No. 765,883. PATENTED JULY 26, 1904.

S. W. CRAMER.

DYEING APPARATUS.

APPLICATION FILED MAY 2, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

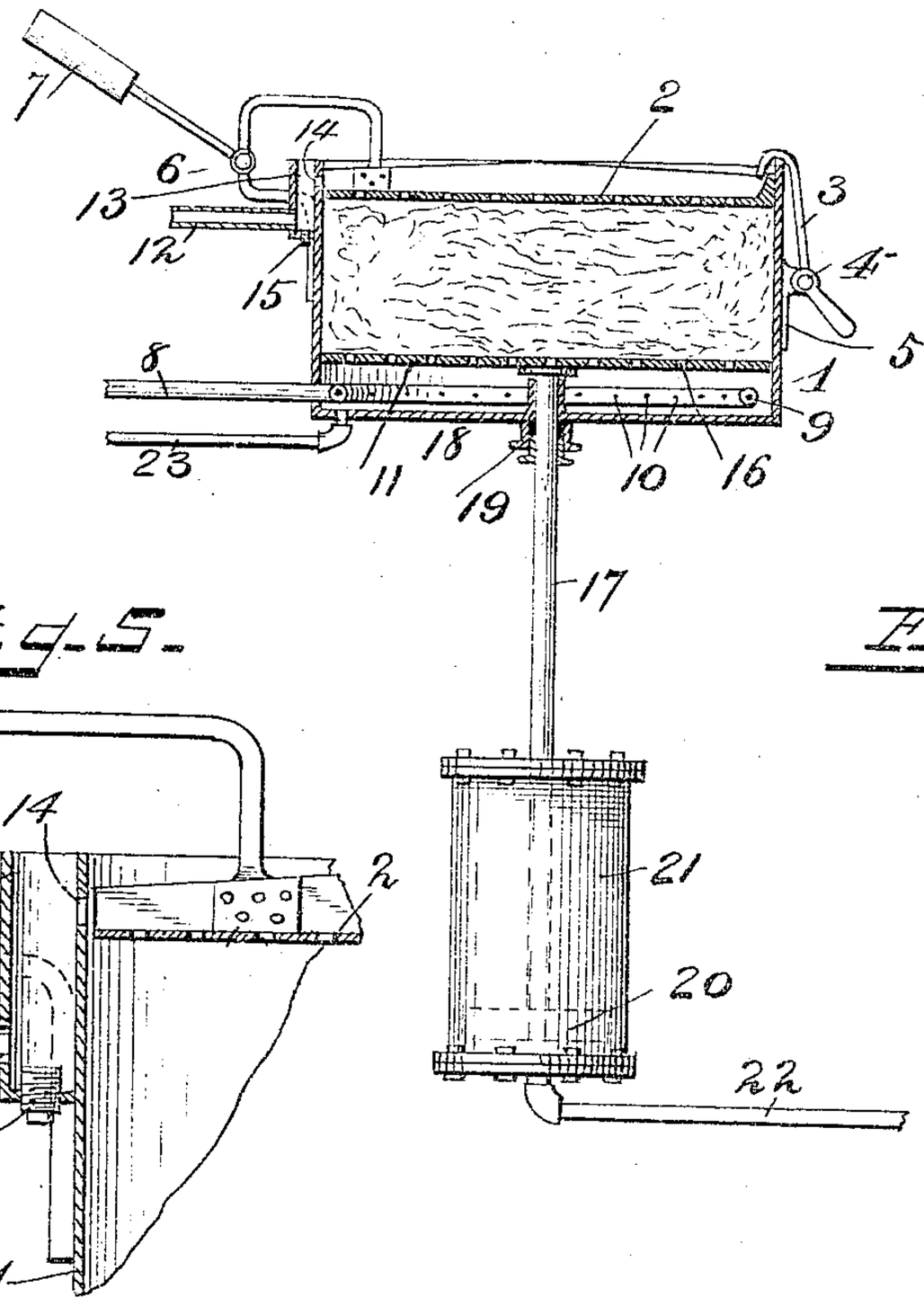
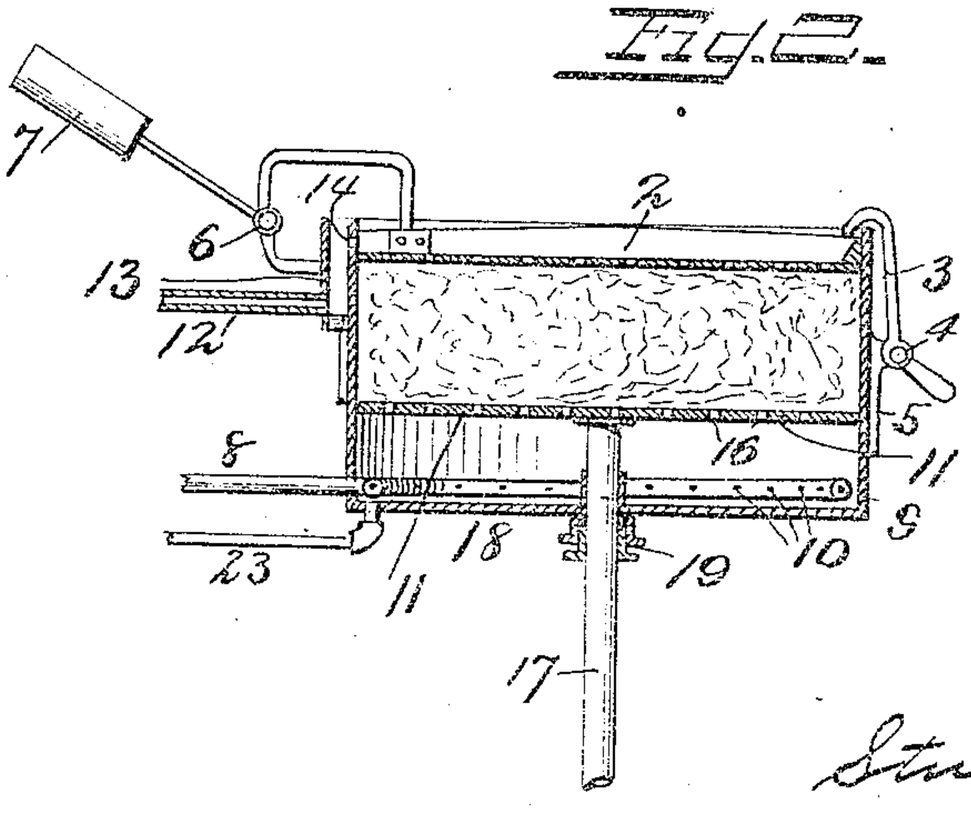


Fig. 5.

Fig. 2.



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NO MODEL. 2 SHEETS—SHEET 2.

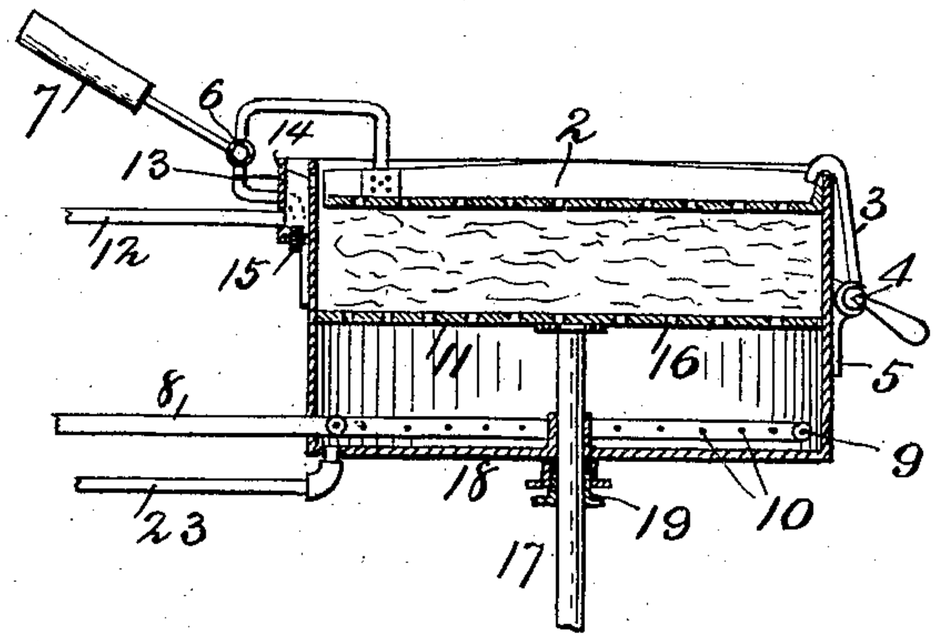

FIG. 3.

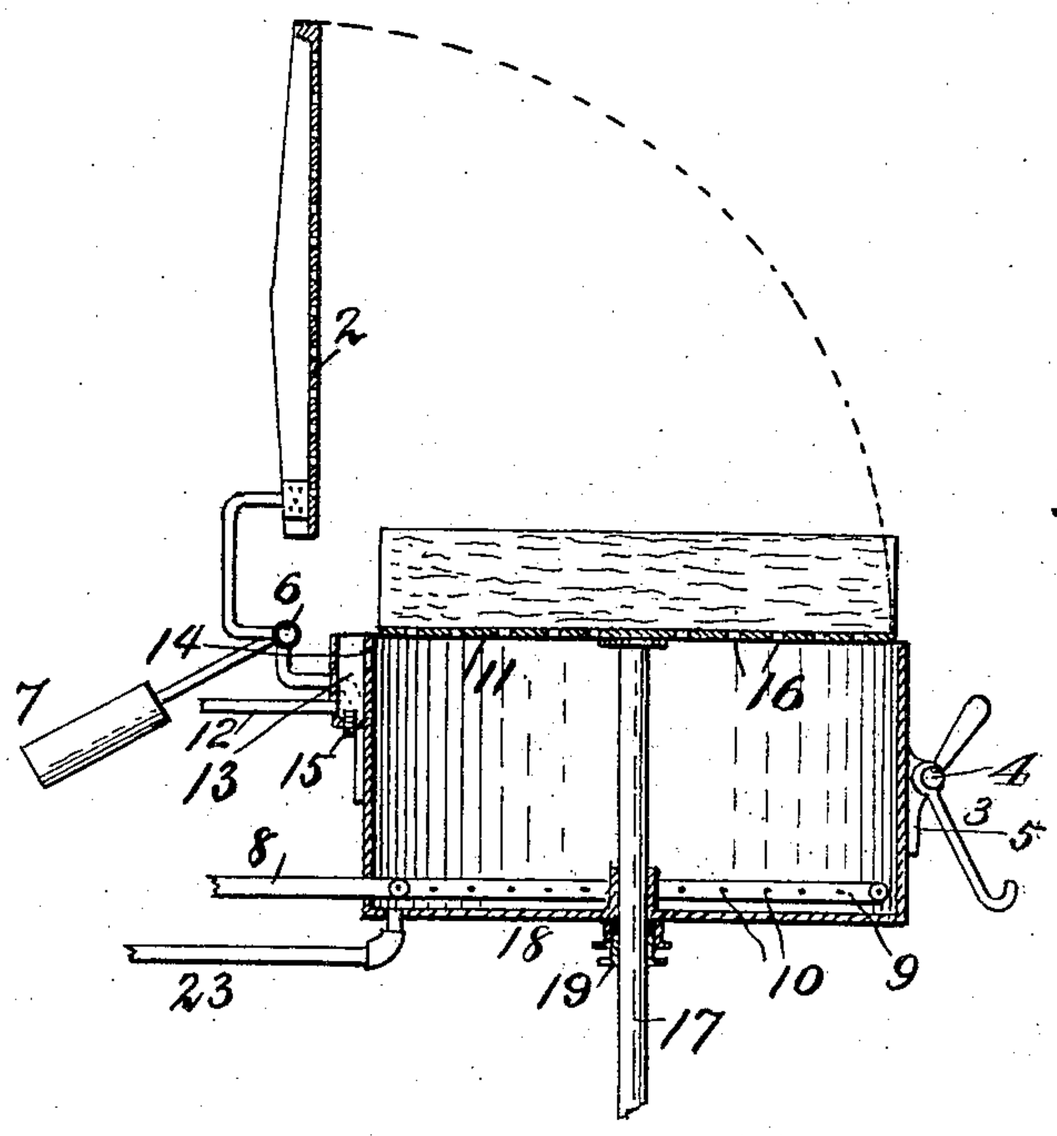

FIG. 4.

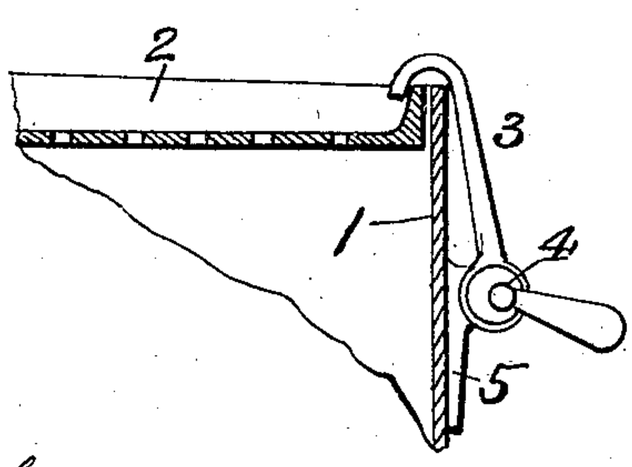

FIG. 5.

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UNITED STATES PATENT OFFICE.

STUART W. CRAMER, OF CHARLOTTE, NORTH CAROLINA.

DYEING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 765,883, dated July 26, 1904.

Application filed May 2, 1904. Serial No. 205,975. (No model.)

To all whom it may concern:

Be it known that I, STUART W. CRAMER, a citizen of the United States, residing at Charlotte, in the county of Mecklenburg and State of North Carolina, have invented certain new and useful Improvements in Dyeing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the art of dyeing wool, cotton, or other material, and has for its object certain improvements by which the material operated upon may be treated in a tank, vat, or other receptacle and expeditiously discharged therefrom.

The invention will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a vertical transverse section, partly in side elevation, showing the supplemental bottom in its lowest position with the material to be dyed resting thereon; Fig. 2, a like view showing the supplemental bottom raised to exert pressure on the material to effect its density; Fig. 3, a like view showing the supplemental bottom raised to a greater extent to express the dye liquor from the dyed material; Fig. 4, a like view showing the supplemental bottom raised to its full extent to expel or discharge the dyed material from the tank; Fig. 5, a like view, on an enlarged scale, showing the overflow-chamber and the liquor-return pipe; and Fig. 6, a like view showing one of the clamps and the cover on an enlarged scale.

Reference being had to the drawings and the designating characters thereon, 1 indicates a tank, vat, or other receptacle in which the material is treated; 2, a perforated or foraminous cover secured in the tank by clamps 3, of which only one is shown, or by any suitable device for the purpose. The clamps 3 are pivotally connected at 4 to a lug 5 on the tank, and the cover is provided with hinged joints 6, one on each side of the transverse center of the tank, only one being shown on the drawings, and each hinge is provided with a counterweight 7 to sustain the cover in its raised position. (Shown in Fig. 4.)

8 indicates the dye-liquor-supply pipe communicating with a pump, (not shown,) enters the tank and encircles the interior thereof, and forms an annular feed-pipe 9, provided with numerous perforations 10, through which the liquor is evenly distributed in the vat under the supplemental bottom 11.

12 is the liquor-return pipe, which communicates with the suction-pipe of the pump in the usual manner of connecting the pump and pipes for this class of machinery. The pipe 12 is connected to an overflow pocket or chamber 13, supplied through a port or opening 14 in the wall of the tank above the cover 2 when in position in the tank. Any number of these pockets may be used as found desirable to carry off the overflow liquor and to maintain circulation thereof through the tank and the pump.

In the bottom of the pocket 13 is a screw-plug 15 to facilitate removal of any solid matter which may accumulate in the pocket.

The supplemental bottom 11 is provided with perforations or openings 16 throughout its area, is provided with a rod 17, extending through the bottom 18 of the tank, the stuffing-box 19, and may be connected to the piston 20 of a fluid-operated motor having a cylinder 21, and a combined supply and discharge pipe 22, controlled by a suitable valve. (Not shown.)

It is obvious that other means may be employed to raise and lower the supplemental bottom without departing from the spirit of my invention.

23 indicates a pipe for drawing off the liquor after the dyeing of the material has been completed and the liquor is returned to its original source of supply.

In the operation of my invention the material to be dyed is placed upon the supplemental bottom 11, the cover 2 lowered into position in the tank and secured by the clamps 3, when the supplemental bottom is raised to compress the material between the cover and the bottom to effect the degree of density of the material found most desirable to secure

the best results of the dye liquor in passing through the material. The pump is then put into operation and the dye liquor forced through the material, the perforations in the bottom 11, and cover 2 and returned through pipe 12 to the pump to maintain circulation of the liquor. After the dyeing has been completed the liquor in the tank is returned to its source of supply through pipe 23. The bottom 11 is elevated to express the liquor from the dyed material, and then the cover 2 is released and raised to its elevated position, when the bottom 11 is further elevated to raise the material thereon to the upper end of the tank, so that it may be moved bodily from the bottom to any suitable means for conveying the material for further treatment.

By the construction shown a tank of variable depth for dyeing purposes is provided, whereby the charge of material to be dyed may be varied in quantity to suit the convenience of the manufacturer.

Having thus fully described my invention, what I claim is—

1. A receptacle provided with a foraminous cover, means for securing the cover, a reciprocatory and foraminous supplemental bottom for the receptacle on which the material to be dyed is supported, means for supplying dye liquor, means for withdrawing the liquor, and means for expressing liquor from the dyed material.

2. A receptacle provided with a foraminous cover, means for securing the cover, a reciprocatory and foraminous supplemental bottom for the receptacle on which the material to be dyed is supported, means for supplying dye liquor below said bottom, a discharge for the liquor above said cover, means for withdrawing the dye liquor, and means for raising the supplemental bottom and expelling the dyed material from the receptacle.

3. A receptacle provided with a foraminous cover, means for securing the cover, a reciprocatory and foraminous supplemental bottom for the receptacle on which the material to be dyed is supported, an annular foraminous supply-pipe below said bottom, a discharge-pipe above said cover, a pipe for drawing off the liquor, means for expressing the dye liquor from the material and for expelling the material from the receptacle.

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

STUART W. CRAMER.

Witnesses:

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