improvements. Fig. 2 is a view on an enlarged scale of a portion of the cone and the distributor. Fig. 3 is a plan view of the apparatus. Fig. 4 is a top plan view of the feed trough.

The distributor A preferably consists of a circular board which is held stationary and may be supported in any suitable way, as for instance, by rods *a* depending from a beam B. This distributor is provided with a circular flange *a'* at its edge, thus providing a shallow receptacle for the stock which is delivered to it by a feed trough C, having a perforated bottom, as shown in Fig. 4. As the stock is fed to the distributor it flows evenly over the flange *a'* and enters the separator below it.

This separator consists of a cone which is rapidly rotated and which is perforated or provided with openings through which water may pass, but which arrests the pulp or fiber. Preferably this separator is constructed as shown in the drawings, comprising a top ring D to which is attached perforated metal plates *d* or perforated sheet metal so shaped as to form a conical receptacle, or more accurately, a frustum-shaped receptacle. The inside of the cone thus formed is covered over with wire cloth E, and the cone is connected by means of spiders F, G, with a vertical centrally arranged shaft H, which is driven by suitable gearing I. The lower end of the shaft rests in a step-bearing J on the inside of a trough K, which carries off the good stock from the separator and empties into any suitable receptacle. The spider F attaches the cone to the driving shaft H and it is also formed, as shown, to provide a dam or obstruction L which, as the stuff flows down the sides of the cone, causes it to flow inward toward the axis of the cone and thus drop down again on to the sides of the lower portion of the cone. The spider G is likewise formed with a dam or obstruction *g* which diverts the stuff as it descends and causes it to enter the trough K. Any suitable number of spiders of this kind may be employed to produce the results above mentioned. The angle of the cone is preferably about 45° and the speed of rotation should be such as to fasten the stock and some of the water by

centrifugal force to the side of the cone. In order to stiffen the cone ribs M may be applied at suitable intervals. The perforated plates or sheet metal outer portion *d* of the cone is so formed that the perforations or holes occupy about half of the surface. The wire covering E should be of fine mesh ranging from 40 to 120 wires to the inch as in this way all good pulp or fiber may be arrested while the surplus water may be separated.

Preferably the flange *a'* is of such dimensions as to hold the water on the distributor until it is about three inches deep, and as this water flows over the edge of the flange it is directed by the ring D on to the perforated cone and the clear water at once commences to separate from the pulp or fiber, the water passing through the cone while the pulp or fiber is arrested and flows down the inside of the cone. The fiber or pulp and some of the water, as it slides down the cone, is arrested by the spider F. This holds back the water so that it has a chance to pass through the cone before reaching the lower portion thereof. In like manner the spider G detains the downward flow of the water and pulp and gives it a chance to pass through the cone. In this way less water is delivered to the trough K. The separator is kept clean by the spray pipe N.

With an apparatus thus constructed the "white water" or waste water can be continuously supplied to the separator and the pulp or fiber can be concentrated in a relatively small quantity of water which passes out through the trough K, the main

body of the water passing through the meshes of the separator and going to waste.

I claim as my invention:—

1. A paper-stock separator, comprising a circular stationary distributor over the annular edge of which the water flows evenly, a perforated cone below the distributor, means for rotating the cone, a spray pipe for keeping the meshes of the cone open, and a trough for receiving the stock which passes to the apex of the cone.

2. A paper-stock separator, comprising a stationary distributor, a cone below it composed of perforated sheet metal covered with fine wire cloth, a vertical centrally arranged driving shaft, and a spider connecting the shaft with the cone provided with a dam or obstruction for the stuff as it flows down the sides of the cone.

3. The combination of a feed trough having a perforated bottom, a circular stationary distributor having a flange at its outer edge over which the stuff flows evenly, a conical separator composed of perforated sheet metal and a covering of fine wire cloth, a trough connected with the lower end of the cone, a spray pipe for keeping the meshes of the cone open, a vertical centrally arranged driving shaft within the cone, and a spider connecting the shaft with the cone.

In testimony whereof, I have hereunto subscribed my name.

G. S. WITHAM, SR.

Witnesses:

H. A. WHITE,
A. A. GATES.