

(No Model.)

2 Sheets—Sheet 1.

U. WELDON.
DYEING APPARATUS.

No. 382,918.

Patented May 15, 1888.

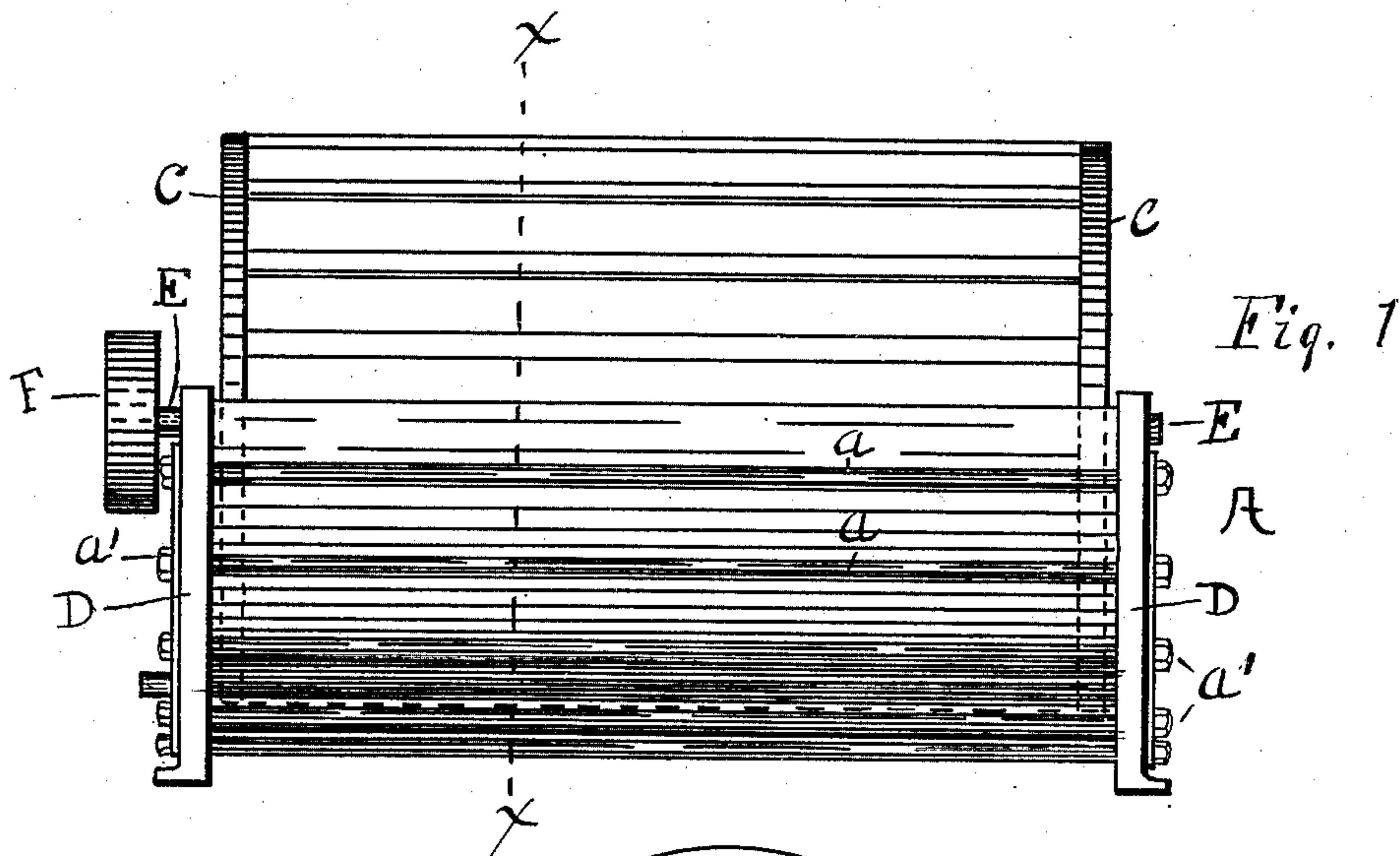


Fig. 1

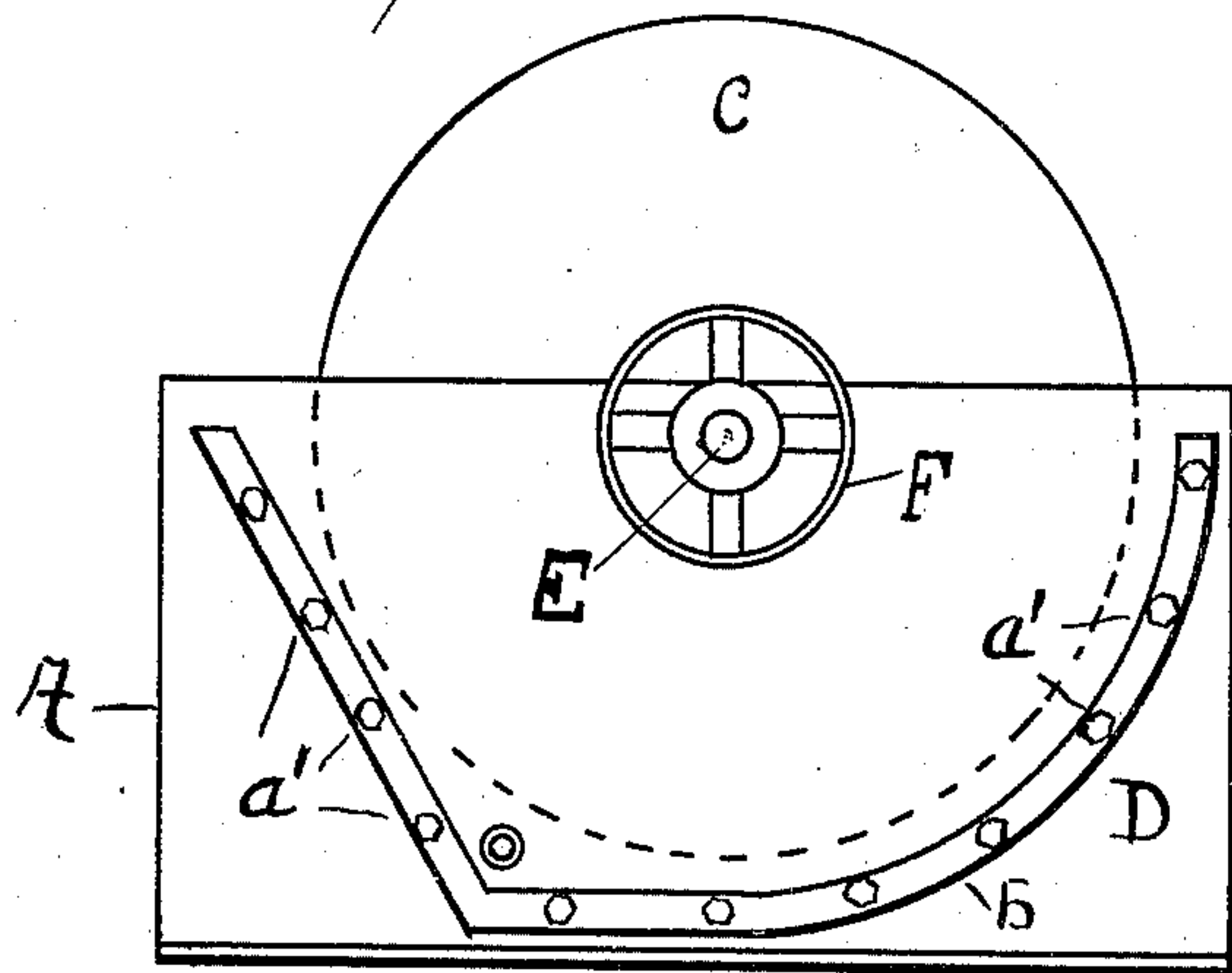


Fig. 2

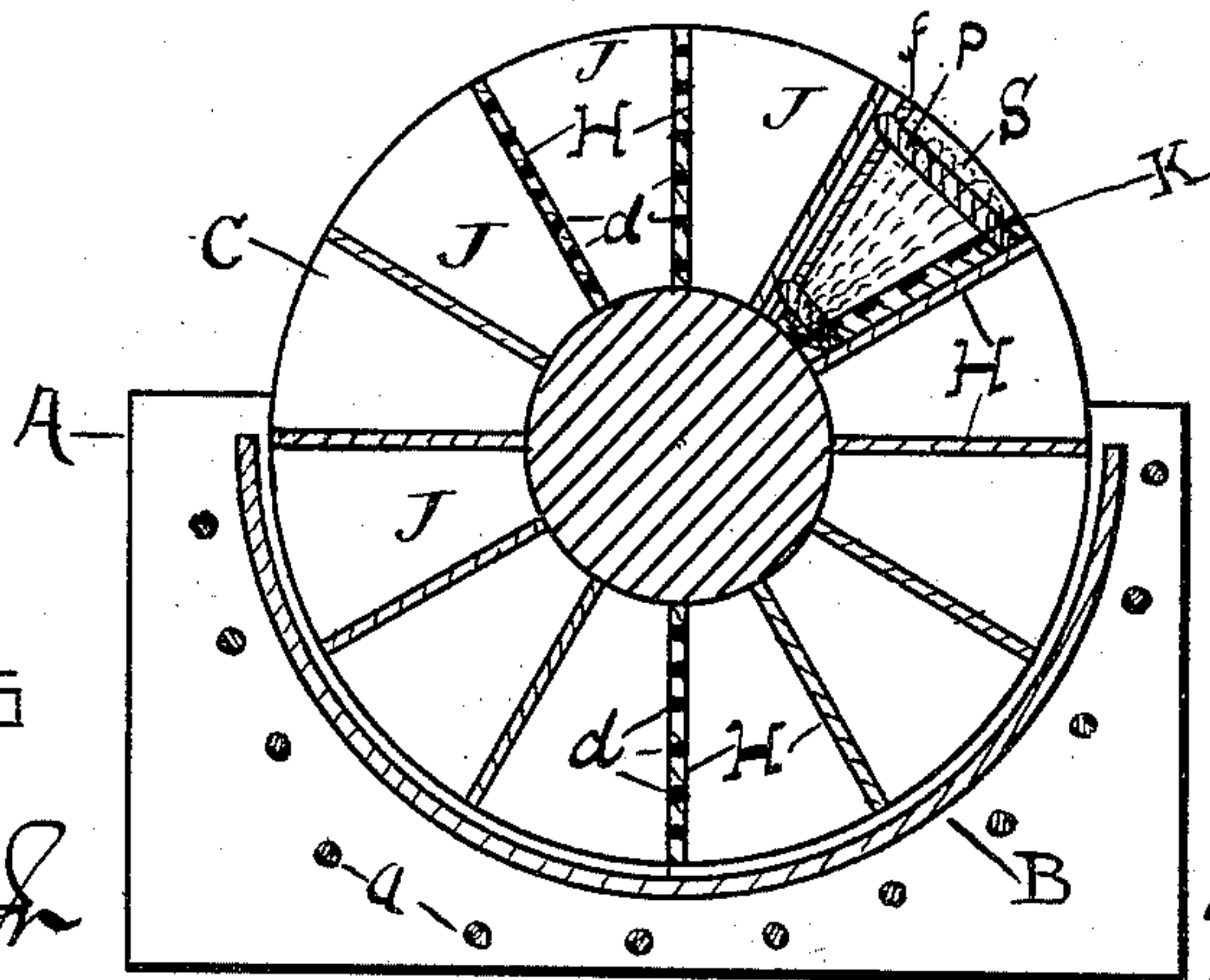


Fig. 3

WITNESSES

C. H. Weaver Jr.
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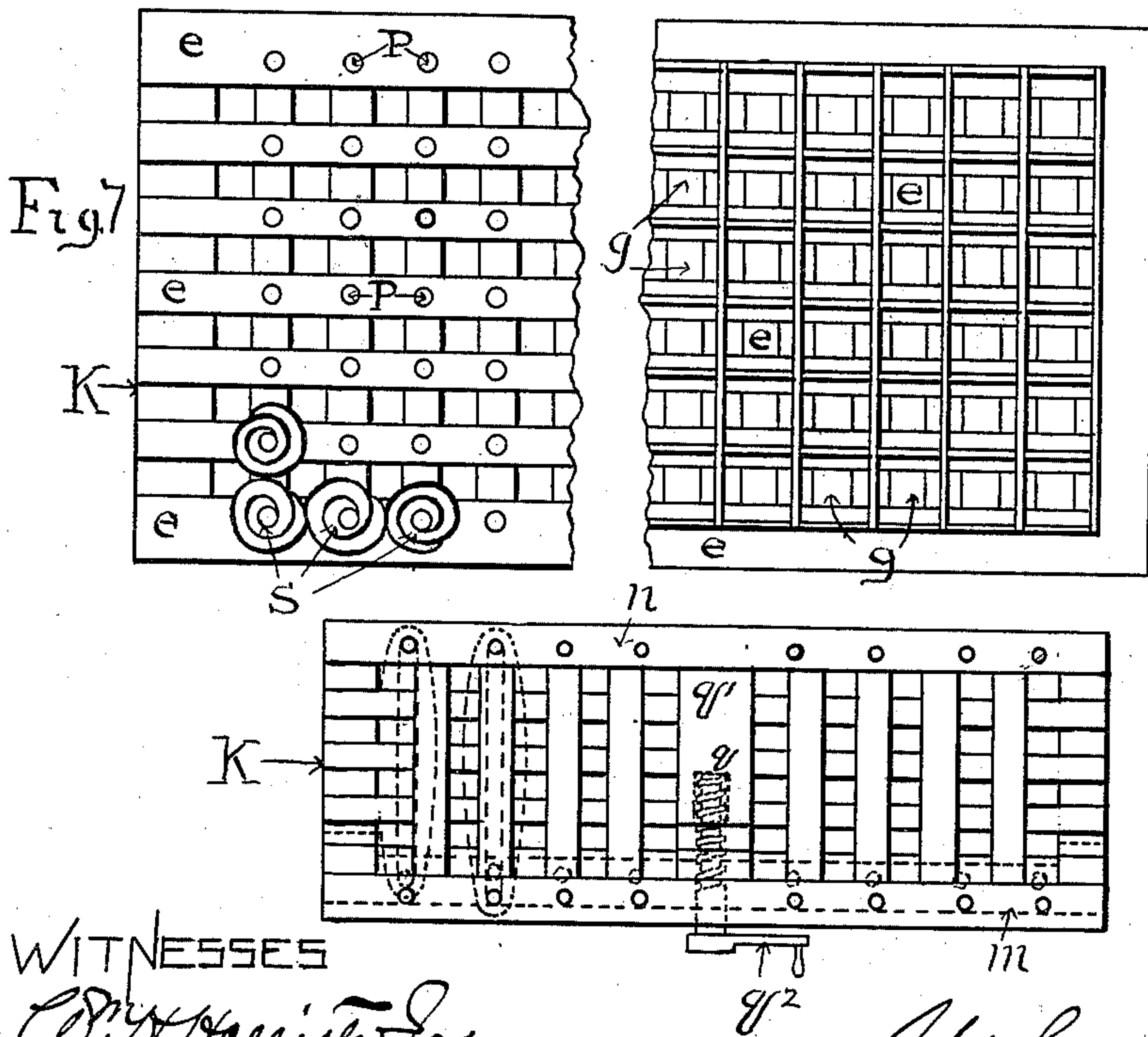
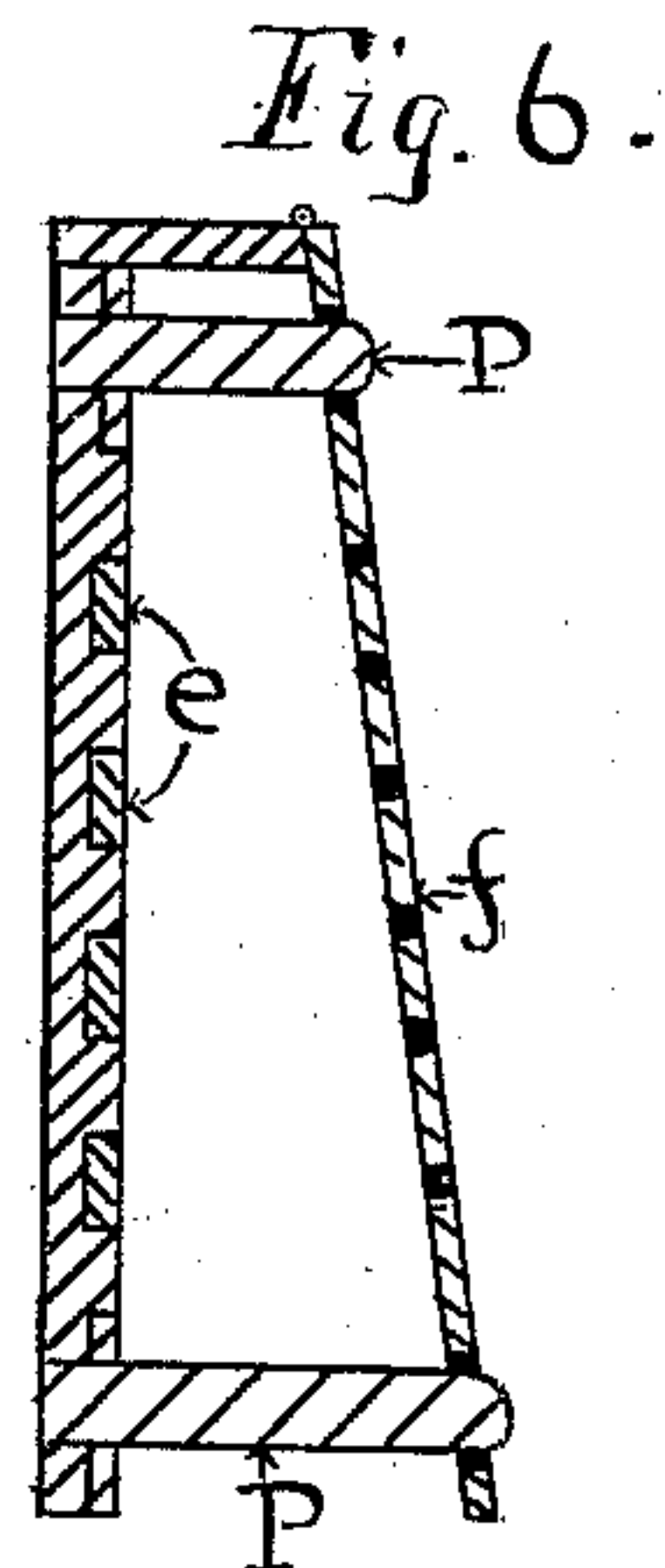
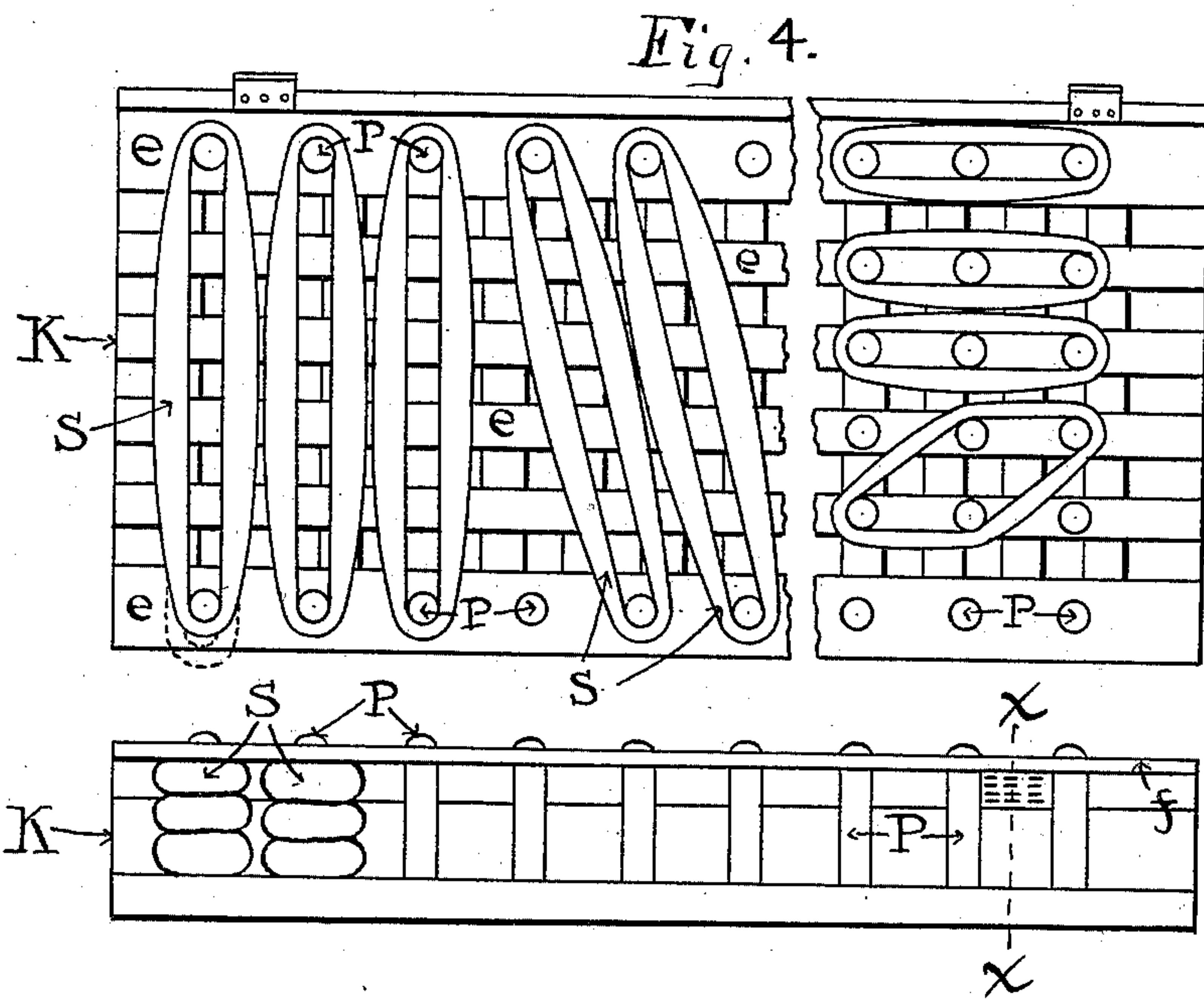
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2 Sheets—Sheet 2.

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DYEING APPARATUS.

No. 382,918.

Patented May 15, 1888.



WITNESSES

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UNITED STATES PATENT OFFICE.

URBAN WELDON, OF COHOES, NEW YORK.

DYEING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 382,918, dated May 15, 1888.

Application filed December 12, 1887. Serial No. 257,624. (No model.)

To all whom it may concern:

Be it known that I, URBAN WELDON, a resident of the city of Cohoes, in the county of Albany and State of New York, have invented certain new and useful Improvements in Apparatus for Dyeing Yarn; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

My invention relates to improvements in apparatus for dyeing yarn; and it consists of the novel construction and combination of parts hereinafter described, and pointed out in the claims.

This application is limited to an apparatus in which the yarn is supported by a detachable frame while the latter is carried through the dye-stuff by a suitable carriage, preferably a rotary cylinder or dipping-wheel.

An apparatus in which the yarn is supported by the wheel without the intervention of detachable yarn-supporting frames while it passes through the dye-stuff will be made the subject of a future application.

Heretofore a rotary cage, wheel, or cylinder provided at or near its periphery with pockets adapted to receive and carry fabrics has been employed to rotate, partly submerged, in a vat containing dye-stuff; but such pockets were not adapted to carry yarns. The yarn must be supported in a position such that the dye-stuff will permeate every thread, and such that the threads will not become tangled or knotted together.

One of the objects of this invention is to properly support the yarn while it is being carried upon the dipping-wheel, and another is to facilitate the operation of securing the yarn in a proper position on the wheel.

Figure 1 of the drawings is a side elevation of my improved apparatus. Fig. 2 is an end view of same. Fig. 3 is a vertical cross-section taken on the broken line *xx* in Fig. 1. Fig. 4 is a plan view of a yarn-supporting frame with the cover removed, and showing skeins of yarn supported in different positions

thereon. Fig. 5 is a front elevation of the frame, showing the cover closed and yarn upon two pins. Fig. 6 is a vertical cross-section of same, taken at broken line *xx* in Fig. 5. Figs. 7, 8, and 9 represent modified forms of yarn-supporting frames, the last figure illustrating a means for adjusting the length or width of the frame.

The vat A, which contains the dye-stuff, may be of any desired shape, though preferably with a semicircular bottom, B, adapted to fit approximately the periphery of the dipping-wheel or cylinder C. The heads D of the tank are held together by bolts or rods *a*, the heads *a'* of which have a bearing upon the plate *b*. The wheel is mounted upon a shaft, E, which has its bearings in the heads of the vat, and may be provided with a driving-pulley, F, fixed thereon.

The dipping-wheel is preferably composed of two circular heads, G, supported by the shaft E, which passes centrally through them, and the radial partitions H, which extend from head to head and form the intervening pockets J, adapted to receive the yarn-supporting frames K.

The partitions H may be perforated, as seen at *d*, or they may be open or lattice work, similar to that in frames K.

The frames may be of any desired form, to be inserted, severally, in the respective pockets of the wheel. I prefer to make them rectangular in shape and of a width or length a little less than the distance between the heads of the wheel, and of a length or depth to be wholly received within the wheel-pocket. The frames are preferably made of lattice-work having the cross-slats *e*, forming a base from which pins or sticks P may be erected to support the yarn. The yarn is customarily and preferably handled in skeins "stuck" or mounted upon sticks or pins. The yarn is stuck upon the pins erected from the frames by slipping one end of a skein, S, over one pin and the other end of the skein over another pin at a suitable distance from the first, to keep the individual threads of the skein approximately parallel to each other, and yet loose enough, so that as the skein hangs vertically, after being weighted by the dye-stuff, the lower end will fall away from the lower pin and permit the dye-stuff to permeate all

the threads alike, which it would not do if any portion of the skein were kept in contact with a pin continuously throughout the operation of dyeing the yarn. The elongated position of the skein is shown by dotted lines forming an extension of the left-hand skein in Fig. 4.

The yarn may be hung in many different positions, according to the length of the skein, as shown in Fig. 4. The frames may also be provided with a cover, *f*, hinged at one side to the frame, the other side being adapted to swing to and from the tops of the pins to facilitate the insertion of the frames into the pockets in the wheel.

The cover may be perforated with holes or made of lattice-work, like the bottoms of the frames.

The skeins of yarn may be doubled upon themselves and stuck upon one pin, as shown in Fig. 7.

Instead of the pins, a light frame-work similar in form to pigeon-holes may be erected from the bottom of the frame, as shown in Fig. 8, each one of the small compartments *g* being adapted to receive and contain a skein of yarn.

The same frames can be used with either long or short skeins of yarn when made in sections adjustable relatively to one another, as shown in Fig. 9.

The section *m* is secured to the section *n* by means of the screw *q*, passing through a screw-threaded nut secured to the section *m*, and loosely entering an aperture in the block *q'*, secured to the section *n*.

The screw is provided with a wrench or handle, *q²*, by which it may be turned to force the sections apart, the natural tension of the yarn tending to draw them together.

Any well-known adjusting device may be employed to control the relative position of the two sections.

The section *m* is represented as having been

forced out by the screw from the position shown by the dotted to that shown by the solid lines.

In the use of the word "perforated" I do not wish to be limited to any particular kind or class of openings or to exclude lattice-work.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for dyeing yarn, in combination with a rotary dipping-wheel provided with partitions forming compartments, a series of removable frames adapted for insertion in said compartments and provided with pins for holding yarn, substantially as and for the purposes described.

2. In an apparatus for dyeing yarn, in combination with a rotary dipping-wheel provided with pockets formed by radial open-work partitions, a series of removable frames provided with fixed pins, and hinged lids adapted to fit in said pockets, substantially as and for the purposes described.

3. In combination with a dipping-wheel divided into compartments, substantially as shown, a series of removable frames provided with yarn-holding devices and adapted for insertion in said compartments, each of which frames is constructed in two sections which are adjustable to or from each other, whereby the frame may be extended or reduced, substantially as set forth and described.

4. In combination with a dipping-wheel provided with radial partitions, a series of frames, *K*, each having an open-work base provided with fixed pins *P*, and a hinged lid, *f*, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 10th day of December, 1887.

URBAN WELDON.

Witnesses:

GEO. A. MOSHER,

W. H. HOLLISTER, Jr.