

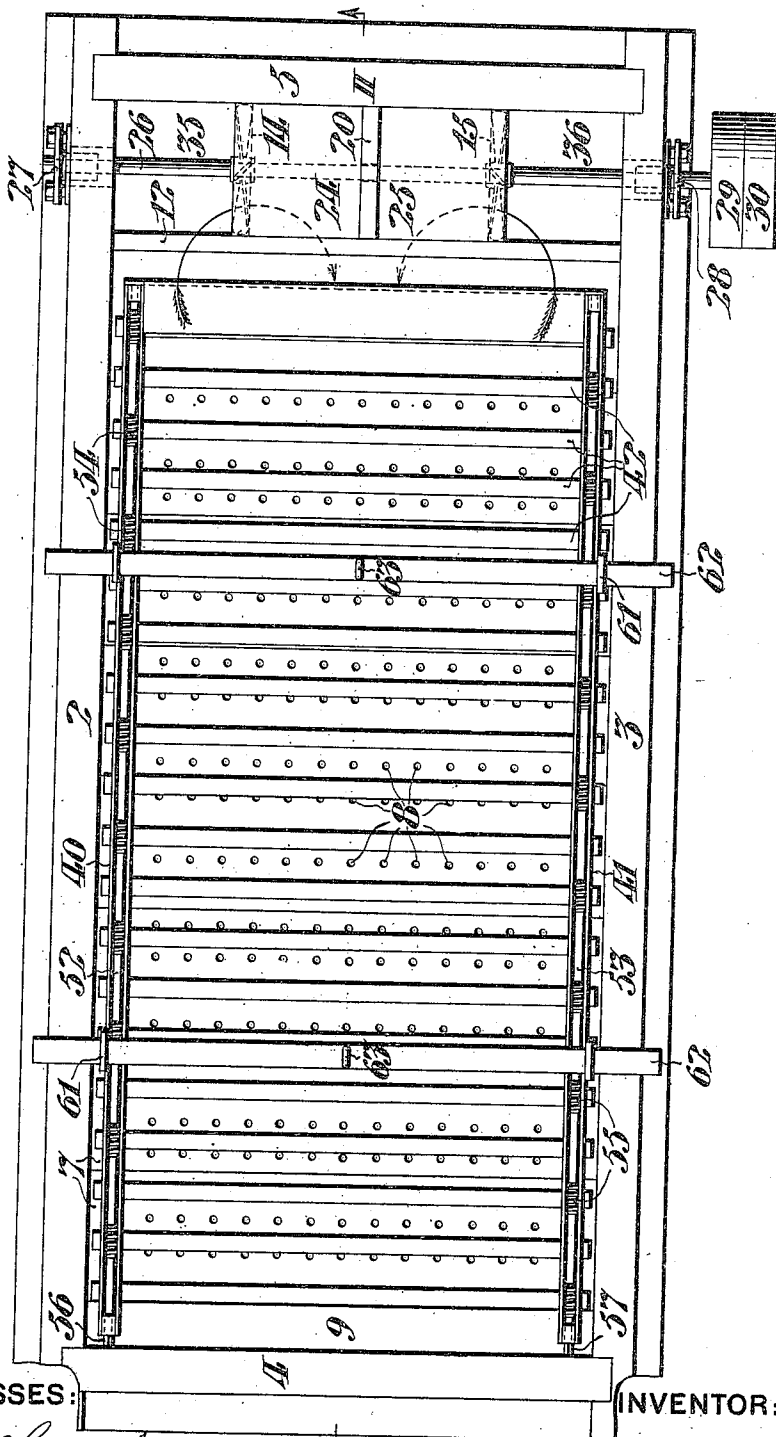
994,016.

H. P. MALLISON.
DYEING MACHINE.
APPLICATION FILED FEB. 24, 1908.

Patented May 30, 1911.

3 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

Clifton C. Hollowell
Morris L. Jensen

INVENTOR:

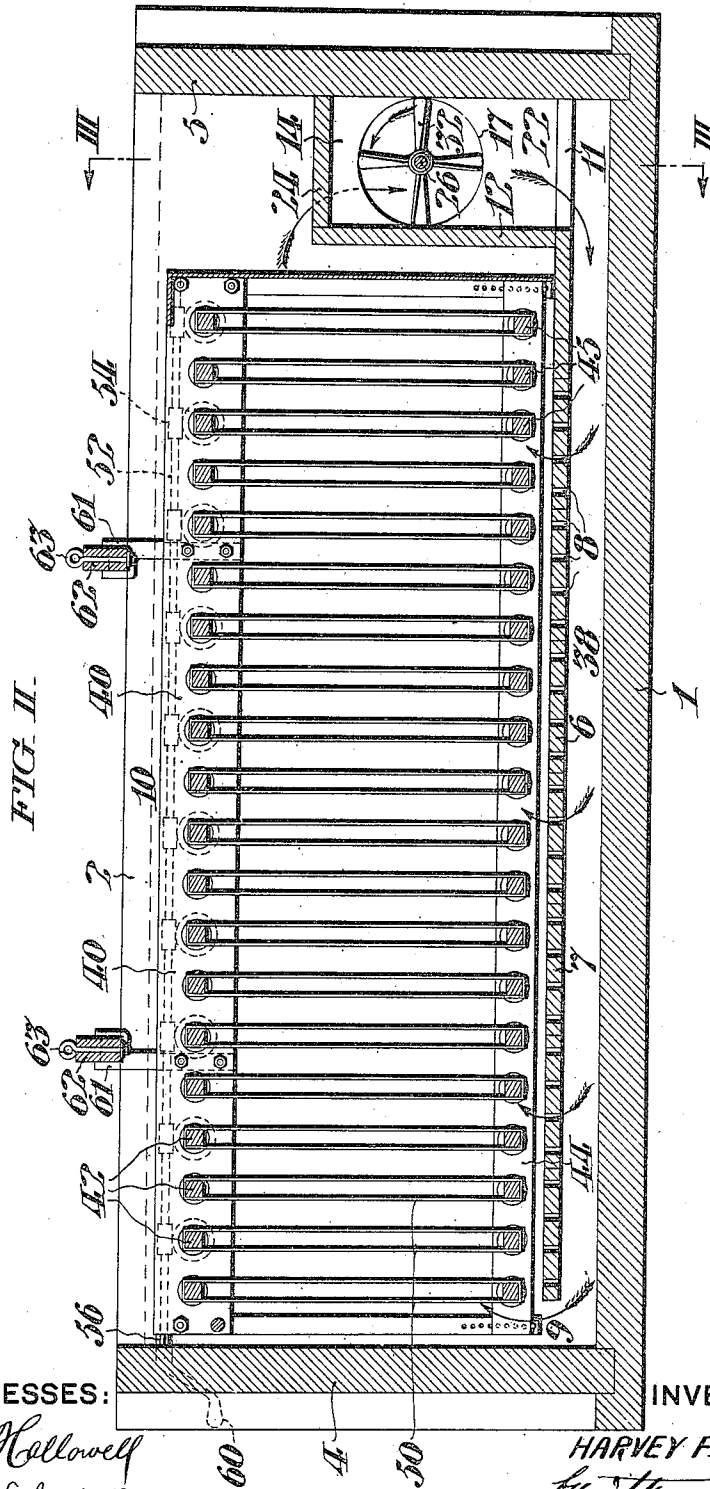
HARVEY P. MALLISON,
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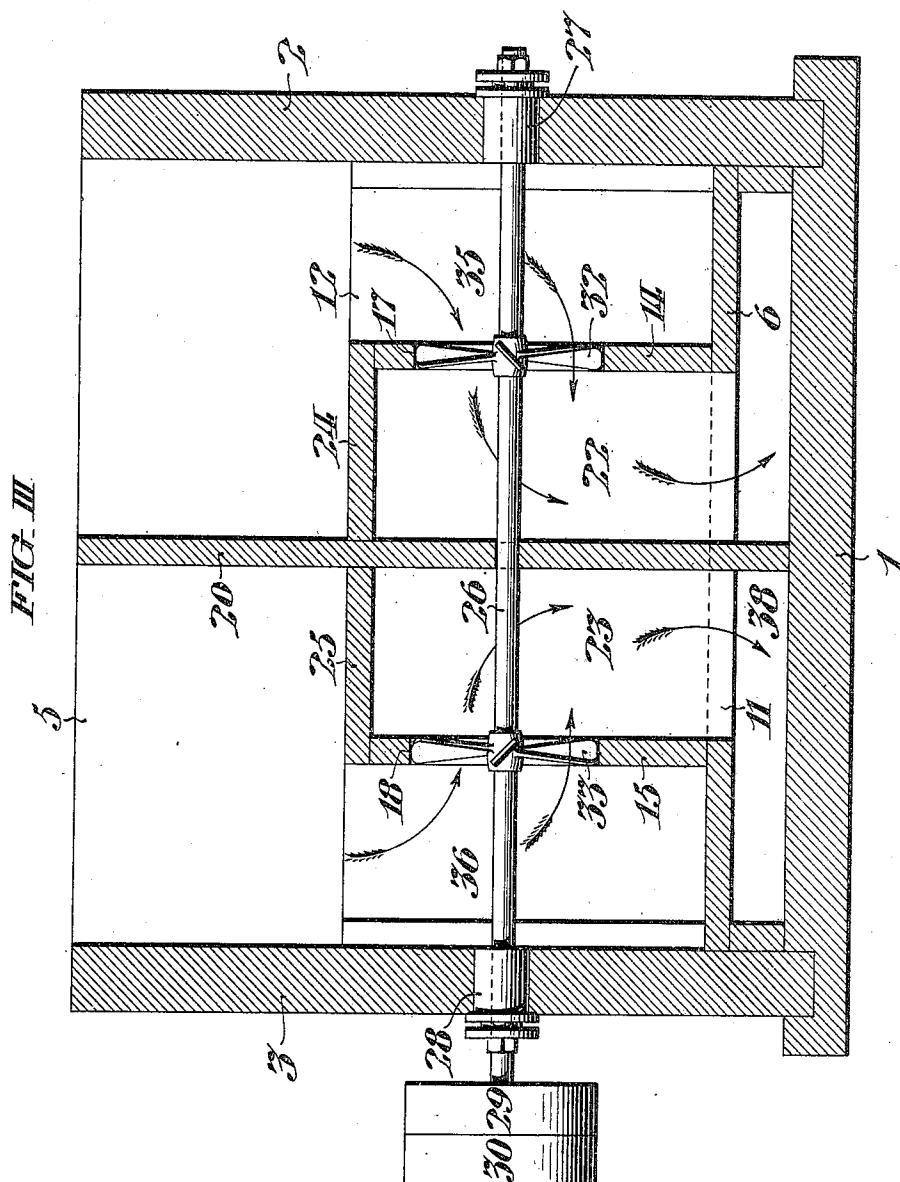
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3 SHEETS—SHEET 3.



WITNESSES:
Clifton C. Hollowell
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UNITED STATES PATENT OFFICE.

HARVEY P. MALLISON, OF LANSDOWNE, PENNSYLVANIA, ASSIGNOR TO DANIEL F. WATERS, OF GERMANTOWN, PENNSYLVANIA.

DYEING-MACHINE.

994,016.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed February 24, 1908. Serial No. 417,396.

To all whom it may concern:

Be it known that I, HARVEY P. MALLISON, of Lansdowne, Delaware county, in the State of Pennsylvania, have invented a certain new and useful Improvement in Dyeing-Machines, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to dyeing machines of the class described in Letters Patent of the United States #872,597, granted to Daniel F. Waters December 3, 1907, comprising a vat wherein yarn is suspended in a dyeing solution while supported upon rotary yarn sticks in a frame which is removable with respect to said vat.

My improvement is particularly directed to the means for circulating the dyeing solution in the vat.

The form of my invention hereinafter described comprises a vat provided with a foraminous false floor and having a casing at one end thereof forming two separate passageways for directing the liquid from the top to the bottom of the vat through ports in opposite vertical walls in said casing; two screw propeller wheels oppositely disposed in said ports, and respectively having oppositely inclined blades, and, a shaft extending horizontally through said ports and operatively connecting said propeller wheels in rigid relation with each other; whereby, the liquid is drawn from the top of the vat through said ports, and forced beneath said floor toward the opposite end of the vat, when said shaft is rotated.

My invention comprises the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawings; Figure I, is a plan view of a machine conveniently embodying my improvement. Fig. II, is a vertical longitudinal sectional view of said machine, taken on the line II, II, in Fig. I. Fig. III, is a vertical transverse sectional view, taken on the line III, III, in Fig. II.

In said drawings; the vat comprises the main floor 1, side walls 2 and 3, and end walls 4 and 5, conveniently formed of wood. The false floor 6, is composed of a series of panels 7, having apertures 8, which, together with the passageway 9, formed by terminating said floor 6, short of the end wall 4, afford passageways through which the liquor may pass into the yarn chamber 10, above

said false floor. Said false floor 6, abuts against the end wall 5, but is provided with the central opening 11, adjacent thereto. The transverse partition 12, extends across the vat, at the edge of said opening 11, and parallel with the end wall 5, and terminates below the top of said vat. The partitions 14 and 15, extend parallel with the side walls 2 and 3, between said transverse partition 12, and the end wall 5, and are respectively provided with circular ports 17 and 18. The central longitudinal partition 20, extends between said transverse partition 12, and the end wall 5, from the top to the bottom of said vat, forming the separate chambers 22 and 23, inclosed between said partitions 14 and 15, by the covers 24 and 25.

The horizontal driving shaft 26, which is journaled in suitable stuffing boxes 27 and 28, and provided with the tight and loose pulleys 29 and 30, extends through said ports 17 and 18, in concentric relation therewith. Said shaft carries the screw propeller wheels 32 and 33, respectively disposed in said ports and respectively comprising oppositely inclined blades arranged to draw the dyeing solution from the yarn chamber 10, over the partition 12, into the open chambers 35 and 36, and thence through the ports 17 and 18, into the chambers 22 and 23, and discharge it through the passageway 38, beneath the false floor 6, back into the yarn chamber 10, and thereby insure an even distribution of said solution through the yarn. It may be observed that said solution being drawn down by the propeller wheels 32 and 33, from the side walls 2 and 3, of the vat and directed transversely in whirling motion against the central longitudinal partition 20, is thus deflected as indicated by the arrows in Fig. III, so as to form transversely divergent streams thereof directed beneath the perforated floor 6, so that the circulation of the solution is both lateral and longitudinal and consequently more diffuse and effective than in machines of the prior art, wherein the circulation is effected solely by directing the solution vertically and longitudinally in the vat.

The yarn frame comprises the top side rails 40 and 41, carrying the yarn sticks 42, and the bottom side rails 44, carrying the yarn sticks 45. As best shown in Fig. II, the hanks of yarn 50, are suspended from the yarn sticks 42, and maintained in par-

allel relation by the yarn sticks 45, which engage the lower bights of the hanks. The alternate yarn sticks 42, are provided with worm gears respectively disposed in the frames 40 and 41, and conveniently rotated by respective shafts 52 and 53, provided with worms 54 and 55. Said shafts have squared ends 56 and 57, so that they may be conveniently rotated by the removable handle 60, as shown in Fig. II. Said yarn frame rails 40 and 41, have the brackets 61, in engagement with the cross bars 62, provided with eyebolts 63, whereby said frame may be lifted from the vat.

I do not desire to limit myself to the precise details of construction and arrangement above described, as it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

I claim:—

1. The combination with a vat; of means arranged to circulate a liquid in said vat, comprising a bottomless casing having two ports in its opposite vertical walls; two screw propeller wheels respectively having oppositely inclined blades, respectively disposed in said ports; a horizontal shaft operatively connecting said propeller wheels; and a solid partition extending from the top of said casing to the bottom of the vat, between said wheels, thereby dividing said casing into two separate compartments.

2. The combination with a vat; of means arranged to circulate a liquid in said vat comprising partitions forming two separate passageways affording communication from the top to the bottom of the vat; the upper openings of said passageways being adjacent to the side walls of the vat, and the lower openings of said passageways being adjacent to the center line of the vat; a screw propeller wheel in each of said passageways; and, a shaft common to said propeller wheels.

3. The combination with a vat; of means arranged to circulate a liquid in said vat, comprising a horizontal shaft adjacent to one end of the tank and two screw propeller wheels respectively having oppositely inclined blades, carried by said shaft; a partition extending transversely in said tank between said shaft and the center of the tank, so located as to permit the liquid to flow above and below it in the tank; a longitudinal solid partition extending from the first named partition to the adjacent end wall of the tank, between said propeller wheels; partitions extending in the plane of said propeller wheels, having respective ports local to said wheels and forming separate compartments adjoining said longitudinal partition; and a cover for said compartments.

4. The combination with a vat; of means

arranged to circulate a liquid in said vat, comprising a bottomless casing having two ports in its opposite vertical walls; a false floor in said vat terminating short of one of its end walls, extending to the other end wall and having an opening beneath said casing; screw propeller wheels respectively having oppositely inclined blades, respectively disposed in said ports; a horizontal shaft operatively connecting said propeller wheels; and a solid partition extending from the top of said casing to the bottom of said vat, between said wheels thereby dividing said casing into two separate compartments.

5. The combination with a vat; of means arranged to circulate a liquid in said vat, comprising a bottomless casing having two ports in its opposite vertical walls; a foraminous false floor in said vat, having an opening beneath said casing; screw propeller wheels respectively having oppositely inclined blades, respectively disposed in said ports; a horizontal shaft operatively connecting said propeller wheels; and, a solid partition extending from the top of said casing to the bottom of said vat, between said wheels thereby dividing said casing into two separate compartments.

6. The combination with a vat; of means arranged to circulate a liquid in said vat, comprising a casing having ports in its opposite walls, affording communication from the top to the bottom of the vat; screw propeller wheels respectively disposed in said ports and mounted on a single shaft, said shaft operatively connecting said propeller wheels; and, means dividing said casing into two separate compartments respectively in communication with said ports.

7. The combination with a vat; of means arranged to circulate a liquid in said vat, comprising a casing having ports in its opposite walls, affording communication from the top to the bottom of the vat; screw propeller wheels respectively disposed in said ports and mounted on a single shaft, said shaft operatively connecting said propeller wheels; and, means preventing communication between said ports in said casing; whereby, the liquid is circulated through said casing in two separate streams.

8. The combination with a vat; of means arranged to circulate a liquid in said vat, comprising a casing having ports in its opposite walls, affording communication from the top to the bottom of the vat; screw propeller wheels respectively disposed in said ports and mounted on a single shaft, said shaft operatively connecting said propeller wheels; and, means in said casing directing the liquid therefrom at the bottom of the vat in two separate streams, longitudinally with respect to the vat and at respectively opposite sides thereof.

9. The combination with a vat; of means

arranged to circulate a liquid in said vat,
comprising a casing having ports in its op-
posite walls, affording communication from
the top to the bottom of the vat; screw pro-
5 peller wheels respectively disposed in said
ports; and, means dividing said casing into
two separate compartments respectively in
communication with said ports.

In testimony whereof, I have hereunto
signed my name at Philadelphia this 18 day 10
of February, 1908.

HARVEY P. MALLISON.

Witnesses:

DANIEL F. WATERS,
HEBER M. LAMON.

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