

June 8, 1943.

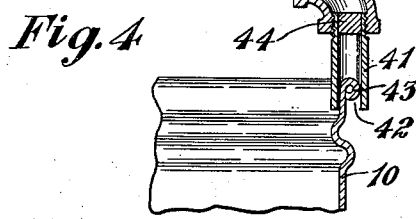
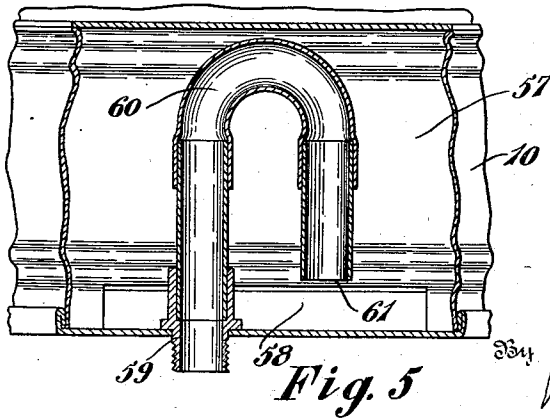
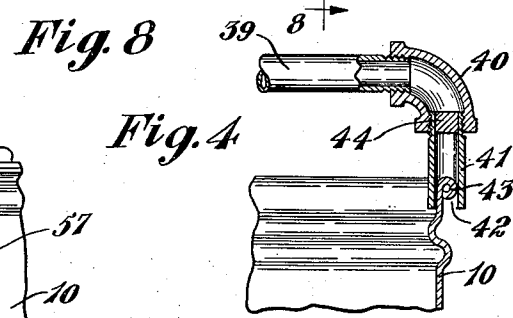
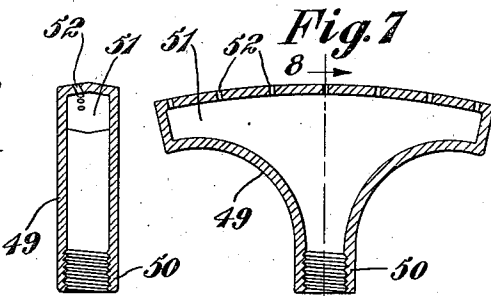
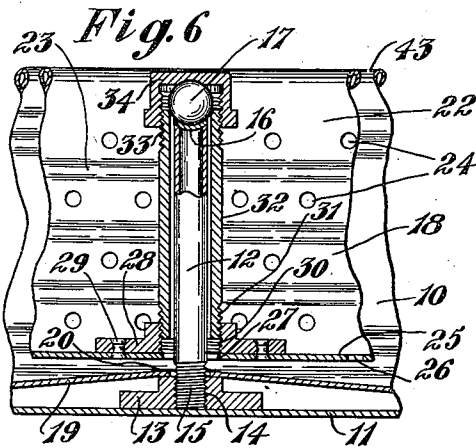
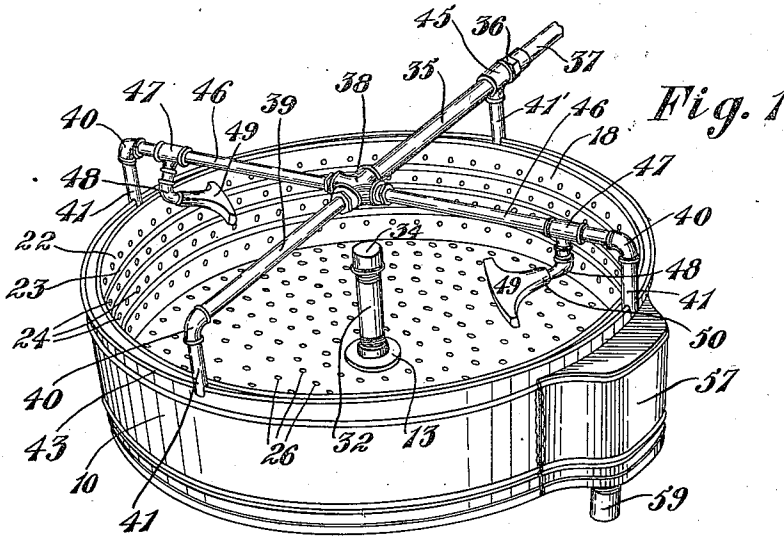
R. L. SWARTZ

2,321,435

PHOTOGRAPHIC PRINT WASHER

Filed March 1, 1941

2 Sheets-Sheet 1



Inventor

Richey L. Swartz

By *Freese & Bishop* Attorneys

June 8, 1943.

R. L. SWARTZ

2,321,435

PHOTOGRAPHIC PRINT WASHER

Filed March 1, 1941

2 Sheets-Sheet 2

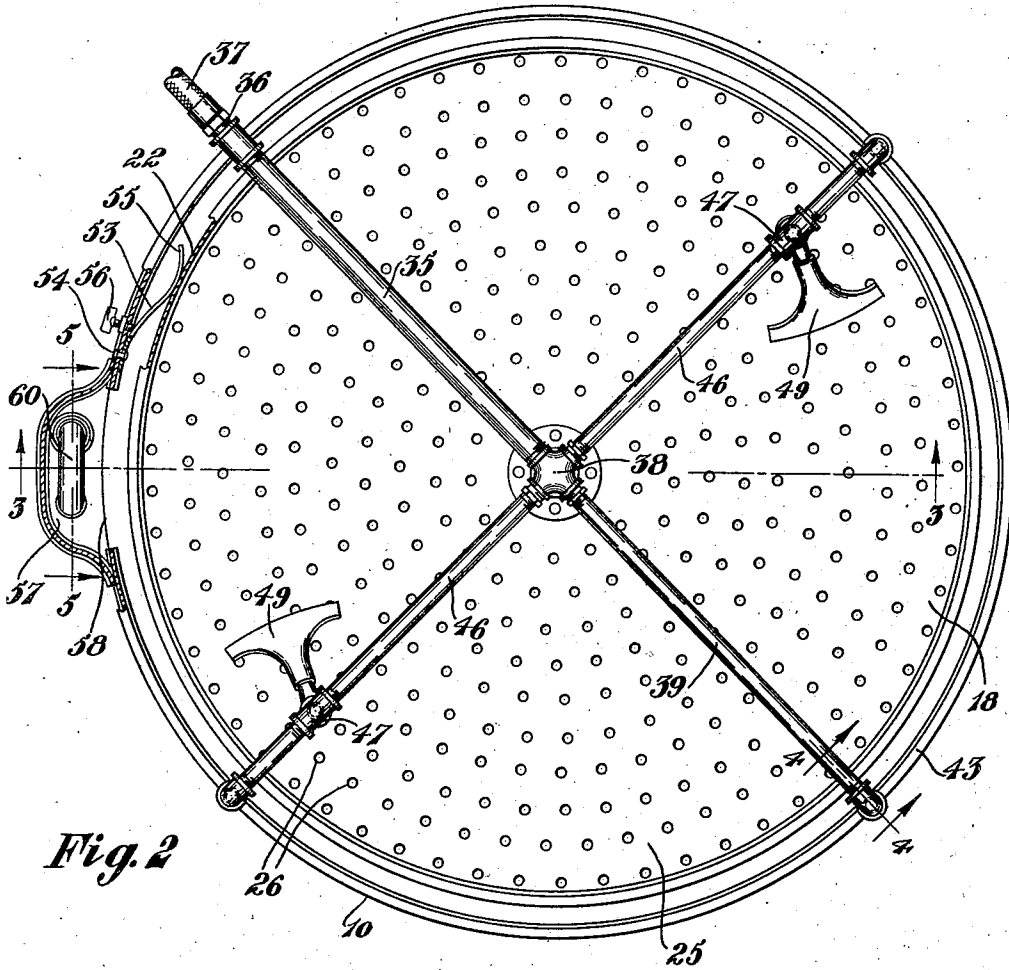


Fig. 2

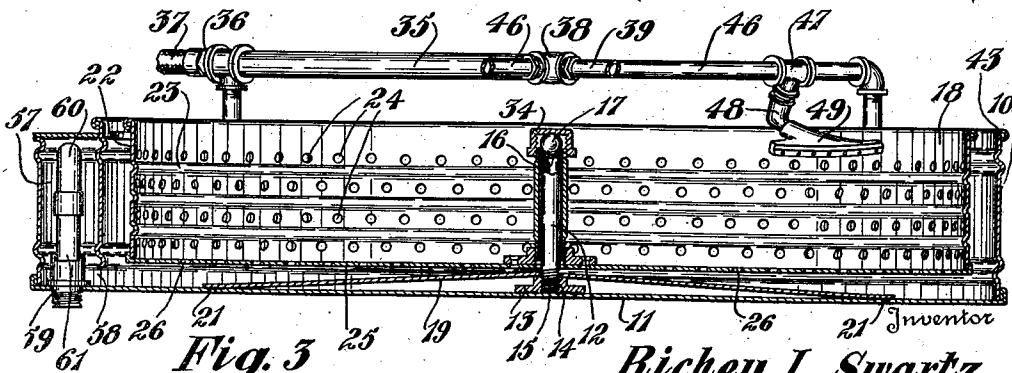


Fig. 3

Inventor
Richey L. Swartz

Freese and Bishop
Attorneys

UNITED STATES PATENT OFFICE

2,321,435

PHOTOGRAPHIC PRINT WASHER

Richey L. Swartz, Canton, Ohio, assignor of one-half to Kenneth B. Cope, Canton, Ohio

Application March 1, 1941, Serial No. 381,268

5 Claims. (Cl. 95—93)

The invention relates to apparatus for washing or rinsing photographic prints and the like.

It is an object of the invention to provide an apparatus through which water is continuously passed for washing or rinsing the prints and in which the prints are continuously moved through the water.

Another object is the provision of a novel nozzle arrangement for continuously rotating the tray in which the prints are being washed, causing the prints to continuously float around in the water in this tray.

A further object is the provision of a novel center post arrangement upon which the perforate print washing tray rotates.

The above objects together with others which will be apparent from the drawings and following description or which may be later referred to may be attained by constructing the improved print washing device in the manner illustrated in the accompanying drawings in which

Figure 1 is a perspective view of a print washing apparatus embodying the invention;

Fig. 2, an enlarged top plan view of the improved print washing apparatus;

Fig. 3, a transverse sectional view taken as on the line 3—3, Fig. 2;

Fig. 4, a fragmentary detail sectional view taken as on the line 4—4, Fig. 2, showing the manner in which the radial water pipes are supported above the print washing tray;

Fig. 5, a detail sectional view of the siphon taken as on the line 5—5, Fig. 2;

Fig. 6, an enlarged vertical sectional view of the center post upon which the perforate tray is rotatably mounted showing adjacent portions of the perforate tray and the outer housing of the apparatus;

Fig. 7, an enlarged sectional view through one of the spray nozzles or heads; and

Fig. 8, a section taken as on the line 8—8, Fig. 7.

Similar numerals refer to similar parts throughout the several views.

The improved print washing apparatus is mounted within an outer housing or tub 10 which may be of substantially cylindrical form and provided with the flat bottom 11 adapted to rest upon a table, work bench, or other horizontal support.

A center post 12 is concentrically mounted upon the flat bottom wall 11 of the outer housing or tub as by means of the flanged plate 13 attached to the bottom wall 11 by any suitable and well-known means and provided with the central tapped bore 14 which receives the screw threaded lower end 15 of the center post.

The upper end of the center post 12 has a cup 16 formed therein to receive the ball 17 upon which the perforate tray 18 is rotatably mounted, as will be later described.

The bottom wall 11 of the outer housing or tub may, if desired, be reinforced and strengthened by means of the central disk 19 having its central portion resting upon the top of the flanged plate 13 and provided with a central opening 20 to receive the center post 12, the peripheral portion of the disk 19 being spot welded or otherwise connected to the bottom wall 11, at a point near the periphery thereof, as shown at 21.

The side wall 22 of the rotatable tray 18 may be provided with the internal annular corrugations 23 as shown in Figs. 1, 3 and 6, and is provided throughout practically its entire area with a great multiplicity of apertures 24, the bottom wall 25 of said tray being also provided throughout its area with a multiplicity of similar apertures 26.

The internal corrugations or ribs 23 are provided in the perforate tray for the purpose of preventing the prints being washed from laying against the inner wall of the perforate tray and adhering thereto.

These ribs will hold the prints slightly away from the wall of the tray permitting water to come through the perforations 24 and wash the prints loose from the tray.

The bottom wall 25 of the rotatable tray 18 has a central aperture 27 fitting loosely around the center post 12 and the flanged plate 28 is connected to the central portion of this bottom wall as by the rivets 29.

A central tapped bore 30 is provided in the flanged plate 28 for receiving the threaded lower end 31 of the tube 32 which loosely surrounds the center post 12, the upper end of said tube being threaded as at 33 and inserted into the threaded lower portion of the cap 34 which rests upon the ball 17 so that the perforate tray 18 is rotatably supported upon said ball.

Water is conveyed to the apparatus through the inlet pipe 35 having a hose coupling 36 at its outer end to which a hose, as indicated at 37, may be connected for supplying water, from a faucet or other source of supply.

The inner end of the pipe 35 may be connected to a pipe cross 38 at substantially the center of the device, a pipe or rod 39 being connected to said pipe cross diametrically opposite to the pipe 35 and provided at its outer end with an elbow 40 to which is connected the depending leg 41

slotted at its lower end as at 42 to straddle the rim bead 43 of the outer housing or tub.

A plug 44 is provided for preventing water from being discharged from the pipe 39.

A slotted leg 41' may be connected to the outer end of the inlet pipe 35 as by the T-coupling 45 for supporting the pipe assembly above the top of the tub and perforate tray.

The spray nozzle pipes 46 are connected to the pipe cross 38 at diametrically opposite sides thereof and preferably at right angles to the inlet pipe 35 and each of these pipes has connected thereto a T-coupling 47 to which may be attached an elbow 48 carrying the spray nozzle or head 49.

Each of these spray nozzles may be of the form shown in the drawings having the reduced interiorly threaded neck 50 for connection to the elbow and the flared or fan shaped nozzle portion 51 provided with the downwardly inclined apertures 52 at its outer edge.

A depending slotted leg 41 may be connected to the outer end of each pipe 46 as by an elbow 40 for supporting the same above the tub, and these pipes may be plugged in the manner shown in detail in Fig. 4, whereby water entering the piping from the hose 37 will be discharged only through the apertures 52 of the spray nozzles 49.

As shown in the drawings, the nozzles 49 are preferably adjusted so as to be inclined slightly downward toward the tray 18, the front edges of these nozzles being located substantially radially of the tray and the nozzles being disposed on opposite sides of the pipes 46 as best shown in Figs. 1 and 2 whereby the force of the sprays of water discharged therefrom will cause the tray 18 to rotate in a clockwise direction as viewed in Fig 2.

The T-couplings 47 are adjustably mounted upon the pipes 46 so as to be rotated around the pipes to any desired position and the elbows 48 are adjustably connected to the T-couplings so as to be swung around to any desired position relative thereto, and the spray nozzles 49 are adjustably mounted upon the elbows so as to be tilted to any desired angle.

This provides for complete adjustment of the spray nozzles in any direction and at any angle so as to easily and quickly accommodate the device to different conditions or weights of prints being washed.

For the purpose of preventing the tray from being rotated too rapidly brake means may be provided in the form of a leaf spring 53 connected to the inner wall of the tub 10 as by a rivet 54 or the like, the free curved end 55 of the spring frictionally bearing upon the periphery of the tray 18, as shown in Fig. 2.

Tension upon the spring 53 may be regulated as by an adjusting screw 56.

In operation it is desirable that the tray 18 rotate about three revolutions per minute. It will be obvious that as the tray 18 is rotated the prints being washed or rinsed will be caused to continuously float around in the water.

For the purpose of periodically discharging the water from the perforate tray 18 so as to continuously remove any chemicals which are washed from the prints and admit fresh water thereto, a siphon is provided which is shown in detail in Fig. 5.

For this purpose a discharge compartment 57 may be formed upon one side of the tub, com-

municating with the interior of the tub through an opening 58 near the bottom thereof.

The drain pipe 59 is located through the bottom wall of the compartment 57 and has a siphon connected thereto in the form of the goose-neck pipe 60 which extends from the drain pipe 59 upward to a point near the top of the compartment and terminates in the open end 61 located at about the level of the bottom wall 25 of the perforate tray 18.

In the operation of the improved print washer, water is admitted through the hose 37 and discharged from the spray nozzles 49 into the perforate tray 18 causing the same to slowly rotate in a clockwise direction as viewed in Fig. 2.

The prints to be washed are placed in the tray 18 and will continuously float around in the same.

As the water level in the device reaches the top of the goose-neck pipe 60, this pipe will act as a siphon discharging the water from the device until the water level reaches the lower open end 61 of the siphon pipe when the suction will be broken and the tray will again begin to fill with water.

This siphoning action will be repeated periodically throughout the operation of the apparatus removing the chemically polluted water from time to time and admitting fresh water for washing the prints.

It will be seen that the entire spray pipe assembly or spider is removably mounted upon the tub 10, and may be removed therefrom as a unit without the necessity of disconnecting the pipe assembly from the water supply.

The perforate tray 18 may then be lifted out of the tub permitting cleaning of the interior of the tub and the exterior of the perforate tray if necessary.

I claim:

1. Print washing apparatus including a tub, a center post in the tub extending to a point near the top of the tub, a cup at the top of the center post, a ball in said cup, a tray comprising perforate bottom and side walls rotatable in said tub and having a center opening receiving said center post, a center tube fixed to the perforate tray and surrounding the center post, the upper end of the center tube being closed and supported upon said ball, a water supply pipe located radially above the tub and tray and extending to a point above the center of the tray, a spray nozzle pipe located diametrically above the tub and tray and connected at its center to the inner end of the water supply pipe, oppositely disposed, forwardly flared, downwardly inclined spray nozzles depending from said spray nozzle pipe on each side of the center thereof for delivering water tangentially into the tray for whirling the water therein and rotating the tray, a radially disposed rod connected to and aligned with the water supply pipe, and depending legs upon the water supply pipe, spray nozzle pipe and rod and having forked lower ends for detachable engagement with the rim of the tub at four equally spaced points.

2. Print washing apparatus including a tub, a center post in the tub extending to a point near the top of the tub, a cup at the top of the center post, a ball in said cup, a tray comprising perforate bottom and side walls rotatable in said tub and having a center opening receiving said center post, a center tube fixed to the perforate tray and surrounding the center post, the upper end

of the center tube being closed and supported upon said ball, a water supply pipe located radially above the tub and tray and extending to a point above the center of the tray, a spray nozzle pipe located diametrically above the tub and tray and connected at its center to the inner end of the water supply pipe, oppositely disposed, forwardly flared, downwardly inclined spray nozzles depending from said spray nozzle pipe on each side of the center thereof for delivering water tangentially into the tray for whirling the water therein and rotating the tray, a radially disposed rod connected to and alined with the water supply pipe, and depending legs upon the water supply pipe, spray nozzle pipe and rod and having forked lower ends for detachable engagement with the rim of the tub at four equally spaced points, and spring brake means in the tub in constant frictional contact with the tray for controlling the speed of rotation of the tray.

3. Print washing apparatus including a tub, a center post in the tub extending to a point near the top of the tub, a cup at the top of the center post, a ball in said cup, a tray comprising perforate bottom and side walls rotatable in said tub and having a center opening receiving said center post, a center tube fixed to the perforate tray and surrounding the center post, the upper end of the center tube being closed and supported upon said ball, a water supply pipe located radially above the tub and tray and extending to a point above the center of the tray, a spray nozzle pipe located diametrically above the tub and tray and connected at its center to the inner end of the water supply pipe, oppositely disposed, forwardly flared, downwardly inclined spray nozzles depending from said spray nozzle pipe on each side of the center thereof for delivering water tangentially into the tray for whirling the water therein and rotating the tray, a radially disposed rod connected to and alined with the water supply pipe, and depending legs upon the water supply pipe, spray nozzle pipe and rod and having forked lower ends for detachable engagement with the rim of the tub at four equally spaced points, and spring brake means in the tub in constant frictional contact with the tray for controlling the speed of rotation of the tray, and screw means for regulating the tension of the brake means.

4. Print washing apparatus including a tub, a center post in the tub extending to a point near the top of the tub, a cup at the top of the center post, a ball in said cup, a tray comprising perforate bottom and side walls rotatable in said

tub and having a center opening receiving said center post, a center tube fixed to the perforate tray and surrounding the center post, the upper end of the center tube being closed and supported upon said ball, a water supply pipe located radially above the tub and tray and extending to a point above the center of the tray, a spray nozzle pipe located diametrically above the tub and tray and connected at its center to the inner end of the water supply pipe, oppositely disposed, forwardly flared, downwardly inclined spray nozzles depending from said spray nozzle pipe on each side of the center thereof for delivering water tangentially into the tray for whirling the water therein and rotating the tray, a radially disposed rod connected to and alined with the water supply pipe, and depending legs upon the water supply pipe, spray nozzle pipe and rod and having forked lower ends for detachable engagement with the rim of the tub at four equally spaced points, and means for adjusting said spray nozzles around the axis of the spray nozzle pipe and upon an axis radial to the spray nozzle pipe.

5. Print washing apparatus including a tub, a center post in the tub extending to a point near the top of the tub, a cup at the top of the center post, a ball in said cup, a tray comprising perforate bottom and side walls rotatable in said tub and having a center opening receiving said center post, a center tube fixed to the perforate tray and surrounding the center post, the upper end of the center tube being closed and supported upon said ball, a water supply pipe located radially above the tub and tray and extending to a point above the center of the tray, a spray nozzle pipe located diametrically above the tub and tray and connected at its center to the inner end of the water supply pipe, oppositely disposed, forwardly flared, downwardly inclined spray nozzles depending from said spray nozzle pipe on each side of the center thereof for delivering water tangentially into the tray for whirling the water therein and rotating the tray, a radially disposed rod connected to and alined with the water supply pipe, and depending legs upon the water supply pipe, spray nozzle pipe and rod and having forked lower ends for detachable engagement with the rim of the tub at four equally spaced points, and means for adjusting said spray nozzles around the axis of the spray nozzle pipe and upon an axis radial to the spray nozzle pipe, and for rotating each spray nozzle around its own axis.

RICHEY L. SWARTZ.