W. P. LASS.

FILTER.

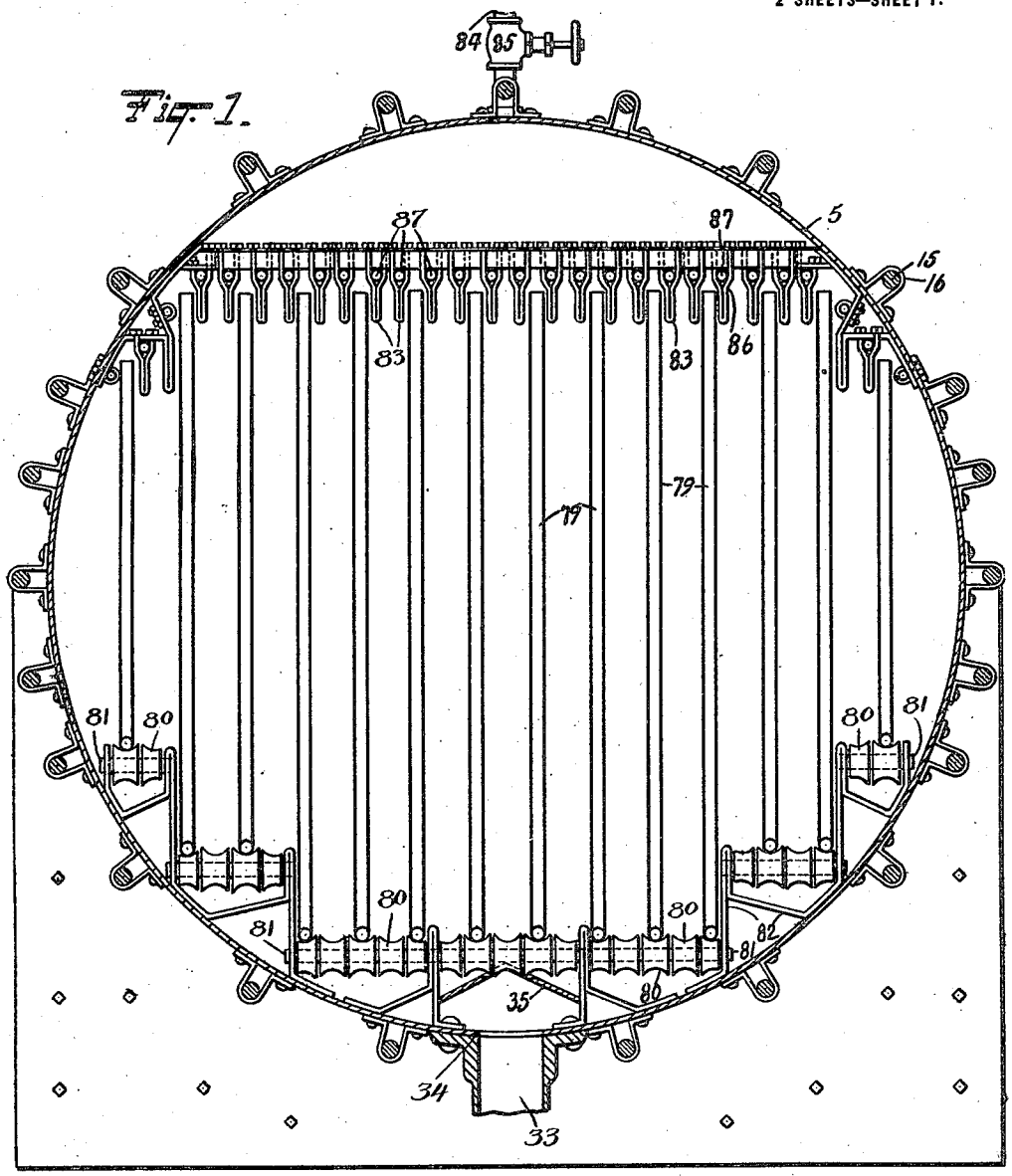
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1,144,854.

Patented June 29, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

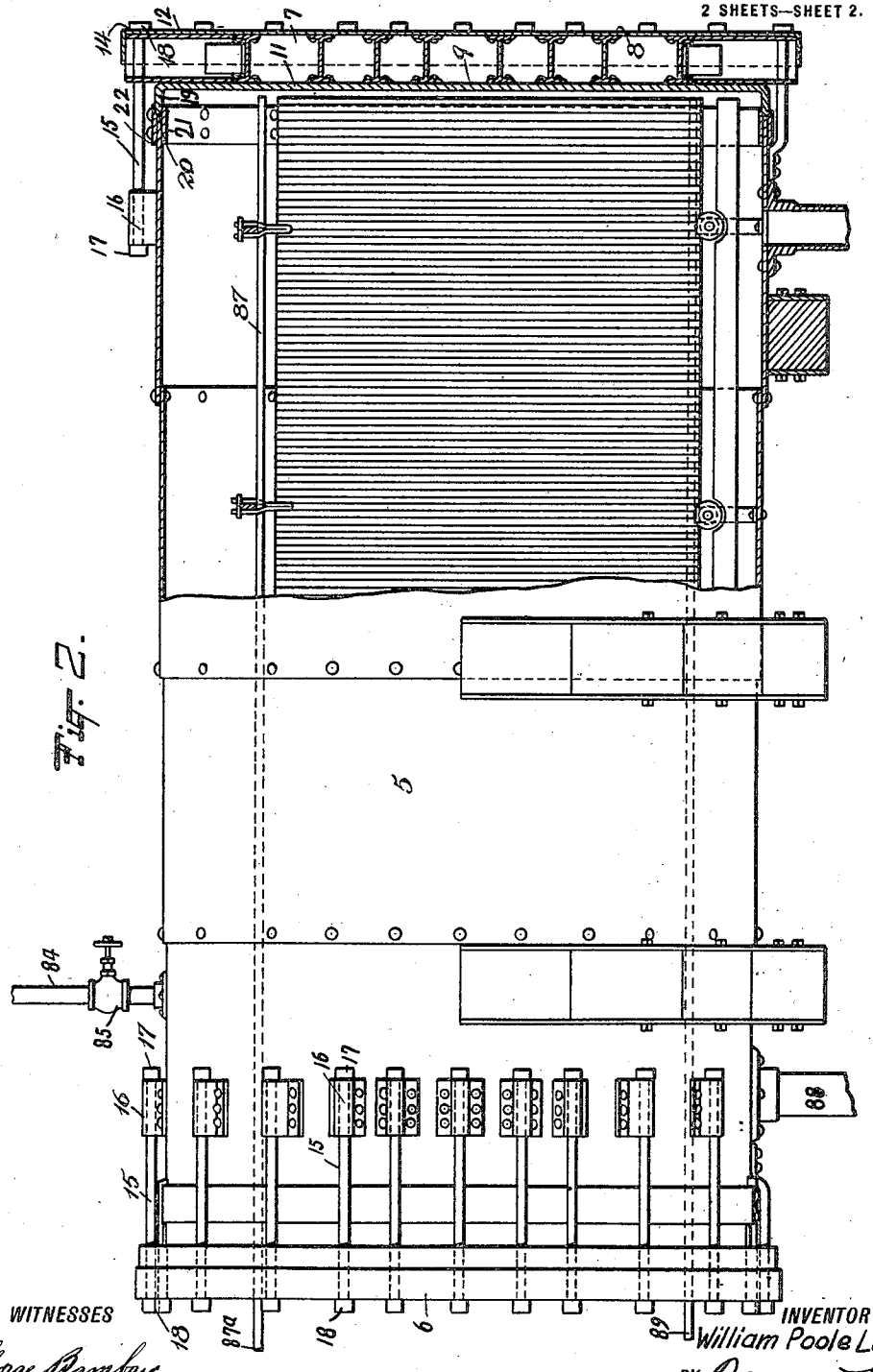


Fig. 2.

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FILTER.

1,144,854. Specification of Letters Patent. Patented June 29, 1915.

Application filed September 30, 1912. Serial No. 723,064.

To all whom it may concern:

Be it known that I, WILLIAM POOLE LASS, a citizen of the United States, and a resident of Treadwell, Alaska, have invented a new and Improved Filter, of which the following is a full, clear, and exact description.

My invention has for its object to provide a filter with the filter members inclosed in a drum, and having means for discharging sands and solids which may accumulate in the drum in the filter member, and without it being necessary to remove the filter member, and without it being necessary to reduce the pressure in the drum which is used for forcing the filtrate through the filter member. When the filter members consist of a series of leaves, the sand and solids are washed off the filter leaves by spray pipes, arranged within the drum, and the sand and solid matters are then removed from the drum by mechanical or other conveyers. The discharging of the solid matters and sands from the drum may be assisted by air or steam within the filter.

When the filter member is in the form of a drum and is disposed within the drum casing, the pulp or material to be filtered is run into this drum casing, and by means of an automatically acting valve regulating the inflow of pulp or material, the said pulp or material which is to be filtered is kept at a constant level in the drum casing, and relatively to the filter drum. The filtrate is forced through the filter drum by means of air pressure, and this air pressure is so regulated that it will not only force the filtrate through the filter drum, but that it will also keep the pulp or material in the drum casing at a constant level.

Additional objects of the invention will appear in the following complete specification in which the preferred form of the invention is disclosed.

In the drawings similar characters of reference indicate corresponding parts in all the views, in which—

Figure 1 is a sectional end view of my invention. Fig. 2 is a side elevation of the same, partially in section.

By referring to the drawings it will be seen that a drum casing 5 is provided, having heads 6 and 7, the head 7 being constructed of the members 8 and 9, which are held apart by the member 10. Through openings 14 in the member 8 of the head 7, there extend bolts 15, these bolts being disposed through collars 16, with their heads 17 disposed against one set of ends of the said collars. Meshing with the threads on the bolts 15 there are nuts 18, which press against the member 8 and the head against the end of the drum casing.

It will be seen by examining Fig. 2 of the drawings that the member 9 has an inwardly extending collar 19, the end of which is disposed in an annular recess 20 formed by the inner band 21 and the outer band 22, which are secured to the end of the drum casing 5, and which project a short distance beyond the said end of the drum casing. The head 6 is constructed in a similar manner, and is held in place by a similar means, referred to by the reference characters used to describe the connection of the head 7 with the other end of the drum casing 5.

The pulp and material to be filtered is introduced into the filter drum 5 through the pipe 33, which opens into the bottom of the drum casing 5 at the point 34. At the bottom of the filter drum 5 adjacent the point 34 at which the pulp and material to be filtered enters the filter drum, there is a spreader 35, which distributes the pulp and material to be filtered. Within the drum 5 are arranged a number of vertically disposed filter leaves which may be of any known construction. These filter leaves 79 rest on rollers 80, mounted on spindles 81 supported by the brackets 82 at the bottom of the drum casing 78. The brackets are step-shape and are arranged in sets at each side of the center of the drum. The adjacent brackets of the set are connected by the spindle 81 at the top of the bracket, and the other spindles connect the top of one bracket with the bottom of the next adjacent bracket. A plurality of rollers are preferably mounted on each spindle as shown. The filter leaves 79 are spaced apart at the top and are held in position by the guides 83. It will therefore be seen that when the head 6 or the head 7 of the drum casing 78 is removed these filter leaves 79 may be readily introduced into the drum casing. Compressed air is supplied to the drum casing 78 through the pipe 84, which communicate with the interior of the drum casing, this pipe 84 being provided with a valve 85, by which the rapidity of the flow of the compressed air through the pipe may be regulated.

Supported by the four portions 86 of the

guides 83 there are spray pipes 87, these spray pipes 87 throwing a spray of water on the filter leaves 79, for washing therefrom all solids and any sand which may lodge on the filter leaves. In this way the sand and solid matter will accumulate at the bottom of the drum casing 78, from whence it may be removed, either by a screw or other mechanical conveyer, or, if desired, a greater flow of water may be forced through the spray pipes 87 to wash the sand and solid matter through the pipes 88 at the bottom of the casing drum 78. The interior opening in each of the filter leaves 79 is connected with a pipe 89, which extends through an opening in one of the heads of the drum casing 78, so that as the filtrate is forced through the sides of the filter leaves 79 it will pass to these pipes 89 and in this way out of the drum casing.

My filter is especially well adapted for the separation of solids, and in which the solids may be subjected to metallurgical treatment.

The following is a description of one manner of using the filter, shown in the drawings: The metal-bearing pulps or sands are introduced through the pipe 33 into the drum 5, air escaping through valve 85, the pulp meets the deflector 35, which acts as a distributer. When the pulp has filled the press to a point above the filter frames 79, a valve at the end of pipe 89 is opened, allowing the filtrate as it passes through the filter 79 to discharge through 89. When the desired amount of solids have been deposited upon the filter, compressed air is introduced through 85 into the drum, forcing the remaining pulp out of the press through 88. With the drum empty of pulp the sands held on the filter by the air pressure within the drum, the dissolving solution is introduced through pipe 88 into drum 5 submerging the filters 79 with their contained solids, as the pressure in the drum 5 is raised, the dissolving solution passes through the deposited solids into the filter 79 and out the pipes 89 after the values have been removed from the sands or the desired amount of solution passed through the solids, the remaining solution is forced out through the pipe 88 by compressed air from 85. In the same manner as many treatment solutions or wash water may be passed through the sands or solids as desired. To discharge the solids from the filter after the final washes have been given, air or steam is introduced through pipe 89 into filter 79 blowing the solids from the filter leaf. Their discharge is assisted by water introduced through spray pipes 87; this water may also serve as the carrier of the solids through pipe 88 to waste.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. In a filter, a drum, a plurality of supports on the inner face of the lower portion of the drum, said supports consisting of a set of spaced brackets at each side of the center of the drum, means connecting the adjacent brackets of the sets together at the top of the brackets, and means connecting the top of each bracket of each set of brackets, with the bottom of the next adjacent bracket, a plurality of filter leaves resting upon the supports, and guides in the upper part of the drum and between which the upper ends of the leaves extend.

2. In a filter, a drum, a plurality of step-shaped brackets mounted on the inner face of the lower portion of the drum, a plurality of rollers mounted in each bracket, a plurality of filter leaves, each resting on a roller, and a plurality of guides in the upper part of the drum between which the upper ends of the leaves extend.

3. In a filter, a drum, a plurality of rollers mounted in the lower portion of the drum, guides in the upper part of the drum, and a plurality of filter leaves, each resting on a roller and having its upper end extending between the guides.

4. In a filter, a drum, a plurality of rollers mounted in the lower part of the drum, a plurality of guides in the upper part of the drum, a plurality of filter plates, each resting on a roller and having its upper end extending between the guides, and spray pipes carried by the guides.

5. In a filter, a drum, a support in the lower part of the drum, a plurality of guides in the upper part of the drum, a plurality of filter leaves resting on the support and each having its upper end extending between two guides, and a spray pipe carried by each guide.

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

WILLIAM POOLE LASS.

Witnesses:
R. G. DATSON,
C. G. MCKINNON.