H. GOETZE.

SPRAYING AND COLLECTING DEVICE FOR LIQUIDS.

APPLICATION FILED JULY 6, 1918.

1,278,329. Patented Sept. 10, 1918.

FIG. 1.

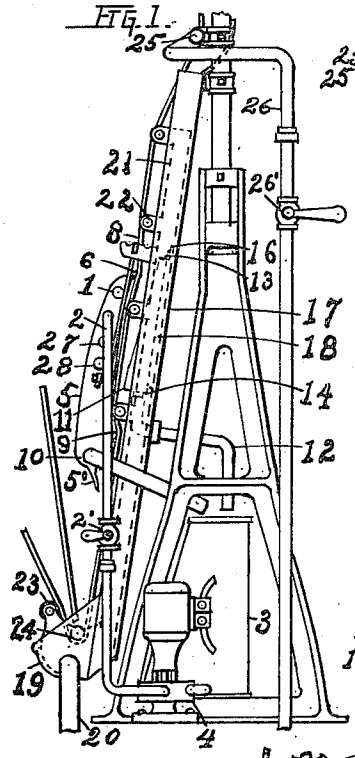


FIG. 2.

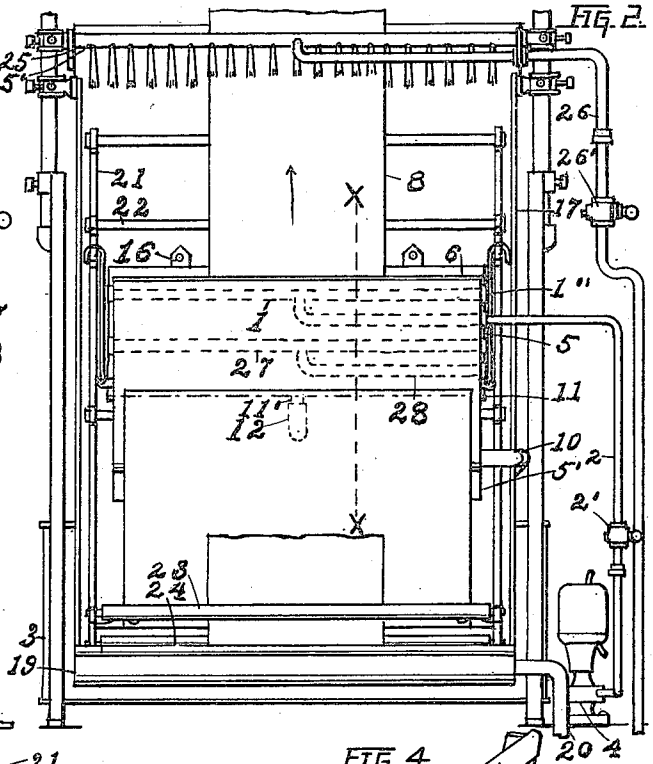


FIG. 3.

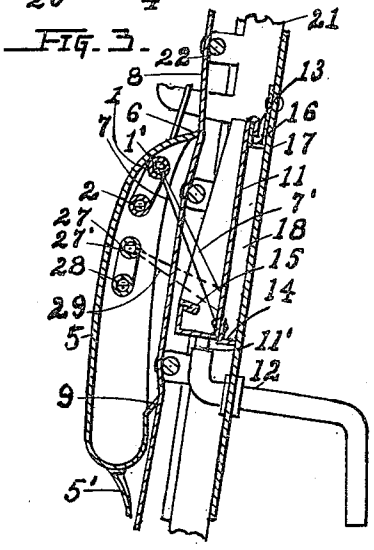
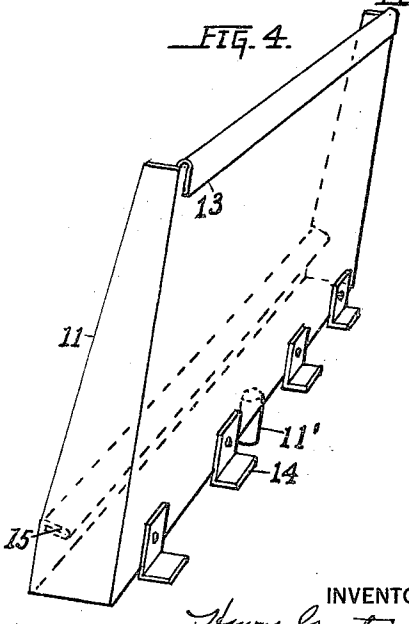


FIG. 4.



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SPRAYING AND COLLECTING DEVICE FOR LIQUIDS.

1,278,329. Specification of Letters Patent. Patented Sept. 10, 1918.

Application filed July 6, 1918. Serial No. 243,550.

To all whom it may concern:

Be it known that I, HENRY GOETZE, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Spraying and Collecting Devices for Liquids, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in spraying and collecting devices for spraying and collecting liquids, and the objects of my improvements are, first: to provide extremely simple, substantial and durable devices of this class, which shall spray sheets of paper or other material with a chemical solution and collect for subsequent use, all of the excess of said solution above what is actually used, regardless of the widths of the sheets of material, sprayed and do the same without any adjustment of the devices to the widths of said sheets and without any attention or care, second; to so shape and proportion the devices that they shall be adapted to spray said sheets and collect the excess of two different solutions, used one at a time, third; to so construct and arrange the devices that they can easily and quickly be attached to and detached from spraying machines now in use and that the parts of the devices shall be readily separable for cleaning and for other purposes, fourth; to so construct the devices that they shall occupy the minimum amount of space and be cheap in cost of manufacture.

I attain these objects by the devices illustrated in the accompanying drawings, in which:

Figure 1 is a side view of the devices, as they appear when attached to a liquid spraying machine. Fig. 2 is a front view of the parts seen in Fig. 1. Fig. 3 is an enlarged transverse section in detail, of the spraying and collecting devices, on the line X X, seen in Fig. 2, looking toward the left. Fig. 4 is an enlarged detailed view in perspective, of the solution collector.

The spray tube 1 has a plurality of spray apertures 1′ formed through one of its sides, as seen in Fig. 3. The ends of said tube are closed by caps 1″, secured thereon, as seen in Fig. 2. The center of said tube is connected with the chemical solution supply pipe 2, through which a chemical solution is pumped from tank 3, by pump 4. Since said pump and its electrical driving means may be of any one of the various forms now in use, the same are neither shown nor described in detail. Said tube is mounted in the surplus solution collector 5, which latter has scraper 6 connected with its upper edge, for scraping the surplus of sprayed solution 7 from the sprayed surface of paper 8, while said paper is moved upward against and past said scraper.

Scraper 9 is secured on the upper edge of the inner wall of collector 5, which wall extends a short distance above the bottom of said collector, as seen in Fig. 3.

Said surplus collector forms no part of my invention, but is used in conjuction with my devices.

The excess amount 7′ of said sprayed solution passes the edges of paper 8 into the excess solution collector, and gravitates therefrom through nipple 11′ and excess discharge pipe 12 into tank 3. Said nipple is formed with collector 11 and is telescoped into the upper end portion of said discharge pipe. Said collector has hook 13 formed on the upper edge of its back, has space plates 14 secured on the lower edge of its back and the downwardly and inwardly inclined flange 15 formed on the upper edge of its front wall, as seen in Figs. 3 and 4. Hook 13 is hook engaged with the plurality of bracket hooks 16, which latter are secured on the front surface of the back of the water collector 17. Said hooks and space plates support collector 11 in the position shown in Fig. 3, with the space 18 between it and the back of said water collector, through which space water or any other liquid can freely gravitate.

Water collector 17 has trough 19 formed on its lower end with which pipe 20 (of which but part is shown,) is connected.

Said pipe acts as an outlet pipe for waste water and may lead into a sewer or any other receptacle for waste water.

Referring to Figs. 1 and 2, the two guide frame sides 21 have the ends of guide rods 22 secured therein forming a frame, which is loosely mounted in water collector 17, with its lower end resting in trough 19.

The ends of guide rollers 23 and 24 are rotatably mounted in the lower end portions of said frame sides.

Said rollers and guide rods guide paper 8 from its unshown source of supply, through

the upper portion of trough 19, thence past scrapers 9, solution spray tube 2 and scraper 6, to the rigidly supported water spray tube 25, which acts as a guide rod for said paper and also as a scraper for scraping surplus water from the latter.

Said water spray tube 25 has spray apertures 25′ formed therein and water supply pipe 26 connected with its central portion. The unshown part of pipe 26 is connected with an unshown source of water supply, for supplying water under pressure to said spray tube.

In operation, with the parts in the position shown in Figs. 1, 2 and 3, water is forced under pressure into water spray tube 25, thence through apertures 25′, onto the upper portion of paper 8, whence said water gravitates along the surface of said paper until it reaches scraper 6. Said scraper directs said water onto the outer surface of collector 5, whereon it gravitates and passes onto the outer surface of water guide 5′, whence said water gravitates onto the lower portion of paper 8, for washing the surface of the lower portion of said paper. Said water gravitates on said paper, until it reaches roller 24, thence into trough 19 and out through waste water pipe 20, into the previously mentioned unshown receptacle.

Where the paper 8 is narrower than the full limits of the machine, as shown, the excess amount of water sprayed from apertures 25′ passes the edges of said paper and strikes the inner surface of the back of water collector 17, on which it gravitates into trough 19 and thence with the previously described waste water.

As the thus sprayed lower portion of paper 8 moves upward it passes scraper 9, which scrapes the surplus water from said pipe. This surplus water gravitates from said scraper, on the adjacent surface of said paper and mingles with the previously described water which gravitates from the surface of water guide 5′, and is discharged with it.

While the thus washed and scraped lower portion of paper 8 is moving between spray tube 1 and excess solution collector 11, said paper is sprayed with a chemical solution from tank 3, pumped therefrom by pump 4, through pipe 2, into spray tube 1, and thence through spray apertures 1′ against paper 8. That portion of the thus sprayed solution 7, which strikes the surface of said paper gravitates thereon against the upper surface of scraper 9 and is thereby directed into the lower portion of collector 5, from which said solution gravitates through pipe 10, into tank 3, for subsequent use.

As said paper is drawn past the edge of scraper 6, the surplus amount of said solution is thereby scraped from said paper. Said surplus solution gravitates on said paper, mingles with the previously described solution 7 and is discharged therewith into tank 3.

The excess amount of said solution passes the edges of paper 8, as seen at 7′ in Fig. 3, and strikes the inner surface of the back of excess solution collector 11 and gravitates thereon into the lower portion of said collector. Said excess solution gravitates thence through nipple 11′ and pipe 12 into tank 3 for subsequent use.

The thus washed and chemically treated paper passes upward from scraper 6 to water spray tube 25, during which movement said chemical solution is washed from the upper portion of said paper, by the action of the previously described sprayed water. As said paper is drawn past and against tube 25, said tube acts as a scraper and scrapes the surplus portion of said water from said paper. Said surplus water gravitates from said tube along the surface of said paper and mingles with the previously described sprayed water.

Pipes 2 and 26 are provided with cocks 2′ and 26′ respectively, whereby the volumes of liquids flowing therethrough are regulated.

Solution collector 5 is provided with another solution spray tube 27, mounted therein, which tube has spray aperture 27′ formed therethrough, as seen in Fig. 3. The central portion of said other spray tube is connected with another solution supply pipe 28, the outer end of which is adapted to be connected with another source of supply of chemical solution.

Since said other source of solution supply may be either an elevated tank or a tank supplied with a pump similar to pump 4, said source of supply is neither shown nor described.

It will be seen in Fig. 3, that the lower flanged portion of collector 11 is below alinement with the spray of said other chemical solution, which is indicated by dotted lines 29, and that said collector is adapted to collect the excess portion of said other solution. In this case a piece of hose not shown, leads from pipe 12 into another solution tank (not shown,) placed adjacent to tank 3.

Cap 1″ and coupling 2″ can be removed from their respective pipes 1 and 2, after which said pipes can be removed from collector 5. Collector 11 can be lifted from the position seen in Fig. 3, until its hook 13 is disengaged from the bracket hooks 16 and its nipple 11′ is disengaged from pipe 12, after which said collector can be lifted from the water collector 17, as seen in Fig. 4, for separating the parts.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The combination with a water collec-

tor mounted in an inclined position of a chemical solution collector mounted in said water collector with a space between said collectors for permitting water to freely flow therebetween; a chemical solution spray tube mounted horizontally with a space between said tube and solution collector, said tube being adapted to direct a spray of liquid onto sheets of material of various widths such as paper and the like while said sheets are drawn through the last mentioned space; a solution tank; and solution conducting means whereby solution is conducted from said solution collector into said tank.

2. A solution collector of pan formation said collector being supported in an inclined position for collecting solution in its lower portion; an anti-splash flange formed on the edge of said lower portion; space plates secured on the lower edge of the back of said collector; a hook formed on the upper edge of the back of said collector; a water collector of pan formation, said collector being used in an inclined position; a plurality of bracket hooks secured on the inner surface of the back of said water collector, said bracket hooks having the first mentioned hook engaged thereon, said hooks and space plates supporting said solution collector in said water collector with a space between them for permitting water to flow freely through said space; and spraying means whereby a sheet of material such as paper and the like is sprayed with a chemical solution, said chemical collector being so positioned with relation to said spraying means and paper that said solution collector collects all of the excess solution which passes the edges of said paper.

3. The combination with a water collector mounted in an inclined position, of an excess solution collector mounted in said water collector with a space between said collectors for permitting free passage of water between said collectors; a chemical solution tank and solution conducting means whereby solution is conducted from said solution collector into said tank.

4. A water collector of pan formation said collector being supported in an inclined position; a solution collector supported in said water collector with a water passage between them; a solution discharge pipe passed through the central portion of the back of said water collector at a point below the bottom of said solution collector and terminating in an upturned end portion; a nipple formed with the central portion of the bottom of said solution collector, said nipple having its lower end portion detachably fitted into the upturned end of said discharge pipe; and securing means whereby said solution collector is detachably secured in place.

5. An excess solution collector of pan formation said collector being mounted in an inclined position for collecting solution in its lower portion; a plurality of spray tubes mounted horizontally in front of said solution collector for spraying with different solutions a sheet of paper passed between said tubes and said collector which latter is so positioned that it collects all of the solution that passes said sheet; and discharging means connected with the lower portion of said collector for discharging solution therefrom into a tank.

In testimony whereof I affix my signature.

HENRY GOETZE.

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