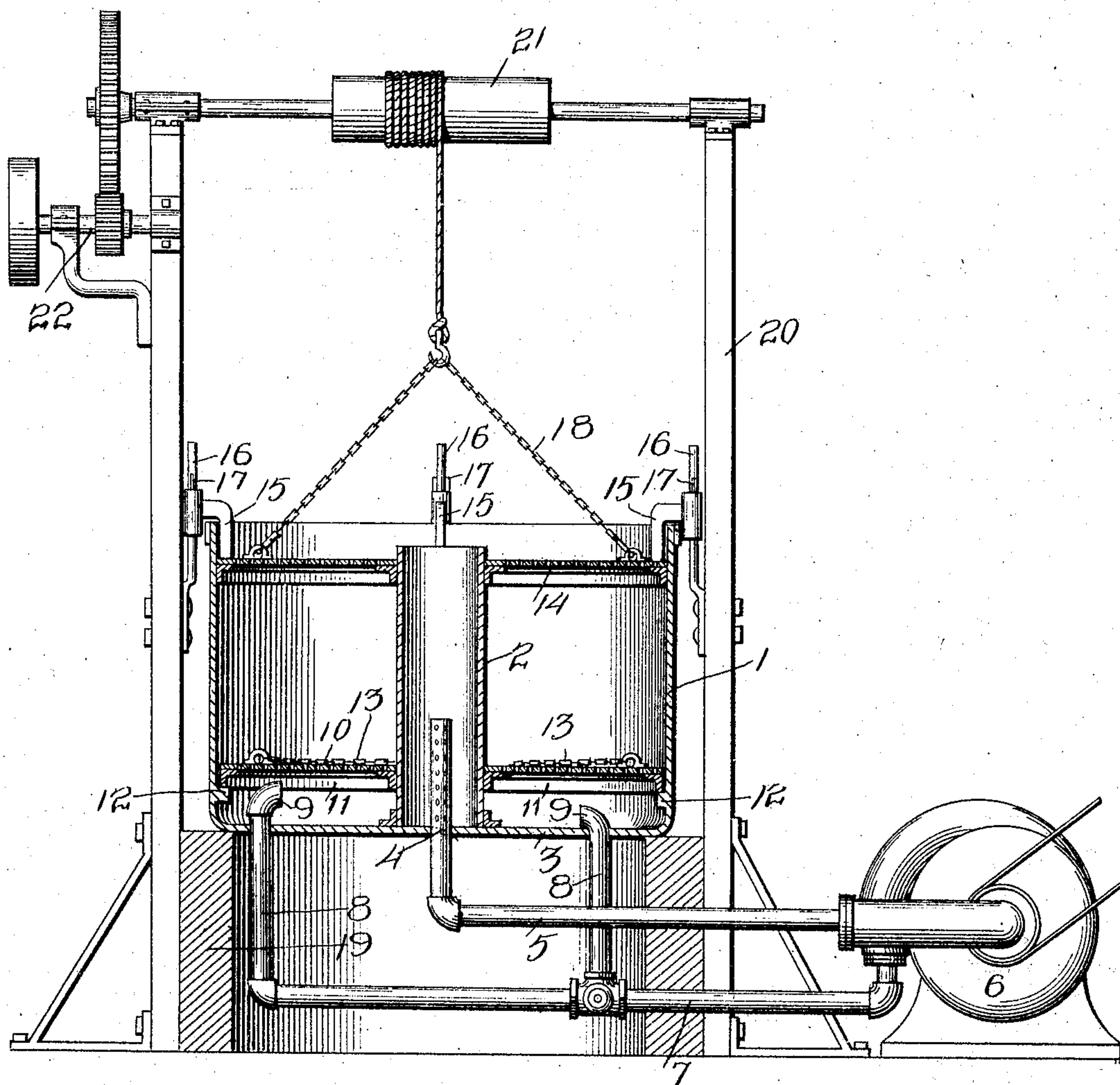


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J. A. WILLARD.
DYEING MACHINE.

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Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES A. WILLARD, OF CHATTANOOGA, TENNESSEE, ASSIGNOR TO VACUUM DYEING MACHINE COMPANY, OF CHATTANOOGA, TENNESSEE, A CORPORATION OF TENNESSEE.

DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 780,398, dated January 17, 1905.

Application filed March 18, 1904. Serial No. 198,766.

To all whom it may concern:

Be it known that I, JAMES A. WILLARD, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented new and useful Improvements in Dyeing-Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in dyeing-machines, and aims to provide a machine of this class whereby the material after being treated can be readily removed therefrom.

The invention further aims to provide a machine of this class with new and novel means for causing the circulation of the dye liquor or washing medium through the machine.

The invention further aims to provide a machine of the class referred to with new and novel means for supplying or withdrawing the dye liquor or washing medium to and from the machine.

The invention further aims to provide a machine of the class referred to which shall be simple in its construction, strong, durable, efficient in its use, and comparatively inexpensive to set up.

With the foregoing and other objects in view the invention consists of the novel combination and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawing, and particularly pointed out in the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawing, forming a part of this specification, and which illustrates a sectional elevation of the machine.

Referring to the drawing by reference characters, 1 denotes a vat in which is mounted centrally thereof a cylinder 2. The vat 1 may be of any suitable contour and is adapted to receive the material to be treated. The cylinder 2 is adapted for use as an overflow medium for the dye liquor or washing medium, so that the dye liquor or washing medium can be withdrawn from the vat 1 and thence discharged back into said receptacle 1. Extending upwardly in the cylinder 2 through

the bottom 3 of the vat 1 is a perforated pipe 4, carried by the suction-pipe 5, the latter communicating with the pump 6. The reference character 7 denotes a supply-pipe for the dye liquor or washing medium and which communicates with the vat 1 through the medium of the branch pipes 8, these latter extending through the bottom 3 and provided on their upper ends with the deflecting-nozzles 9. By such a construction after the dye liquor has been supplied to the vat 1 and cylinder 2 it can be withdrawn from the latter when the pump 6 is operated and then supplied back into the vat 1 through the medium of the pipe 7 and branch pipes 8.

The material to be treated is mounted upon a removable perforated supporting-plate 10, which is provided with a centrally-arranged opening, so that the cylinder 2 can extend therethrough. The plate 10 is supported upon the angle-irons 11, secured to the cylinder 2 at a suitable point removed from the bottom thereof, so as to form an auxiliary dye-liquor-receiving chamber, as at 11', and further supported upon the shoulders 12, formed on or secured to the inner face of the vat 1. The plate 10 is provided with any suitable means, such as the chains 13, to permit of connecting with a hoisting device, so that said plate and the material supported thereby can be removed from the vat 1.

The material which is placed within the vat 1 to be treated upon the bottom plate 10 is compressed through the medium of a perforated plate 14, which is provided with a centrally-arranged opening to permit of the cylinder 2 extending therethrough. The plate 14 is retained in position as well as being adjusted by any suitable means; but, as shown, a plurality of adjustable dogs 15 is employed and which are carried by the rods 16, secured to the receptacle 1, and said dogs 15 are retained in position by means of the removable wedges 17, extending through the rods 16. Other suitable means for adjusting as well as retaining the plate 14 can be employed. The plate 14 is provided with the chains 18 or other suitable means for connecting it to a hoisting

device, so that said plate can be removed from the machine.

The vat 1 is mounted upon a suitable support, as indicated by the reference character 5 19, and extending upwardly from said support is a frame 20, carrying at its upper end a windlass 21, which is shown as one form of a device for removing the plates 14 and 10 from within the vat 1, the windlass 21 being operated by any suitable means, as shown at 22.

It is thought the operation of the machine can be readily understood from the foregoing description, taken in connection with the accompanying drawing; but it will be stated 15 that originally the body of dye liquor which is supplied to the vat 1 at the beginning of the operation is of such quantity that it will extend above the top of the cylinder 2, so that during the operation of dyeing the level of the 20 body of dye liquor will always be above said cylinder 2, so that the material cannot come into contact with air, thereby preventing oxidation. It will also be stated that the operation of the pump can be reversed, that the 25 suction-pipe 5 will be the supply-pipe, and the supply-pipe 7 can be used as the suction-pipe.

It is thought that the many advantages of a dyeing-machine constructed in accordance with the foregoing description, taken in connection with the accompanying drawing, can 30 be readily understood, and it will furthermore be evident that changes, variations, and modifications can be resorted to without departing from the spirit of my invention or sacrificing 35 any of its advantages, and I therefore do not wish to restrict myself to the details of construction hereinbefore described and as set forth in the annexed drawing, but reserve the right to make such changes, variations, 40 and modifications as come properly within the scope of the protection prayed.

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

45 1. In a dyeing-machine, a vat adapted to receive the material to be treated, a cylinder arranged in said vat and having its bottom formed by the bottom of said vat, said cylinder adapted to receive the overflow of dye 50 liquor, a removable perforated supporting-plate arranged within said vat and surrounding said cylinder, a removable perforated compression-plate operating in said vat and surrounding said cylinder, and means extending in said 55 cylinder and communicating with said vat for circulating a liquid therethrough.

2. In a dyeing-machine, a vat adapted to receive the material to be treated, a cylinder 60 arranged in said vat for the overflow of dye liquor, a removable perforated supporting-plate arranged within said vat and surrounding said cylinder, a removable perforated compression-plate operating in said vat and surrounding said cylinder, means extending

in said cylinder and communicating with said 65 vat for circulating a liquid therethrough, and means for removing said plates from the vat.

3. A dyeing-machine comprising a vat adapted to contain the material to be treated, 70 a cylinder arranged in said vat for the overflow of dye liquor, means arranged in said vat for supporting and compressing the material to be treated, means extending through the bottom of said vat and communicating with said cylinder and said vat for circulating 75 a dye liquor therethrough, and means for removing said supporting and compressing means from said vat.

4. A dyeing-machine comprising a vat adapted to contain the material to be treated, 80 a cylinder arranged in said vat for the overflow of dye liquor, removable means arranged in said vat for supporting the material to be treated, removable means operating in said vat for compressing the material to be treated, 85 means extending into said cylinder and communicating with said vat for circulating a dye liquor therethrough, a hoisting device adapted when operated to replace and remove said supporting and compressing means, supports 90 for said hoisting means, and means carried by the supports and extending into the vat and engaging in said compressing means for retaining it in its operative position.

5. In a dyeing-machine, a vat adapted to 95 contain the material to be treated, a cylinder for the overflow of dye liquor, a suction-pipe having a perforated end extending upwardly in said cylinder, a supply-pipe, and a plurality of branch pipes communicating with said supply-pipe and with said vat, said branch pipes 100 and perforated end of the suction-pipe extending through the bottom of said vat.

6. In a dyeing-machine, a vat adapted to 105 contain the material to be treated, a cylinder for the overflow of dye liquor, a suction-pipe having a perforated end extending upwardly in said cylinder, a supply-pipe, a plurality of branch pipes communicating with said supply-pipe and with said vat, said branch pipes 110 and perforated end of the suction-pipe extending through the bottom of said vat, a removable perforated supporting-plate arranged within said vat and adapted to surround said cylinder, and a removable perforated compression-plate arranged within said vat and 115 surrounding said cylinder.

7. In a dyeing-machine, a vat adapted to contain the material to be treated, a cylinder 120 for the overflow of dye liquor, a suction-pipe having a perforated end extending upwardly in said cylinder, a supply-pipe, a plurality of branch pipes communicating with said supply-pipe and with said vat, said branch pipes and perforated end of the suction-pipe extending 125 through the bottom of said vat, a removable perforated supporting-plate arranged within said vat and adapted to surround said cylinder,

a removable perforated compression-plate arranged within said vat and surrounding said cylinder, a hoisting device for removing and replacing said plates, a support for said hoisting device, an adjustable means connected with said support and adapted to extend in said vat and engage said compression-plate for retaining it in its operative position.

8. In a dyeing-machine, a vat adapted to contain the material to be treated, a cylinder for the overflow of dye liquor, a suction-pipe extending upwardly in said cylinder, a supply-pipe, and a plurality of branch pipes communicating with said supply-pipe and with said vat and provided with deflecting-nozzles, said branch pipes and perforated end of said suction-pipe extending upwardly through the bottom of said vat.

9. In a dyeing-machine, a vat adapted to contain the material to be treated, a cylinder for the overflow of dye liquor, a suction-pipe extending upwardly in said cylinder, a supply-pipe, a plurality of branch pipes communicating with said supply-pipe and with said vat and provided with deflecting-nozzles, said branch pipes and perforated end of said suction-pipe extending upwardly through the bottom of said vat, a removable perforated supporting-plate arranged within said vat and adapted to surround said cylinder, and a removable perforated compression-plate ar-

ranged within said vat and surrounding said cylinder.

10. In a dyeing-machine, a vat adapted to contain the material to be treated, a cylinder for the overflow of dye liquor, a suction-pipe extending upwardly in said cylinder, a supply-pipe, a plurality of branch pipes communicating with said supply-pipe and with said vat and provided with deflecting-nozzles, said branch pipes and perforated end of said suction-pipe extending upwardly through the bottom of said vat, a removable perforated supporting-plate arranged within said vat and adapted to surround said cylinder, a removable perforated compression-plate arranged within said vat and surrounding said cylinder, a pair of vertical supports, a hoisting device mounted upon the top of said supports and adapted to remove and replace the said plates, and an adjustable means connected to said supports and extending in said vat and adapted to engage said compression-plate for retaining it in its adjusted position.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES A. WILLARD.

Witnesses:

P. O. TATUM,
L. B. LOCKWOOD.