

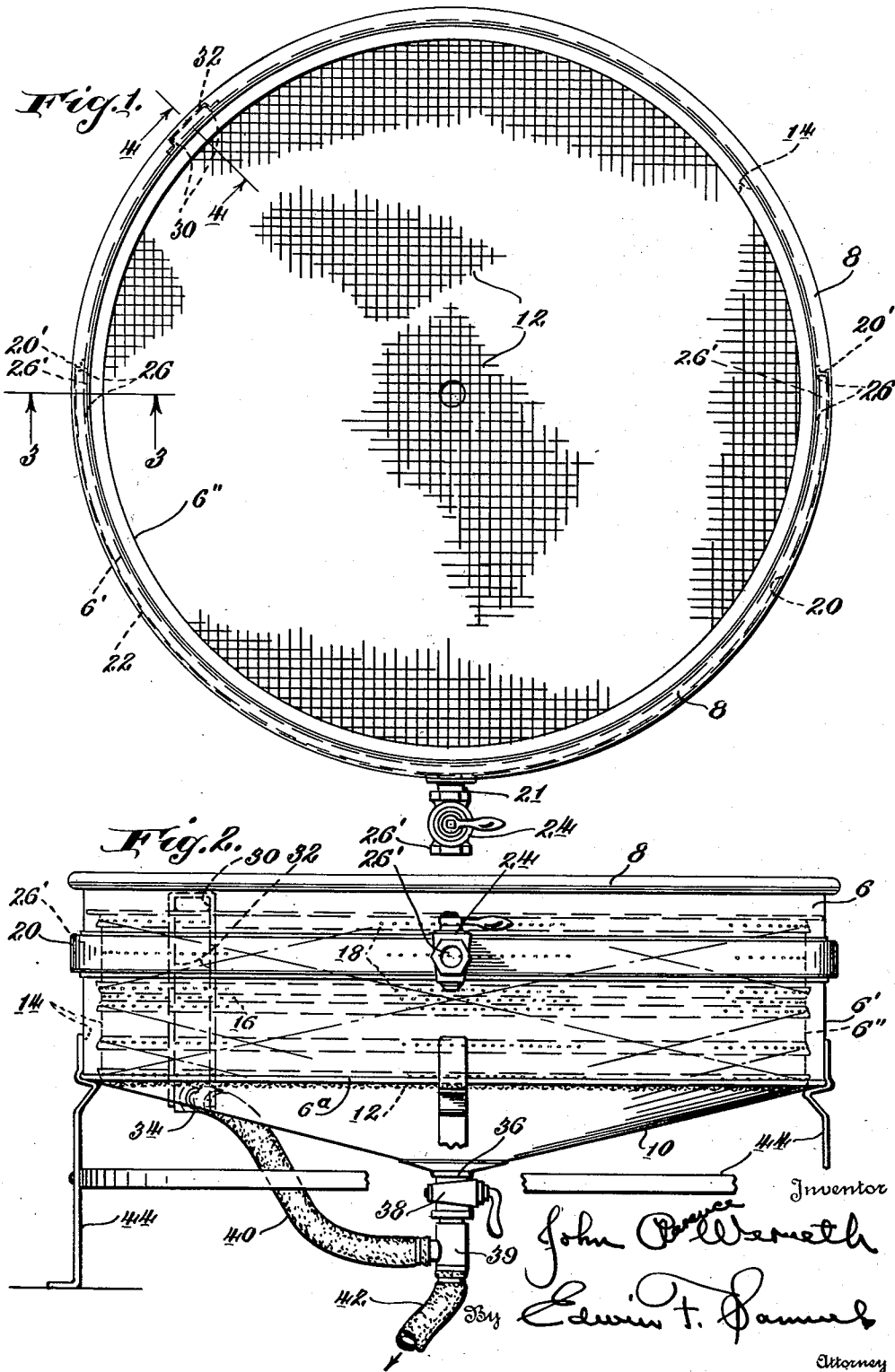
Oct. 8, 1940.

J. C. WERNETH
PHOTOGRAPHIC WASHER

2,217,531

Filed Jan. 13, 1939

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

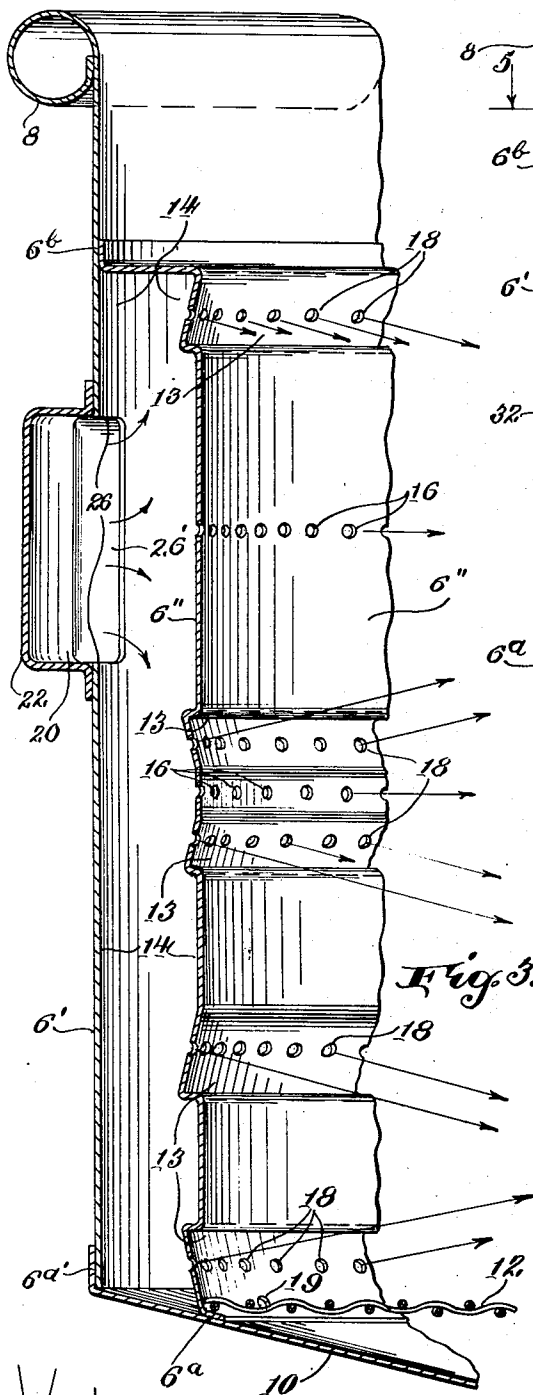


Fig. 3.

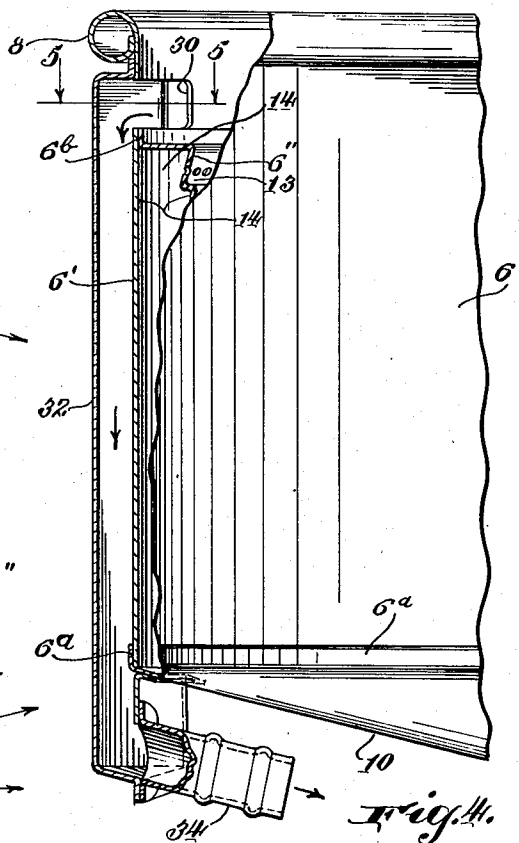


Fig. 4.

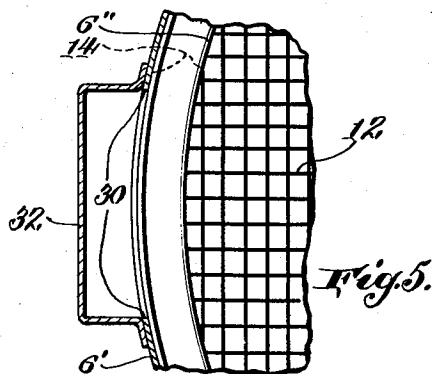


Fig. 5.

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PHOTOGRAPHIC WASHER

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3 Claims. (Cl. 95—97)

The present invention relates to washers and although the present washer is capable of various washing operations, it is particularly adapted for use in washing photographic prints and films.

5 The art of preparing these prints and films in order to produce photographs is well known. One of the steps being, the washing of the prints or films for removing or neutralizing a solution with which they have been treated and it is this
10 step to which the present invention pertains.

When the prints or films have been sufficiently acted upon by the solution, or solutions, it is necessary to wash them thoroughly in order that the print or film will not undergo further reaction therefrom.

15 It is the primary object of this invention to perform this washing operation in a more efficient and satisfactory manner than has been possible heretofore.

20 Another object of the invention is to provide an apparatus of this character which is without moving parts and automatic and continuous in its operation.

Still another object of the invention is to provide a washer of economical construction and one which will operate with a minimum of washing fluid.

30 A further object of the invention is to provide means for utilizing the currents set up in the washing fluid to create the proper circulation or turbulence within the washer, and to maintain continuous and substantially uniform circulation or turbulence throughout the washing tank.

35 While several of the objects have been specifically set out above, other objects will appear from the specifications when taken in connection with the drawings which form a part of this application and in which:

Figure 1 is a top plan view of the washer.

40 Figure 2 is a side elevation of the same, showing diagrammatically the direction of the currents in the washing fluid during the operation of the washer.

Figure 3 is an enlarged fragmentary sectional view taken along the line 3—3 of Figure 1.

45 Figure 4 is an enlarged fragmentary sectional view taken along the line 4—4 of Figure 1.

Figure 5 is a fragmentary horizontal sectional view taken along the line 5—5 of Figure 4.

50 Referring now to the drawings which are merely illustrative of the preferred form of the invention, the present embodiment of the invention comprises a tank 6, which is preferably cylindrical in form, although it may be in any other
55 convenient shape. The tank is preferably constructed of sheet metal or the like, or any suitable material that may be readily adaptable to the economical construction of the invention, the same being provided with an outer wall 6' and an inner wall 6''. The outer wall has about its top edge a rolled bead 8. Extending inwardly from the lower edge of the wall is a bottom 10 of inverted conical form. The inner wall 6'' is provided adjacent its lower edge with a perforated, or screened bottom 12. This inner wall 6'' may be either secured to the outer wall 6' or it may be separate so that it may be removed. If the inner wall 6'' is to be secured within the outer wall it is fastened to the bottom 10 at 6a and at the top at 6b by soldering, welding or other suitable securing means.

5 The inner wall 6'' is of such size and is so located as to form a chamber 14 between the walls 6' and 6'' for accumulating a supply of the washing fluid. The bottom edge of the wall 6'' is adapted to fit closely around and upon the inverted conical formed bottom member 10, as shown at 6a. The top of the wall 6'' is formed to extend outwardly and contact the outer wall 6' as shown at 6b.

20 The inner wall is also provided with a plurality of openings 16 and 18 arranged in horizontal rows extending from the bottom to the top and around the wall surface. This wall is provided with off-sets or corrugations 13 and arranged and extending about the wall surface in such a manner that the rows of openings 18 are angularly disposed as to a horizontal plane. The rows of openings 16 are made along vertical portions of the wall and are disposed at right angles to the vertical axis of the tank, i. e., horizontally or substantially so.

25 The tank is provided with a circumferential or partially circumferential channel 20 formed by an arcuate housing 22 secured to the outer wall 6', which, as shown, extends through approximately one hundred and eighty degrees of the circumference of the tank. Arranged substantially in the center of this housing 22 is an inlet 21 which is controllable by the valve 24 for admitting the washing fluid to the channel 20. The closed end section 20' of the channel 20, terminates adjacent to and encloses from the outside the openings 26 in the outer tank wall 6', as shown particularly in Figures 1 and 3 of the drawings, the said openings 26 leading into the circumferential chamber 14 formed between the walls 6' and 6''.

40 Adjacent the top of the tank there is provided an overflow opening 30. Extending from this

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opening and downwardly along the side of the tank is a drain pipe 32 which has connected to the end thereof a hose connection 34.

Leading from the apex of the inverted conical formed bottom 10 is a drain 36 which is regulated by a suitable valve or cock 38. Connected to the cock 38 is a suitable pipe T 39 to which the hose 40 is connected as shown which, in turn, is connected at its opposite end with the overflow hose connection 34. A hose 42 or other suitable means is attached to the drain assembly by means of the T member 39 as shown, which leads to any convenient waste receiving means.

The tank may be supported upon a stand or frame 44 as shown best in Figure 2, or it may also be supported from overhead supports when not convenient to use the stand.

In operation the inlet side 26 of the inlet 21 is connected with a supply of washing fluid, which is usually water under normal city pressure. The draw-off cock 38 is closed. The fluid passes through the valve or cock 24 into the channel 20 and thence into the top of the chamber 14 by way of the openings 26. The chamber 14 and the tank will become filled as the fluid will pass out into the center of the tank through the apertures or openings 16 and 18 within the wall 6". When the tank is filled the surplus washing fluid after it has reached a predetermined level will be drawn off through the overflow opening 30, the drain pipe 32, the hose 40, and thence through the common drain hose 42. When the tank has been filled as just described the draw-off valve or cock 38 is regulated to allow the fluid to be drawn off at the bottom at a predetermined rate or substantially the same rate as it is being supplied. Any excess supply of fluid caused by variation between the drain flow and inlet fluid pressure will pass out through the overflow as described hereinbefore.

The washer is now ready to receive the prints or film, which are placed within the fluid filled tank, and the washing operation is begun. The surface residue such as acids or developing chemicals, washed from the prints or film passes through the screen 12 and settles to the bottom of the tank due to their being heavier than the washing fluid, i. e. water, thence are guided by the tapered bottom 10 of the tank to the draw-off or drain cock 38. If there is any floating matter it will be carried off by the over flow pipe 34. In order to get the best results, the draw-off cock 38 should be adjusted so that a small quantity of the fluid will pass over into the over flow pipe. This will provide an escape for the floating matter.

In the present arrangement the washing fluid such as water is supplied to the washer under pressure by way of a supply line which enters channel 20 at 26'. This creates a pressure within the chamber 14 and causes the washing fluid to be forced through the openings 16 and 18 with considerable force and at various angles as shown diagrammatically in Figures 2 and 3. This will create a turbulent effect upon the washing fluid in the tank and at the same time replenishes the supply. The direction of the injected fluid through the openings 16 and 18 will set up currents in the fluid in all sections of the tank and assure a substantially uniform change and agitation of the fluid without the necessity of moving parts such as mechanical agitators and other means used for this purpose.

With particular reference to Figures 2 and 3 of the drawings, it will be noted that the respec-

tive openings or orifices of the various stratum of circumferential pressure orifices as indicated at 16 and 18 are directed in varying angles to, as well as in a plane to the horizontal, thus causing the washing fluid passing through the same under predetermined pressure to set up minute counteracting paths or currents of the washing fluid within the body of the fluid in the filled tank during the operating period. Thus giving a turbulent or boiling action of predetermined degree to the body of washing fluid within the tank. This turbulent action imparted to the body of the washing fluid is important, with particular reference to the washing of photographic prints, in that, upon placing a "batch" of prints within the present type of washing tank structure as herewith presented, the "batch" of prints is immediately caused to be broken up or separated, and the individual prints are thoroughly agitated and moved through the varying currents of the washing fluid. This turbulent action of the washing fluid as well as the minute angularly directed streams of washing fluid under pressure leaving the various holes 16 and 18, tend to keep the prints upon becoming saturated and heavy, from settling and remaining on the bottom or screen portion 12 of the tank structure. The turbulent action of the body proper of the tank of washing fluid as well as the minute subsurface streams of the washing fluid leaving the holes 16 and 18 tend to thoroughly wash and free the print or film surfaces of developing acids or chemicals with a minimum loss of time and increased effectiveness within a given time period as compared to the present day type of hand operated photographic wash tanks.

It is understood in the present instance that the degree of the agitation or turbulence to the washing fluid is fully controlled by the inlet valve or cock member 24, whereby the prints or films will not in any way be marred or defaced by too much agitating pressure being applied to the washing fluid.

When the washing operation is completed the supply of washing fluid is cut off and all parts of the washer may be thoroughly drained through the drain cock 38, including the chamber 14, which may be completely emptied through one or more lower openings as indicated at 19 in the wall 6".

While the invention has been illustrated and described in a particular form, it is not intended that the same be limited to all the details of this description and drawings. The scope of the invention is defined in the following claims.

What I claim as new and desire to secure by Letters Patent is:

1. A photographic washing tank comprising an outer vertical side wall and an inner wall running substantially parallel therewith, said walls arranged to form a relatively narrow closed chamber therebetween, means for supplying a washing fluid to the chamber, the inner wall having a plurality of small openings distributed throughout the vertical height of the said wall for emitting the washing fluid to the interior of the tank, said openings being disposed at various angles to a horizontal plane, whereby the fluid being emitted from the openings will be directed at different angles through the tank.

2. A photographic washing tank comprising an outer vertical side wall and an inner wall running substantially parallel therewith, said walls arranged to form a relatively narrow closed chamber therebetween, means for supplying a wash-

ing fluid to the chamber, the inner wall having a plurality of small openings distributed throughout the vertical height of said wall for emitting the washing fluid to the interior of the tank, a number of said openings being inclined slightly upwardly from a horizontal plane and others being inclined slightly downwardly from a horizontal plane whereby the fluid being emitted from said openings will be directed at various angles through the tank.

3. A photographic washing tank comprising an outer vertical wall and an inner wall running substantially parallel therewith, said walls arranged

to form a relatively narrow closed chamber therebetween, means for supplying a washing fluid to the chamber, a plurality of corrugations extending around and distributed throughout the vertical height of the inner side wall, a plurality of small openings arranged within the said corrugated surfaces at different angles to a horizontal plane for emitting the fluid into the interior of the tank, whereby the fluid being emitted through the openings will be directed at various angles through the tank.

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