

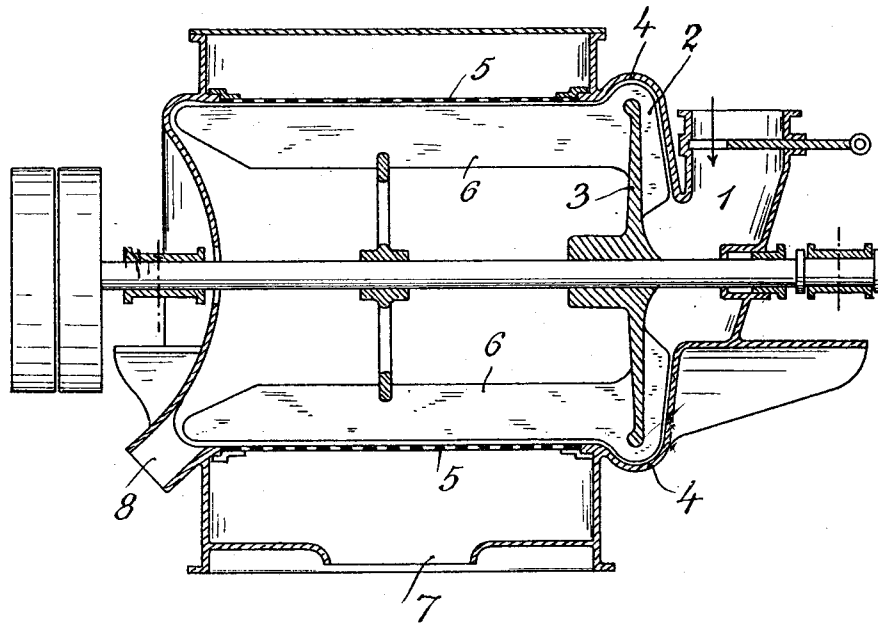
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H. STUB

CENTRIFUGAL SCREEN

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UNITED STATES PATENT OFFICE.

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CENTRIFUGAL SCREEN.

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To all whom it may concern:

Be it known that I, HANS STUB, subject of the King of Norway, residing at Kirkeveien 78, Oslo, Norway, have invented certain new and useful Improvements in Centrifugal Screens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

In centrifugal screens for sorting wood pulp (paper pulp) into coarse and fine fibres it is important to obtain a substantially perfectly uniform supply of the pulp water to the screening cylinder preferably in a tangential direction, because in such case no disturbances of the helical movement of the pulp water over the cylinder will take place or same will be reduced to a minimum. In the type of screens, wherein the pulp is supplied inside the centrifugal wheel or to the wings, such a uniform tangential supply is difficult to perform. But it might be obtained by causing the pulp to take a rotating motion and in this state to supply it at the end of the screening cylinder, before it is caught by the centrifugal wheel proper. One has tried to obtain this result by supplying the pulp to the cylinder by a separate wheel constructed approximately like the wheel of a centrifugal pump and mounted on the same shaft as the centrifugal wheel.

However, in order to obtain a quite uniform outflow from the pump wheel, it is necessary that the wheel channels be completely filled by pulp water, which in turn can be effected only if the outflow therefrom takes place in water (liquid)—not in air—and that the outflow aperture of the pump, which forms also the supply to the screening cylinder, be a circular aperture concentric with the said cylinder.

In the present invention the conditions above named are fulfilled by arranging on the blade shaft, adjacent the supply to the screening cylinder, a disc which is provided at the supply side with pump blades surrounded by a curved tight deflection wall, the largest inner diameter of which is larger

than the diameter of the screening cylinder, said wall forming at one side the transition to the screening cylinder and at the other side to the supply.

Preferably the pump blades on the supply side of the radial disc may constitute a continuous extension of the centrifugal blades which are rotating inside the screening cylinder proper.

An embodiment of the invention is illustrated in the accompanying drawing, showing a longitudinal section of the complete apparatus.

1 designates the pulp supply, 2 the pump wheel blades or wings, 3 the hub disc of the pump wheel, 4 the pump casing, 5 the screening cylinder, 6 the centrifugal wheel, 7 the outlet for the fine filtered pulp and 8 the outlet for the coarse pulp (mill pulp, refiner pulp).

The pump wheel thus comprises the hub disc 3, being of approximately the same diameter as the screening cylinder, and the wings 2 extending a distance farther out. The pump wheel 4 thereby will be larger in diameter than the screening cylinder. As a consequence thereof, when the machine is in operation, a much larger quantity of liquid must rotate in the exterior part of the pump casing, even if the supply is very small.

Now, the hub disc of the pump wheel is made so large that its exterior edge in all cases projects somewhat down into the rotating liquid. Thereby the air is prevented from passing back into the pump channels, consequently the said channels will remain quite filled with pulp water. The velocity through the channels will thereby be—as nearly as possible—of the same value all over at the same distance from the centre and may be regulated by a closing member arranged in the supply pipe.

From the pulp water rotating within the exterior part of the pump casing a uniform current passes on to the screening cylinder, and the quantity may be regulated within wide limits by the said closing member in the supply pipe.

It will be obvious that the rotation velocity of the pulp water, when entering the cylinder, will be approximately the same one as that of the centrifugal member.

Thereby losses due to shocks will be avoided and a most possibly uniform motion along the screen is obtained.

In the embodiment described above, the
5 wall 4 surrounding the pump blades is stationary, but obviously nothing prevents its being constructed as a rotating member. In the latter case the wall 4 is connected in some suitable manner with the blades 3 or
10 with the rotating shaft as ordinarily used in centrifugal pumps.

Claims:

1. The combination with a centrifugal screen comprising a horizontally arranged
15 screening cylinder, rotating blades within said cylinder, and an axial supply, of a rotating disc spaced from said cylinder at the supply end thereof, pump blades at the supply side of said disc, a housing enclosing
20 said disc, the outer end of said housing being

adapted to receive the material to be screened and the inner end of said housing abutting the supply end of said screen.

2. The invention as claimed in claim 1, wherein the diameter of said disc is not less
25 than the diameter of said screen.

3. The invention as claimed in claim 1, wherein the said disc is mounted upon the shaft carrying said rotating blades.

4. The invention is claimed in claim 1, 30 wherein the pump blades on said disc extend over the edge thereof and merge into the respective rotating blades.

5. The invention as claimed in claim 1, wherein the largest inner diameter of said
35 housing is greater than the diameter of said screen.

In testimony that I claim the foregoing as my invention, I have signed my name.

HANS STUB.