June 3, 1924. 1,496,517

M. E. BOEHM

STRAINING WHEEL

Filed June 16, 1921

Fig. 1.

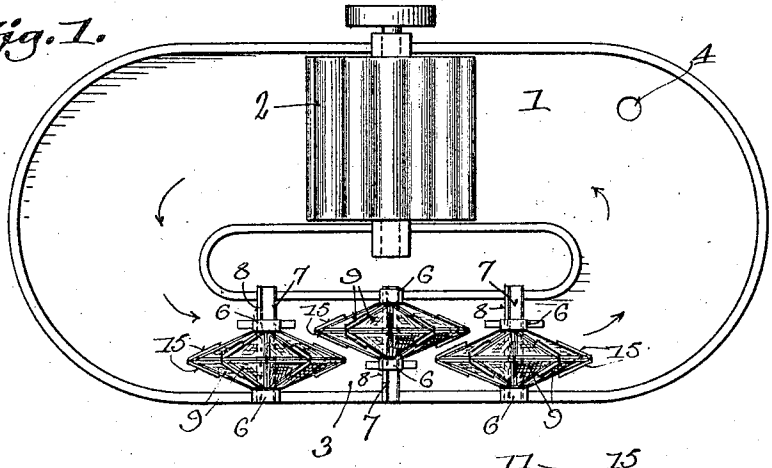


Fig. 2.

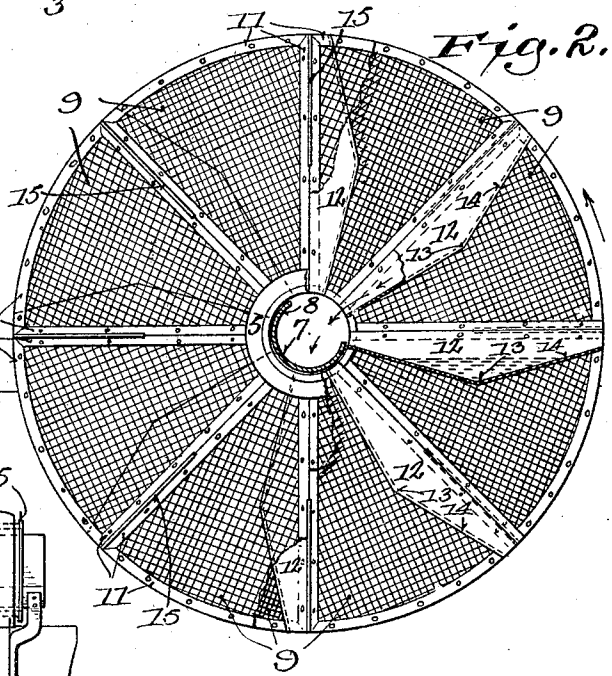
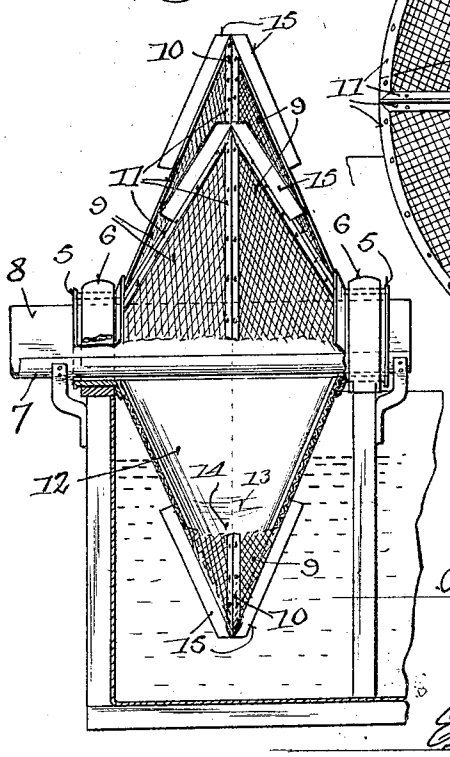


Fig. 3.



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UNITED STATES PATENT OFFICE.

MAXIMILIAN EUGENE BOEHM, OF NEENAH, WISCONSIN.

STRAINING WHEEL.

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To all whom it may concern:

Be it known that I, MAXIMILIAN EUGENE BOEHM, a citizen of the United States, residing at Neenah, county of Winnebago, and State of Wisconsin, have invented new and useful Improvements in Straining Wheels, of which the following is a specification.

This invention relates to straining wheels and is particularly directed to straining wheels as associated with pulp beating engines or machines.

The objects of this invention are to provide a machine which will expedite the delivery of water from the washing tank; which will present a larger surface to the water; which will remove water in larger quantities or at a faster rate than machines heretofore made; which is so shaped and proportioned that it will enter the water without jar and without wedging the pulp or otherwise obstructing its free passage; and to provide such a machine which is self-propelling.

Further objects are to provide a straining wheel for pulp beating engines in which the sides of the wheel are made of removable sections so that when any side becomes worn or damaged it may be readily removed and a new one substituted; and to provide such a straining wheel which may be cheaply and readily manufactured, and which will be sturdy and rugged in construction.

An embodiment of the invention is shown in the accompanying drawings, in which:

Fig. 1 is a plan view of a pulp beating engine.

Fig. 2 is a side view of a straining wheel with parts broken away.

Fig. 3 is an end view of one of the straining wheels with parts broken away.

In the drawings, the washing tank is generally oval in contour, and has a widened portion 1 within which a beater 2 is adapted to operate.

This tank has a constricted portion 3 within which a series of straining wheels are positioned. A supply pipe 4 is adapted to deliver water into the washing tank.

The straining wheels are mounted upon hollow hubs 5 which are carried in suitable bearings 6 upon opposite sides of the constricted portion 3 of the tank. An open trough extends through each of these wheels and is provided with an upwardly extending rear face 8 upon the side towards which the water approaches in its normal travel around the oval shaped tank. From these hollow hubs a series of substantially triangular shaped panels 9 extend outwardly and are joined at the central outer portion of the wheel as indicated at 10 in Fig. 3. These panel sections are formed of wire cloth which is reenforced around its edges by means of bands 11. These bands 11 are provided with a series of openings through which the attaching screws may pass so as to removably position each panel with respect to the other panels. It will therefore be seen that the wheel consists of approximately two frustro-conical portions with their larger peripheries joined. Within the wheel a series of troughs 12, V-shape in plan, are positioned such troughs having a relatively depressed portion 13 intermediate their ends to provide a bottom 14, V-shape in side elevation.

A series of vanes 15 are secured upon the outer sides of the wheel.

The operation of the apparatus is as follows. When the machine is in operation the pulp and water travel at a relatively high rate around the oval shaped tank, the speed being relatively greater through the constricted portion 3 than through the relatively wide portion 1. Due to the vanes 15 and also due to the frictional engagement of the water with the sides of the wheel, the wheels are each rotated in the direction indicated in Fig. 2. This rotation of the wheels causes the buckets 12 to be successively lifted on the ascending side of the wheel and to discharge the water held therein into the trough 7, the elongated rear portion 8 of such trough preventing the splashing of the water rearwardly over the trough. It is to be noted that the tapered formation of the straining wheel allows such wheel to readily enter the pulpy mixture without clogging and without splashing. It is also to be noted that by staggering the wheels as illustrated in Fig. 1 that the water is removed from a number of spaced apart portions of the flowing stream and that a relatively compact apparatus may be provided as the tapered formation of the wheels allows them to be closely spaced. A further feature to be noted is that the blades 15 tend to agitate the liquid when entering therein and receding therefrom.

It will thus be seen that an apparatus has been provided which will readily and rapidly remove the water from the pulpy mass;

which will not clog; and which is self-propelling, thereby greatly simplifying the mechanical construction of the pulp beater.

While the machine has been specifically described with reference to pulp beating machines, it is of course obvious that it may be used for other purposes, such for example, in washing of various fibrous suspended material or in any capacity where it is desired to remove liquid from suspended or partly suspended solid material.

I claim:

1. A straining wheel for separating water from solid suspended material comprising a wheel formed of foraminous material and provided with a series of paddles and interiorly positioned buckets, said paddles being adapted to rotate the straining wheel and to agitate the water and suspended material when entering therein and receding therefrom.

2. A straining wheel adapted to remove liquid from a mixture containing such liquid and suspended solid material, said wheel comprising substantially frustro-conical sections formed of foraminous material with their larger peripheries joined, a series of paddles carried by the outer portion of said wheel, and a series of interiorly carried buckets, said paddles being adapted to rotate the straining wheel.

3. A straining wheel for pulp beating machines comprising a tapered wheel structure formed of wire cloth arranged in removable sections, a series of buckets carried within said wheel and a series of paddles arranged exteriorly thereof adjacent its periphery, said paddles being adapted to rotate the straining wheel.

4. A pulp beating machine comprising a tank adapted to provide a continuous path of travel for pulp and water, means for supplying water to said tank, means for causing said pulp and water to travel in a closed path, a series of straining wheels mounted in staggered relation within a portion of said path and comprising each a pair of frustro-conical sections provided with propelling vanes and with interior buckets, and a series of open troughs passing through said wheels and adapted to receive liquid elevated by said troughs and discharge such liquid outwardly beyond the outlines of said tank.

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