March 15, 1932. M. KRAUT 1,849,146

PNEUMATIC FLOTATION APPARATUS

Filed June 18, 1928

Fig. 1.

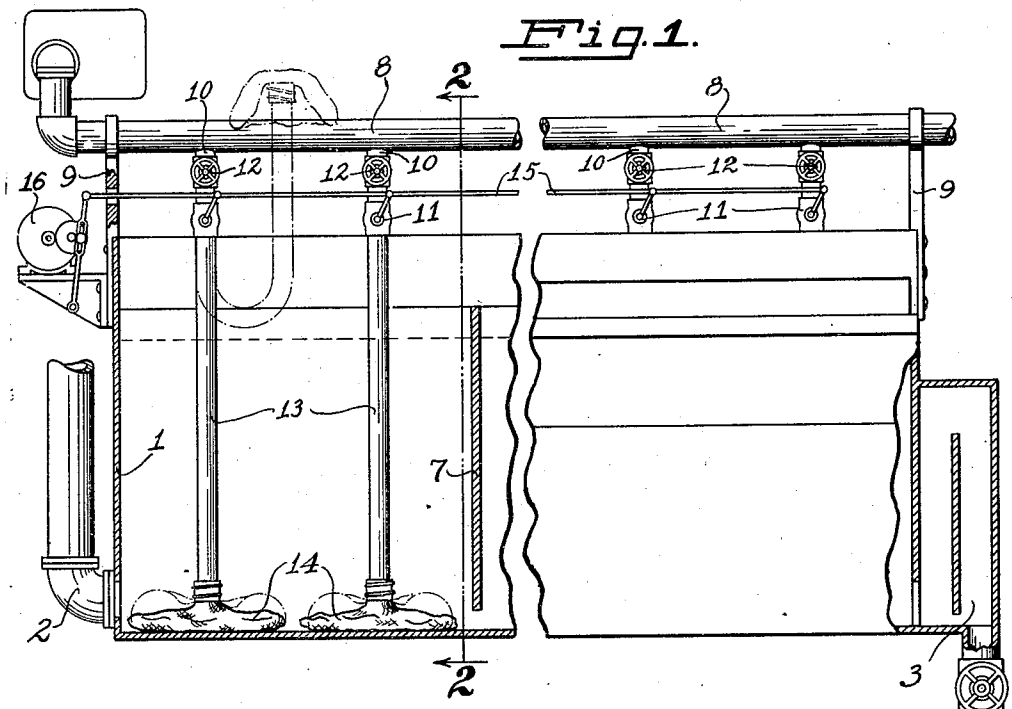
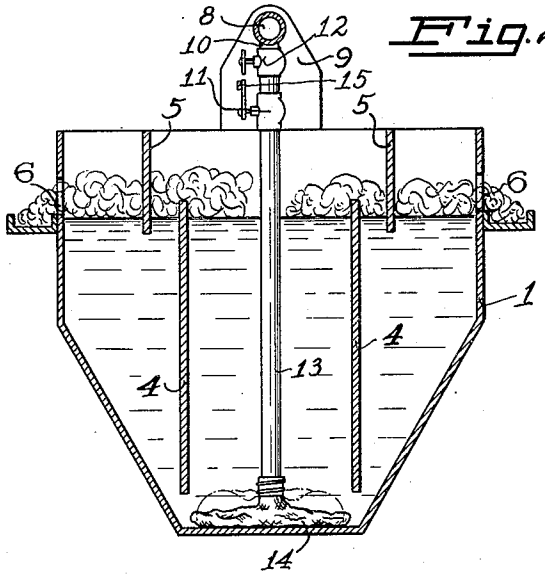


Fig. 2.



INVENTOR.

Max Kraut

BY Harry A. Tollen

ATTORNEY.

Patented Mar. 15, 1932 1,849,146

UNITED STATES PATENT OFFICE

MAX KRAUT, OF SAN FRANCISCO, CALIFORNIA

PNEUMATIC FLOTATION APPARATUS

Application filed June 18, 1928. Serial No. 286,471.

The present invention relates to improvements in pneumatic flotation apparatus.

Pneumatic flotation apparatus has in the past been inefficient and costly in operation and costly to maintain. The inefficiency in operation has been caused mainly by the frequent clogging of the porous medium, reducing the available area for aeration, necessitating the frequent cleaning of the porous medium and consequent loss of time of operation of the apparatus. The costly maintenance has been occasioned by the frequent necessity of renewal of the porous medium which, due to the frequent cleaning, becomes worm and the fibers thereof broken or damaged resulting in holes which render the medium worthless.

The object of this invention is to provide a pneumatic apparatus which is free from clogging, is self-cleaning, and which does not require the shutting down of the entire apparatus for the renewal or replacement of one of the porous members.

The invention consists primarily in a member adapted for positioning in the pulp body, and having flexible porous walls, the member being adapted for inflation and deflation by a controlled air stream admitted thereinto to cause a weaving or movement of its walls, the air passing through the porous walls to aerate the pulp creating a froth and maintain the surface of the member free from pore clogging material.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and set forth in the claim hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claim may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To comprehend the invention, reference is directed to the accompanying drawings, wherein:—

Fig. 1 is a view in longitudinal broken section of the preferred embodiment of my invention illustrating in dotted lines one of the hose removed from the tank to admit of the renewal of its sack.

Fig. 2 is a vertical transverse sectional view on line 2—2 of Fig. 1.

In the drawings wherein like characters of reference designate corresponding parts, 1 indicates a tank having a pulp inlet 2, and a suitable discharge 3. The tank is divided longitudinally by settling and circulation baffles 4 and 5 which fall short of contacting with the tank bottom, and with their adjacent edges terminating below the froth level to enable the froth with its recovered values to pass under the lower edge of the baffle 5 and discharge from the overflow 6. Suitable separating partitions 7 are positioned transversely of the tank at intervals and terminate short of the bottom thereof.

Disposed above the tank and extending longitudinally of the center thereof is an air conduit or pipe 8 mounted on brackets 9 and supplied with air under pressure from any suitable source such as a pump or blower. Couplings 10 communicate with the interior of the air pipe 8 at intervals throughout its length, and each mounts a cut off valve 12 and an intermittently operated valve 11. The valve 12 controls the admission of air from the pipe 8 to valve 11 and the latter valve controls the intermittent discharging of the air from the coupling. Suspended from each coupling is a section of flexible hose 13 depending into the tank to a point near the bottom thereof, and detachably positioned over the lower end of each hose is a fabric bag 14 preferably of heavy canvas. The bags when not subjected to air pressure assume a collapsed position, this being caused by the pressure of the pulp on the exterior surface thereof.

The valves 11 are illustrated as connected together by a common operating rod 15. The rod 15 is intermittently reciprocated by an operating mechanism 16 of any suitable type.

With the parts positioned as in the drawings, and the valves 12 adjusted to open position, the intermittent operation of rod 15 by mechanism 16 will intermittently open and close valves 11 causing air to pass through the hose 13 inflating the respective bags 14, and

passing therefrom through the porous bag walls removing from the exterior surface thereof any particles of material having a tendency to adhere thereto and clog the same. The flow of air into the bags is cut off when valves 12 are closed and the weight of the pulp causes a deflation or collapsing of the bags; thus the inflation and deflation of the bags causes a weaving or flexing of the bag forming material which agitates any material adhering to the surface rendering it comparatively easy of dislodgment by the air streams passing outwardly through the bag walls. The air passing through the porous bags dries the pulp and creates a froth which carries the recovered values, and which overflows at 6.

To renew or replace any particular bag, it is only necessary to close its associated valve 12, bend its mounting hose to lift the bag free from the pulp at which time the bag can be renewed and the bag and hose thereafter dropped back into the tank with the bag suspended on the end of the hose. This change is accomplished without interrupting the operation of any portion of the apparatus except that hose mounting the bag requiring the renewal.

I claim:—

In a pneumatic flotation apparatus having a tank for pulp, means to aerate the pulp comprising an air duct overlying the tank, a plurality of independent flexible conduit members depending from and communicating with the air duct and having one end extending into the tank to a position adjacent the bottom of the tank, an independent single-chambered bellows member provided with a porous flexible wall mounted at the end of and supported by the independent flexible conduit members in communication with said conduit, and means to intermittently introduce air into said bellows members from said air duct.

In testimony whereof I have signed my name to this specification.

MAX KRAUT.