

No. 632,317.

Patented Sept. 5, 1899.

C. E., F. P. & A. T. MIDDLETON.

DYEING APPARATUS.

(No Model.)

(Application filed Oct. 7, 1897.)

3 Sheets—Sheet 1.

FIG. 1

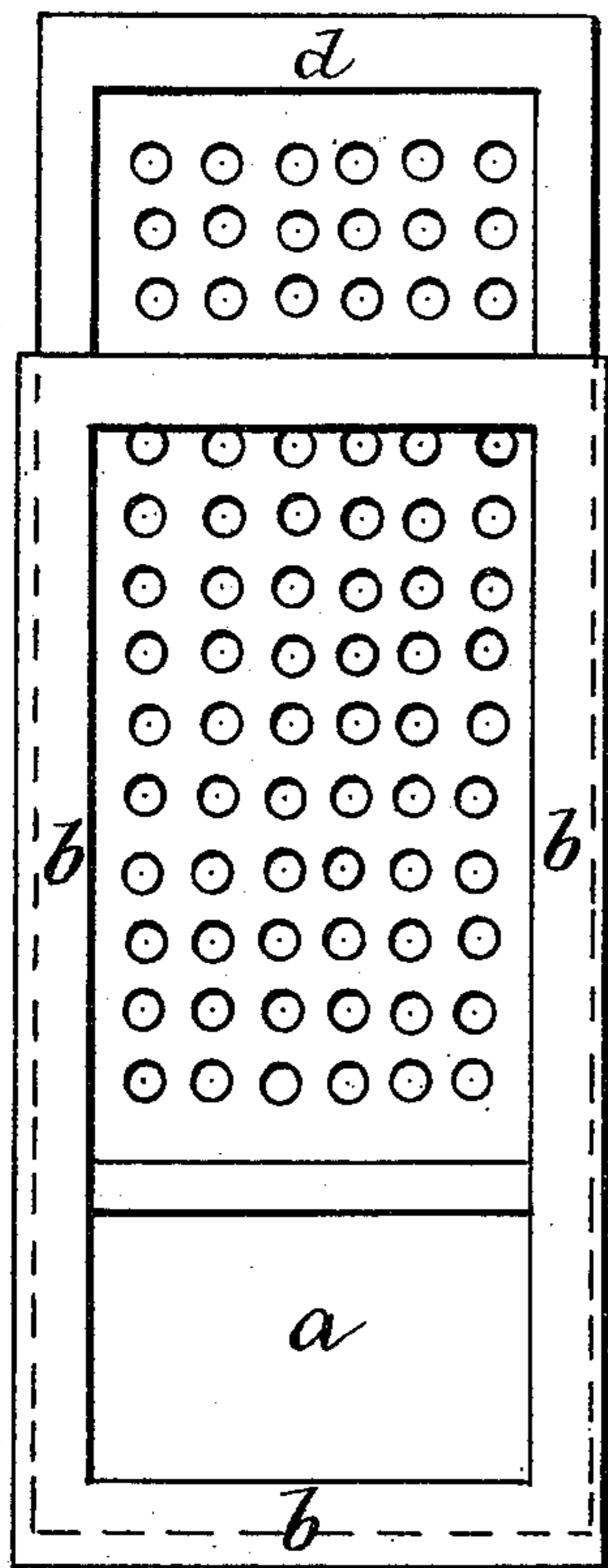


FIG. 2

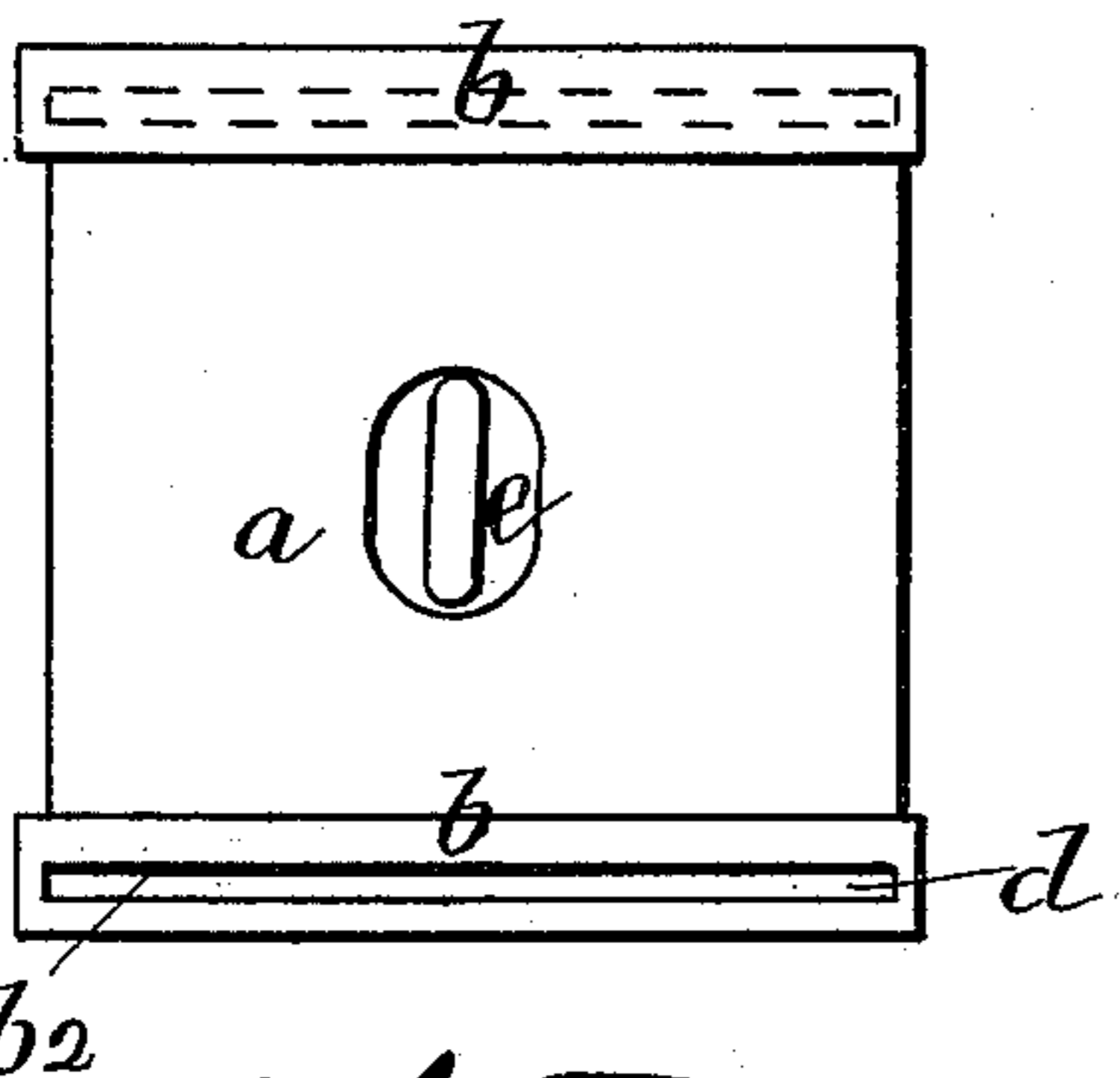
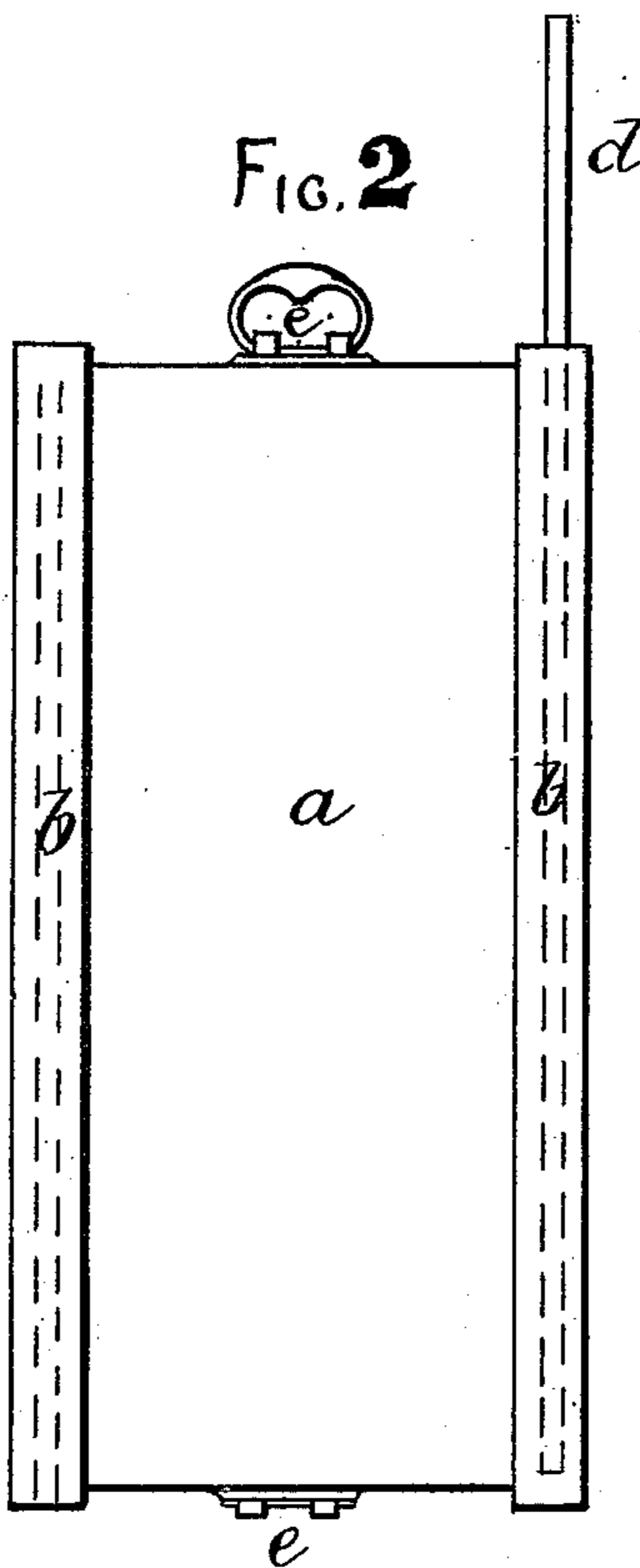


FIG. 3

Inventors

Charles Edward Middleton,

Francis Philip Middleton

Arthur Thomas Middleton

per

John Henry Topham
Attorney

Witnesses John Redwell
Leonard West Topham

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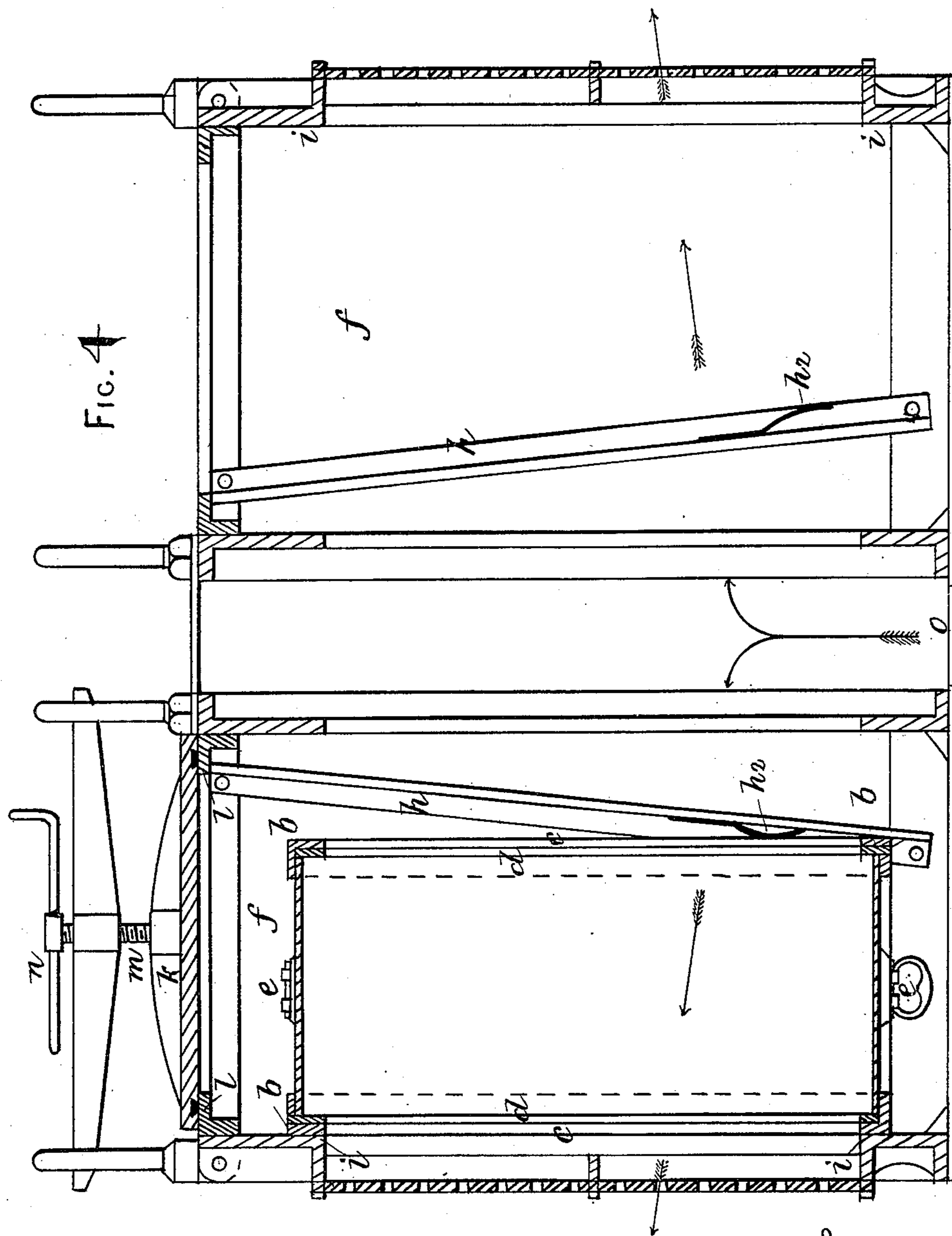
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Leonard West Topham

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Arthur Thomas Middleton

per

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Attorney

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3 Sheets—Sheet 3.

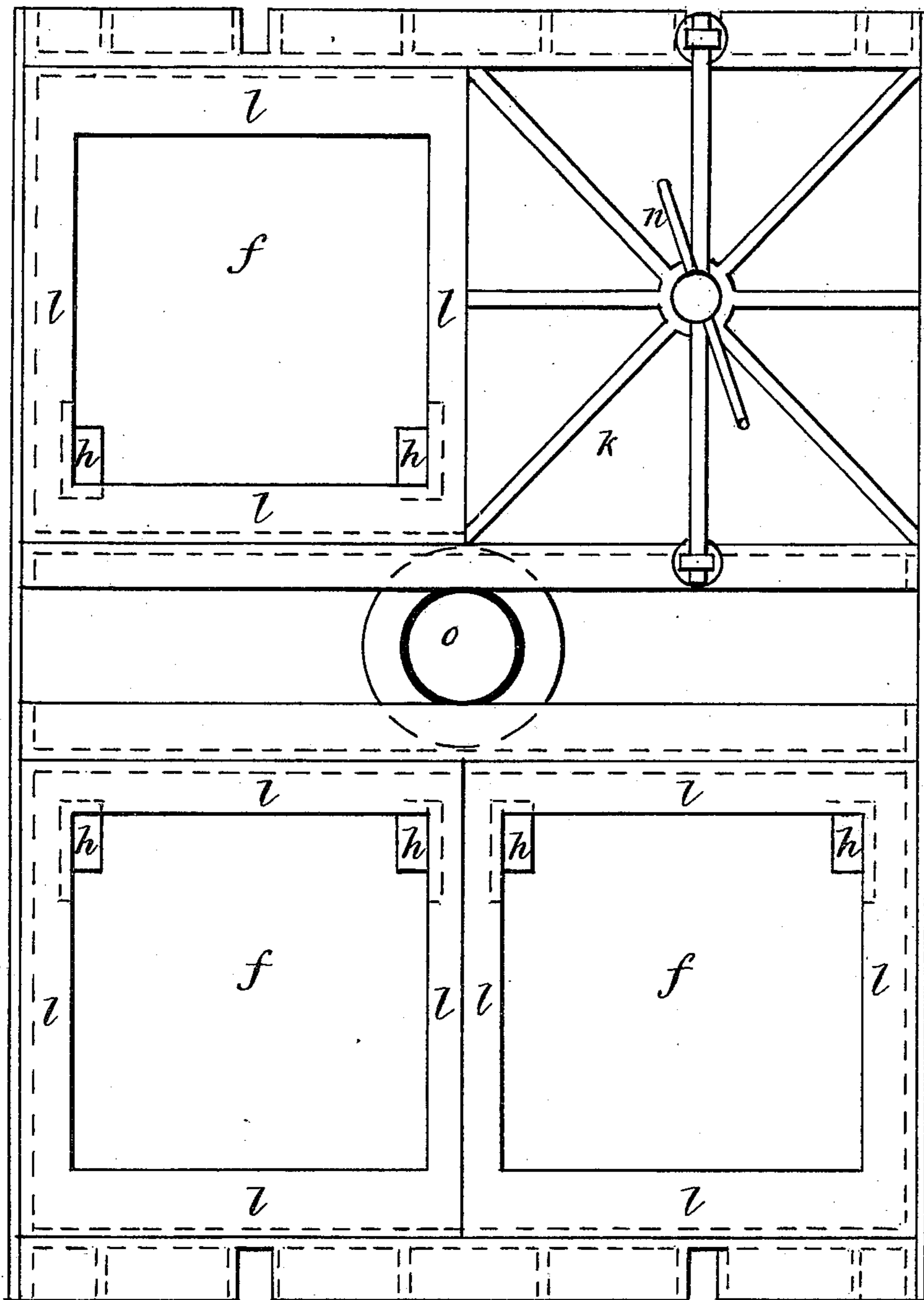


FIG. 5

Witnesses

John R. Thwale
Leonard West Sapham

Inventors

Charles Edward Middleton
Francis Philip Middleton
Arthur Thomas Middleton

per

John Henry Sapham
Attorney

UNITED STATES PATENT OFFICE.

CHARLES EDWARD MIDDLETON, FRANCIS PHILIP MIDDLETON, AND
ARTHUR THOMAS MIDDLETON, OF ADLINGTON, ENGLAND.

DYEING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 632,317, dated September 5, 1899.

Application filed October 7, 1897. Serial No. 654,487. (No model.)

To all whom it may concern:

Be it known that we, CHARLES EDWARD MIDDLETON, FRANCIS PHILIP MIDDLETON, and ARTHUR THOMAS MIDDLETON, subjects of the Queen of the United Kingdom of Great Britain and Ireland, residing at Adlington, in the county of Lancaster, England, have invented certain new and useful Improvements in Dyeing Apparatus; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention consists in certain improvements in what is known as "Obermier's apparatus," used for dyeing cops under hydraulic pressure, and relates more particularly to the boxes or cases employed for holding the cops during the process. The cases as at present used are open at the ends as well as the sides and are difficult to pack with cops in such a manner as to insure a perfect process of dyeing, a great quantity of waste material having to be used to fill the ends of the cases and the interstices between the cops and also between the case and the compartment it is in. In addition to this the pressure necessary in attempting to obtain a perfect fit of the cases, &c., in the vat seriously damages the cops.

To overcome these difficulties is the object of our invention. This we accomplish as follows: We form the cop-cases with closed ends and sides, (which may be perforated,) leaving only two sides open, and upon the edges of the open sides we form or fit frames or surfaces of suitable metal, planed or otherwise formed to a true surface, which fit or slide into suitable frames or slides in the vat or chest, so as to obtain a perfect fit or joint between the open sides of the case and the vat, this being further facilitated by means of a thin strip of india-rubber or other suitable material attached to one or both of the surfaces in contact. The cops are placed sideways into the case, very little waste packing being required, and the two movable perforated plates at the sides are slid into position in suitable grooves in the flanges or surfaces before mentioned. We also furnish the compartment of the vat or chest, in which the

cop-case is placed, with a suitable metal lid with similar planed (or other) contact-surfaces and india-rubber (or other) joint, so as to insure a tight joint without any loose or waste packing. By this arrangement the hydraulic pressure is utilized to tighten the joint of the outside of the case against the outer side of the vat or chest, making it impossible for any liquor to pass out of the vat or chest except through the cop-case and cops.

Referring to the drawings sent herewith, Figures 1, 2, and 3 are respectively a front, side, and top view of our improved cop-case. Figs. 4 and 5 are respectively a cross-section and plan of the vat or chest with our improved fittings.

The cop-case *a* is fitted with flanges or surfaces *b*, planed to a true surface, as before mentioned, and completely closed, excepting on two sides *c c*, which are fitted with perforated and movable plates *d*, which slide in grooves *b*² in flanges *b*. One of these perforated plates *d* is shown only partly closed in Figs. 1 and 2. The cop-case *a* is reversible and is fitted with a suitable handle *e* at each end for convenient handling. The cop-case *a* is placed upright in compartment *f* of vat or chest *g*, being guided into position by slide or guide *h*, which is sometimes furnished with a suitable spring *h*² to press the faces or flanges *b* of the cop-case *a* firmly against corresponding faces *i* on the outlet side of the compartment *f*. A suitable metal lid *k* is then fitted upon the top of compartment *f*, fitting upon faces or flanges *l* and screwed up tight by means of screw *m* and handle *n*. All other outlets being now tightly closed, the dye-liquor is pumped in by inlet *o* and passes out through cop-case *a* (pressing it firmly against the side of the compartment *f* and so stopping all leakage) in the direction shown by arrows on drawings.

Having now particularly described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In dyeing apparatus, an improved cop-case fitted with flanges or surfaces *b* and formed with two open sides *c c*, fitted with perforated movable plates *d*, sliding in grooves

b^2 in flanges b , and fitted at each end with a handle e .

2. In dyeing apparatus, an improved cop-
case a in combination with an improved com-
5 partment or vat f with flanges or surfaces i
and l , and guide or slide h , spring h^2 , and
closed by the metal lid k secured by screw m
and handle n .

In testimony that we claim the foregoing we

have hereunto set our hands this 23d day of 10
July, 1896.

CHARLES EDWARD MIDDLETON.
FRANCIS PHILIP MIDDLETON.
ARTHUR THOMAS MIDDLETON.

Witnesses:

JOHN CURTIS,
JOHN HENRY TOPHAM.