

No. 685,910.

Patented Nov. 5, 1901.

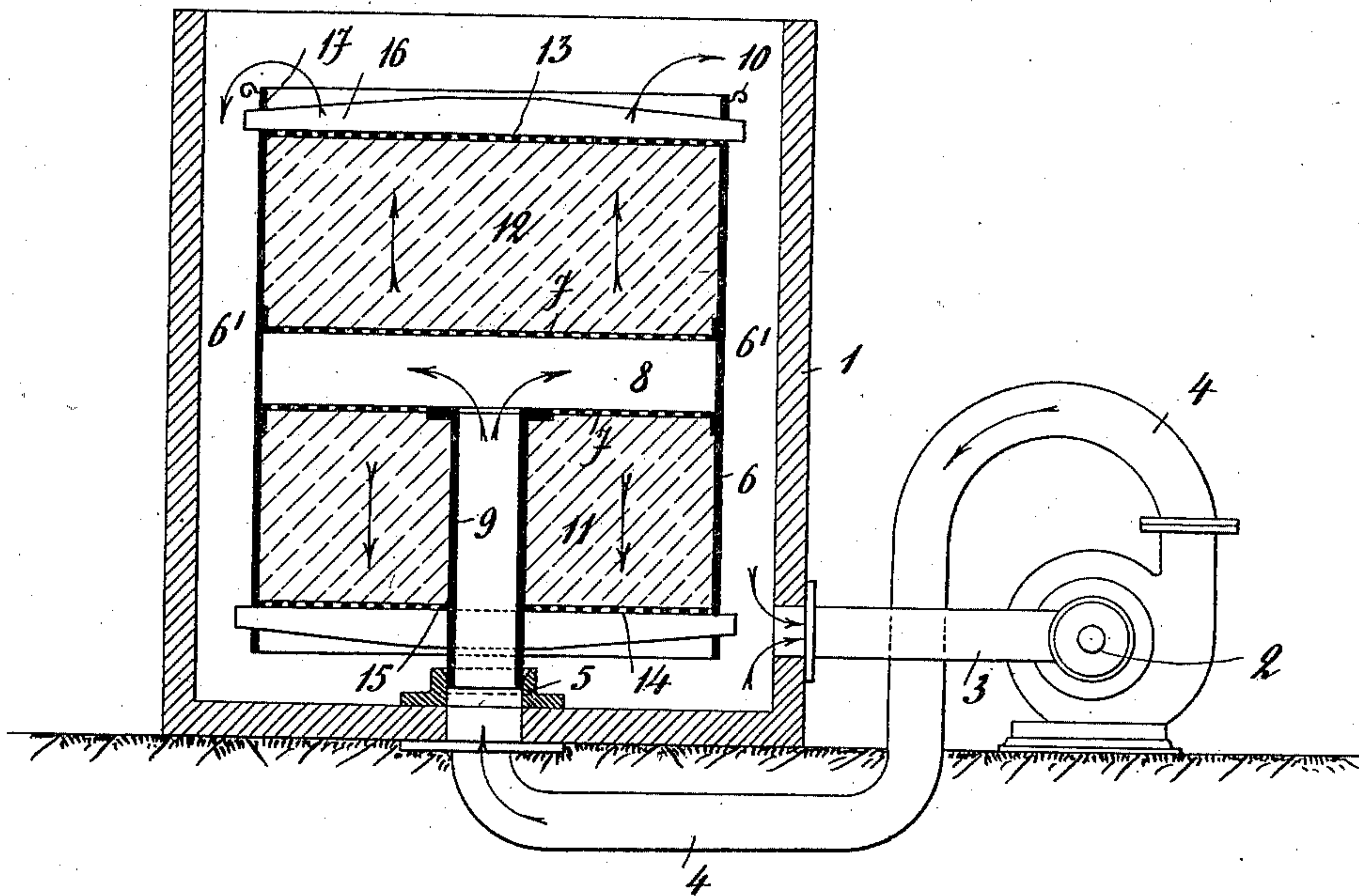
G. DE KEUKELAERE.

DYEING MACHINE.

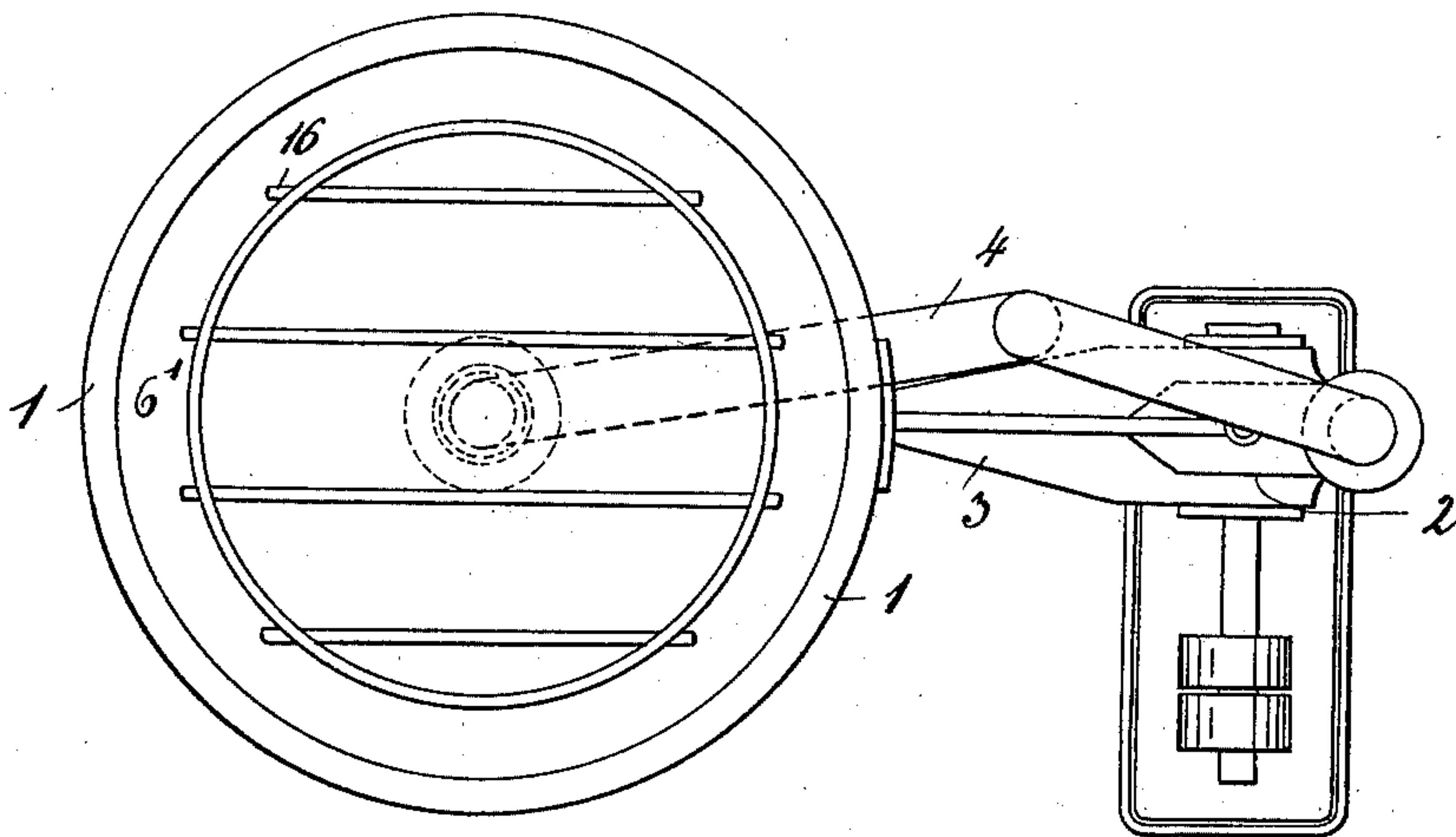
(Application filed May 4, 1901.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,910, dated November 5, 1901.

Application filed May 4, 1901. Serial No. 58,728. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAVE DE KEUKELAERE, chemist, a subject of the King of Belgium, residing at Brussels, in the Kingdom of Belgium, have invented certain new and useful Improvements in Dyeing-Machines, of which the following is a specification.

This invention relates to improvements in machines for dyeing textile materials—such as cotton, rags, and the like—and has for its object to provide novel means in order to facilitate the charging and discharging of the apparatus, simplifying at the same time the construction of the apparatus and providing for a regular circulation of the dyeing fluid and for a uniform action of the said fluid upon the material.

With this object in view my invention essentially consists in a novel arrangement and combination of parts, as hereinafter fully described, and set forth in the appended claims.

Referring to the annexed drawings, which show as an example a construction of a dyeing apparatus embodying my invention, Figure 1 is a vertical sectional view of the dyeing apparatus connected to a pump adapted to cause the dyeing fluid to circulate through the apparatus. Fig. 2 is a top view of the same apparatus.

In the drawings, 1 is a cylindrical dyeing-vat.

2 is a pump, preferably a motor-actuated centrifugal pump, connected to the dyeing-vat by two pipes 3 4. One of these pipes—the suction-pipe 3—connects the pump 2 to the lower part of the dyeing-vat 1. The second or forcing pipe 4 opens at the center of the bottom of the said dyeing-vat and is fitted in this vat with a connection 5, the inner part of which is conically shaped, so as to form a conical joint, in which fits tightly the lower part of a central tube forming part of and projecting from the “dyeing-cylinder” 6, properly so called and hereinafter described.

This dyeing-cylinder 6 is placed vertically in the dyeing-vat 1 and has a smaller diameter than the said dyeing-vat, so as to leave between its outer wall and the interior of the dyeing-vat a free space 6' for the circulation of the dyeing fluid. The cylinder 6 is open at both ends and provided at the same distance from said ends with two perforated

sheet-metal plates 7, rigidly attached to the laterally-closed wall of the cylinder and leaving between them a free space or conduit 8, so as to divide the cylinder 6 into two compartments. At the center of the lower perforated plate 7 is fixed the central tube 9, projecting downward, adapted to support the cylinder 6 and adjusting tightly in the connection 5 of the pipe 4. The cylinder 6 is fitted at its upper end with a number of hooks 10, adapted to be acted upon by a suitable lifting device in order to be easily removed from or replaced in the dyeing-vat 1.

After having been removed from the dyeing-vat 1 the two compartments 11 12, formed between the open ends of the cylinder and the perforated sheet-metal plates 7, are filled with the material to be treated. This material—cotton, rags, or the like—being suitably and conveniently compressed in the said compartments, the cylinder is closed at both extremities by aid of two perforated plates 13 14, one of which, the plate 14, is provided with a central hole 15 for the central tube 9. These perforated plates or covers 13 14 are pressed on the material to be treated and held in place by the aid of a number of bars or cross-beams 16, passing through suitable holes 17 in the wall of the cylinder 6. The cylinder being thus filled with the material to be treated is lifted again by means of the lifting apparatus and replaced in the dyeing-vat 1, the end of the central tube 9 adjusting tightly in the conical joint 5, the tightness of the joint being greatly increased through the weight of the movable cylinder 6. A certain quantity of dyeing liquor being then poured in the dyeing-vat 1, the pump 2 is started. The liquor sucked by the pump through the pipe 3 is forced through pipe 4 in pipe 9 and penetrates in the free space or conduit between the two perforated plates 7, passes through the perforations of the said plates and through the material to be dyed at the top and lower parts of the cylinder 6, circulates in the space 6' of the dyeing-vat 1, and is drawn again through the suction-pipe 3 to be again forced through pipe 4 and the material. The dyeing operation being performed, the pump 2 is stopped and the cylinder 6 is removed from the dyeing-vat 1, whereafter the cross-beams 16 are disengaged from the cylinder and the perforated plates



13 14 are removed, enabling thus the dyed material to be quickly and easily discharged from the apparatus and replaced by another quantity to be treated.

5 As will be easily understood, the great advantages of the new dyeing-machine hereinbefore described consist principally in the simplicity of construction and handling of the dyeing-cylinder, which may be easily removed from the machine and which on account of the central conduit 8 causes the dyeing fluid or liquor to circulate equally through the whole mass of material to be treated and to act upon a large surface of said material, 15 the said cylinder securing automatically through its weight the tightness of the joint at the lower end of the tube 9 without necessitating any complicated joint.

What I claim is—

20 1. In a dyeing apparatus in combination with a dyeing-vat, a laterally-closed cylinder, a horizontal conduit having perforated walls in the said cylinder, a connection between the said horizontal conduit and the forcing-pipe 25 of the pump, a conical joint between the said connection and the forcing-pipe of the pump and means for holding the material to be treated in the cylinder on each side of the horizontal conduit, substantially as described 30 and for the purpose set forth.

2. In a dyeing apparatus, in combination with a dyeing-vat and with a pump, a later-

ally-closed cylinder removable from the said vat, two horizontal perforated sheet-metal plates leaving a free space in the said cylinder and dividing this cylinder into two compartments, a central tube projecting from one of the perforated plates, a conical joint on the bottom of the dyeing-vat upon which the said tube adjusts tightly and means for 35 holding the material to be treated in the compartments of the cylinder substantially as described and for the purpose set forth. 40

3. In a dyeing apparatus in combination with a dyeing-vat and with a pump, a laterally-closed cylinder removable from the said vat, two horizontal sheet-metal plates forming a horizontal conduit in the said cylinder and dividing this cylinder into two compartments, a central tube projecting from one of the perforated plates, a conical joint on the bottom of the dyeing-vat upon which the said tube adjusts tightly and automatically, two perforated covers and cross-beams for holding the material to be treated in the compartments of the cylinder, substantially as described and for the purpose set forth. 45 50 55

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

GUSTAVE DE KEUKELAERE.

Witnesses:

GEORGE BELL,  
GREGORY PHELAN.