W. BERGMAN.

PHOTOGRAPHIC WASHING APPARATUS OR TANK.

APPLICATION FILED NOV. 14, 1917.

1,265,291.

Patented May 7, 1918.

2 SHEETS—SHEET 1.

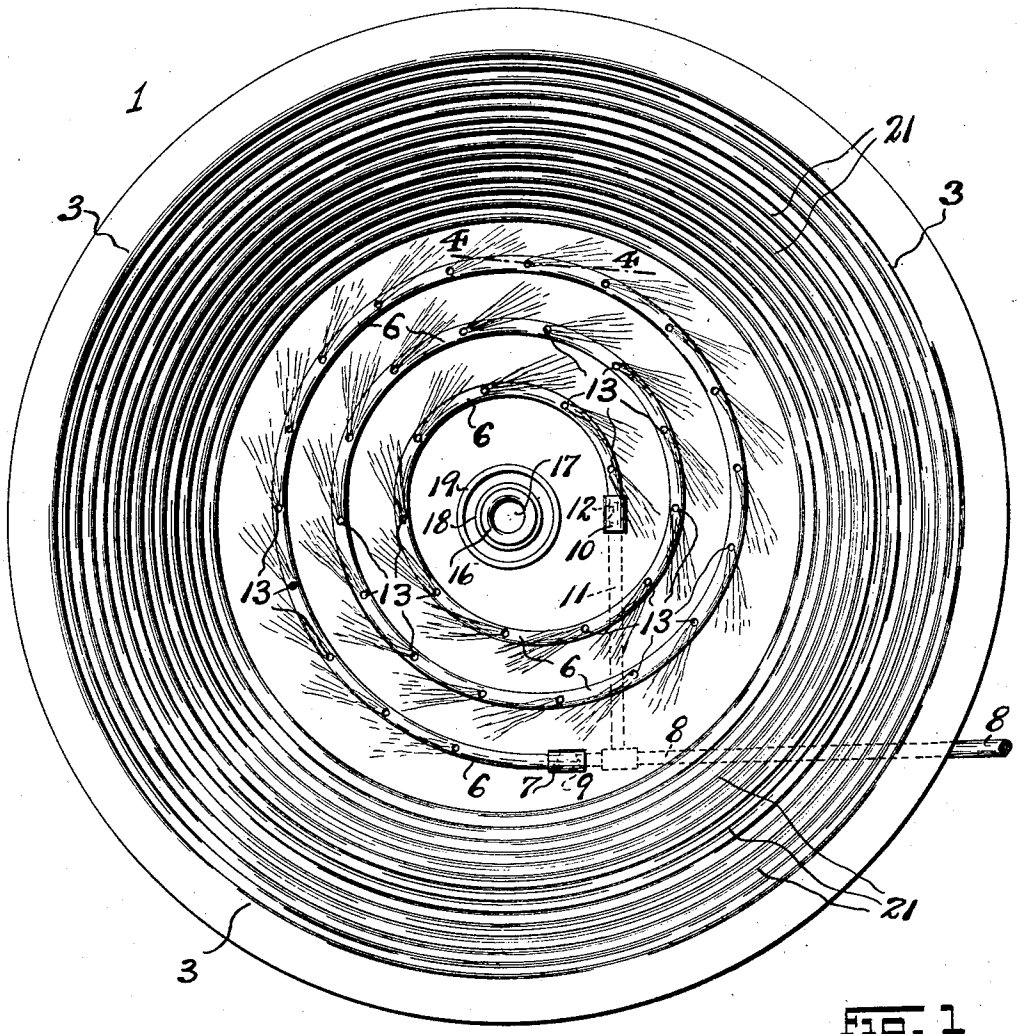


Fig. 1

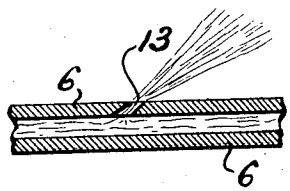


Fig. 4

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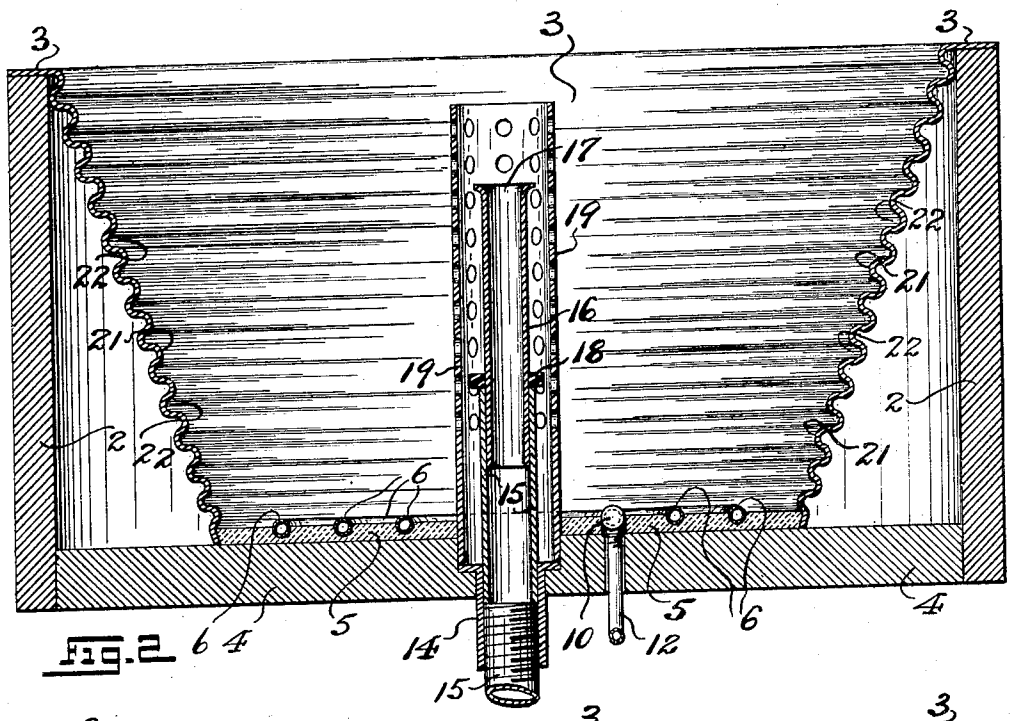


Fig. 2

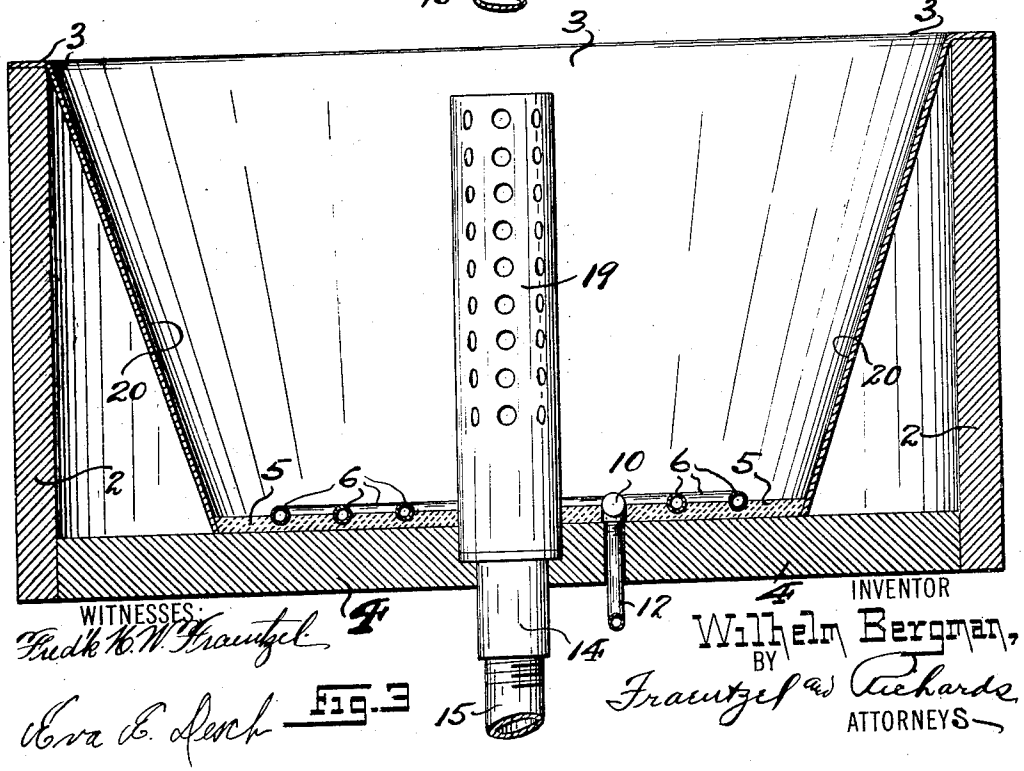


Fig. 3

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UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC WASHING APPARATUS OR TANK.

1,265,291. Specification of Letters Patent. Patented May 7, 1918.

Application filed November 14, 1917. Serial No. 201,923.

To all whom it may concern:

Be it known that I, WILHELM BERGMAN, a citizen of the United States, residing at Arlington, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Photographic Washing Apparatus or Tanks; 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 characters of reference marked thereon, which form a part of this specification.

The present invention relates, generally, to improvements in washing devices; and the invention has reference, more particularly, to a novel construction of washing device adapted to be used for washing photographic films, prints, etc.

The invention has for its principal object to provide a very simple, cheap and efficient device for washing photographic films, prints, and the like, the said washing device being provided with a novel construction and arrangement of means for circulating running water within the washing chamber, whereby not only is the water constantly changed during operation, but the same is also given a desired swirling action within the washing chamber, so that the films or prints are kept in motion and all parts of the same readily and thoroughly subjected to the cleansing effect of the water.

A further object of the invention is to provide a novel construction of washing chamber having walls of such character that they easily resist any tendency of the films or prints to lodge thereon and adhere thereto, so that the water is prevented from contacting thoroughly with all surfaces thereof.

Another object of the present invention is to provide a novel means for controlling and adjusting the water outlet of the washing chamber, so that the desired volume of circulating water is automatically attained and maintained within said washing chamber.

Other objects of the present invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the present invention.

With the various objects of the present invention in view, the said invention consists, primarily, in the novel washing device hereinafter set forth; and the invention consists, furthermore, in the several novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of said parts, all of which will be hereinafter more particularly described in the following specification, and then finally embodied in the clauses of the claims which are appended to the said specification and which form an essential part of the same.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a plan view of the novel washing device, made according to and embodying the principles of the present invention; Fig. 2 is a vertical transverse section through the same; Fig. 3 is a similar vertical transverse section, illustrating a slightly modified construction of the washing chamber of the device; and Fig. 4 is an enlarged detail longitudinal section, taken on line 4—4 in said Fig. 1, and illustrating, more particularly, the arrangement and construction of the water ejection outlets leading out of the water delivery devices.

Similar characters of reference are employed in all of the hereinabove described views, to illustrate corresponding parts.

Referring now to the said drawings, the reference character 1 indicates the complete washing device, made according to and embodying the principles of my present invention, the same comprising a tub or casing 2, which may be made of any suitable material. Arranged within and supported by said tub or casing 2, is an inverted frustum shaped basin 3, extending from the upper marginal edge of the tub or casing 2 downwardly and inwardly to the bottom 4 thereof. Said basin 3 is floored and sealed, preferably, with a suitable plastic material, such as wax, to provide a waterproof basin-bottom 5. I do not wish, however, to confine myself to the use of a plastic material for this purpose, since said basin-bottom 5 may be made of any other material, plastic or non-plastic, or might even be omitted, except for the sealing of the junction of said basin 3 with the tub bottom 4.

Embedded in said basin-bottom 5, or other-

wise suitably secured within the bottom of said basin 3, is a water-delivery device, the same comprising a spirally arranged or convolute delivery pipe 6, of a size substantially coextensive, in horizontal plane, with the bottom of said basin 3. The outer end of said delivery pipe 6 is provided with a suitable fitting 7, which serves to couple with such end a water supply pipe 8, having a portion 9 extending upwardly through the bottom 4 of said tub or casing 2 to communicating connection with said fitting 7. The inner end of said delivery pipe 6 is also provided with a suitable fitting 10, with which is connected a branch 11 of said water supply pipe 8, having a portion 12 extending upwardly through the bottom 4 of said tub or casing 2 to communicating connection with said fitting 10. By this arrangement the supply water is led into both ends of said water delivery pipe 6 under suitable pressure. The upwardly presented, exposed walls of said spiral or convolute water delivery pipe 6 are provided, at suitable intervals throughout its length, with a plurality of upwardly and forwardly inclined or oblique ejection perforations or jets 13. The supply water entering both ends of said delivery pipe 6, under suitable pressure, quickly fills the same, and is caused to spurt outwardly through said ejection perforations or jets 13 in tangentially directed jets or streams. The basin 3 being filled with water to the desired height or depth, these tangentially directed jets tend to set up a swirling current of water within the basin 3, so that the photographic films or prints deposited in the water for washing, are not only kept agitated or in motion, so that all portions of their opposite surfaces are presented to the cleansing contact of the water, but the moving current tends also to frictionally engage and quickly dislodge and dissolve from the films or prints the soluble chemicals contained therein.

Centrally disposed and suitably affixed to the bottom 4 of the tub or casing 2 is a bushing 14, through which screws an outlet or overflow pipe 15, which extends upwardly from the bottom of and into the interior of the basin 3. Telescopically related to the upper end of said overflow pipe 15 is a longitudinally adjustable extension 16, which may be vertically raised or lowered to elevate or depress the overflow receiving opening 17 in the end thereof, whereby governing and determining the desired volume of water to be maintained in circulation within said basin 3, according to the number of films or prints it is desired to wash. Slidably arranged upon the exterior of said extension 16 is a rubber gasket or washer 18, which, when properly adjusted, abuts against the end of said overflow pipe 15, and thus maintains said extension in desired adjusted relation thereto. Arranged to extend over and surround said overflow pipe 15 and its extension 16 is a suitable screen-device, such as the perforated tubular member 19, which is fixed, in any suitable manner, by its lower end to the bottom 4 of said tub or casing 2, and which prevents the films or prints, while being agitated within the basin during the washing process, from lodging against the overflow pipe and its extension in clogging relation to the opening 17 thereof. It will be understood that this screen member may be constructed in various ways, and that consequently I do not limit myself exclusively to the use of the perforated tubular member shown in the drawings.

The walls of the basin 3 being of inverted frustum shape, or downwardly and inwardly inclined, together with the fact that the water is ejected into the basin from the bottom with an initial swirling motion, provides a washing chamber of such character, that tendency to drive the prints or films into adhering engagement with the walls is eliminated. The said walls may be made of smooth interior surface, as at 20, in Fig. 3, or the said walls may be formed with a series or plurality of annular corrugations or ribs 21, as shown in Figs. 1 and 2 of the drawings. I prefer to use the latter construction, although I do not wish to limit myself entirely to such use. The reason for my preference in this respect is, that when a print or film does strike against such a corrugated wall, it engages the high points thereof, while the alternate intervening annular channels 22 permits the water to flow in back of the film or print, and immediately force the same away from the wall, so that there is not even a momentary adherence of the film or print to the wall.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction of the said parts, without departing from the scope of my invention as set forth in the foregoing specification, and as defined in the claims. Hence, I do not limit my invention to the exact arrangements and combinations of the various devices and parts as described in said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

I claim:—

1. In a device of the kind described, a basin of inverted frustum shape, a water delivery means secured to the bottom of and within said basin, said water delivery means having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, an overflow pipe leading out of said basin, a vertically adjustable extension connected

with said overflow pipe, and means for holding said extension in desired adjusted position.

2. In a device of the kind described, a basin of inverted frustum shape, a water delivery means secured to the bottom of and within said basin, said water delivery means having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, an overflow pipe leading out of said basin, a vertically adjustable extension connected with said overflow pipe, means for holding said extension in desired adjusted position, and a screen-member surrounding and protecting said overflow pipe and its extension.

3. In a device of the kind described, a basin of inverted frustum shape, a water delivery means secured to the bottom of and within said basin, said water delivery means having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, an overflow pipe leading out of said basin, a vertically adjustable extension connected with said overflow pipe, means for holding said extension in desired adjusted position, the walls of said basin having a plurality of annular corrugations formed therein.

4. In a device of the kind described, a basin of inverted frustum shape, a water delivery means secured to the bottom of and within said basin, said water delivery means having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, an overflow pipe leading out of said basin, a vertically adjustable extension connected with said overflow pipe, means for holding said extension in desired adjusted position, a screen-member surrounding and protecting said overflow pipe and its extension, the walls of said basin having a plurality of annular corrugations formed therein.

5. In a device of the kind described, a casing, an inverted frustum-shaped basin arranged within and supported by said casing, means rendering the bottom of said basin water-tight, a convolute water delivery pipe substantially coextensive in size with the bottom of said basin, a water-supply pipe, means connecting both ends of said convolute delivery pipe with said water-supply pipe, said convolute water delivery pipe having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, and an overflow means for leading the water out of said basin.

6. In a device of the kind described, a casing, an inverted frustum-shaped basin arranged within and supported by said casing, means rendering the bottom of said basin water-tight, a convolute water delivery pipe substantially coextensive in size with the bottom of said basin, a water-supply pipe, means connecting both ends of said convolute water delivery pipe having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, an overflow means for leading the water out of said basin, the walls of said basin having a plurality of annular corrugations formed therein.

7. In a device of the kind described, a casing, an inverted frustum-shaped basin arranged within and supported by said casing, means rendering the bottom of said basin water-tight, a convolute water delivery pipe substantially coextensive in size with the bottom of said basin, a water-supply pipe, means connecting both ends of said convolute water delivery pipe with said water-supply pipe, said convolute water delivery pipe having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, an overflow pipe leading out of said basin, a vertically adjustable extension connected with said overflow pipe, and means for holding said extension in desired adjusted position.

8. In a device of the kind described, a casing, an inverted frustum-shaped basin arranged within and supported by said casing, means rendering the bottom of said basin water-tight, a convolute water delivery pipe substantially coextensive in size with the bottom of said basin, a water-supply pipe, means connecting both ends of said convolute water delivery pipe with said water-supply pipe, said convolute water delivery pipe having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, an overflow pipe leading out of said basin, a vertically adjustable extension connected with said overflow pipe, and means for holding said extension in desired adjusted position, a screen-member surrounding and protecting said overflow pipe and its extension.

9. In a device of the kind described, a casing, an inverted frustum-shaped basin arranged within and supported by said casing, means rendering the bottom of said basin water-tight ,a convolute water delivery pipe substantially coextensive in size with the bottom of said basin, a water-supply pipe, means connecting both ends of said convolute water delivery pipe with said water-supply pipe, said convolute water delivery pipe having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, an overflow pipe leading out of said basin, a vertically adjustable extension connected with said overflow pipe, means for holding said extension in desired adjusted position, the walls of said basin having a plurality of annular corrugations formed therein.

10. In a device of the kind described, a cas-

ing, an inverted frustum-shaped basin arranged within and supported by said casing, means rendering the bottom of said basin water-tight, a convolute water delivery pipe substantially coextensive in size with the bottom of said basin, a water-supply pipe, means connecting both ends of said convolute water delivery pipe with said water-supply pipe, said convolute water delivery pipe having a plurality of ejection perforations or jets adapted to discharge the water in upwardly inclined tangential streams, an overflow pipe leading out of said basin, a vertically adjustable extension connected with said overflow pipe, means for holding said extension in desired adjusted position, a screen-member surrounding and protecting said overflow pipe and its extension, the walls of said basin having a plurality of annular corrugations formed therein.

In testimony that I claim the invention set forth above I have hereunto set my hand this 10th day of November, 1917.

WILHELM BERGMAN.

Witnesses:
FREDK. C. FRAENTZEL,
FREDK. H. W. FRAENTZEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."