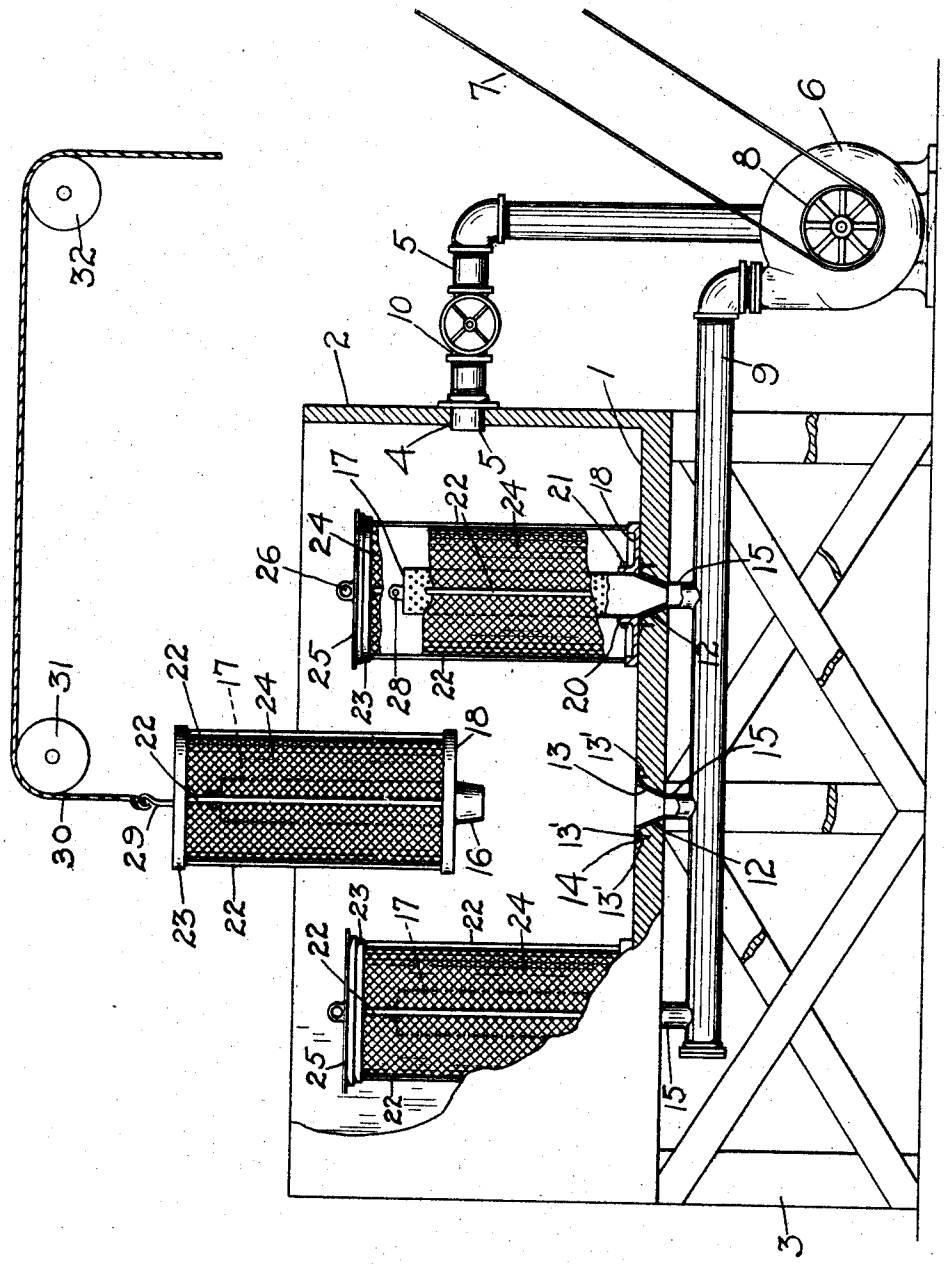
J. FRIEDRICHS.

DYEING APPARATUS.

APPLICATION FILED MAY 18, 1908.

907,229.

Patented Dec. 22, 1908.



WITNESSES.

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JAMES FRIEDRICHS, OF WOONSOCKET, RHODE ISLAND.

DYEING APPARATUS.

No. 907,229. Specification of Letters Patent. Patented Dec. 22, 1908.

Application filed May 18, 1908. Serial No. 433,423.

To all whom it may concern:

Be it known that I, JAMES FRIEDRICHS, a citizen of the United States, residing at Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Dyeing Apparatus, of which the following is a specification.

My invention relates to dyeing apparatus and has for its essential objects the thorough and complete application of dye to textile rovings; novel means for mounting the receptacle and its inclosed parts in the vat floor; means for detaching the holder and inclosed parts from their seat; improved means creating a circulation of the dye liquors through the holders; and simplicity, cheapness, and convenience, both in construction and operation.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

In the accompanying drawings which form a part of this specification, the drawing is a side elevation partially in central longitudinal section of a dyeing apparatus, embodying my invention.

In the drawings, 1 represents the floor and 2 the walls of a dyeing vat mounted upon a suitable base or frame 3. In the end wall of the vat is an opening, 4, in which is the end of a pipe, 5, leading outwardly and downwardly into a pump, 6, of the usual form, driven from any convenient source of power through the belt, 7, by the pulley, 8.

9 is the pump eduction pipe, which runs longitudinally of and beneath the center of the floor of the vat.

10 is a shut off valve in the pump induction pipe.

The floor, 1, of the vat is provided centrally and at intervals throughout its length with conical openings, 12, and in each opening is fixed a tapering or frusto-conical inclined plate, 13, provided upon its upper end with a retaining flange, 14, and upon its lower end, connected to or integral with a pipe 15, entering the pipe, 9. The plate, 13, is held in place by screws 13′ in the flange, 14. The plate, 13, constitutes a tight seat for the conical lower end portion, 16, of the perforated spraying tube, 17. The holder or cage base consists of a circular copper plate, 18, provided with a central opening to receive the tube, 17, and an upturned flange, 20, around the opening and bearing against the side of the tube at a point above the conical portion, 16, thereof. Screws, 21, passing through the flange, 20, and entering the wall of the tube, unite the base, 18, and the tube. The base, 18, may be united to the tube in any other convenient manner. Rods, 22, upon the base support an annular head, 23. The head and base are connected by reticulated material which forms the side, 24, of the cage or holder. A removable cover, 25, having a hand hold, 26, is provided to engage the head, 23. The tube, 17, preferably terminates below the plane of the head, 23, and is provided upon its upper end with a ring, 28, adapted to be engaged by a hook, 29, upon the end of a rope, 30, passing over rollers, 31 and 32, mounted in a convenient manner above the vat. In place of an independent ring, 28, the upper end of the tube, 17, may be flattened and perforated to form an integral ring.

The operation of my structure is as follows: The rovings or other materials to be dyed are placed in the cage around the tube, 17, and the cage placed in position in the vat, with tube end, 16, resting tightly in the plate, 12. The dye liquor is forced by the pump, 6, through the pipes, 10 and 9, thereby propelling the liquor through the perforations of the tubes, 17, into and through the material around the tube. It is desirable during the dyeing process to inspect the material being treated. Heretofore, this inspection has been difficult, dangerous, and never complete, when cages have been used, because of the inaccessibility of the material in the lower portion of the cage and the high temperature of the dye liquor. In my apparatus the removal is easily effected by inserting a hook or other implement in the ring, 28, and pulling vertically thereon, whereby the end, 16, of the tube is forced from its seat, 12, and the cage is elevated any desired height.

The hoisting device shown comprising the rope, 30, and pulleys or rollers, 31 and 32, is convenient but not essential, as any desired means, either mechanical or manual, may be employed. For the purposes of illustration, only one of the cages is provided with a hoisting device.

What I claim is,

1. In a dyeing apparatus, the combination with a vat, of a frusto-conical inclined plate

having a retaining flange secured in an opening in the floor of said vat and terminating in a pipe extending below said floor, a pump eduction pipe connected with said pipe, a cage, a spray tube disposed concentrically therein with its lower end tapered to engage the conical portion of said plate, and means for raising and lowering said cage and spray tube.

2. In a dyeing apparatus, the combination with a vat, of a frusto-conical inclined plate having a retaining flange secured in an opening in the floor of said vat and terminating in a pipe extending below said floor, a pump eduction pipe connected with said pipe, a cage, a spray tube disposed concentrically therein with its lower end tapered to engage the conical portion of said plate, and means for raising and lowering said cage and spray tube, said spray tube being perforated and terminating within the cage.

3. In a dyeing apparatus, the combination with a vat, of a frusto-conical inclined plate having a retaining flange secured in an opening in the floor of said vat and terminating in a pipe extending below said floor, a pump eduction pipe connected with said pipe, a cage, a spray tube disposed concentrically therein with its lower end tapered to engage the conical portion of said plate, and means for raising and lowering said cage and spray tube, said spray tube being perforated and terminating within the cage, said cage being also perforated.

4. In a dyeing apparatus, the combination with a vat, of a frusto-conical inclined plate having a retaining flange secured in an opening in the floor of said vat and terminating in a pipe extending below said floor, a pump eduction pipe connected with said pipe, a cage, a spray tube disposed concentrically therein with its lower end tapered to engage the conical portion of said plate, and means for raising and lowering said cage and spray tube, said spray tube being perforated and terminating within the cage, said cage being also perforated, and the spray tube having means whereby it may be withdrawn and with it the cage.

5. In a dyeing apparatus, the combination with a vat, of a frusto-conical inclined plate having a retaining flange secured in an opening in the floor of said vat and terminating in a pipe extending below said floor, a pump eduction pipe connected with said pipe, a cage, a spray tube disposed concentrically therein with its lower end tapered to engage the conical portion of said plate, and means for raising and lowering said cage and spray tube, said spray tube being perforated and terminating within the cage, said being also perforated, combined with a pump connected with said eduction pipe and a pipe leading from said pump and connected with the vat near its upper end.

6. In a dyeing apparatus, the combination with a vat having an opening in its bottom and a conical plate extending through said opening and having a tube depending through the bottom of the vat for connection with a pump, a spray tube frictionally engaged in the conical portion of said plate, a base plate through which the bottom of said tube extends, means securing said base to said tube, an annular head, means connecting said base and head, a reticulated material connecting said base and head and forming a cage extending above the top of the spray tube, and a removable cover to said cage, the spray tube having means whereby it may be hoisted and with it the cage.

In testimony whereof I have affixed my signature in presence of two witnesses.

JAMES FRIEDRICHS.

Witnesses:

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