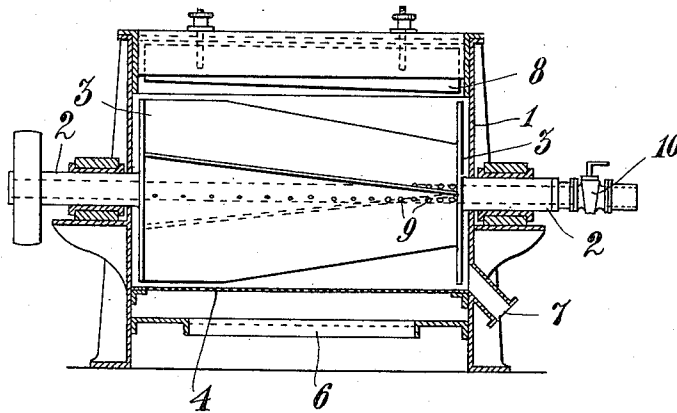


R. WAGNER.  
PULP STRAINER.  
APPLICATION FILED FEB. 27, 1909.

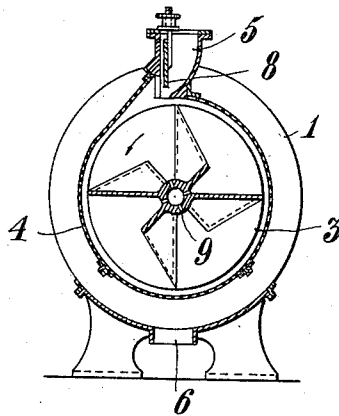
987,657.

Patented Mar. 21, 1911.

*Fig. 1.*



*Fig. 2.*



Witnesses

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# UNITED STATES PATENT OFFICE.

RUDOLF WAGNER, OF KARLSTAD, SWEDEN, ASSIGNOR TO JENS ORTEN-BÖVING, OF LONDON, ENGLAND.

## PULP-STRAINER.

987,657.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed February 27, 1909. Serial No. 480,394.

*To all whom it may concern:*

Be it known that I, RUDOLF WAGNER, a subject of the Emperor of Germany, residing at Karlstad, in the Kingdom of Sweden, have invented new and useful Improvements in Pulp-Strainers, of which the following is a specification, reference being had to the drawing accompanying and forming a part hereof.

This invention relates to strainers for pulp and the like and particularly to that class of pulp strainers having a rotary fan and a screen surrounding the said fan.

One object of the invention is to cause the pulp to act on the fan in such a manner as to aid in driving the same and to cause this driving action to be as uniform and thrust-free as possible.

A second object of the invention is to cause the pulp to be thrown by the blades of the fan against the whole surface of the screen.

A third object of the invention is to cause the pulp supplied to the fan to be most advantageously distributed all over the whole surface of the screen.

A further object of the invention is to make it possible to dilute the pulp within the apparatus.

Further objects of the invention will hereinafter appear.

The invention consists, chiefly, in the combination with a horizontal screen having a pulp inlet at its upper side, of a rotary fan mounted horizontally within the said screen and having blades extending from the hub thereof. Preferably, according to the invention, the outer edges of the blades extend in oblique directions in relation to the hub, and suitably the plane of each separate blade is set at an angle to the hub, by which the different parts of the blades will be successively actuated by the pulp supplied to the apparatus so that the driving action of the pulp will be more uniform. Further, each separate blade may be placed, according to the invention, in a direction in relation to the hub opposite to that of the two adjacent blades.

The invention further comprises the constructions and combinations of parts hereinafter more particularly described.

In the drawing, I have shown a pulp strainer embodying the invention.

Figure 1 is a longitudinal section of the

apparatus, and Fig. 2 is a cross-sectional view of the same.

Referring to the drawing, 1 is the casing or frame of the apparatus. Journaled in the said casing or frame is the shaft 2 of a fan 3 attached to or made integral with the shaft. The fan is surrounded, in the usual manner, by a screen 4. Situated in the upper part 5 of the casing is an inlet 5 for the pulp. Placed in the lower part of the casing is an outlet 6 for the refined pulp which has passed through the screen 4, and a lateral outlet 7 for the sliver or coarser particles which have not been able to pass through the perforations of the screen. The size of the inlet opening may be adjusted by the gate 8. The blades of the fan 3 extend from the shaft or hub 2 (see particularly Fig. 2) so as to form a series of separate chambers or cells. The outer edges of the blades are, preferably, not parallel to the hub but have an oblique direction, and, preferably, each blade is set at an angle to the hub. Preferably, the blades are not inclined in the same direction, but each blade has suitably a direction in relation to the hub opposite to that of the adjacent blades.

The apparatus described works in the following manner. When the pulp flowing through the inlet 5, below the edge of the gate 8, is struck by a blade rotating in the direction of the arrow (Fig. 2), said blade throws the pulp against a part of the inner surface of the screen 4 while the following blade, on account of its form and position, throws the pulp against another part of the screen. The blades, in a certain degree, work as the vanes of a water-wheel so that the pulp aids in driving the fan by which the power necessary for driving is considerably reduced. On account of the oblique position of the blades the different parts thereof are successively exposed to the driving action of the inflowing pulp, by which the said action of the pulp on the fan is made uniform and sudden thrusts are avoided. The pulp falling down on the lowermost part of the screen is thrown upward toward the other (in Fig. 2 the right) side of the screen. The coarser particles, *i. e.* the particles which cannot pass through the perforations of the screen, escape through the outlet 7, while the refined pulp escapes through the outlet 6.

In order to produce an effective separation the inlet 5 is so arranged that the quantity of the inflowing pulp is gradually decreased toward the outlet 7 for the coarser particles 5 of the pulp. To this end the lower edge of the gate 8 has an oblique direction, as shown in Fig. 1, so that the inlet opening tapers toward the right side of the apparatus.

10 In order to decrease the quantity of water required for the separation, the pulp supplied to the apparatus should have the thickest possible consistence, the dilution required being performed within the apparatus. The 15 water required for the dilution is led through the hollow shaft or hub 2 and streams through the perforations 9 in the wall thereof into the chambers formed by the blades of the fan. Preferably, the perforations are 20 arranged in rows opening in the different chambers, each row extending all over the whole width of the fan, the perforations of each row preferably increasing in number and size toward the outlet 7 for the coarser 25 particles of the pulp, as clearly shown in Fig. 1. The quantity of inflowing water is thus gradually increased in the direction toward the said outlet. The regulation of the quantity of water admitted into the apparatus may be performed by means of a 30 cock 10.

By means of the apparatus described an extremely favorable dilution and separation of the pulp may be performed and the consumption of water is considerably reduced, 35 which may be of great importance in many cases. Moreover, the clogging of the screen is avoided. If the supply of pulp is stopped, the apparatus rapidly cleans itself in that 40 the water entering through the shaft is thrown, as before, against the whole surface of the screen until the pulp therein is entirely assorted and the screen is completely cleansed. By this means the troublesome 45 cleansing of the screen by hand and the time-wasting removal and insertion of the said screen is done away with. The wear and tear of the latter is therefore reduced and, on account thereof, a greater durability 50 is gained. Finally, by this automatic cleansing of the screen no losses of pulp whatsoever arise as is the case when the screen is cleansed by hand.

I claim:

55 1. In a pulp strainer, the combination of a horizontal screen having a pulp inlet at its upper side, and a rotary fan mounted horizontally within the said screen and hav-

ing blades extending in their whole length from the hub thereof. 60

2. In a pulp strainer, the combination of a horizontally mounted rotary fan having blades extending from the hub thereof, the outer edges of said blades extending obliquely in relation to the axis of the fan, 65 and a screen surrounding the said fan.

3. In a pulp strainer, the combination of a horizontally mounted rotary fan having blades extending from the hub thereof in a direction at an angle to the said hub, and 70 a screen surrounding the said fan.

4. In a pulp strainer, the combination of a rotary fan having blades extending from the hub thereof, in a direction at an angle to the said hub, and having their outer edges 75 obliquely cut, and a screen surrounding the said fan.

5. In a pulp strainer, the combination of a rotary fan having blades extending from the hub thereof, each blade extending at an 80 angle to the said hub in a direction in relation to the hub opposite to that of the adjacent blades, and a screen surrounding the said fan.

6. In a pulp strainer, the combination of a rotary fan having blades extending from the hub thereof, each blade extending at an angle to the said hub in a direction in relation to the hub opposite to that of the adjacent blades and having its outer edge obliquely cut, and a screen surrounding the 90 said fan.

7. In a pulp strainer, the combination of a rotary fan having blades extending from the hub thereof, a screen surrounding the 95 said fan, an outlet at one end of the fan, inside the screen, and means for supplying pulp to the fan in such a manner that the quantity of inflowing pulp decreases toward the said outlet. 100

8. In a pulp strainer, the combination of a rotary fan having blades extending from a hollow perforated hub, a screen surrounding the said fan, an outlet at one end of the fan, inside the screen, means for supplying 105 pulp to the fan in such a manner that the quantity of inflowing pulp decreases toward the said outlet, and means for supplying water through the hollow hub, the perforations of the said hub being so arranged that 110 the quantity of inflowing water increases toward the said outlet.

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Witnesses:

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