H. M. DUDLEY.

FABRIC TREATING DEVICE.

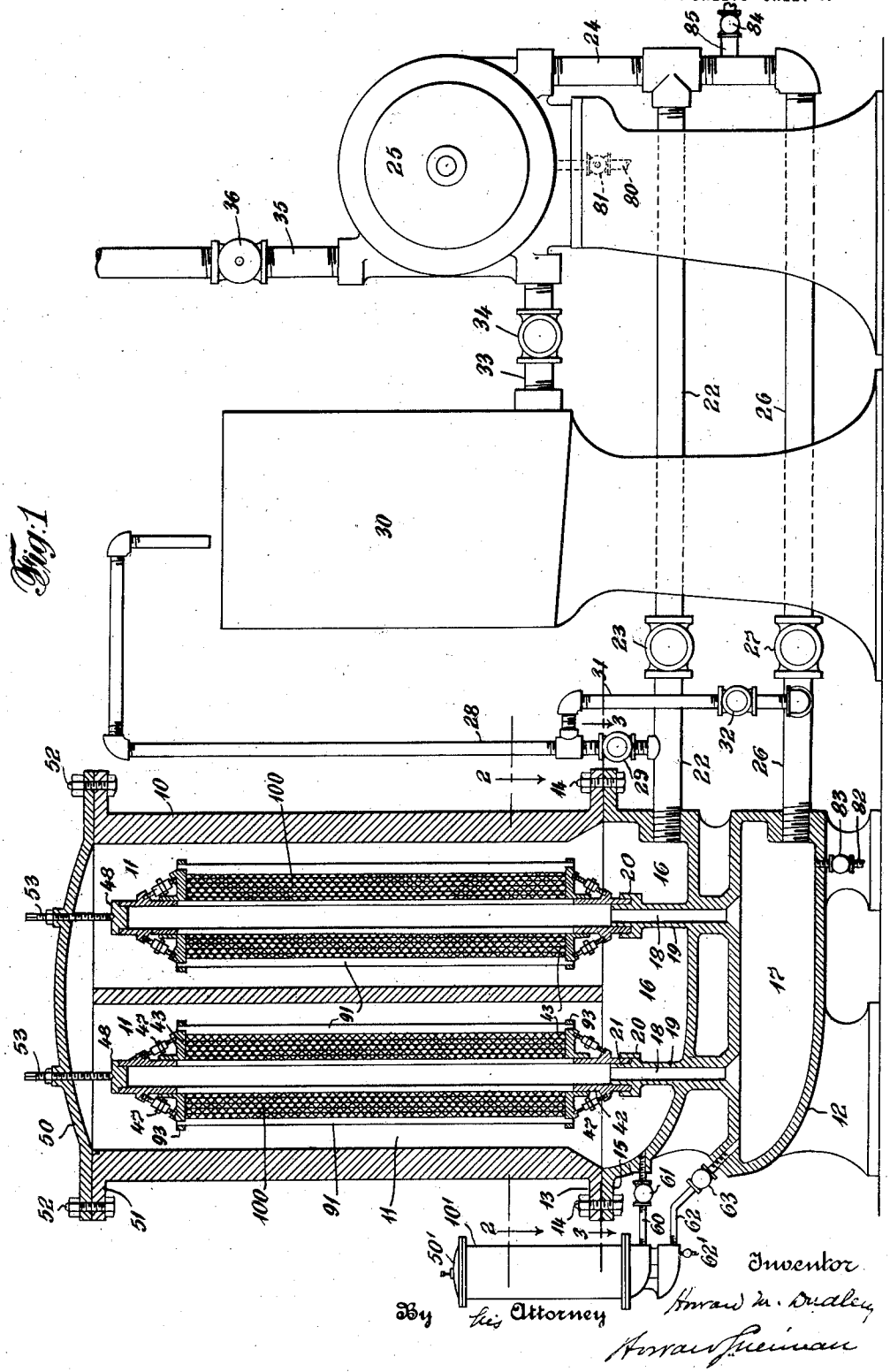
APPLICATION FILED NOV. 22, 1917.

1,335,098.

Patented Mar. 30, 1920.

4 SHEETS—SHEET 1.

Fig. 1



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4 SHEETS—SHEET 2.

Fig. 2

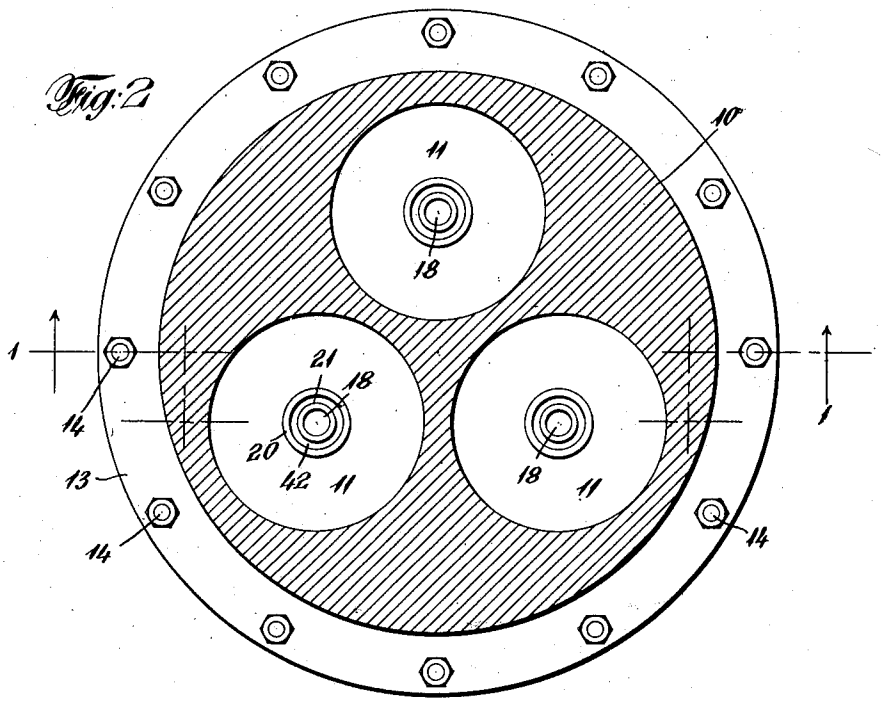
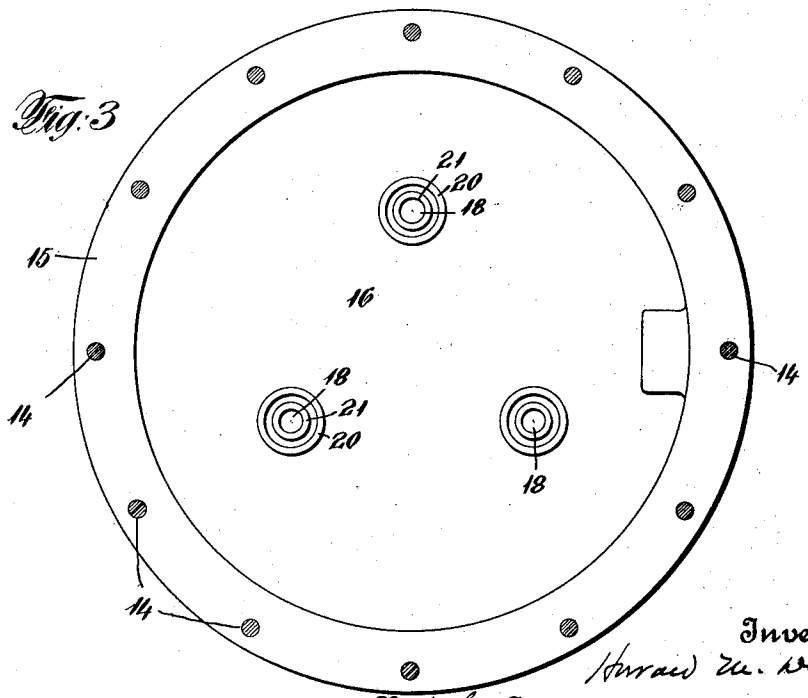


Fig. 3



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H. M. DUDLEY.

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4 SHEETS—SHEET 3.

Fig. 4

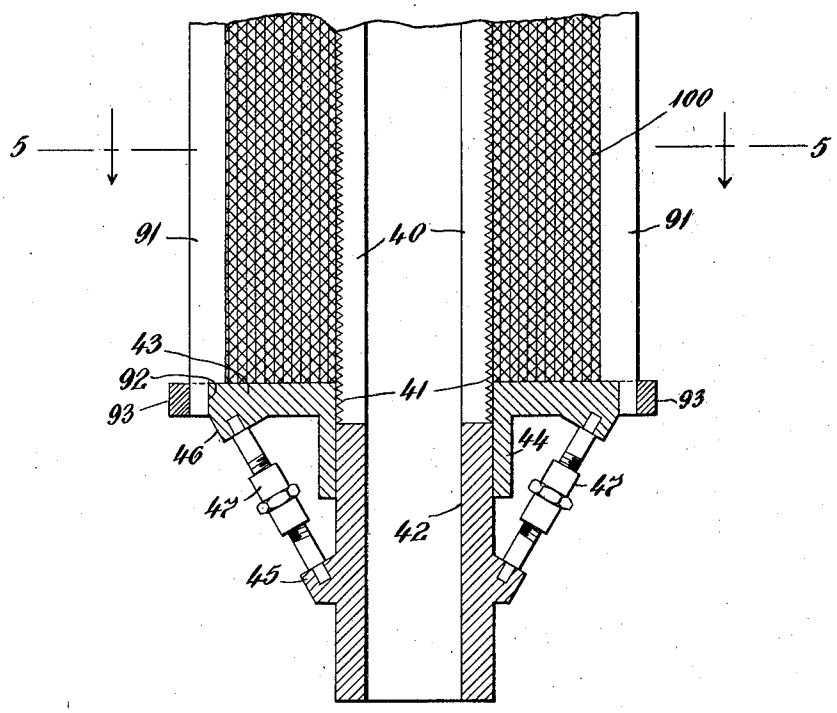
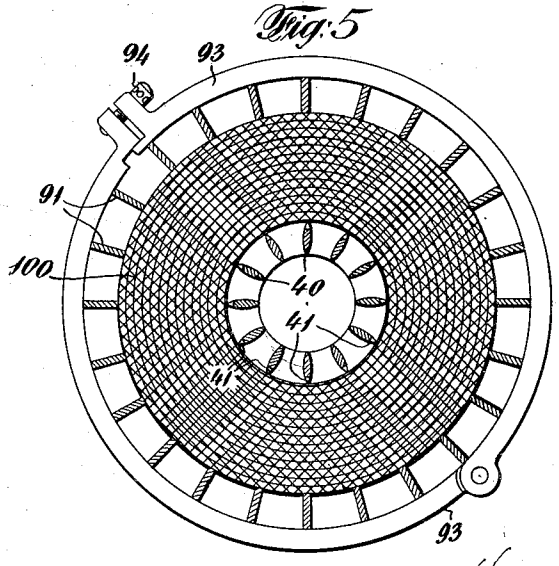


Fig. 5



Inventor

Horace M. Dudley

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Patented Mar. 30, 1920.

4 SHEETS—SHEET 4.

Fig. 6

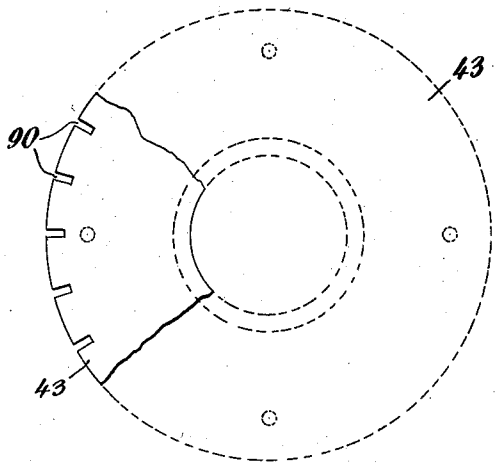


Fig. 8

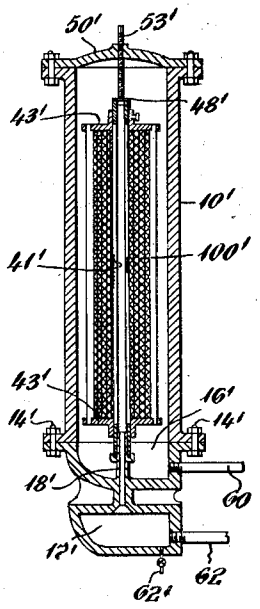
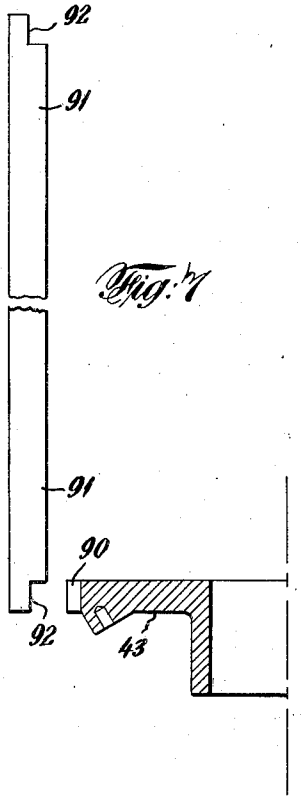


Fig. 7



Inventor

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UNITED STATES PATENT OFFICE.

HOWARD M. DUDLEY, OF PHILADELPHIA, PENNSYLVANIA.

FABRIC-TREATING DEVICE.

1,335,098. Specification of Letters Patent. Patented Mar. 30, 1920.

Application filed November 22, 1917. Serial No. 203,369.

To all whom it may concern:

Be it known that I, HOWARD M. DUDLEY, a citizen of the United States, residing in the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Fabric-Treating Devices, of which the following is a full, clear, and exact specification.

My invention relates to fabric treating devices and refers particularly to those devices suitable for treating wound fabrics with liquid, steam or air.

One object of my invention is a device whereby a series of wound fabrics may be subjected simultaneously to equal and uniform treatment with liquid, steam or air.

Another object of my invention is a device in which fabric of any width may be subjected to equal and uniform treatment with liquid, steam or air.

Another object of my invention is a device in which liquid, steam or air may be passed in opposite directions through a series of wound fabrics to produce even and uniform results.

Another object of my invention is a device in which wound fabric may be maintained in a fixed position during the passage of liquid, steam and air through it in opposite directions.

Another object of my invention is a device in which the condition of the fabric may be determined without opening the device, interrupting the operation or disturbing the fabric.

These and other objects of the device of my invention will be evident upon a consideration of my specification, drawings and claims.

A number of difficulties present themselves in the treatment of wound fabrics such as dyeing, crabbing, steaming and bleaching. All portions of the fabric must receive equal treatment in order that the interior, exterior and edges of the fabric may be uniform, equal penetration must exist in all parts, and the device must be capable of treating fabric of varying widths. In addition to these requirements, it is advantageous to treat a number of wound fabrics simultaneously in order to save time and labor and insure uniformity of results. Further, it is essential that the condition of the treated fabric be capable of judgment from time to time without disturbing the fabric or interrupting the operation.

The device of my invention accomplishes all of these desirable results and presents a method whereby a number of fabrics of varying widths may be treated equally and uniformly in a simple, rapid and economical manner, and the treated condition observed without interrupting the operation or disturbing the fabric.

In the particular form of the device of my invention, shown in the accompanying drawings, similar parts are designated by similar numerals:—

Figure 1 is a side elevation, partly in cross-section.

Fig. 2 is a cross-section through the line 2—2 of Fig. 1 with the fabric-carrying members removed.

Fig. 3 is a cross-section through the line 3—3 of Fig. 1.

Fig. 4 is a broken enlarged vertical cross-section of the bottom portion of a fabric-carrying member.

Fig. 5 is a cross-section through the line 5—5 of Fig. 4.

Fig. 6 is a top plan view of one of the fabric-carrying members, partly broken away and partly in cross-section.

Fig. 7 is a broken side plan view of one of the blades.

Fig. 8 is a vertical cross-section of the testing device.

The particular form of the device of my invention shown in the accompanying drawings, comprises a body member 10, within which is a series of fabric chambers 11, 11, 11. A bottom member 12 is attached to the flange 13 of the body 10 by means of the bolts 14, 14, 14 passing through the flange 15 of the bottom 12. The bottom 12 comprises an upper liquid chamber 16 and a lower liquid chamber 17. Within the bottom 12 is a series of tubular openings 18, 18 formed by the walls 19, 19, the tubular openings 18, 18 connecting the liquid chamber 17 with the upper portion of the liquid chamber 16 and being situated centrally of the fiber chambers 11, 11. The upper portion of each annular wall 19 has an annular recess formed by the members 20 and 21 for purposes described later. The chamber 16 is connected to the pipe 22, carrying the valve 23, connected to the pipe 24 which in turn is connected to the discharge chamber of the

pump 25. The chamber 17 is connected to the pipe 26, carrying the valve 27, which is connected to the pipe 24. The pipe 22 is connected to the pipe 28, carrying the valve 29, which opens into the upper portion of the reserve tank 30. The pipe 26 is connected to the pipe 28 by means of the pipe 31, carrying the valve 32. The lower portion of the reserve tank 30 is connected to the receiving chamber of the pump 25 by means of the pipe 33 carrying the valve 34. The receiving chamber of the pump 25 is also connected to the pipe 35 carrying the valve 36, connected to a dissolving tank, not shown.

The fabric carrying means comprises a foraminous core formed by a series of parallel spaced bars 40, 40 having outer serrated edges 41, 41, carried by the hollow annular members 42, 42. Slidable over the foraminous core are two flange members 43, 43, the lower arms 44, 44 of which abut upon the member 42 to form a water-tight joint. Each member 42 carries an offset 45, which is connected to the offset 46 of the flange 43 by means of a series of right and left turnbuckles 47, 47, thus allowing the flanges 43, 43 to be fixedly positioned at predetermined distances from each other. The bottom annular member is capable of being positioned between the members 20 and 21 to form a water-tight joint. The upper end of each core is closed by means of a cap 48. A removable top 50 is capable of being attached to the flange 51 of the body 10 by means of the bolts 52, 52. Threaded through openings in the top 50 is a series of set screws 53, 53, each being capable of being positioned within a recess within the cap 48. The flanges 43, 43 have a series of slots 90, 90 in their outer positions, into which the blades 91, 91 having the offsets 92, 92 may be fitted. The blades 91, 91 rest against the fiber 100 and are pressed inwardly by means of the clamping members 93, 93 and the clamp screws 94, 94.

A smaller testing device, proportionate to the large device and having one core therein, is exterior of the device, and in the drawings, parts similar to those of the larger device are designated by prime numerals.

The chamber 16′ is connected to the chamber 16 by the pipe 60 carrying the valve 61, and the chamber 17′ is connected to the chamber 17 by the pipe 62 carrying the valve 63. The fiber 100′ within the testing device may be examined by removing the top 50′ and withdrawing the fiber-carrying member.

A pipe 80, carrying the valve 81, connects the discharge chamber of the pump 25 with a source of fresh water supply, and the drain pipe 82, carrying the valve 83, is connected to the chamber 17. The pipe 84, carrying the valve 85, connects the pipe 24 with a source of steam.

The operation of the device is as follows:—

The fabric 100 is wrapped around the members 40, 40 of each core, the flange members 43, 43 moved to abut closely upon the edges of the wound fabric 100 by means of the turn buckles 47, 47, the blades 91, 91 inserted in the slots 90, 90 of the flanges 43, 43 and forced against the fiber 100 by means of the clamping members 93, 93. The top 50 is removed, a wound fabric carrying member inserted in each fabric chamber 11, 11 so that the bottom member 42 fits between the members 20 and 21, the top 50 attached to the body 10, and the set screws 53, 53 set to hold the wound fabric in a fixed position. The testing machine is removed, fabric 100′ introduced therein and the testing device replaced. All of the valves are closed with the exception of valves 36, 27, 29, 61 and 63 and the pump 25 started. The liquid thus passes from the dissolving tank, not shown, into the pump 25, through the pipes 24 and 26 into the liquid chamber 17 and thence through the openings 18, 18 into the center of the cores and thence outwardly through the fabric 100 wound thereon, into the fiber chambers 11, 11 and the liquid chamber 16, from which it passes through the pipes 22 and 28 into the reserve tank 30. When sufficient liquid has been introduced, valve 36 is closed and valve 34 is opened, the liquid thus passing continuously in the direction indicated. At the same time the liquid takes a similar course through the testing device and the fabric 100′ therein. When it is desired to pass the liquid in the opposite direction, the valves 27 and 29 are closed and valves 23 and 32 opened. Then the liquid passes from the pump 25 through the pipes 24 and 22 into the liquid chamber 16 and the fabric chambers, and thence inwardly through the wound fabric 100 into the center of the core and then through the openings 18, 18, the liquid chamber 17, the pipes 26, 31 and 28 into the reserve tank and then through the pipe 33 for continuous circulation. At the same time the liquid passes through the testing device and the fiber 100′ therein in a similar direction. The liquid may be drained from the device by opening the valve 83 of the pipe 82. Fresh water may be forced through the device by opening the valve 81 of the pipe 80, and steam may be passed through the device by opening the valve 85 of the pipe 84. The condition of the fabric being treated may be determined without interrupting the operation in the larger device at any time by closing the valves 61 and 63, removing the testing device and examining the fiber 100′ as described above.

I do not limit myself to the particular size, shape, number or arrangement of parts

as shown and described, all of which may be varied without going beyond the scope of my invention as described and claimed.

What I claim is:—

1. In a fabric treating device, in combination, a series of fabric chambers, a hollow foraminous fabric-carrying member within each fabric chamber, a series of spaced parallel bars capable of abutment upon fabric wound upon each of the fabric-carrying members, two liquid chambers, a conduit connecting one liquid chamber with the interior of each fabric-carrying member, means for forcing a liquid from said liquid chamber into the interior of the hollow fabric-carrying members and thence through the fabric-carrying members into the other liquid chamber, means for conveying the liquid outwardly from the last-mentioned chamber and means for the continuous flow of the liquid as described.

2. In a fabric treating device, in combination, a series of fabric chambers, a hollow foraminous fabric-carrying member within each fabric chamber, opposed end pieces slidable over each fabric-carrying member and capable of abutment upon fiber wound thereon, means whereby the two end pieces may be moved with respect to each other, two liquid chambers, a conduit connecting one liquid chamber with the interior of each fabric-carrying member, means for forcing a liquid from said liquid chamber into the interior of the hollow fabric-carrying members and thence through the fabric-carrying members into the other liquid chamber, means for conveying the liquid outwardly from the last-mentioned chamber and means for the continuous flow of the liquid as described.

3. In a fabric treating device, in combination, a series of fabric chambers, a hollow foraminous fabric-carrying member within each fabric chamber, opposed end pieces slidable over each fabric-carrying member and capable of abutment upon fiber wound thereon, means whereby the two end pieces may be moved with respect to each other, a series of spaced parallel bars capable of abutment upon fabric wound upon each of the fiber-carrying members, two liquid chambers, a conduit connecting one liquid chamber with the interior of each fabric-carrying member, means for forcing a liquid from said liquid chamber into the interior of the hollow fabric-carrying members and thence through the fabric-carrying members into the other liquid chamber, means for conveying the liquid outwardly from the last-mentioned chamber and means for the continuous flow of the liquid as described.

4. In a fabric treating device, in combination, a series of fabric chambers, a foraminous fabric-carrying member within each fabric chamber comprising a series of parallel spaced bars and an imperforate flange at each end of the series of bars, means for sliding the flanges over the parallel bars closing all of the openings between the bars except those between the flanges, a liquid chamber connected to all of the fabric chambers, a liquid chamber connected to the interiors of all of the fabric-carrying members and means for forcing a liquid through the device.

5. In a fabric treating device, in combination, a series of fabric chambers, a foraminous fabric-carrying member within each fabric chamber comprising a series of parallel spaced bars and an imperforate flange at each end of the series of bars, means for sliding the flanges over the parallel bars, maintaining them in a predetermined position and limiting the foraminous portion of the device to that portion between the flanges, a chamber connected to all of the fabric chambers, a chamber connected to all of the interiors of the fabric-carrying members and means for forcing liquids and gases through the device.

Signed at New York city, in the county of New York and State of New York, this 19th day of November, 1917.

HOWARD M. DUDLEY.