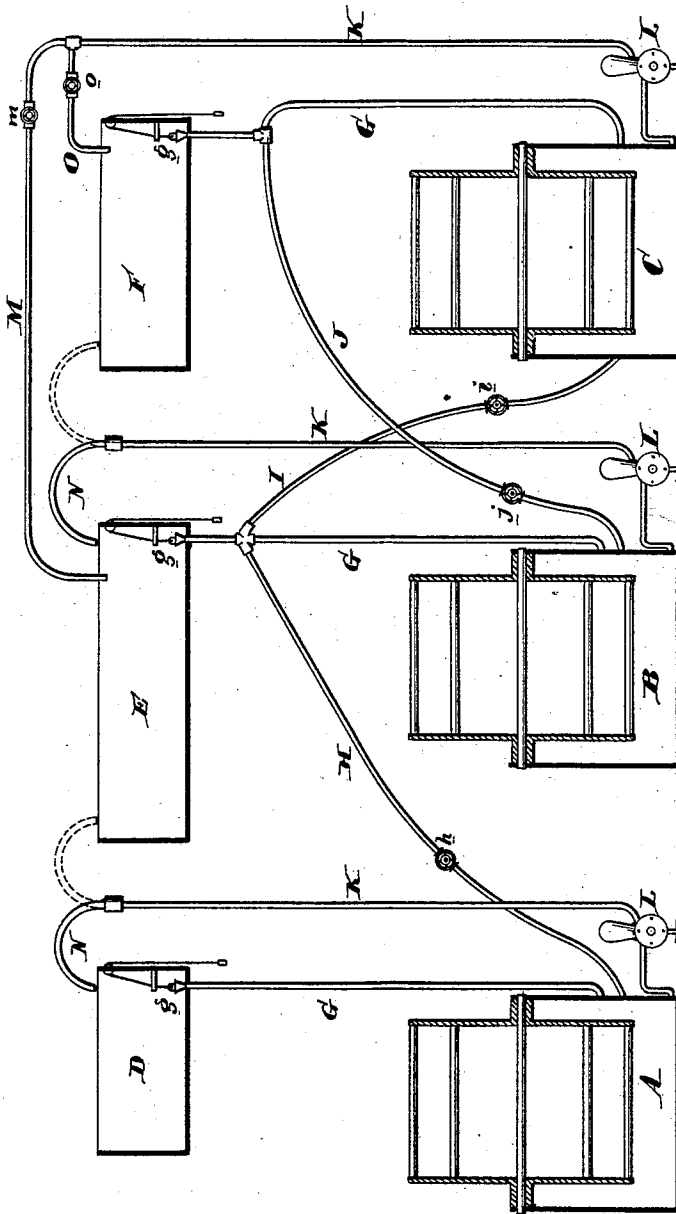


(No Model.)

C. L. KLAUDER.
DYEING APPARATUS.

No. 425,614.

Patented Apr. 15, 1890.



WITNESSES:

Henry Drury
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[Signature]

UNITED STATES PATENT OFFICE.

CHARLES L. KLAUDER, OF PHILADELPHIA, PENNSYLVANIA.

DYEING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 425,614, dated April 15, 1890.

Application filed February 23, 1889. Serial No. 300,986. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. KLAUDER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Dyeing Apparatus, of which the following is a specification.

My invention has reference to apparatus for dyeing and analogous treatment of textile materials; and it consists of certain improvements, all of which are fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

It frequently happens in large dyeing establishments that there are a number of dyeing-machines employed, and sometimes all of said dyeing-machines will be operating with the same dye-liquor, and at times each of said machines is operating upon an entirely different dye-liquor, or two or more said machines may be operating with one liquor simultaneously, with one or more of said machines operating with other dye-liquor. Furthermore, it is desirable that after treating the material to be dyed the liquor may be saved for future use, thereby avoiding the loss which would result from allowing the liquor to run to waste. Another advantage of employing the apparatus whereby two or more dyeing-machines may be operating with liquor from the same batch or mixture of dye-liquor is that the tint or color of the material being dyed is uniform in the different machines—a result which would be difficult to obtain where the dye-liquor was mixed separately in each dyeing-machine.

In carrying out my invention I provide a series of dyeing-machines of any suitable construction with suitable supply-pipes and discharge-pipes combined with pumps or equivalent means to draw the liquor from the dye-tanks and discharge it into storage-tanks. Each of the dyeing-machines receives liquor from either one of two of the storage-tanks, as desired. The arrangement of the apparatus is such that each dyeing-machine may receive a supply of dye-liquor from separate tanks, or one dyeing-machine may receive liquor from two tanks giving an admixture, or two or three dyeing-machines, as desired, may receive liquor from one tank. The re-

turn-pipes are so arranged that the liquor may return to the proper tanks as desired.

I do not limit myself to the mere details whereby this may be accomplished, as the arrangement of the dyeing-machines and connections between the dyeing-machines and separate tanks may be more or less modified to suit the views of the dyer.

In the drawing is shown a sectional elevation or diagrammatic view of dyeing apparatus embodying my invention.

A B C represent dyeing-machines of any suitable construction, by which the material to be dyed is carried through the dye-liquor in the tanks forming a portion of said machines.

D, E, and F are three storage-tanks, preferably arranged at a higher level than the tanks of the dyeing-machines. It is desirable that the capacity of tank F shall be twice that of tank D, and tank E shall be three times the capacity of tank D.

G are pipes extending, respectively, from the tanks D E F, and connecting, respectively, with the dyeing-machines A B C, and are provided with valves *g* to control the flow of the liquor from the storage-tank to the dyeing-machine. Each of the dyeing-machines is also provided with a delivery or discharge pipe K and pump L, for withdrawing the liquor from the dyeing-machine and returning it to the storage-tanks. In the case of the pipe K leading from the dyeing-machine A the discharge-nozzle N thereon is made to discharge either into the storage-tanks D or E. In the case of the pipe K leading from dyeing-machine B a movable discharge-nozzle N enables the dye-liquor to be put into tank E or F, as desired. In the case of the discharge-pipe K from the dyeing-machines C there are two pipes O and M, having valves *o* and *m*, for respectively discharging into the tanks F and E. It will thus be seen that the dyeing-machine A may be discharged into tanks D or E. The dyeing-machines B may be discharged into the tanks E or F. The dyeing-machine C may be discharged into tanks F or E. It is quite evident in this latter case that in place of pipes K O M the discharge-pump for the dyeing-machine C might discharge into the delivery-pipe K from the dye-

ing-machine B, as both the deliveries from machines B and C enter the same tanks E F.

J is a pipe which leads from the supply-pipe G from tank F to the dyeing-machine B, and is provided with a suitable valve *j*. By this means the contents of the tank F, which has a capacity equal to two dyeing-machines, may be discharged simultaneously into the dyeing-machines B and C, so that both machines may be employed to dye material in the same batch of liquor, and thereby insure the proper color or tint.

From the supply-pipe G to the dyeing-machine B there are two supply-pipes I and H, respectively, which lead to the dyeing-machines C and A, and these pipes are provided with valves *i* and *h* to control the flow of the dye-liquor to the dyeing-machines. It will thus be seen that the contents of the tank E may be simultaneously discharged into the three machines A, B, and C, whereby all three may be operated upon material to be dyed with the same batch of dyeing-liquor.

While I have only shown three dyeing-machines and three different-sized tanks, more dyeing-machines may be used and a corresponding addition in the number of storage-tanks employed. The mere details of the arrangement in connection with the pipes for supplying and discharging the liquor between the storage-tanks and the dyeing-machines may be greatly modified without in the least departing from the spirit of my invention, and hence I do not limit myself to what is shown, since the drawing is only intended to illustrate the principle of the invention, the minute details being varied as required to suit the exigencies of the case.

When I use the term "dyeing-machines" I do not wish to be understood as limiting myself to any particular class of machines, as any ordinary well-known dye-vat may be employed.

While the specification describes the invention as especially adapted to dyeing, it is clear that the tanks may contain other liquors—such as mordants, bleaching-liquors, &c.—and the invention is equally applicable to the use of any liquor.

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

1. The combination of two or more dyeing machines or vats, a storage-tank, supply-pipes from the storage-tank to each of the dyeing machines or vats, independent discharge-pipes from each of said dyeing machines or vats to the storage-tank, and a pump in each of said independent discharge-pipes to circulate the liquor between the dyeing machines or vats and storage-tank.

2. The combination of two dyeing machines

or vats, two storage-tanks, a supply-pipe from one of the tanks leading to one of the dyeing machines or vats only, supply-pipes from the other of said tanks leading to both of said dyeing machines or vats, valves in said supply-pipes, discharge-pipes from the first-mentioned dyeing machine or vat to the first-mentioned tank, discharge-pipes from both of the dyeing machines or vats to the second-mentioned tanks, and pumps to circulate the liquor between the dyeing machines or vats and tanks.

3. The combination of two dyeing machines or vats, two storage-tanks of different capacities, one of which is equal at least to the capacity of one dyeing machine or vat, and the other of which has about twice that capacity, a supply-pipe from the tank of less capacity leading to one of the dyeing machines or vats, supply-pipes from the tanks of greater capacity leading to both of said dyeing machines or vats, valves in said supply-pipes, discharge-pipes from the first-mentioned dyeing machine or vat to the first-mentioned tank, discharge-pipes from both of the dyeing machines or vats to the second-mentioned tank, and pumps to circulate the liquor between the dyeing machines or vats and tanks.

4. A series of dyeing machines or vats, in combination with a series of tanks connecting supply-pipes between each tank of the series and a different number of dyeing-machines, valves in the supply-pipes, discharge-pipes from the dyeing machines or vats and tanks, and pumps to circulate the liquor through said discharge-pipes.

5. The combination of a series of dyeing machines or vats, a series of storage-tanks, discharge-pipes from each of the dyeing machines or vats to two of the tanks, a different number of supply-pipes from each of the tanks to the dyeing machines or vats, and in which each supply-pipe from a single tank leads to different dyeing machines or vats, and circulating-pumps for causing the liquor to flow between the dyeing machines or vats and tanks.

6. The combination of two dyeing machines or vats, two storage-tanks, a discharge-pipe and a supply-pipe between one dyeing machine or vat and one of the tanks, a discharge-pipe and a supply-pipe between the other dyeing machine or vat and the other tank, a discharge-pipe and a supply-pipe between the first-mentioned dyeing-machine and last-mentioned tank, and pumps to circulate the liquor.

In testimony of which invention I hereunto set my hand.

CHARLES L. KLAUDER.

Witnesses:

ERNEST HOWARD HUNTER,
E. M. BRECKINREED.