A. J. HAUG.

CENTRIFUGAL SCREEN.

APPLICATION FILED DEC. 9, 1915.

1,209,153.

Patented Dec. 19, 1916.

2 SHEETS—SHEET 1.

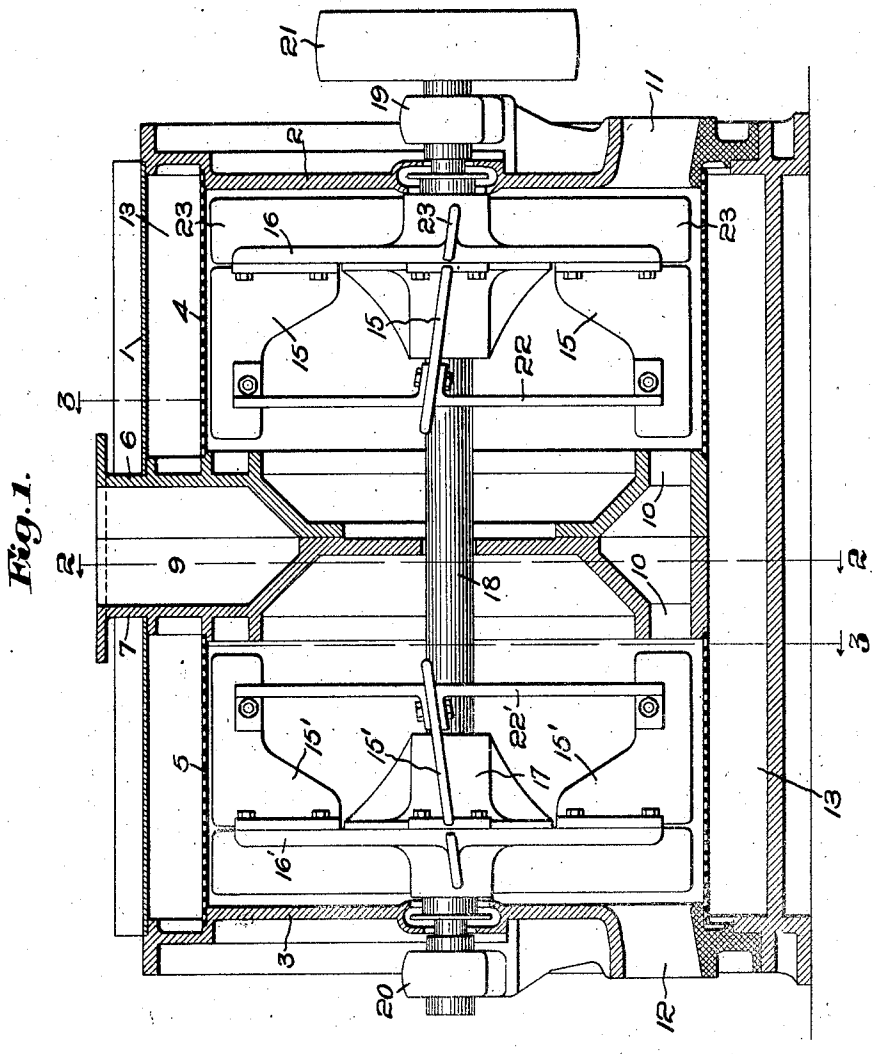


Fig. 1.

Inventor:
Anton J. Haug,
by Emery, Booth, Janney & Varney
Attys

A. J. HAUG.

CENTRIFUGAL SCREEN.

APPLICATION FILED DEC. 9, 1915.

1,209,153.

Patented Dec. 19, 1916.

2 SHEETS—SHEET 2.

Fig. 3.

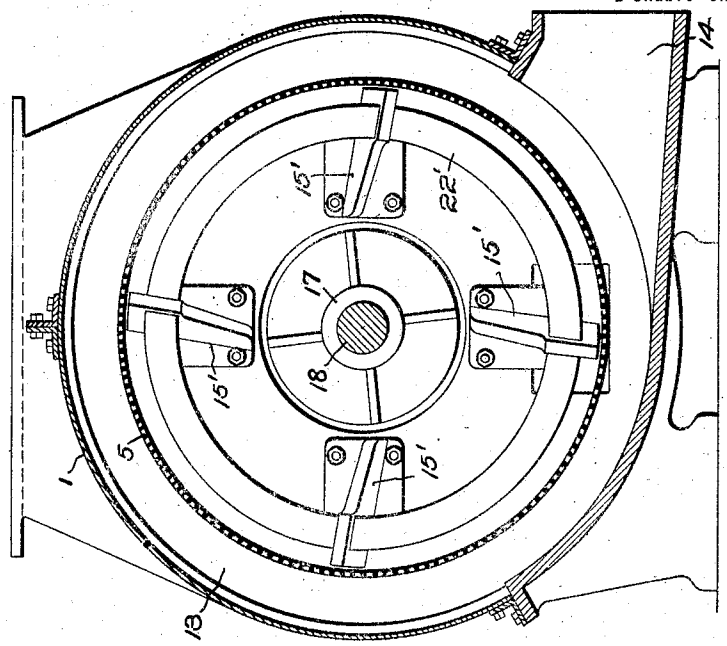


Fig. 4.

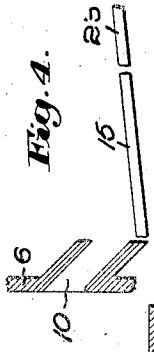
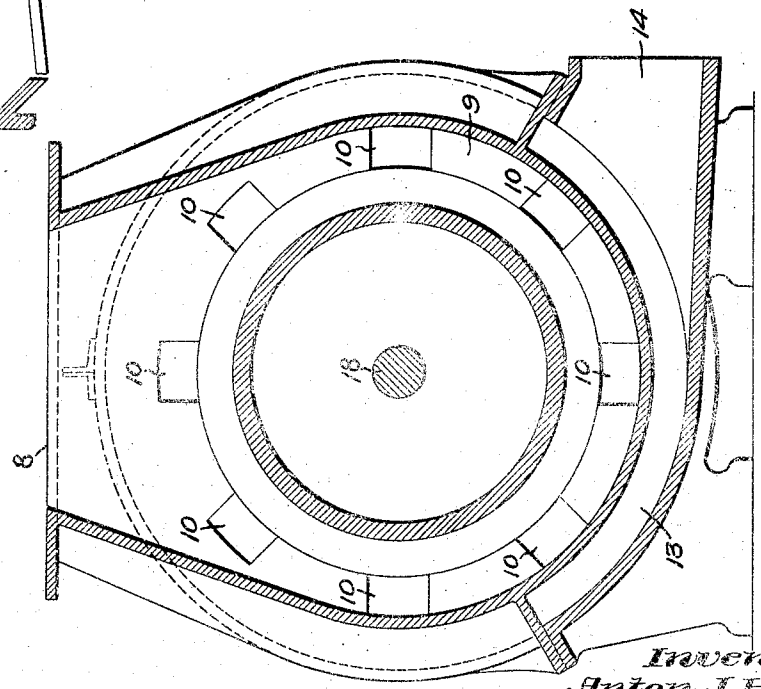


Fig. 2.



Inventor:
Anton J. Haug
by Emery, Booth, Jessup & Vaner
Attys.

BEST AVAILABLE COP

UNITED STATES PATENT OFFICE.

ANTON J. HAUG, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR TO IMPROVED PAPER MACHINERY COMPANY, OF NASHUA, NEW HAMPSHIRE, A CORPORATION OF MAINE.

CENTRIFUGAL SCREEN.

1,209,153. Specification of Letters Patent. Patented Dec. 19, 1916.

Application filed December 9, 1915. Serial No. 65,998.

To all whom it may concern:

Be it known that I, ANTON J. HAUG, a citizen of the United States, and a resident of Nashua, county of Hillsborough, State of New Hampshire, (whose post-office address is care of Improved Paper Machinery Company, Nashua, New Hampshire,) have invented an Improvement in Centrifugal Screens, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to pulp screens and more particularly, though not exclusively, to screens of the type where stock is delivered to the screening surface and forced against the same by means of paddle blades, the fine fibers being forced through the screen and the coarser particles being discharged at the end thereof.

This invention relates more particularly, though not exclusively, to improvements in the construction of the impeller blades and their relation to the screening surface and to the pulp inlet orifice or orifices.

The invention will be best understood by reference to the following description when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings: Figure 1 is a central, longitudinal section in elevation showing a pulp screen embodying one form of the invention; Fig. 2 is a central, transverse section in elevation taken on the line 2—2 in Fig. 1; Fig. 3 is a similar section taken on the line 3—3 in Fig. 1; and Fig. 4 is a detail section in plan showing the relation of the paddle blades to a pulp inlet orifice.

Referring to the illustrative embodiment of the invention and more particularly to Fig. 1, the machine there shown is provided with a generally drum-shaped casing 1 supported and having its ends closed by the end castings 2 and 3. Supported also by the end castings 2 and 3 and within the casing is a screening member, herein in the form of a cylindrical drum. While such screening member might consist of a single, integral unit, herein it is subdivided into two portions 4 and 5, each supported at one end on the adjacent end casting 2 or 3 and at the opposite end upon one of the centrally arranged castings 6 or 7, which, as will hereafter appear, are arranged intermediate the casing to form an annular pulp supply chamber. The screen drum surfaces are herein stationary, although it is not essential to the operation of the invention that they should be so.

Pulp stock is fed from any suitable source to the pulp supply chamber 9 (Figs. 1 and 4) which is located intermediate and herein centrally the ends of the screen drum and the casing.

The pulp is discharged from the annular chamber 9 applied to the screening surface, and herein within the screen drum, through laterally arranged discharge orifices 10 which are located at both sides of the annular chamber so that the pulp is discharged toward each opposite end of the screen drum. At the opposite ends of the screen drum there are provided discharge openings 11 and 12 for the waste, slivers or unscreened residue, the screened pulp passing through the screening surface of the drum into the annular chamber 13 provided between the casing and the screen drum and thence to the pulp discharge orifice 14 (Figs. 3 and 4) whence it may be conducted to any desired point.

Arranged in coöperative relation to the screening surface and herein within the screening drum, there are provided suitable means in the shape of impeller blades 15, 15′, which act both to force the stock against the screening surface and also to feed the stock progressively along that surface. Herein there are provided two sets of such blades, one on each side of the annular pulp chamber, the blades of one set being separated by the blades of the other set by a space which is occupied by the pulp chamber, and the ends of the blades terminating in close proximity to the pulp discharge orifices 10. Herein also the blades of each set are inclined lengthwise rearwardly with relation to the direction of rotation from the middle of the screen toward the end thereof, so that as the blades are rotated over the surface of the screen, they tend to advance the pulp received from the discharge orifices along the screen surface and toward the sliver discharge outlet 11, the blades of one set feeding the pulp received by it toward

BEST AVAILABLE COP'

one discharge opening at the end of the screen and the blades of the other set feeding the pulp received by it in the opposite direction toward the opposite end of the screen.

The impeller blades 15 and 15′ may be constructed in any desired fashion, but herein they are bolted at their outer ends to spiders 16, 16′, which latter are secured to hubs 17, 17′ mounted to rotate with the impeller shaft 18. The latter is journaled in bearings 19 and 20 adapted to be driven from any suitable source of power through the driving pulley 21. At their inner ends the blades 15, 15′ are given added rigidity by an annular connecting plate 22, 22′, to which they are bolted adjacent their ends. At the opposite side each spider 16, 16′ is provided with ribs or blades 23, 23′, the ends of which act as prolongations for the blades 15, 15′ and assist in expelling the slivers from the casing.

The stock is preferably fed to the inlet under a suitable head and preferably is applied to the blades so that the head or flow of the stock is utilized to assist in rotating the impeller blades. To this end the pulp discharge orifices 10 are so positioned with reference to the blades that the stock discharged therethrough is preferably fed to strike the blades at an angle near the ends thereof and preferably in a direction lengthwise the blades. The inclination of the paddle blades alone is sufficient to give thereto an impulse of rotation as the stock discharged from the orifices 10 is forced under its head against the rear side of the blade. Preferably, however, I also incline the orifice in the direction of rotation of the impeller blades, so that the relationship is somewhat as shown in Fig. 4. Through this arrangement the stock discharged from the orifice strikes the rear of the paddle blade at a considerable angle, applying thereto the impact and head of the stock supply, thereby materially assisting in the rotation of the impeller.

While I have herein shown and described for purposes of illustration one specific embodiment of the invention, it is to be understood that the same is not limited to the details of construction and arrangement herein shown, but that extensive deviations from the disclosure herein may be made without departing from the spirit thereof.

Claims:

1. In a machine of the character described, the combination with a casing of a screen drum located therein, a stock inlet extending through the casing and the screen drum intermediate the length thereof, said inlet having a discharge opening within the screen drum, sliver discharge means at each end of the drum communicating with the interior thereof, a pulp outlet communicating with the interior of the casing, and means for feeding the stock in opposite directions toward opposite ends of the drum, said means comprising paddle blades inclined from end to end rearwardly with respect to the direction of rotation.

2. In a machine of the character described, the combination with a casing of a screen drum located therein, a stock inlet extending through the casing intermediate the length thereof, and paddle blades cooperating with said drum and inclined from end to end rearwardly with respect to the direction of rotation whereby the unscreened materials are caused to travel from the stock inlet to opposite ends of said screen drum.

3. In a machine of the character described, the combination with a casing of a screen drum located therein, a stock inlet extending through the casing intermediate the length thereof, paddle blades coöperating with said screen drum extending in opposite directions from said stock inlet, and stock discharge openings located with reference to said blades to cause the stock to strike the latter and give an impulse of rotation thereto.

4. In a machine of the character described, the combination with a screen drum of rotary paddle blades mounted to coöperate therewith, said blades being arranged in two sets, the blades of each set inclined from end to end with reference to the direction of rotation from the end of the drum toward an intermediate point therein, and means for feeding stock to be screened upon the ends of each set of blades and in the direction of their length.

5. In a machine of the character described, the combination with a screen drum of rotary paddle blades mounted to coöperate therewith, said blades being arranged in two sets, the blades of each set inclined from end to end with reference to the direction of rotation from the end of the drum toward an intermediate point therein, and a stock inlet located between said sets of blades and having discharge openings for discharging stock upon the ends of the blades in the direction of the length thereof.

6. In a machine of the character described, the combination with a casing of a screen drum therein, two sets of blades cooperating with said screen drum, said sets of blades being separated by an intermediate space and a stock inlet having discharge openings in said intermediate space to discharge stock upon the ends of each set of blades.

7. In a machine of the character described, the combination with a screen drum of an impeller blade coöperating therewith, and a stock inlet having a discharge orifice inclined with relation to the axis of rotation of said blade.

8. In a machine of the character described, the combination with a screen drum of an impeller blade inclined from end to end with relation to the direction of rotation, and a stock inlet having a discharge orifice, the latter being inclined with relation to the axis of rotation of the blade.

9. In a machine of the character described, the combination with a casing of a screen drum, an annular pulp supply chamber intermediate the ends of the casing, sets of impeller blades arranged on each side of said annular chamber, and discharge orifices inclined with relation to said blades for discharging pulp from said supply chamber upon the blades.

10. In a machine of the character described, the combination with a screen member 4, 5, of paddle blades 15, 15′, 16, 16′, a stock supply inlet 8, a discharge passage 14, and a tailings outlet 11, 12.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ANTON J. HAUG.

Witnesses:

SADIE E. O'NEIL,

MARCEL THEIRAULT.