

No. 863,460.

PATENTED AUG. 13, 1907.

R. P. SMITH & G. E. DRUM.

DYEING MACHINE.

APPLICATION FILED DEC. 24, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

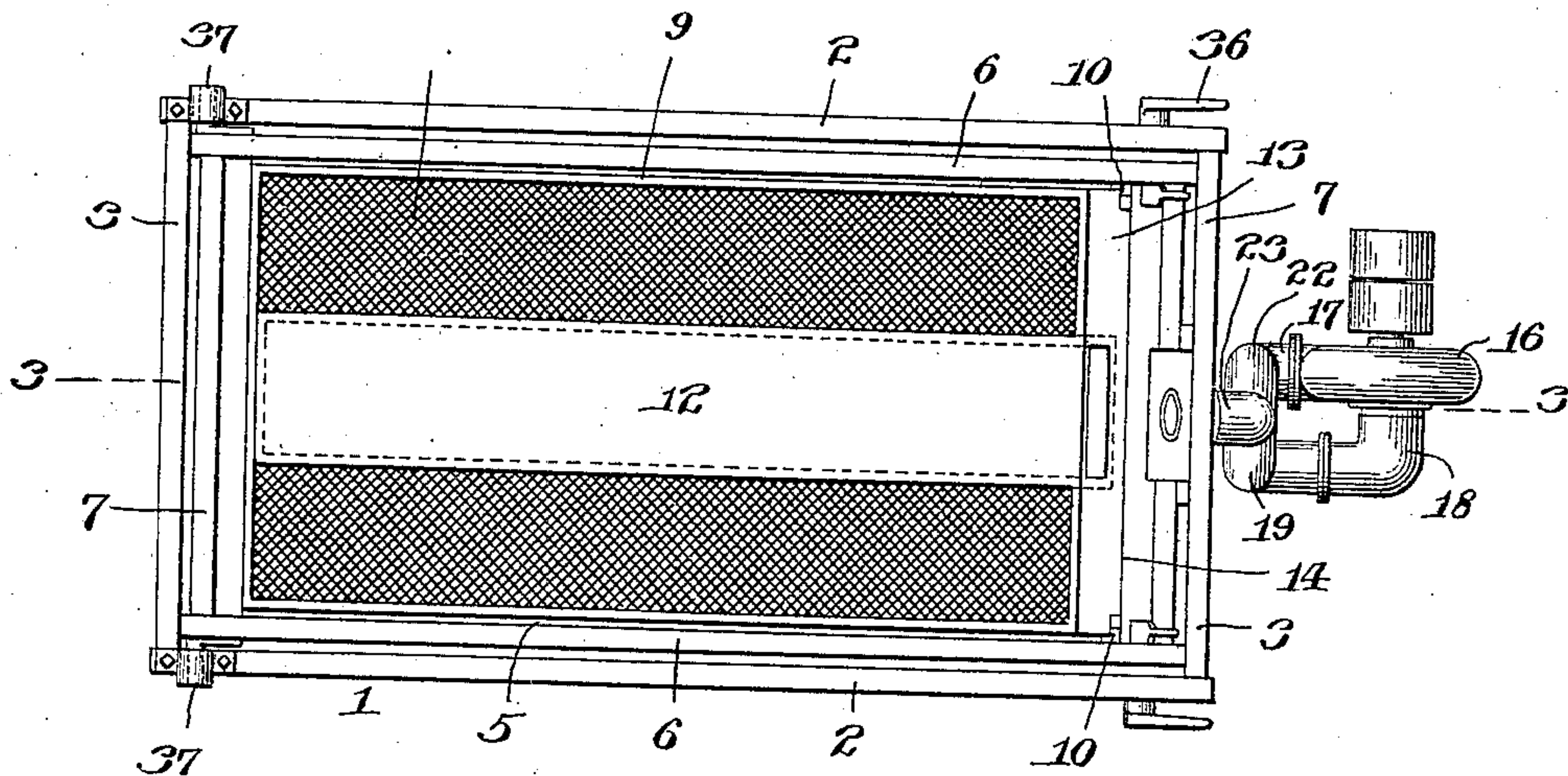
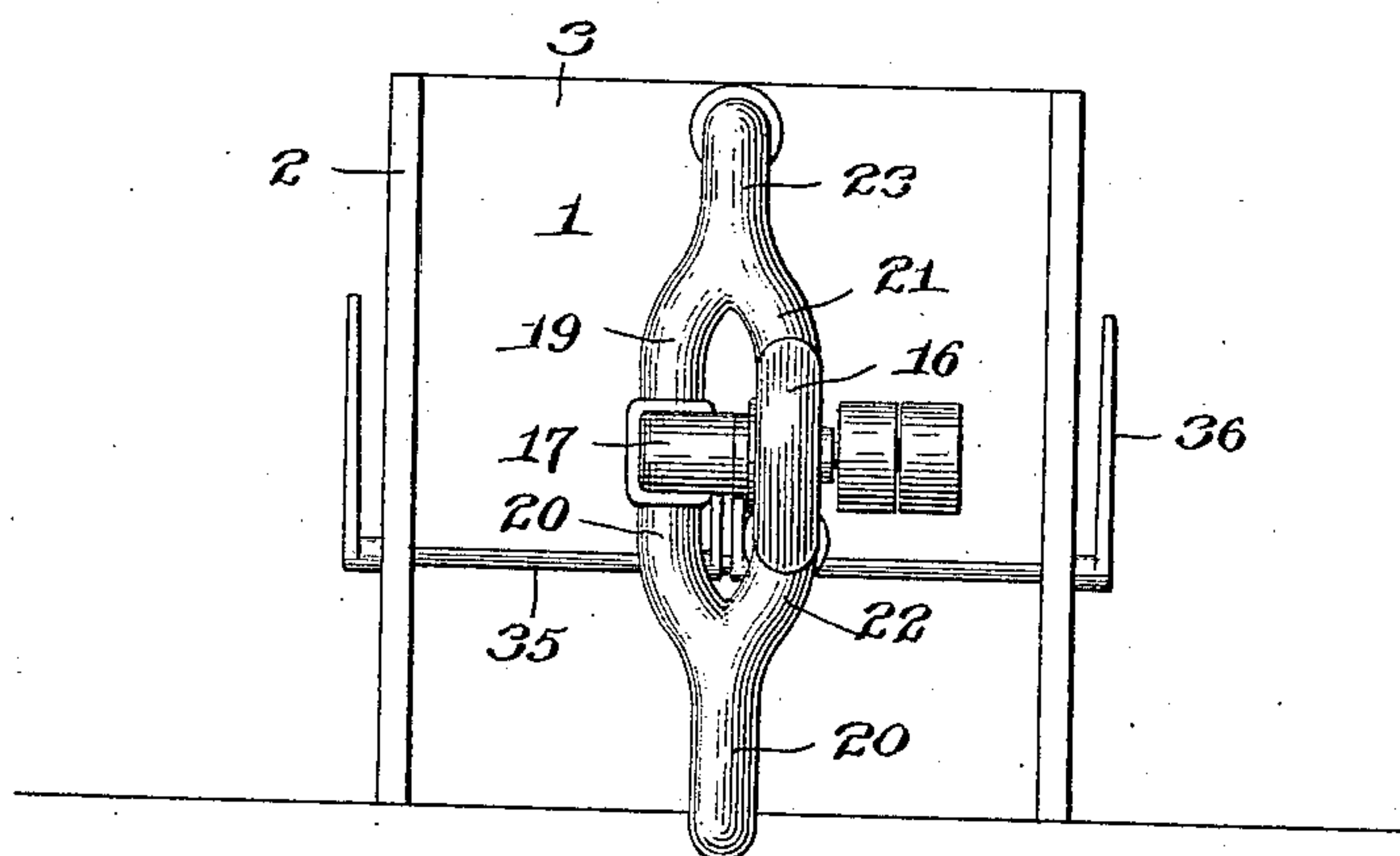


Fig. 2.



WITNESSES:

Ella M. Ware

W. Bailey

INVENTORS

Robert P. Smith and
George E. Drum
by A. V. Jones
ATTORNEY.

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2 SHEETS—SHEET 2.

Fig. 3.

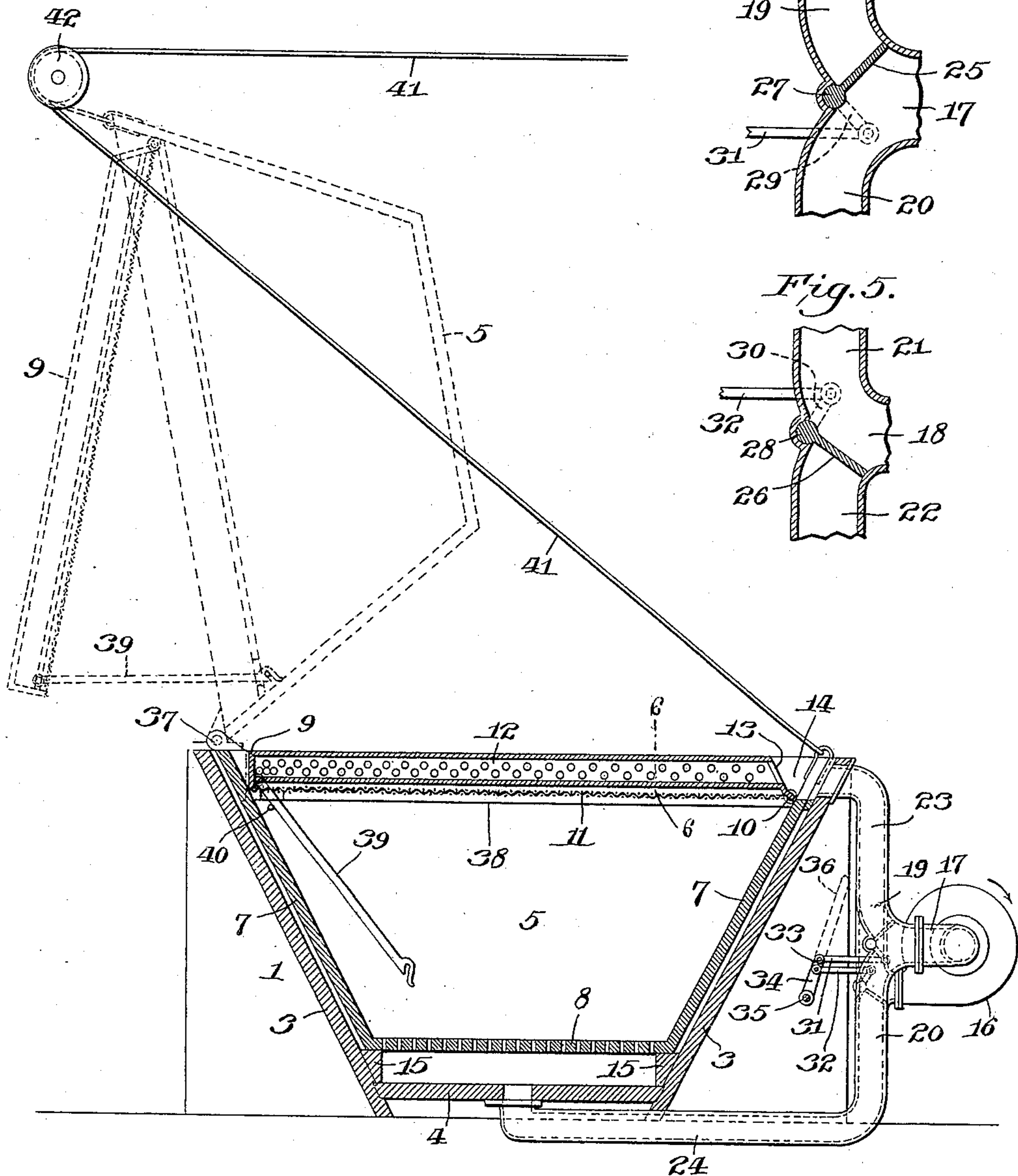


Fig. 4.

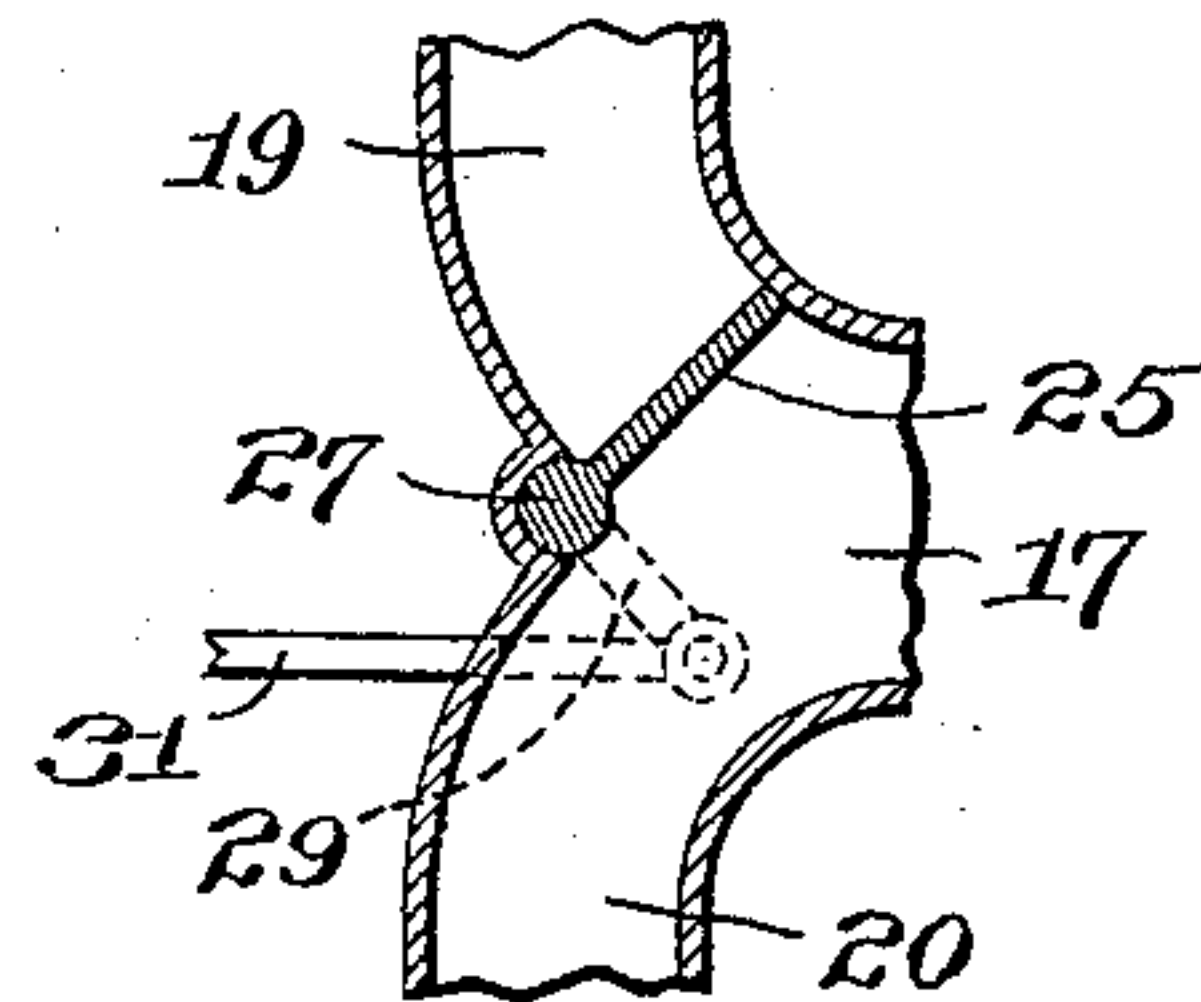


Fig. 5.

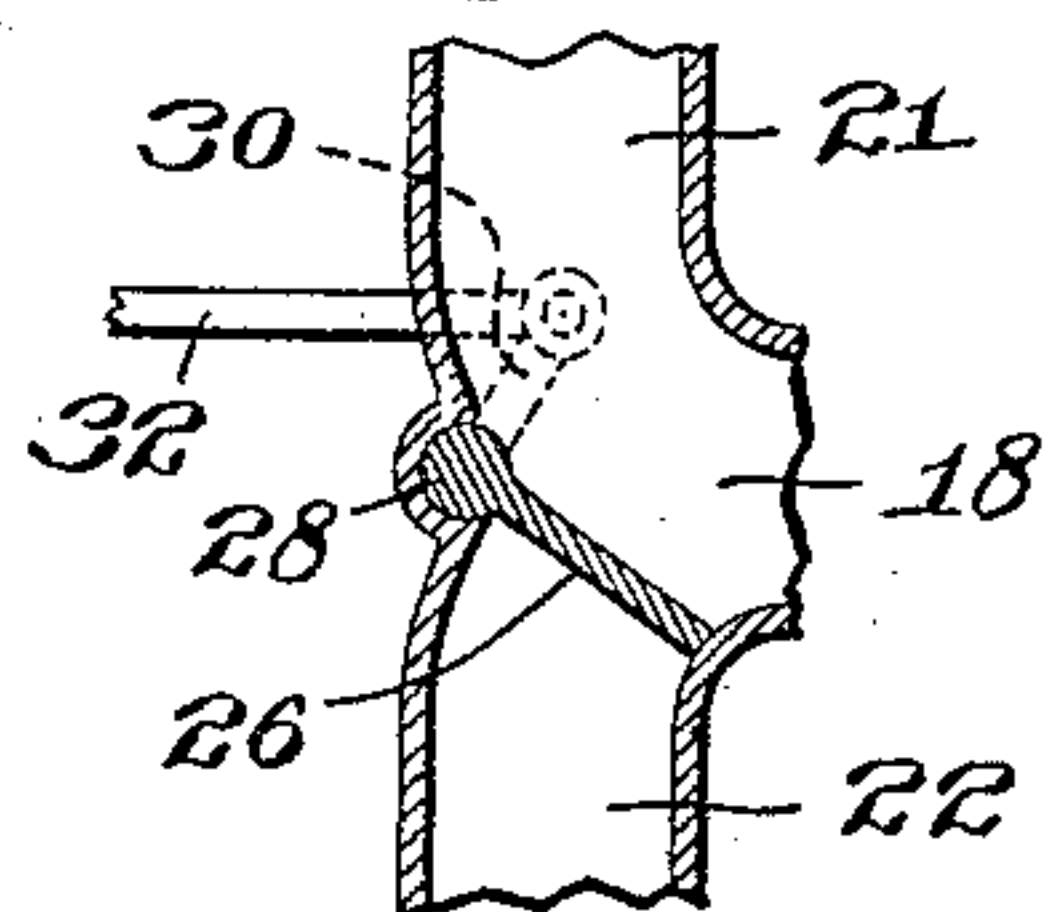
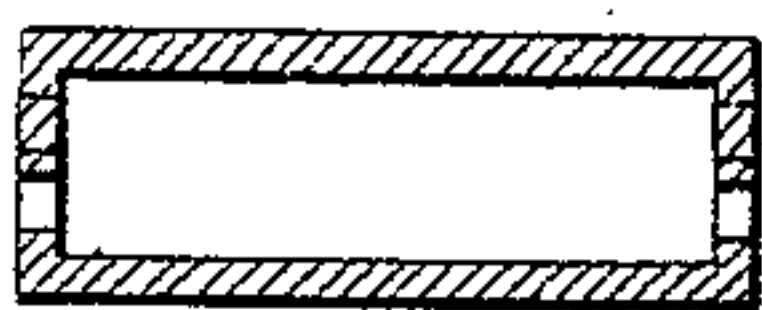


Fig. 6.



WITNESSES:

Ella M. Ware.

Chas. Bailey

INVENTORS

Robert P. Smith and
George E. Drum

by A. V. Troup
ATTORNEY.

UNITED STATES PATENT OFFICE.

ROBERT P. SMITH AND GEORGE E. DRUM, OF PHILADELPHIA, PENNSYLVANIA.

DYEING-MACHINE.

No. 863,460.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed December 24, 1906. Serial No. 349,357.

To all whom it may concern:

Be it known that we, ROBERT P. SMITH and GEORGE E. DRUM, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Dyeing-Machines, of which the following is a specification.

The object of my invention is to provide a simple and efficient dyeing machine having provision whereby material to be dyed may be thoroughly subjected to the dyeing liquid, and expeditiously introduced to or removed from the machine.

The invention consists in the novel features of construction and combinations of parts which I shall hereinafter fully describe and claim.

In the drawings, Figure 1 is a plan view of a dyeing machine embodying my invention. Fig. 2 is an end elevation thereof. Fig. 3 is a vertical section as on the line 3—3, Fig. 1, showing, by dotted lines, the receptacle for the material to be dyed moved out of the tank, and in position to dump its contents. Figs. 4 and 5 are sectional details of the valves for controlling the flow of the dyeing liquid. Fig. 6 is a sectional detail, as on the line 6—6 of Fig. 3.

1 designates a tank to contain the dyeing liquid. This tank is open at its top, and comprises opposite parallel side walls, 2, oppositely disposed, downwardly converging side walls 3, and the bottom 4. Removably contained within the tank is the receptacle 5 for the material to be dyed. This receptacle is of the same shape as the interior of the tank, but of slightly smaller dimensions, and it comprises opposite parallel side walls 6, oppositely disposed downwardly converging side walls 7, and the bottom 8.

Extending over the top of the receptacle 5, a slight distance below the top thereof, is an open frame 9, which is hinged at one of its ends to the receptacle 5, as at 10. This frame 9 carries a screen 11, which extends entirely over the receptacle; and arranged above the screen 11, and extending down through the central portion of the receptacle, is a pipe 12, which is secured to and carried by the frame 9. The end wall 13 of the frame 9 is arranged on an incline opposite to the incline of the adjacent wall of the receptacle, and the end wall 13 extends to the hinge 10 and into engagement with the wall of the receptacle, to provide a small chamber 14 separate from the receptacle. One end of the pipe 12 opens into the chamber 14, and the opposite end of the pipe 12 is closed. The side walls of the pipe 12 are provided with perforations which gradually increase in number from the end of the pipe communicating with the chamber 14 to the opposite end thereof. Thus it will be seen that if the dyeing liquid be introduced to the chamber 14, said liquid will flow through the pipe 12 and out through the perforations therein into the receptacle 5, the gradually

increasing number of perforations insuring an equal distribution of the dyeing liquid to the receptacle.

The bottom 8 of the receptacle 5 is provided with perforations to permit the dyeing liquid to flow vertically through the receptacle and tank. Extending around the interior of the tank, a slight distance above the bottom thereof, is a ledge 15, upon which the receptacle rests when it is within the tank. The purpose of this ledge is to support the receptacle within the tank, and provide a space below the receptacle into which the dyeing liquid may be forced and caused to flow up through the receptacle, the engagement of the receptacle with the ledge preventing the flow of the liquid up through the tank exteriorly of the receptacle.

16 designates a rotary pump having an inlet opening and a discharge opening therein. Leading from the inlet opening in the pump is a pipe 17, and leading from the discharge opening is a pipe 18. The pipe 17 communicates with two branch pipes, 19 and 20, and the pipe 18 also communicates with two branch pipes, 21 and 22. The branch pipes 19 and 21 communicate with a pipe 23 which discharges into the chamber 14 when the receptacle is in the tank; and the other branch pipes 20 and 22 communicate with a pipe 24 which discharges into the bottom of the tank 1, centrally thereof.

Arranged at the union of the pipes 19 and 20 is a valve 25, and arranged at the union of the pipes 21 and 22 is a valve 26. The valve 25 may be adjusted to direct the flow of liquid through the pipe 19 or the pipe 20, and the valve 26 may be adjusted to direct the flow of liquid through the pipe 21 or the pipe 22, as desired.

The valves 25 and 26 project from rock shafts 27 and 28 respectively. The ends of the shafts 27 and 28 extend outwardly and are provided with arms 29 and 30 which are connected, by links 31 and 32, with arms 33 and 34, respectively, projecting from a rock shaft 35. The rock shaft 35 has its bearings in extensions of the side walls 2 of the tank, and the shaft 35 is provided with a hand lever 36, by means of which the shaft 35 may be operated to adjust the valves 25 and 26, through its connections therewith.

When the parts occupy the position shown in the drawings, and the pump is driven in the direction indicated by the arrow, the dyeing liquid will be drawn by the pump 16 from the bottom of the tank 1, through the pipes 24, 20 and 17, and discharged through the pipes 18, 21 and 32 into the chamber 14 within the receptacle 5, from which it will flow through the pipe 12, from which it is distributed throughout the upper portion of the receptacle. Thus it will be seen that during the operation of the pump 16, the dyeing liquid will be caused to circulate and flow downwardly through the receptacle 5. When, however, the valves 25 and 26 are reversed, the dyeing liquid will be drawn by the pump 16 from the pipe 12 and chamber 14 through the

pipes 23, 19 and 17, and discharged through the pipes 18, 22, and 24 into the bottom of the tank 1, thus causing the liquid to flow or circulate upwardly through the receptacle. Thus it will be seen that the contents of the receptacle may be thoroughly subjected to the dyeing liquid.

The end of the top of the receptacle 5 away from the chamber 14 is hinged to the tank 1, as at 37, to the end that the receptacle may be swung from within the tank to the position shown by dotted lines, in Fig. 3. It will be observed that the converging side walls 7 of the receptacle 5 and the converging side walls 3 of the tank 1 permit the receptacle to practically fill the tank and yet be readily moved from within the same on the hinge 37.

When the receptacle 5 is lowered into the tank, the frame 9 rests normally upon a ledge 38. This frame 9 may, however, be raised upon its hinge 10, to the position shown by dotted lines in Fig. 3, with respect to the receptacle 5; and the frame 9 may be supported in this position by the elongated hook 39 pivotally connected at one end to the frame 9, and having its other end adapted to engage a pin 40 on the side wall of the receptacle 5. By moving the frame 9, and therewith the screen 11 and pipe 12, away from the top of the receptacle, the material to be dyed may be readily introduced into the receptacle.

When it is desired to remove the dyed material from the receptacle, the frame 9 is raised and the hook 39 is engaged with the pin 40. The receptacle 5 is then moved from within the tank to the position shown by dotted lines in Fig. 3, to dump its contents. As the receptacle leaves the tank, the dyeing liquid flows out of the receptacle and into the tank through the perforations in the bottom 8.

As a suitable means for moving the receptacle 5 from the tank 1, or lowering it into the same, I provide a rope 41 attached to the end of the receptacle away from the hinge 37, and pass said rope around a suitably located pulley 42 to any convenient point where the rope may be taken in or paid out to raise or lower the receptacle, as desired.

I claim

1. In a dyeing machine the combination of a tank to contain the dyeing liquid, a perforated receptacle to receive the material to be dyed, said receptacle being hinged to the tank and movable into and out of the latter, a passage way connecting the upper and lower portions of the tank, and means for causing the dyeing liquid to flow through said tank and passageway.

2. In a dyeing machine the combination of a tank to contain the dyeing liquid, a receptacle to receive the material to be dyed, said receptacle being hinged to the tank and movable into and out of the latter and comprising side walls and a perforated top and a perforated bottom, and means for causing the dyeing liquid to flow into and out of said receptacle when it is in the tank.

3. In a dyeing machine the combination of a tank to contain the dyeing liquid, a receptacle to receive the material to be dyed, said receptacle being hinged to the tank, and movable into and out of the latter and compris-

ing side walls and a perforated top and a perforated bottom, a passageway connecting the upper and lower portions of the tank, and means for causing the dyeing liquid to flow through said tank and passageway.

4. In a dyeing machine the combination of a tank to contain the dyeing liquid, a receptacle to receive the material to be dyed, said receptacle being hinged to the tank and movable into and out of the latter and comprising side walls and a perforated top hingedly connected to the receptacle and a perforated bottom, and means for causing the dyeing liquid to flow into and out of said receptacle when it is in the tank.

5. In a dyeing machine the combination of a tank to contain the dyeing liquid, a perforated receptacle to receive the material to be dyed, said receptacle being hinged to the tank and movable into and out of the latter, a passage way connecting the upper and lower portions of the tank, means for causing the dyeing liquid to flow through said tank and passageway, and means for reversing the flow of the dyeing liquid.

6. In a dyeing machine the combination of a tank to contain the dyeing liquid, a receptacle to receive the material to be dyed, said receptacle being hinged to the tank and movable into and out of the latter and comprising side walls and a perforated top and a perforated bottom, means for causing the dyeing liquid to flow into and out of said receptacle when it is in the tank, and means for reversing the flow of the dyeing liquid.

7. In a dyeing machine the combination of a tank to contain the dyeing liquid, a receptacle to receive the material to be dyed, said receptacle being hinged to the tank and movable into and out of the latter and comprising side walls and a perforated top and a perforated bottom, means for supporting the receptacle with its bottom above the bottom of the tank, and means for causing the dyeing liquid to flow into and out of said receptacle when it is in the tank.

8. In a dyeing machine the combination of a tank to contain the dyeing liquid, a receptacle to receive the material to be dyed, said receptacle being hinged to the tank and movable into and out of the latter and comprising side walls and a perforated top below the top of the side walls and a perforated bottom, and means for causing the dyeing liquid to flow into and out of said receptacle when it is in the tank.

9. In a dyeing machine the combination of a tank to contain the dyeing liquid, a receptacle to receive the material to be dyed, said receptacle being hinged to the tank and movable into and out of the latter and comprising side walls and a perforated top below the top of the side walls, and a perforated bottom and means for supporting the receptacle with the bottom above the bottom of the tank, and means for causing the dyeing liquid to flow into and out of said receptacle when it is in the tank.

10. In a dyeing machine the combination of a tank to contain the dyeing liquid and including oppositely disposed downwardly converging side walls, a perforated receptacle to receive the material to be dyed, said receptacle being hinged to the tank and movable into and out of the latter, and including oppositely disposed downwardly converging side walls, and means for causing the dyeing liquid to flow through the receptacle.

In testimony whereof we affix our signatures in presence of two witnesses.

ROBERT P. SMITH.
GEORGE E. DRUM.

Witnesses:

GEO. E. POTTS,
IRMA BARTZEL.