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PATENTED JAN. 31, 1905.

J. G. BROTHWELL & G. F. PENLEY.

ELECTROPLATING TANK.

APPLICATION FILED JAN. 11, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

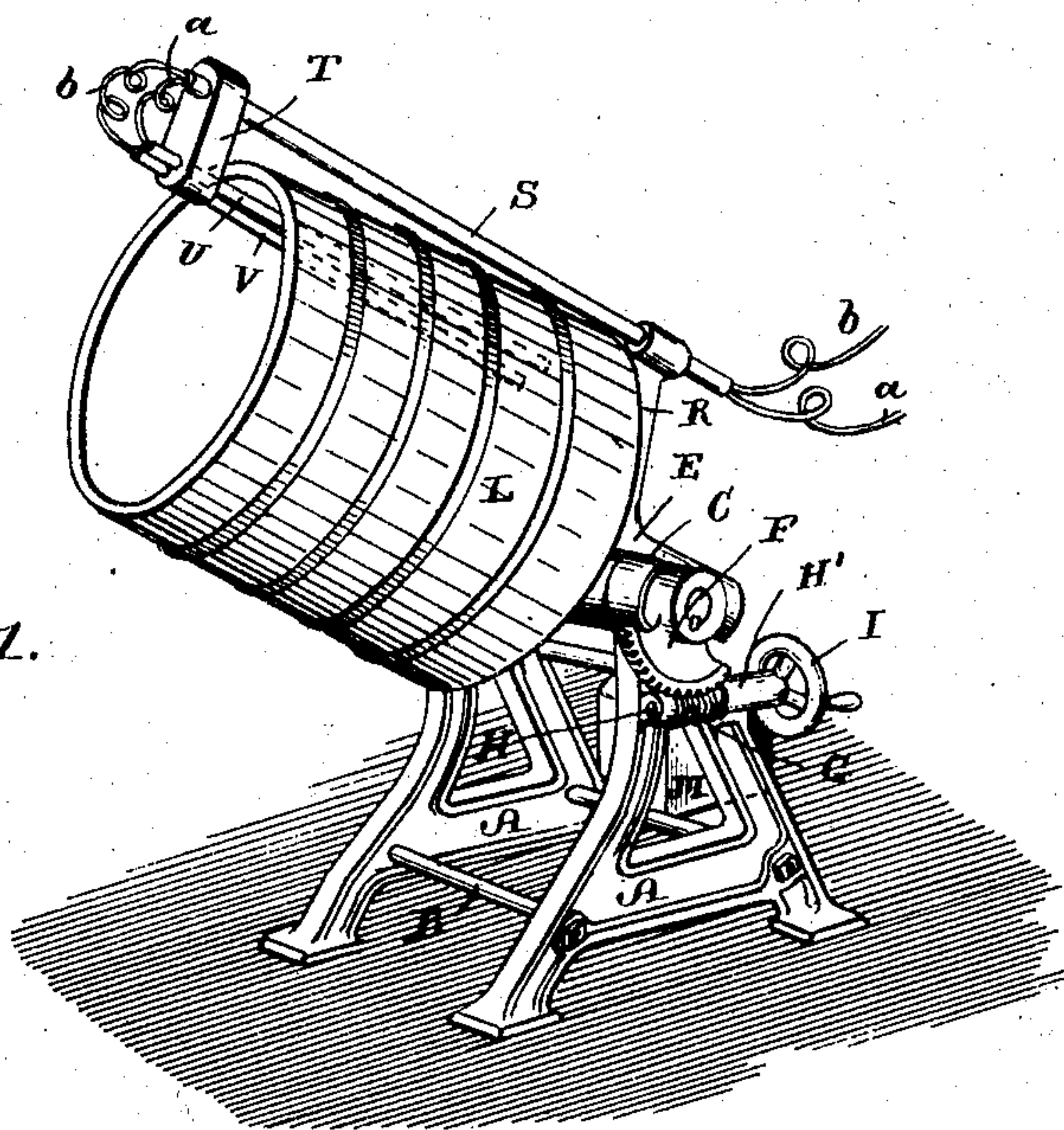
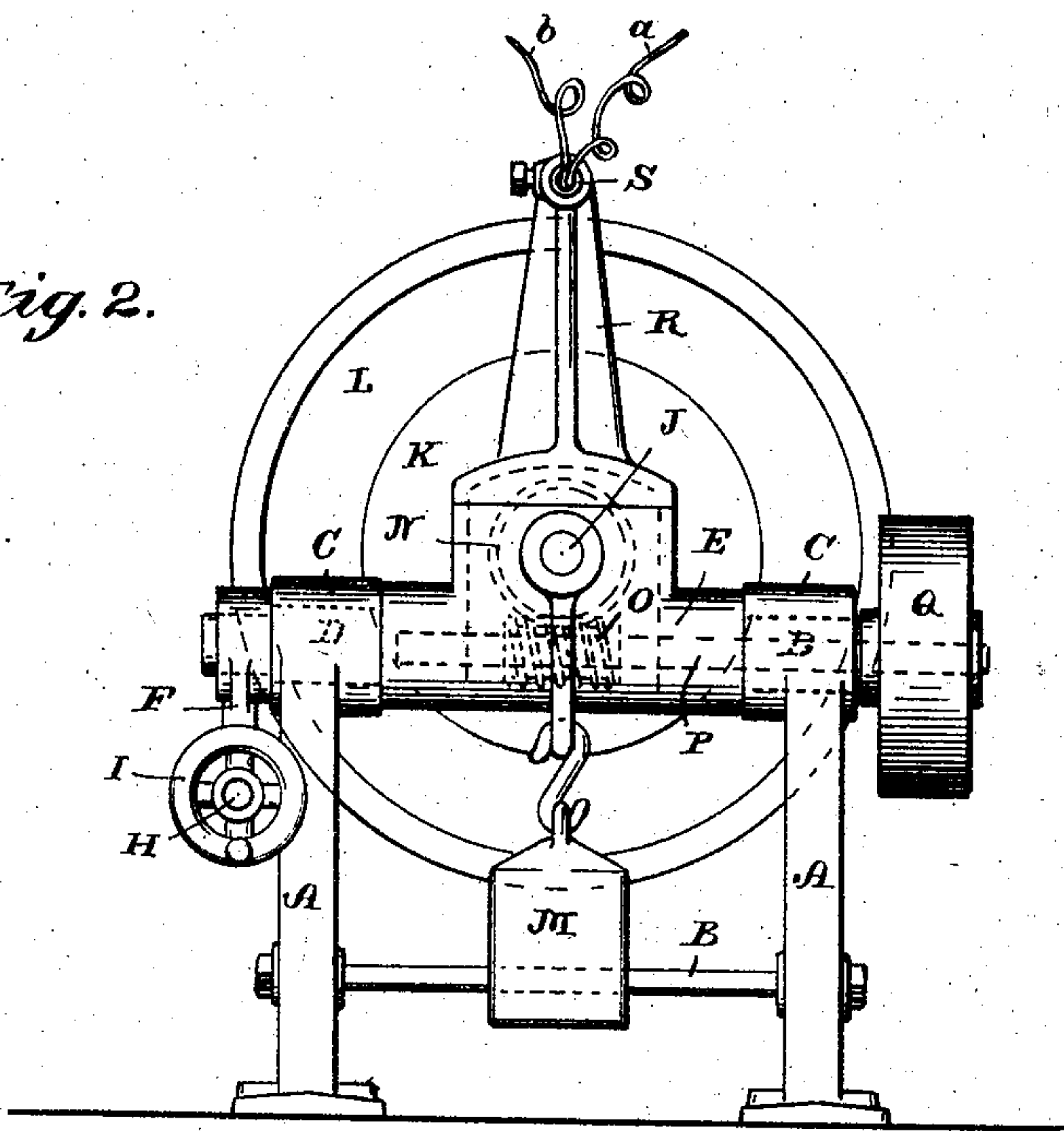


Fig. 2.



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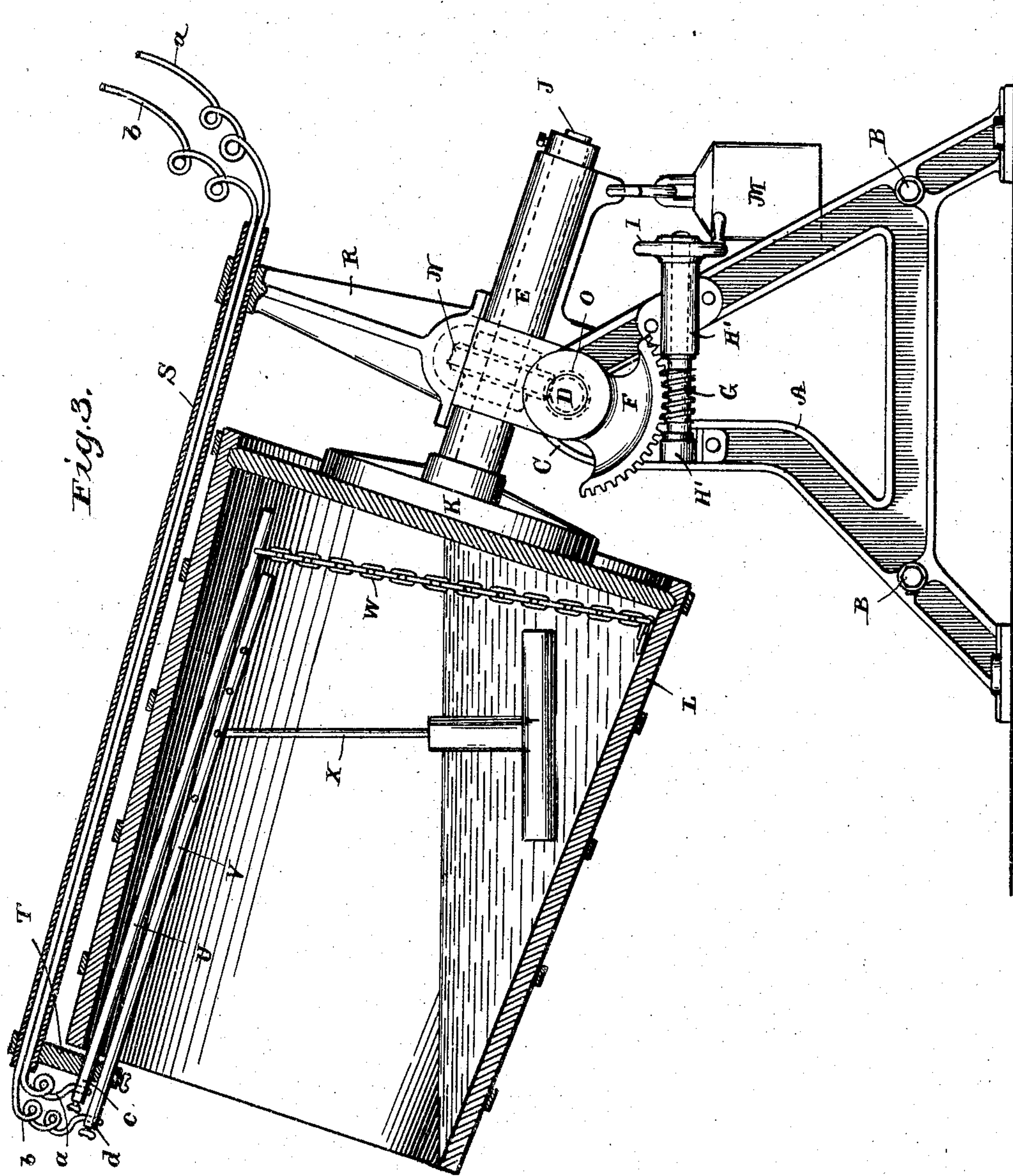
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UNITED STATES PATENT OFFICE.

JOHN G. BROTHWELL AND GEORGE F. PENLEY, OF TORRINGTON, CONNECTICUT, ASSIGNORS TO THE TORRINGTON MANUFACTURING COMPANY, OF TORRINGTON, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTROPLATING-TANK.

SPECIFICATION forming part of Letters Patent No. 781,327, dated January 31, 1905.

Application filed January 11, 1904. Serial No. 188,584.

To all whom it may concern:

Be it known that we, JOHN G. BROTHWELL and GEORGE F. PENLEY, citizens of the United States, and residents of Torrington, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Electroplating-Tanks, of which the following is a specification.

Our invention relates to new and useful improvements in electrical plating-tanks, such as are employed in the art of plating small metallic articles through the medium of electricity, and refers more particularly to a machine comprising in part a rotatable tank in which the articles are submerged and continuously moved or "tumbled," so to speak, while in the process of being plated and finally to produce a tank in which the articles are examinable at all times.

It is the object of our invention to provide a device which will be simple in construction, cheap to manufacture, and convenient to operate, that can be adjusted to hold varying quantities of fluid and number of articles to be plated in a way to permit of a free movement therein with the rotation of the tank; further, to provide a plating-tank of a compact construction with its conducting-wires protected and in part concealed, and, finally, to provide a flexible electrical connection to the fluid of the tank in a way to insure a positive and uniform distribution of the current throughout the fluid and to the articles submerged therein.

With the above objects in view our invention resides and consists in the novel construction and combination of parts shown upon the accompanying two sheets of drawings, forming a part of this specification, upon which similar characters of reference denote like or corresponding parts throughout the several figures, and of which—

Figure 1 shows a perspective view of our improved rotatable electroplating-tank complete and adjusted in position for operation.

Fig. 2 is a rear view of the machine on a slightly-enlarged scale, the tank being adjusted to a horizontal position. Fig. 3 is a still-further enlarged sectional elevation of our machine complete, the position of the same agreeing substantially with that of Fig. 1 and being in an operative position.

Our electroplating apparatus is necessarily connected with a suitable dynamo, as is the custom, but which for convenience of illustration has been omitted from the accompanying drawings, we having shown only two wires leading therefrom, which will later be properly designated and referred to.

Referring to the drawings and the characters of reference marked thereon, it will be seen that the operative portions of our machine are mounted in a suitable framework, of which A A represent side members, and B brace-rods securing said members together. In the upper portions of these side frames we provide bearings C, in which are journaled trunnions D of an adjustable bracket E, which is clearly shown in Figs. 2 and 3. A segmental rack F is secured to a reduced extension of one of these trunnions and is engaged by a worm G, secured to shaft H, journaled in bearing H' and operated by an adjusting-wheel I. By this means it will be noted that the bracket in question may be rocked or adjusted to different positions, as is required in the operation of the tank.

Within the bracket E is journaled a spindle J, bearing a plate K on its forward end and to which the bottom of the tank L is secured. To the rear end of this bracket is hung a weight M, which counterbalances the weight of the tank and insures an easy adjustment of this bracket and tank to any desirable position by means of the adjusting-wheel I, before mentioned.

To the spindle J is secured a worm-gear N, which meshes with and is driven by a worm O on a transverse shaft P, journaled in the bracket E, before mentioned, and provided

with a driving-pulley Q on its outer end. By this means it will clearly be apparent (see Fig. 3) that the tank in question may be rotated by the pulley through said connections while adjusted to any angle desired.

A standard R is attached to the bracket E, before mentioned, and carries a guide-pipe S to inclose the conducting-wires *a* and *b*, that are charged from any suitable source. To the forward end of this pipe is hung an arm T, which in turn is provided with two conducting-rods U and V, extending into the tank and to which the respective wires are attached, as at *c* and *d*. To the rod U is hung a flexible conductor W in the form of a chain that drags through the solution in contact with the articles submerged therein to insure a positive and uniform contact. To the rod V is pivotally attached an electrode X, which is also submerged in the plating fluid.

In the process of plating the tank is necessarily adjusted to a raised position, preferably upon an angle somewhat like that shown in Figs. 1 and 3, thus retaining more or less of the plating liquid therein. This fluid, as well as the articles submerged therein, may be quickly dumped out any time for the purpose of renewal by simply adjusting the hand-wheel in question, said materials being caught by holding a suitable sieve below the mouth of the tank and under it a tight vessel, the first to catch the plated articles and the second to retain the fluid, whereupon said tank could be again raised by the wheel, new articles and the same fluid again replaced, and the rotating operation repeated for a suitable length of time. This method of plating has the advantage of tumbling and finishing the articles, producing a more durable and lasting plating, and also the desirable feature of exposing said articles more or less during the plating operation, which permits of their inspection, and finally does away with the laborious practice of stringing the articles on wire, as is extensively practiced in the majority of electric plating plants.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an electroplating device, the combination with a rotatable tank, and means for rotating the same, of conducting-rods supported longitudinally therein, an electrode suspended from one of said rods, and a flexible chain conductor suspended from the other of said

rods in a manner to freely drag through the solution of the tank.

2. In an electroplating device, the combination with a rotary tank and means for rotating the same, of conducting-wires for the tank, a guide-pipe through which the wires are arranged, conducting-rods connected with the said wires and extended into the tank, an electrode suspended from one of said rods, and a chain forming a conductor suspended from the other of said rods.

3. In an electroplating device, the combination with a tank and means for rotating the same, of means for adjusting the tank to different angles, an electrode submerged within the fluid of the tank and provided with an electric connection, a chain forming a flexible conductor also suspended in the fluid in the tank and provided with electric connections, substantially as described.

4. In an electroplating device, the combination with a tank rotatably mounted in a frame, of means for rotating said tank, a standard secured to said frame, a guide-pipe mounted in the standard, conducting-wires arranged through the pipe, conducting-rods arranged within the tank and to which the wires are attached, an electrode suspended from one of said rods and a flexible conductor attached to the other rod, both arranged to pass the current through the solution of the tank substantially as described.

5. In an electroplating-tank, the combination with a support, of an adjustable bracket mounted in said support, a spindle journaled in the bracket, a tank secured to the spindle, means for rotating said tank and spindle, means for lowering and raising the tank for the purpose of discharging its contents, a standard secured to the bracket, a guide-pipe secured in the standard and longitudinally with the tank, wires passing through the pipe, an arm attached to said pipe and bearing conducting-rods extended into said tank and a flexible connection for passing the current through the solution of the tank for the purposes described.

Signed at Torrington, in the county of Litchfield and State of Connecticut, this 30th day of December, A. D. 1903.

JOHN G. BROTHWELL.
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Witnesses:

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