(No Model.)

D. HALSEY, Jr.

APPARATUS FOR WASHING AND DYEING.

No. 450,865. Patented Apr. 21, 1891.

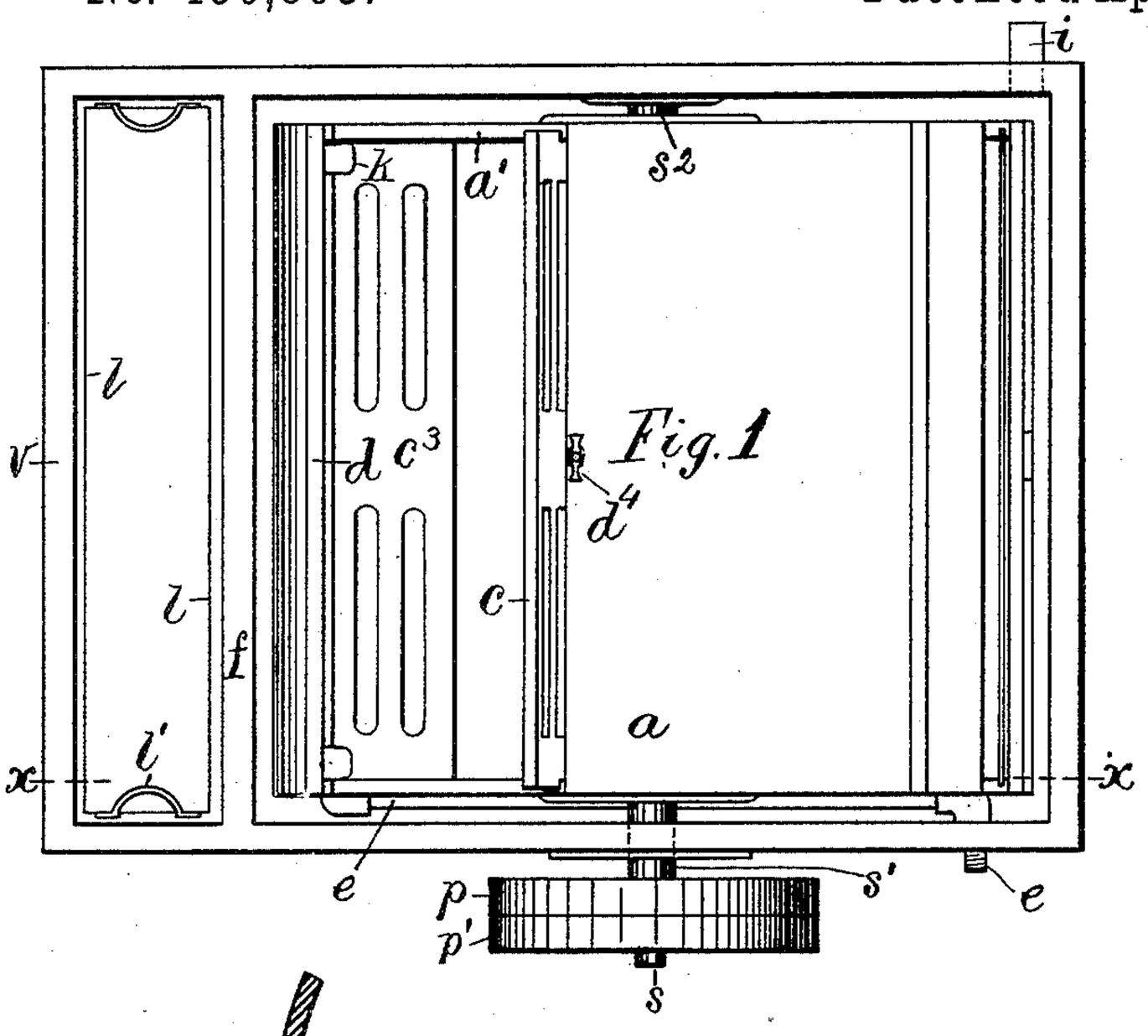

Fig. 1

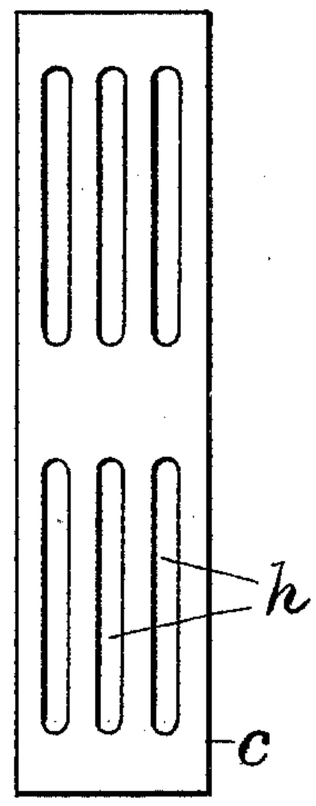

Fig. 3.

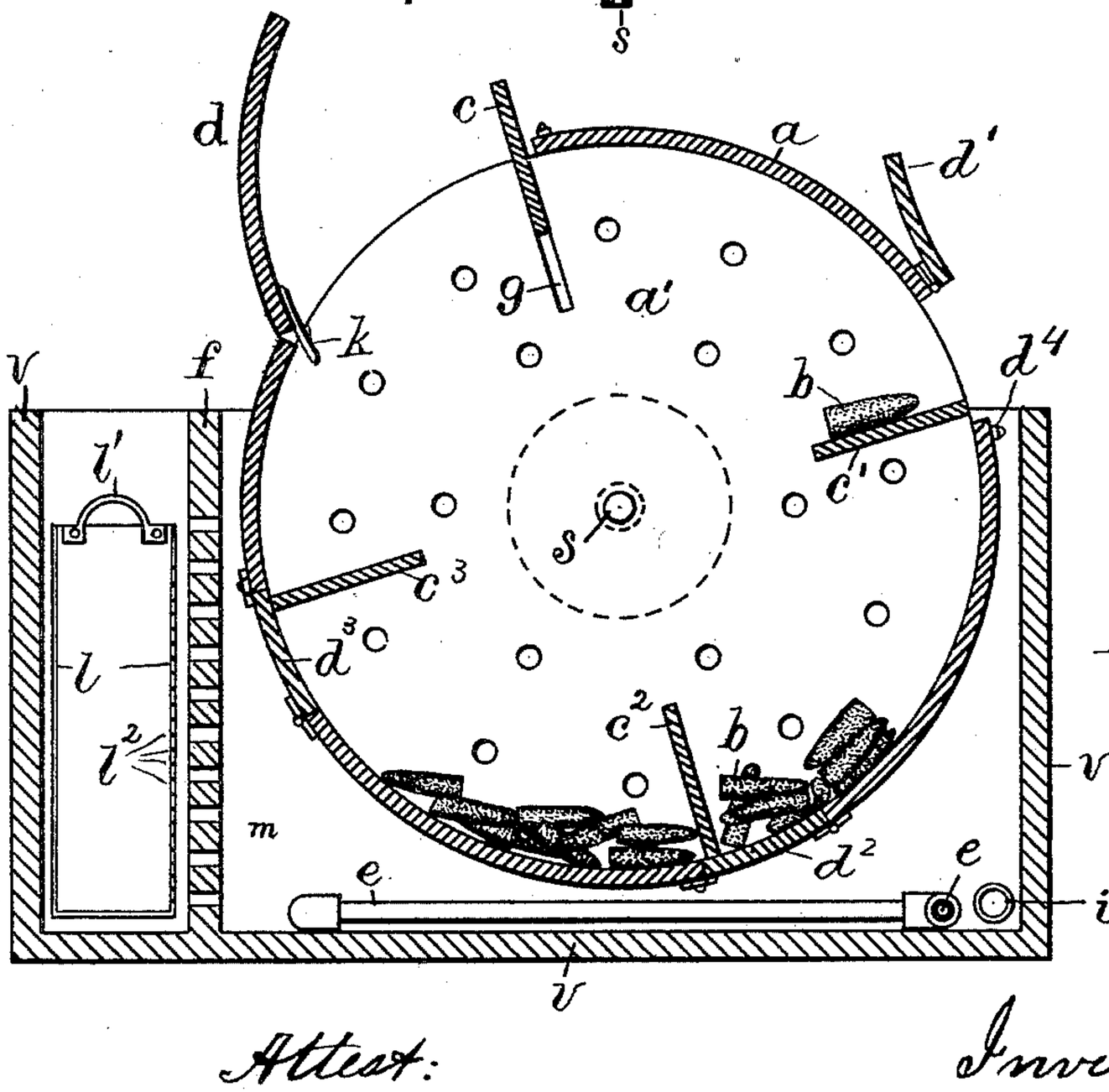

Fig. 2.

Attest:
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UNITED STATES PATENT OFFICE.

DANIEL HALSEY, JR., OF NEWARK, NEW JERSEY.

APPARATUS FOR WASHING AND DYEING.

SPECIFICATION forming part of Letters Patent No. 450,865, dated April 21, 1891.

Application filed June 16, 1890. Serial No. 355,574. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HALSEY, Jr., a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Dyeing and Washing Wheels, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists partly in a cylinder provided with removable shelves to support the articles to be dyed, partly in a series of inspection-doors adjacent to such shelves, and partly in a receptacle in the vat for holding the dyeing material.

In the annexed drawings, Figure 1 is a plan of an apparatus embodying my invention. Fig. 2 is a sectional elevation of the same, and Fig. 3 is a plan of one of the removable shelves.

a is a cylindrical shell having heads *a'* at its ends, and supported in a vat *v*, containing the coloring-fluid, by the shaft *s*.

s' is a stuffing-box provided in one end of the vat to receive the shaft *s*, and s^2 a bearing in the other end for the opposite end of the shaft. Tight and loose pulleys *p* and *p'* are provided at the outer end of the shaft *s* for rotating the cylinder.

The cylinder-heads *a'* are perforated to permit the free circulation of the coloring-fluid through the cylinder in contact with the articles to be dyed. (Shown herein as a number of felt hat-bodies *b*.) The heads *a'* are also provided with a series of radial grooves *g* at the periphery of the cylinder, and a series of shelves *c*, *c'*, c^2, and c^3 are applied thereto with their outer ends inserted in the grooves.

d is a segmental door fitted removably with a joint-plate *k* to the cylindrical shell adjacent to and covering the outer edge of the shelf *c*, and adapted thus to lock the latter in place when the apparatus is in operation, and adapted, also, to give access to the interior of the cylinder for the purpose of supplying or withdrawing the articles to be dyed and for the purpose of cleaning the cylinder.

d', d^2, and d^3 are doors hinged to the cylinder over the edges of the shelves *c'*, c^2, and c^3, the same being of less width than the door *d*, and serving merely as apertures for the inspection of the contents of the cylinder. Each of the doors is provided with a suitable button or catch d^4 for holding the same shut when the cylinder is rotated.

A coil *e* of heating-pipes is applied at the bottom of the vat for heating the coloring-fluid to the required temperature, as is customary in apparatus for similar purposes.

At one side of the vat is provided a separate receptacle for the coloring material in a solid state. I have shown herein two means of forming such receptacle, one being a partition *f*, perforated to permit the free circulation of the coloring-fluid from the body *m* of the vat, and applied to one side of the vat, and the other consisting in a basket or crate *l*, having a handle *l'* for raising it from and lowering it into the vat, in order to withdraw and renew its contents, and its walls having perforations l^2. When one of such means is used to separate the solid material from the body of the vat, the other may be omitted; but it may be found desirable in some instances to employ both, as any sediment that may escape from the basket would in such case be confined in the bottom of the receptacle containing the basket. By the use of such separate receptacle, when employing logwood or any dye containing insoluble matter, the chips or other insoluble matter are wholly prevented from entering the body *m* of the vat, thereby clogging the cylinder and preventing its free rotation. The coloring-fluid entering the cylinder is also kept perfectly clear and free from solid matter, and the cylinder containing the articles to be dyed being suspended and rotated therein mixes such fluid to give it a uniform strength and exposes the articles uniformly and effectively to the coloring-fluid.

As the shelves are applied radially within the cylinder and adjacent to its periphery, it is obvious that the rotation of the cylinder operates continuously to vary the inclination of the shelves and to simultaneously vary their height with relation to the surface of the dyeing-fluid in the tank.

The shelves are shown herein provided with apertures or slots *h* to allow the fluid to pass through them while picking up the articles from the dyeing-fluid, thereby preventing the articles being washed off as the shelves pass through the fluid and leave its surfaces.

The rotation of the cylinder causes the re-

tention of a number of the inclosed articles upon each of the shelves in succession until its inclination is sufficient to make them slide off, when they are plunged into the dyeing-fluid in the lower side of the cylinder, by which they become thoroughly saturated, as described in my United States patent, No. 278,331, issued May 29, 1883.

In order to determine when the dyed articles are ready for removal, the cylinder is stopped as the rising shelf containing some of such articles is slightly inclined downwardly and the inspection-door adjacent thereto is opened, as shown at the right in Figs. 1 and 2.

When the articles are sufficiently colored, the shelves are all removed in succession by opening the doors adjacent thereto and the larger door opened to remove the articles, as shown at the left in Figs. 1 and 2. The removal of the articles is much facilitated by the prior withdrawal of the shelves, as they leave the interior of the cylinder perfectly smooth, and thereby avoid incommoding the operator. The removal of the shelves offers also a decided advantage in scrubbing the interior of the cylinder, as no inaccessible corners are left in which the dye previously used may have collected and which cannot be reached by the operator in cleaning the same.

Although the grooves are preferably made radial in the heads a' of the cylinder, as shown herein, it is evident that their angle with the surfaces of the doors may be varied without departing from my invention. It is also immaterial how many shelves and doors be applied to the cylinder, as their number will depend largely upon the size of the latter.

Having thus set forth the nature of my invention, what I claim is—

1. The combination, with the dyeing-vat, of a cylinder having the heads a', provided each with the series of radial grooves g, shelves having their ends fitted removably in such grooves, and doors in the shell of the cylinder adjacent to the grooves to permit the removal of the shelves, as and for the purpose set forth.

2. The combination, with the dyeing-vat, of a cylinder having the heads a', provided each with the series of radial grooves g, and the series of shelves fitted removably thereto and provided with the longitudinal slots h, as and for the purpose set forth.

3. The combination, with the dyeing-vat v and the dyeing-cylinder rotated therein, of the vertical perforated partition f, arrranged within the vat close to the cylinder to form a compartment for the dye-stuff, as and for the purpose set forth.

4. The combination, with the dyeing-vat v, provided with the rotary cylinder, and the vertical perforated partition contiguous to such cylinder, of the dye-crate l, having perforated walls and removable from the compartment formed by the partition, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

DANIEL HALSEY, JR.

Witnesses:
THOS. S. CRANE,
HENRY J. MILLER.