June 30, 1931. H. J. BRUNK 1,812,470

MEANS FOR WASHING BLUE PRINTS AND OTHER PHOTOPRINTS

Filed Feb. 18 1928

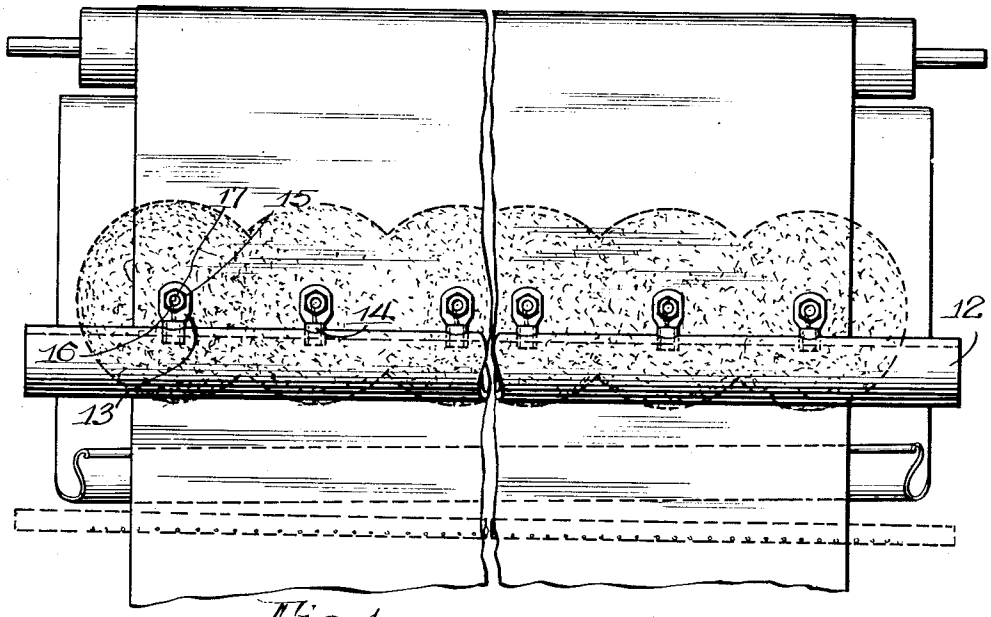


Fig. 1

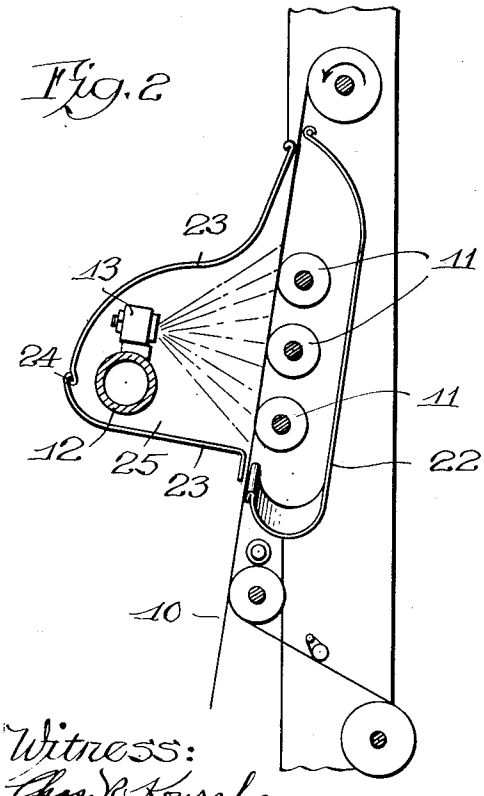


Fig. 2

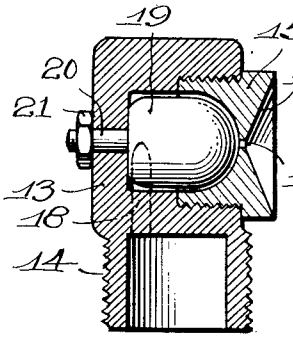


Fig. 3

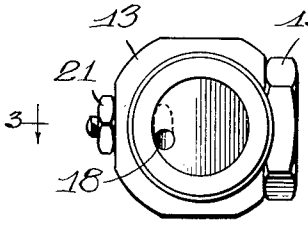


Fig. 4

Witness:
Chas. R. Kourse.

Inventor,
Harold J. Brunk,
Geo. Bayard Jones Atty.

Patented June 30, 1931

1,812,470

UNITED STATES PATENT OFFICE

HAROLD J. BRUNK, OF CHICAGO, ILLINOIS, ASSIGNOR TO C. F. PEASE COMPANY, A CORPORATION OF DELAWARE

MEANS FOR WASHING BLUE PRINTS AND OTHER PHOTOPRINTS

Application filed February 18, 1928. Serial No. 255,482.

My invention relates to improvements in means for washing blue prints and other photoprints.

In making blue prints, white prints, brown line prints and other photoprints of like character, where the prints are run continuously through a printer and are then washed, fixed and dried in a series of consecutive steps, the washing is a very important operation, and up to the present time has not been accomplished in a manner that is entirely satisfactory.

Several methods have been in use, each having certain disadvantages. If the paper is pulled through a body of water at rest in a suitable receptacle, either a very long period of time is required to thoroughly wash away the chemicals, or a very long tank must be used to effect the work in a fairly satisfactory manner. Where ordinary sprays of water are used, such as are supplied by a row as small holes in a pipe, the individual streams of water striking against the paper cause uneven washing, particularly where the paper is thin. The streams of water may broaden out and run together below the sprays and flow down the paper as a continuous sheet of water, but the washing is nevertheless unequal because of the lack of continuity of the water near the source. This inequality, particularly in the case of thin paper, results in streaked blue prints and negatives, and also causes numerous wrinkles which are very hard to straighten out in the drying operation.

The object of the present invention is to overcome these difficulties and to accomplish the washing in a more thorough manner and with much less water than has been employed heretofore.

A contributory object is to apply the water to the prints in the form of a series of small sprays of considerable width which overlap each other and which not only have a whirling motion, but strike the paper at high speed and drive off the chemicals very effectively.

A further object is to provide an improved nozzle for such spray.

In the accompanying drawings I have illustrated one embodiment of the invention.

Fig. 1 is an elevation of the improved apparatus,

Fig. 2 is a side elevation thereof,

Fig. 3 is a section on a larger scale of one of the nozzles, and

Fig. 4 is a top plan view thereof.

A long wide sheet of sensitized paper 10, such as blue print paper, is shown in Figs. 1 and 2 as being caused to travel downwardly past a series of rollers 11 which form a backing for the same and reduce the noise caused by the fluttering or vibrating of the paper. Water is supplied from any suitable source through a tube 12, having a series of nozzles 13 mounted thereon. Each nozzle has a screw threaded extension 14, screwed into the pipe 12 and has a screw threaded outlet at right angles thereto. Said outlet receives a screw threaded cylindrical member 15 having a widely flaring outlet 16 and a small opening 17, communicating with a chamber in the interior of the body 13. An opening 18 also connects said interior chamber with the inlet or space in the screw threaded extension 14. The opening 18 enters the inner chamber tangentially, causing the water to flow therethrough to the outlet 17 with a circular motion. Said inner chamber is nearly filled by a plug or deflector 19 having a stem 20 thereon screw threaded at the end to receive a nut 21, whereby said plug is held in place. The diameter of said plug is a little less than the diameter of the interior opening, leaving a small annular clearance space communicating with the opening 17. The water in passing around this deflector rotates, and due to the small size of the opening 17, passes through the latter at considerable pressure, whereby it is ejected in a fine spray, flowing at high speed and with a rotary motion.

The size of the opening 17, and surrounding parts, may vary, depending on the service for which the nozzle is designed and in the case where ordinary blue print paper is being washed, the spray of water strikes the paper in a circle several inches in diameter and in the form of a high speed mist, which insures very quick and thorough washing by driving off the chemicals.

As shown in Fig. 1, the circular areas of the several sprays overlap, resulting in a uniform washing action entirely across the sheet, even though the latter may be several feet wide.

To prevent the water from splashing, a sheet metal collector 22 is provided on the side of the rollers 11 opposite the nozzles and is curved at the bottom in the form of a trough which is inclined from one side to the other as shown in Fig. 1, to drain off the surplus water which is delivered over the edges of the paper. The nozzles themselves are preferably enclosed in a sheet metal cover 23 which may be hinged at 24 to facilitate convenient access to the nozzles. Suitable end castings 25 carry the entire assembly so that the structure as a whole may constitute a unit readily applicable to an existing machine.

As will be seen, the nozzles are so constructed that they may be taken apart readily and cleaned if necessary.

What I claim is:

1. In a print washing machine, a plurality of nozzles spaced to deliver overlapping sprays, means for delivering liquid to said nozzles, means for moving a sheet of light sensitive material through said sprays, a series of rollers behind and in contact with said sheet for supporting the same against the action of said nozzles, and complementary enclosure members for said nozzles and rollers, said members being positioned with their upper and lower edges disposed adjacent the portion of the paper being washed but spaced sufficiently to permit the passage of the paper between the same.

2. In a print washing machine, a plurality of nozzles spaced to deliver overlapping sprays, means for delivering liquid to said nozzles, means for moving a sheet of light sensitive material through said sprays, a series of rollers behind and in contact with said sheet for supporting the same against the action of said nozzles, and an enclosure for said nozzles and rollers and that portion of the paper being washed, said enclosure having upper and lower transverse openings to permit the continuous passage of paper through the same.

In testimony whereof, I have subscribed my name.

HAROLD J. BRUNK.