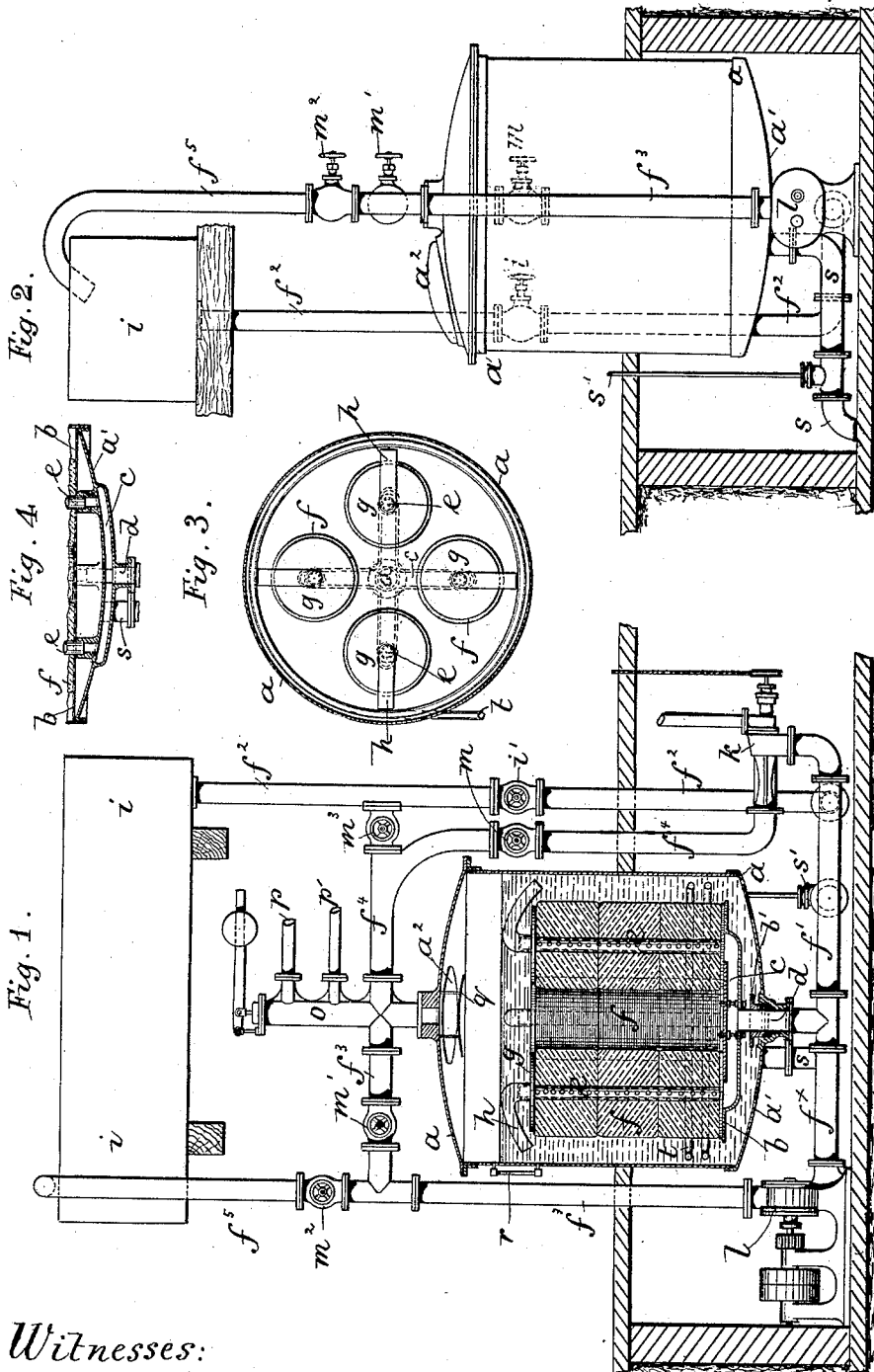


(No Model.)

S. MASON, Jr.
APPARATUS FOR DYEING WOOL.

No. 465,871.

Patented Dec. 29, 1891.



Witnesses:

A. B. Sumner.
E. B. Bolton

Inventor:
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UNITED STATES PATENT OFFICE.

SAMUEL MASON, JR., OF MANCHESTER, ENGLAND.

APPARATUS FOR DYEING WOOL.

SPECIFICATION forming part of Letters Patent No. 465,871, dated December 29, 1891.

Application filed May 13, 1891. Serial No. 392,635. (No model.) Patented in England June 3, 1889, No. 9,149.

To all whom it may concern:

Be it known that I, SAMUEL MASON, JR., a subject of the Queen of Great Britain, and a resident of Manchester, in the county of Lancaster, Kingdom of Great Britain, have invented new and useful Apparatus for Dyeing or otherwise Treating Wool, (for which I have obtained a patent in Great Britain, No. 9,149, bearing date June 3, 1889,) of which the following is a specification.

My invention relates to improvements in apparatus for dyeing, mordanting, scouring, or otherwise treating wool, and has for its object to provide means which will permit the treatment of wool in "top" form or roving bobbins in a keir or other similar hermetically-closed vessel. I attain this object by the apparatus described in the accompanying drawings, in which—

Figure 1 is a vertical section, Fig. 2, an end view, and Fig. 3 a sectional plan, of my improved apparatus for dyeing or otherwise treating wool tops or bobbins. Fig. 4 is a vertical section of the lower part of the keir, showing a modification thereof.

Similar letters refer to similar parts throughout the several views.

The hermetically-closed vessel *a*, herein-after termed the "keir," made of iron or other suitable material, according to requirements of the colors and treatment to be performed, is internally furnished with a perforated false bottom *b*, arranged stationary, Fig. 4, or preferably with a bottom *b*, arranged to revolve in a stuffing-box *b'*, (see Fig. 1,) formed on the keir-bottom *a'*. When employing a stationary perforated false bottom *b*, the keir-bottom *a'* is formed with a number of channels *c*, Fig. 4; otherwise the said channels are or a cavity *c* is formed underneath the revolving bottom *b*, Fig. 1. The said channels or the cavity *c* communicates with the pipe *d*, which serves both as an inlet and as an outlet for the liquor, and with perforated pipes *e*, suitably fitted into the keir-bottom *a'* or false perforated bottom *b*, on which are placed the wool tops or bobbins *f* to be treated. A weight *g* is placed on the top thereof, having a short piece of hose-piping *h* attached, (the free end of which is closed,) which weight *g*, when the tops or bobbins *f* shrink during the treatment,

draws the hose *h* down the perforated pipe *e*, thus covering the perforations and compelling all the liquor to pass through the tops or bobbins *f*.

To the inlet and outlet *d* are suitably connected two pipes *f'* and *f''*, respectively in communication with an elevator *k* and rotary or other suction pump *l* and with the liquor-tank *i* by means of pipes *f''*, *f'''*, and *f'''*. The liquor-tank *i* is arranged at a level higher than the liquor-level in the keir *a*, and the said elevator *k* and rotary or other suction pump *l* are brought, respectively, into communication with the inlet-pipe *o* on the top of the keir *a* by means of the pipes *f''* and valve *m* and the pipe *f'''* and valve *m'*. The inlet-pipe *o* is also connected to a vacuum-pump (not shown) and a water-supply, respectively, by means of the pipes *p* *p'* and the top of the keir *a* formed with a man-hole *a''*, which can be hermetically closed and facilitates the placing and removing of the wool tops or bobbins *f* onto or from the perforated pipes *e*. No circulation of the current takes place through these pipes *p* *p'*, as one serves for the inlet of water and the other for producing a vacuum. By revolving the bottom *b* in the keir *a* the perforated pipes *e* can be successively brought underneath the man-hole *a''*, which greatly facilitates the placing on or removal of the tops or bobbins *f* from the same. Below the inlet-pipe *o* a distributor *q* is arranged in the keir *a*, and on the outside thereof a liquor-gage *r*.

To facilitate the draining or washing of the keir *a*, a waste-pipe *s*, furnished with a valve *s'*, may be connected to the keir-bottom *a'*.

For such colors as require the liquor to be heated or boiled to fix the dye the keir *a* is provided with a circular steam-coil *t*, arranged close to its inner surface, and the supply-tank *i* may be heated in a similar manner or by an open steam-jet.

The operation of the apparatus is as follows: After placing the wool tops or bobbins *f* to be treated onto the perforated pipes *e*—one on top of the other—in the keir *a*, the same are subjected to a vacuum, during which time communication with the liquor-tank *i* and elevator *k* and rotary or other suction pump *l* is cut off by means of the valves *m*, *m'*, *m''*, *m'''*, and *i'*. The valve *i'* in

pipe f^2 , leading to the liquor-tank i , is then opened, which causes the liquor to rush into the keir a through pipes $f^2 f'$ and inlet d and through the perforated pipes e and wool tops or bobbins f . When the latter are fully immersed in the liquor, which can be ascertained by the gage-glass r , the valve i' , leading to the liquor-tank i , is closed and the valves m^2 and m^3 are opened, which establishes communication through pipes f^2, f^4 , and o between the keir a and the liquor-tank i . The pump l is then set in operation, which circulates the liquor in the keir a through the tops or bobbins f , perforated pipes e , channels or cavity c , outlet d , pipes f^x, f^3 , and f^5 , and back into the tank i .

Where the nature of the liquor will allow it, an elevator k may be used, which, on the valves i', m', m^2 , and m^3 being closed and the valve m opened, raises the liquor previously run into the keir a from the outlet d through the pipes f', f^4 , and o onto the distributor q in the top of the keir a , whereby a continuous circulation of the liquor through the wool tops or bobbins f can also be maintained. When the operation of dyeing is completed, the liquor in the keir a can be returned into the tank i by means of the rotary or other suction pump l through outlet d , pipes f^x, f^3 , and

f^5 , and valve m^2 , which latter otherwise remains closed.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In an apparatus for treating wool, a hermetically-closed vessel having a man-hole, vacuum, or liquor-inlet at the top, an outlet at the bottom, perforated pipes, a perforated bottom adapted to be circularly movable for the purpose of bringing said perforated pipes in succession beneath the man-hole, channels communicating therewith, and weight g , provided with a flexible pipe, said pipe being drawn over the perforations in the before-mentioned pipes by the weight, substantially as set forth.

2. The combination, with the perforated pipe e , adapted to receive the tops or bobbins f to be treated, of a weight g , having attached a flexible pipe h , which weight, while the tops or bobbins f are shrinking during treatment, descends and draws the flexible pipe h gradually over the perforations in e , substantially as set forth.

SAMUEL MASON, JR.

Witnesses:

FERDINAND BOSSHARDT,
S. E. BRAMALL.