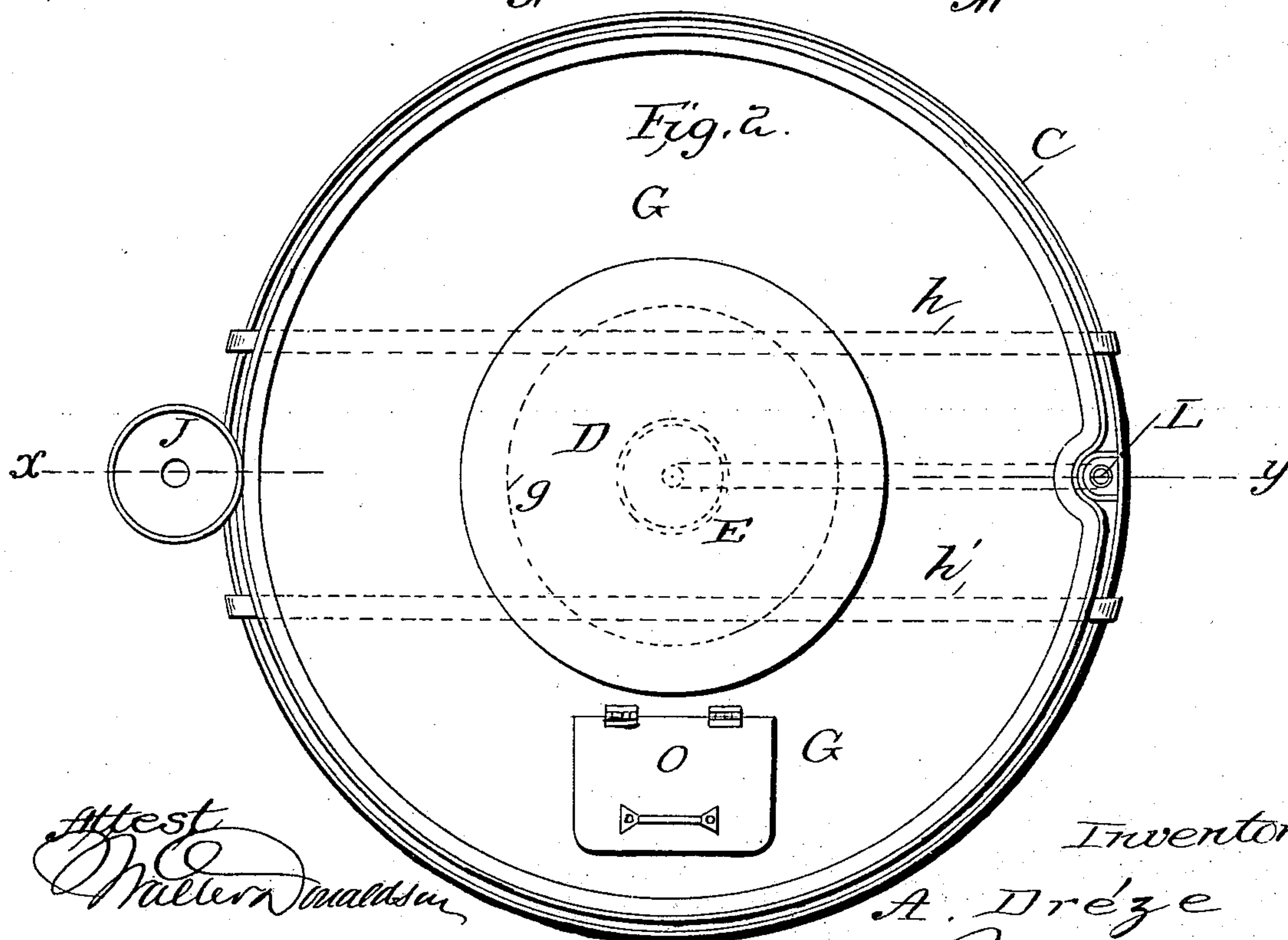
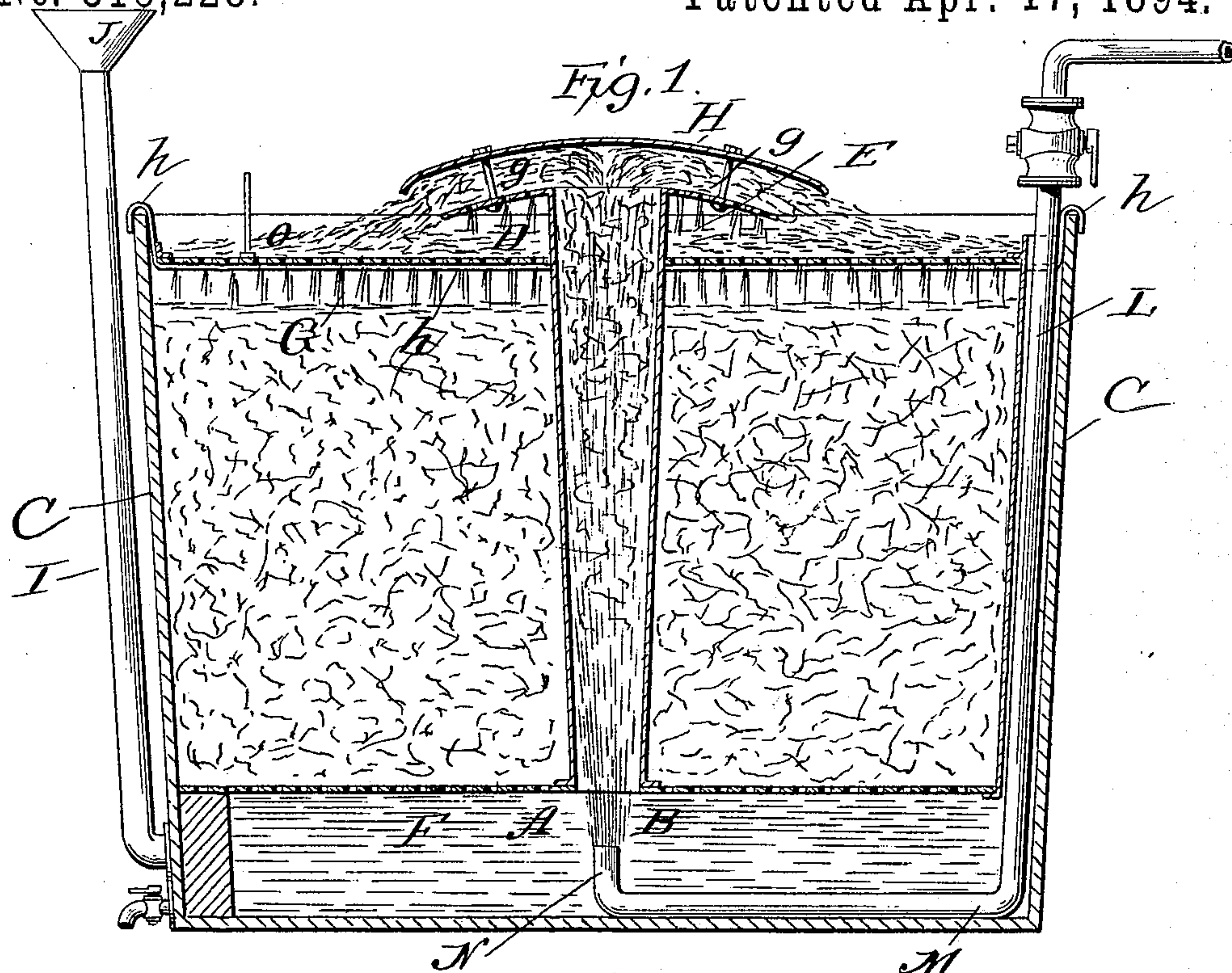


A. DRÉZE.  
APPARATUS FOR DYEING.

No. 518,228.

Patented Apr. 17, 1894.



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F. L. Middleton

Inventor  
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Fig. 3.

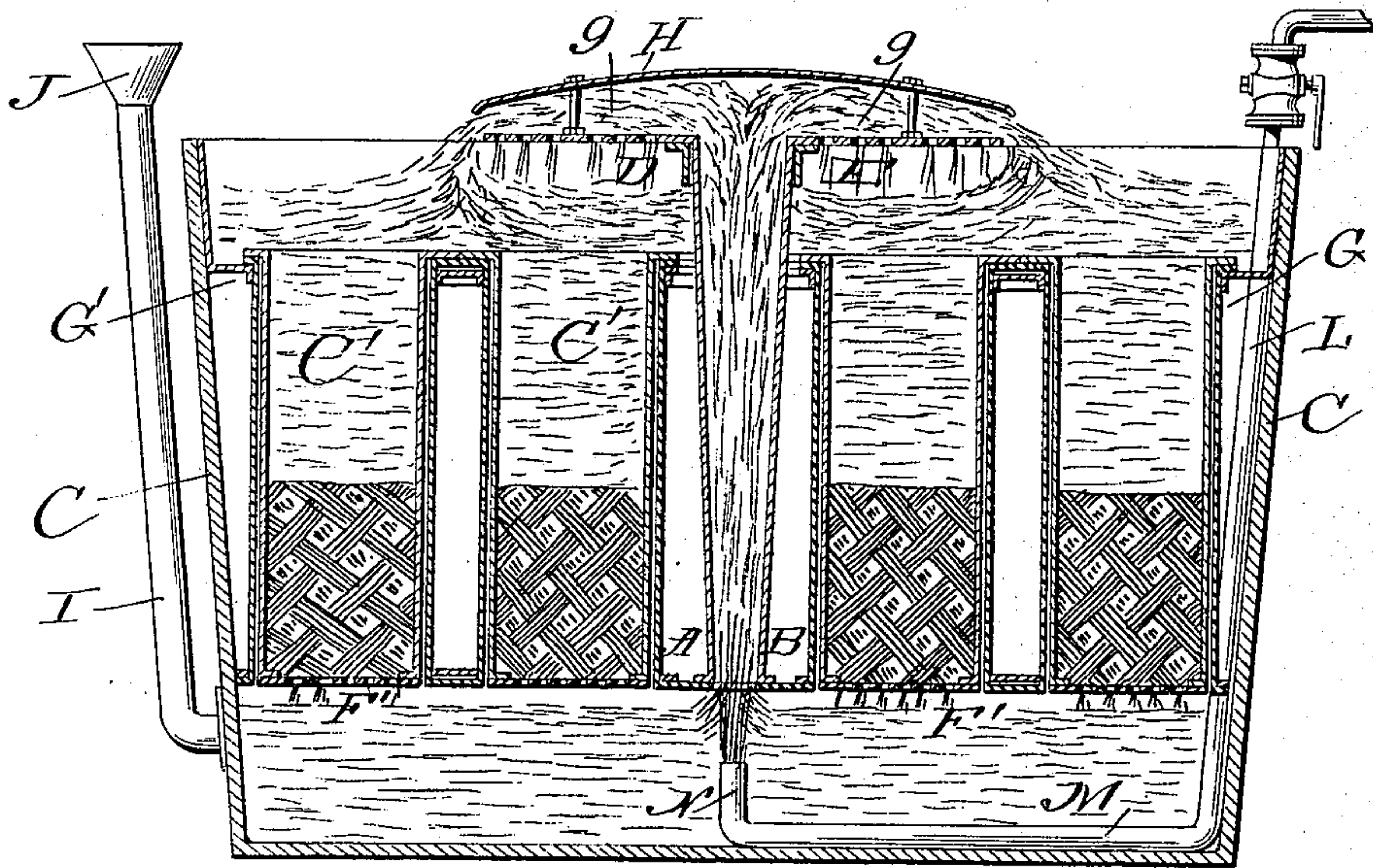
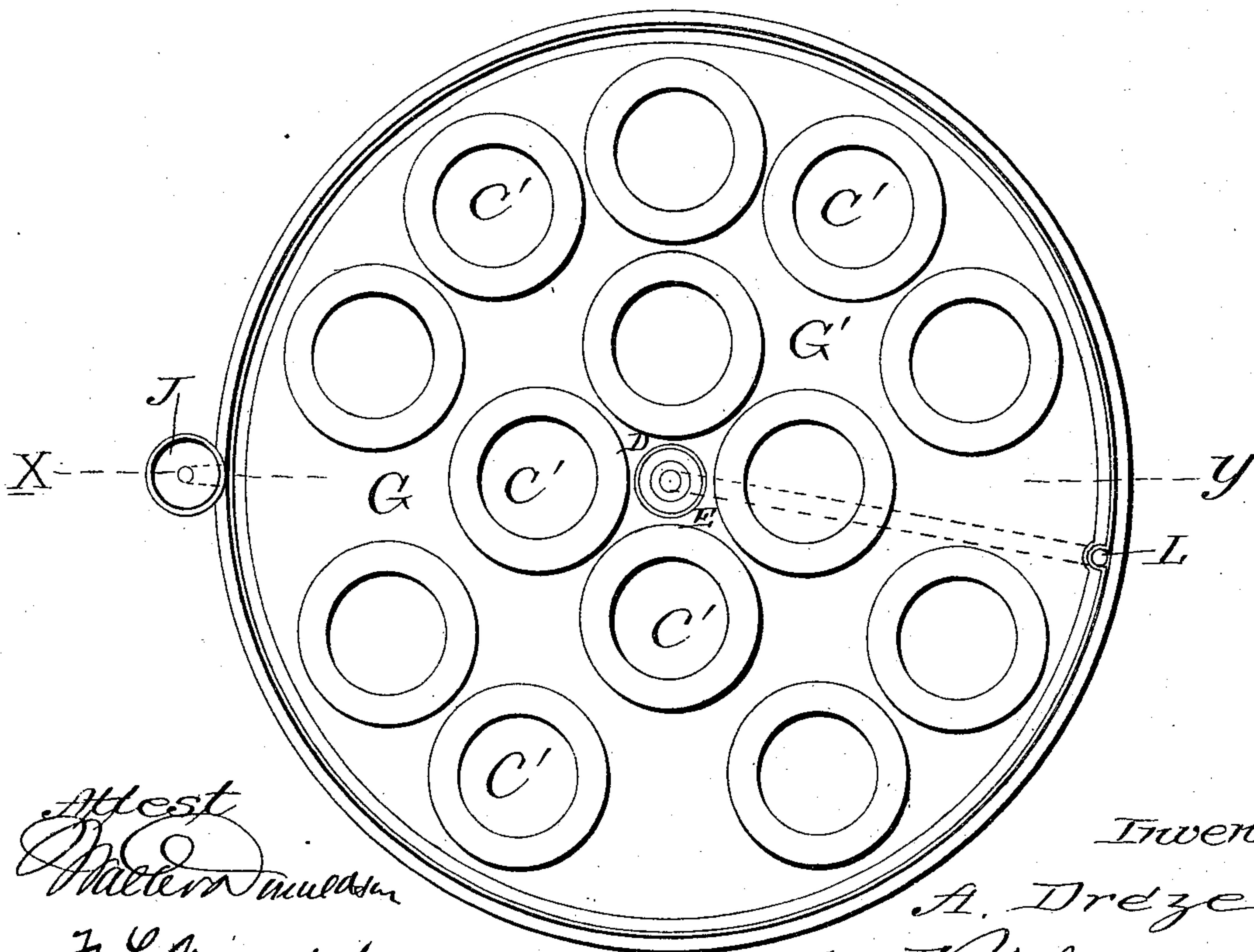


Fig. 4.



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# UNITED STATES PATENT OFFICE.

ALFRED DRÉZE, OF PEPINSTER, BELGIUM.

## APPARATUS FOR DYEING.

SPECIFICATION forming part of Letters Patent No. 518,228, dated April 17, 1894.

Application filed September 17, 1892. Serial No. 446,240. (No model.) Patented in Belgium December 14, 1891, No. 97,570, and December 24, 1891, No. 97,716; in France December 14, 1891, No. 218,035; in England January 4, 1892, No. 148; in Italy March 26, 1892, No. 31,556/40, and in Spain March 28, 1892, No. 13,126.

*To all whom it may concern:*

Be it known that I, ALFRED DRÉZE, a subject of the King of Belgium, residing at Pepinster, Belgium, have invented certain new and useful Improvements in Dyeing Apparatus, of which the following is a full, clear, and exact specification, this invention having been patented in Belgium December 14, 1891, No. 97,570, and December 24, 1891, No. 97,716; in France December 14, 1891, No. 218,035; in Great Britain January 4, 1892, No. 148; in Italy March 26, 1892, No. 31,556/40, and in Spain March 28, 1892, No. 13,126.

The improvements refer to apparatus in which, by the action of steam, a continuous circulating motion is given to the coloring liquid for cleaning purposes, through the materials to be treated, these materials being inclosed between two iron plates, through the center of which the conducting pipe passes which carries the bath from the bottom upward.

The object is to cause a very quick heating of the liquor, and the continuous circulation of this heated liquor brings it to a very high temperature.

The improvement consists in directing the steam in a single mass through a free opened tube under the opening of a conical pipe surrounded by the materials to be treated and at a distance under said opening calculated so as to leave a sufficient passage for the liquid.

In the drawings—Figure 1 is a section of an apparatus through the line X. Y. of Fig. 2. Fig. 2 is a view in plan of Fig. 1. Figs. 3 and 4 are views similar to those of Figs. 1 and 2 but representing a special application of the apparatus.

C is a tub.

A. B. D. E. is a conical pipe small end down; F a fixed perforated iron plate to which the inferior extremity of the pipe A. B. D. E. is fastened. This iron plate rests upon supports which are fixed to the tubs and form a double bottom upon which the materials which must be treated are placed.

G is a superior iron plate, also perforated which can be divided in several segments.

h h' are two rods fastened to the edge of

the tub and supporting the upper iron plate which, by this device can be kept at a certain distance of the material to be treated while the plate G prevents at the same time any abnormal motion of the materials.

In Figs. 3 and 4 the two plates of perforated sheet iron F. and G of Fig. 1 are replaced by two plates of solid sheet iron F' and G' connected by a series of vessels C' fixed in an appropriate way to the bottoms F' and G' in which are placed the materials which must be dyed, either in the shape of bobbins or otherwise. The upper part of each of the vessels is open while the inferior perforated iron plate F' forms the bottom of the same. This plate is movable so that it can easily be taken away to introduce or to remove the materials to be dyed.

I J represents a pipe with a funnel end through which the liquid constituting the bath, which must be heated and caused to circulate, is introduced into the lower part of the tub.

g is a perforated disk, vaulted or not fixed to the upper part of the pipe A. B. D. E. and is provided with a cap H. which deflects the liquor projected against it to flow over the whole surface of the upper iron plate G.

O is a small door allowing removal or examination of the bits of wool during the boiling.

The apparatus works as follows: The liquor in the tub is heated and the circulation is begun upward by means of a jet of steam passing through the pipe L. M. N. of which the end piece M. N. is located in the axis of the tub and of the pipe, the steam being directed up the truncated central pipe, the end N of the pipe being a sufficient distance from the bottom of the central pipe to leave between the ends of both pipes a sufficient passage for the circulation of the liquid which should not be obstructed. The jet of steam forces the liquor through the central tube, against the cap H and from there it runs through the perforated cover G over the materials to be treated; through the materials and down through the bottom F to the lower part of the tub. From there the liquor rises again in the central pipe pressed by the steam,



passes again through the materials and continues its circulation in that way.

It will be understood that, the steam, poured in as an undivided mass, and acting with live force below the liquid column gives mechanically an upward motion to the same which motion is continuous and absolutely uniform as the vacuum which would be produced under the raised masses is filled continuously by the liquid which surrounds the trunk of the cone and which flows down continuously in order to take the place of that which rises in the cone.

I claim—

1. In combination, the tub, the supporting means therein, for holding the material to be treated, the central pipe, the jet below the same, the perforated plate G, near the upper end of the pipe and the cap at the upper end of the pipe extending partially over the plate G, and comprising the upper and lower plates

H, with a space between them opening laterally, substantially as described.

2. In combination, the tub, the supporting means therein for holding the material comprising the upper and lower plates with sockets extending between them, the removable receptacles having perforated bottoms and adapted to the said sockets, the central pipe with a jet below the same, and the cap extending partially over the upper plate and comprising the plates H, G, at the upper end of the central pipe with a space between them opening laterally, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALFRED DRÉZE.

Witnesses:

GEORGE BECHE,  
GREGORY PHELAN.