

(No Model.)

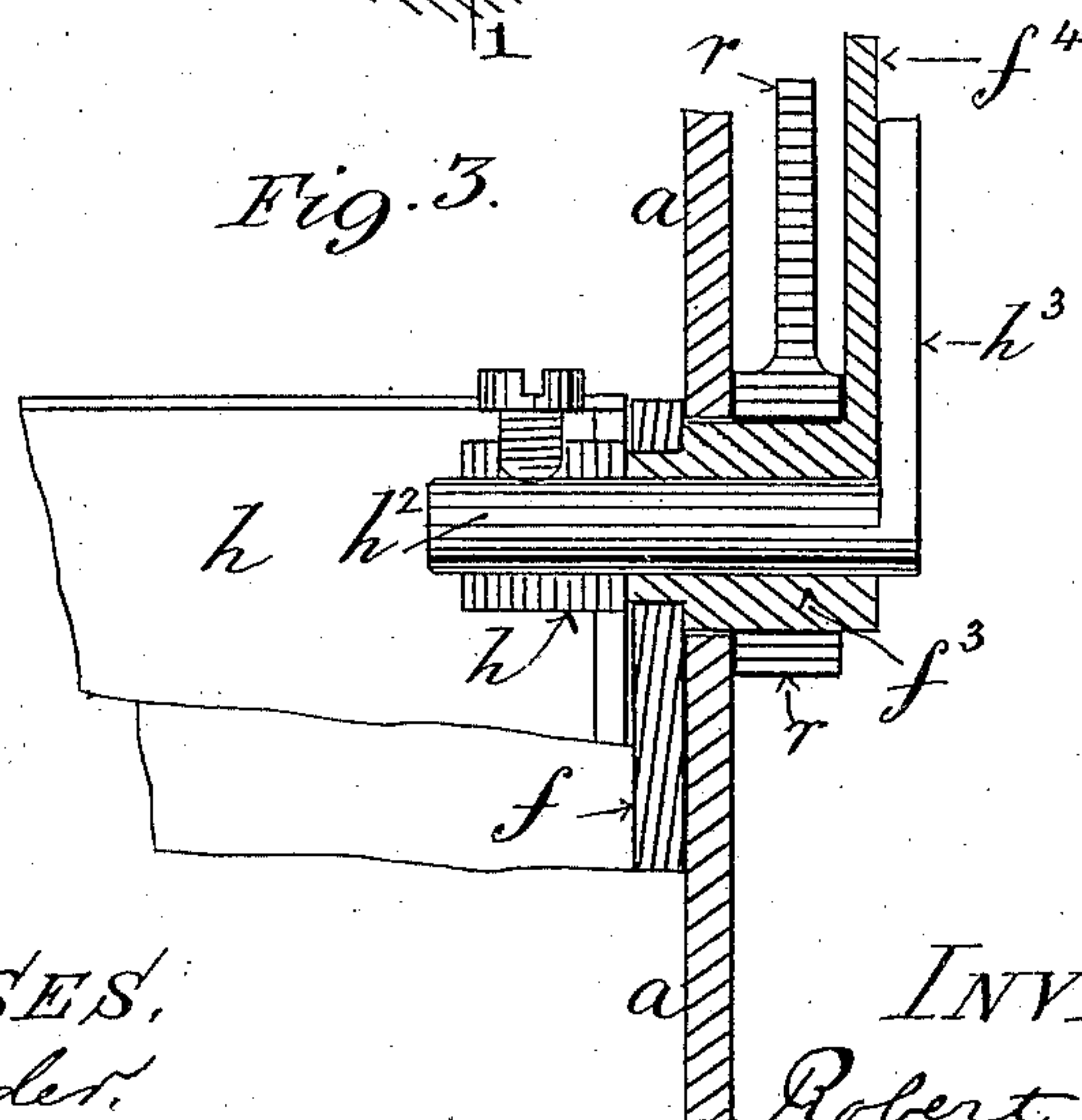
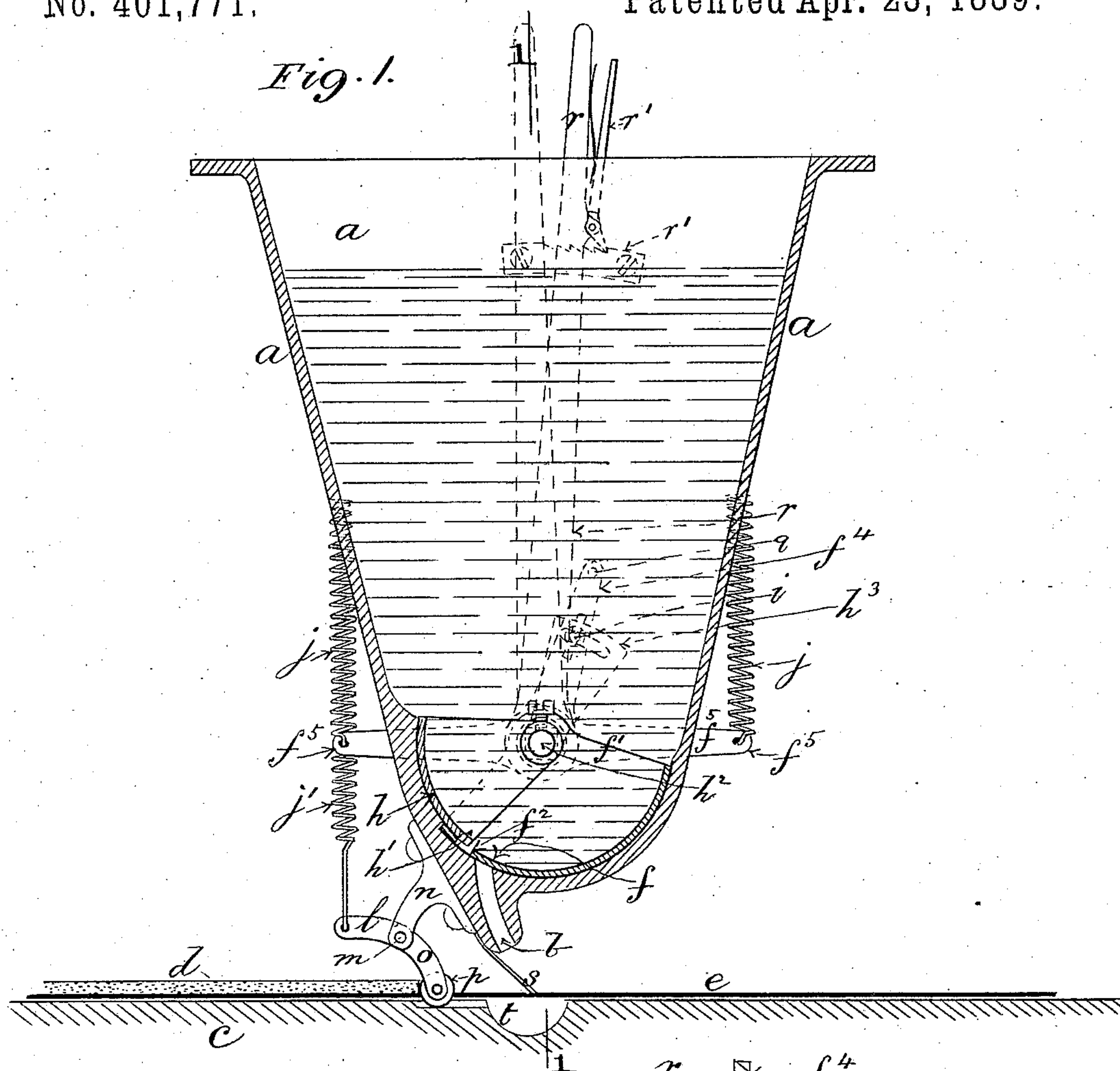
2 Sheets—Sheet 1.

R. E. M. BAIN.

APPARATUS FOR COATING PHOTOGRAPHIC PLATES WITH EMULSION.

No. 401,771.

Patented Apr. 23, 1889.



WITNESSES,
S. L. Schrader,
W. M. Byrne.

INVENTOR,
Robert E. M. Bain by
Paul Bakewell,
his attorney.

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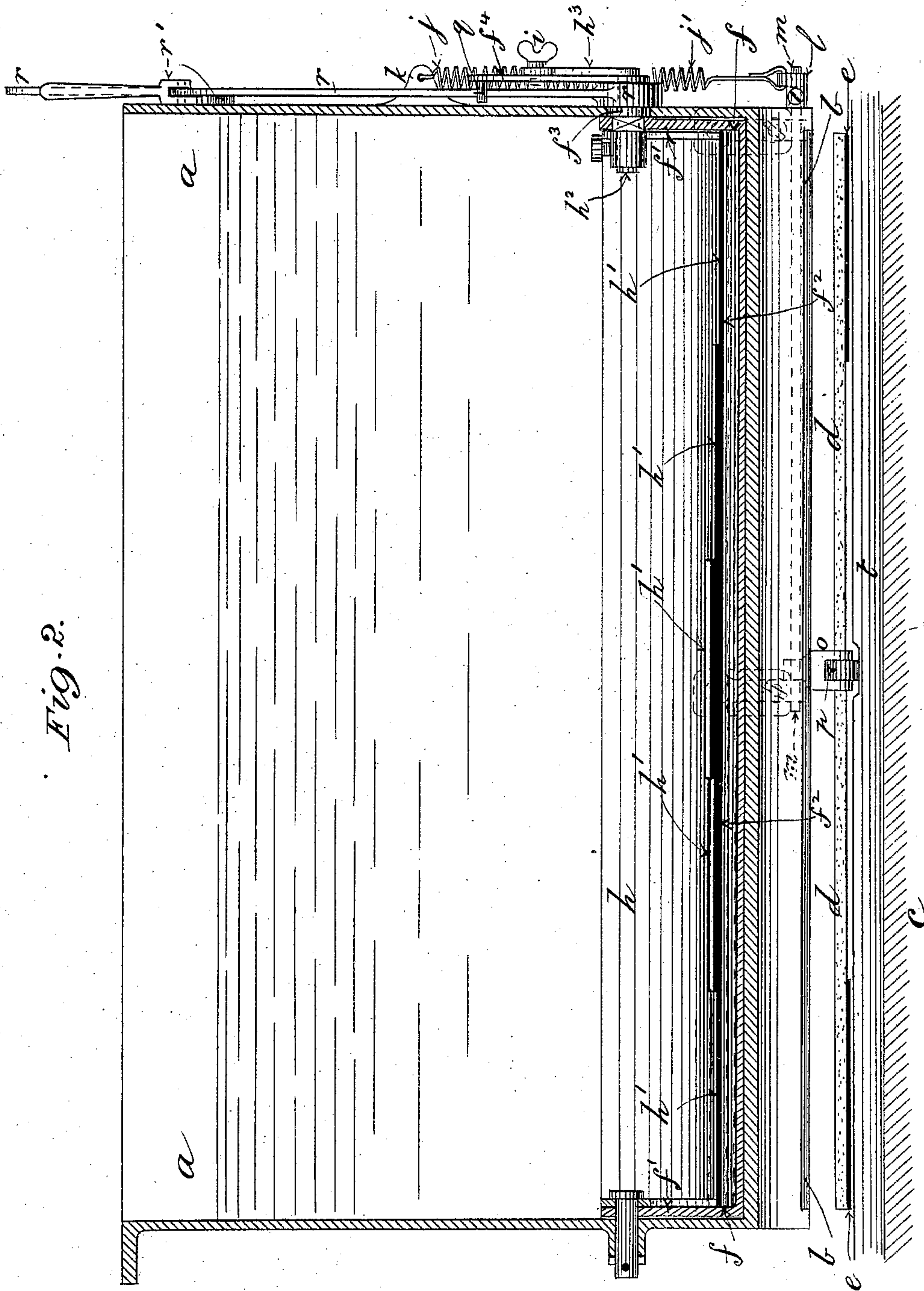
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UNITED STATES PATENT OFFICE.

ROBERT E. M. BAIN, OF ST. LOUIS, MISSOURI.

APPARATUS FOR COATING PHOTOGRAPHIC PLATES WITH EMULSION.

SPECIFICATION forming part of Letters Patent No. 401,771, dated April 23, 1889.

Application filed January 5, 1889. Serial No. 295,490. (No model.)

To all whom it may concern:

Be it known that I, ROBERT E. M. BAIN, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improved Apparatus for Coating Photographic Plates with Emulsion, of which the following is a full, clear, and exact description.

My invention relates to improved apparatus for coating the dry plates used in photography with emulsion, whereby the flow of the emulsion is automatically regulated according to the various widths of the plates and distributed over the latter more uniformly and thoroughly with less waste than by the present system of coating.

It consists in a tank containing the emulsion and having an outlet-opening through which the emulsion is allowed to flow onto the plates, and regulated by means of a valve having, preferably, an adjustable portion and moved automatically by levers and springs, which are actuated by the plates as these are moved forward along the table, so as to open or close the opening and allow the emulsion to flow onto the plates in a uniform stream of varying width, according to that of the plates.

On the accompanying drawings, Figure 1 represents a transverse sectional elevation of the apparatus embodying my invention; Fig. 2, a longitudinal sectional elevation thereof on line 1 1 in Fig. 1, and Fig. 3 a detached sectional view, to an enlarged scale, of the parts seen to the right of Fig. 2.

Like letters of reference denote like parts in all the figures.

a represents a tank which contains the emulsion, and is preferably of a semi-cylindrical shape at the bottom, where it is provided with an outlet opening and passage, *b*, located at a suitable distance above the table *c*, along which the plates *d*, mounted on traveling belts *e*, are passed beneath the passage *b*. At and adjacent to the passage *b*—preferably within the tank *a*—is fitted a segmental cylindrical-shaped valve, *f*, which is radial with its seating in the bottom of the tank *a* and pivoted axially at its ends *f'* to the corresponding ends of the tank *a*.

Pivoted concentrically with and fitted with-

in the valve *f* is an adjustable segment, *h*, formed on one edge adjacent to the edge *f*² of the valve *f* with notches *h'*, which are of varying lengths, according to the corresponding widths of the plates *d* to be coated, so that when the segment *h* is moved toward or from the edge *f*² of the valve *f* the intervening space or opening afforded by the latter and the notches *h'* of its combined segment *h* for the passage of the emulsion from the tank *a* is successively diminished or enlarged, respectively, according to the width of plate to be coated or the amount of emulsion required.

In the arrangement shown on the drawings the valve *f* is pivoted in one end of the tank *a* by a tubular journal, *f*³, (see more particularly Fig. 3,) to the end of which outside the tank *a* is fixed an arm, *f*⁴, while the corresponding end of the segment *h* is pivoted by a pin, *h*², which passes through the tubular pivot *f*³ of the valve *f* and terminates in a slotted arm, *h*³, which is confined to and adjustable with the arm *f*⁴ of the valve *f* by a set-screw, *i*; but this pivotal adjustable feature of the valve *f* with its segment *h* may be effected otherwise in a variety of ways, as found most convenient.

From the tubular journal *f*³, at opposite parts of its circumference, adjacent to the arm *f*⁴, project arms *f*⁵, having their ends connected, respectively, by spiral springs *j* to lugs *k* or other convenient part of the tank, the springs *j* being so arranged that when in equal tension the arms *f*⁵, which control the valve *f*, are in their normal position, or with the valve *f* closing the outlet opening and passage *b* from the tank *a*. From the end of one arm *f*⁵ a spiral spring, *j'*, connects with the end of a lever, *l*, which is fulcrumed to a shaft, *m*, extending horizontally beneath the tank *a*, where it is mounted in bearings *n* and provided with an arm, *o*, carrying a roller, *p*, which normally bears upon the table *c*.

From the arm *f*⁴ of the valve *f* projects a stud or pin, *q*, which, when the arm *f*⁴ is vibrated on the opening of the valve *f*, as hereinafter more particularly referred to, strikes against the edge of a hand-lever, *r*, which is fulcrumed loosely on the tubular pivot *f*³ of the valve *f* and extends upward therefrom to a suitable length. The lever *r* is provided

with a ratchet or clicking device, r' , so that by the sound thereby produced in throwing over the lever r the operator is enabled to adjust in the dark the amount of vibration to be allowed to the arm f^4 for opening the valve f to the desired extent.

In operation, assuming the outlet-passage b to be closed by the valve f and the notched edge of the segment h at its maximum distance from the edge f^2 of the valve f , with the other parts of the apparatus in the position seen in Fig. 1, as the plate d is advanced along the table c by the belts e , its forward edge comes in contact with and lifts the roller p and arm o and depresses lever l , which pulls down spring j' and the corresponding arm f^5 , so as to vibrate the valve f , with its combined segment h and arm f^4 , and thereby open the passage b to the emulsion, which now flows from the tank a through passage b onto the plate d , until the latter has passed the roller p , when the unequal tension previously imparted to the spring j returns the arms f^5 and valve f to their normal position, or so as to cause the edge f^2 of the valve f to close the opening b and prevent any further flow of emulsion from the tank a . The extent to which the valve f is vibrated or opened to the passage b , as described, is determined by the position of the hand-lever r , against which the vibration of the arm f^4 , carried by the valve f , is stopped by the stud q , so that whatever the thickness of the plate d may be, the valve f is only opened to the extent allowed by the lever r , any excessive vibration of the arm o and lever l , caused by an increased thickness of plate, being imparted to the spiral spring j' without affecting the arms f^5 f^4 . If a fuller stream of emulsion is required, the hand-lever r is thrown over toward the left-hand position, (shown by dotted lines in Fig. 1,) so that the vibration of the arm f^4 and valve f is thereby increased and the edge f^2 of the latter moved, so as to open the passage b more fully to the emulsion.

When desired to reduce the stream of emulsion for a narrower plate, the segment h is adjusted by its slotted arm h^3 , so as to close the notches h' toward the edge f^2 of the valve f , and thereby expose an opening through the valve f to the passage of the emulsion equal in length to the particular notch h' which corresponds with the width of the plate to be coated, when the arms f^4 and h^3 are clamped together by the set-screw i , and the lever r adjusted accordingly. s represents an apron, (not shown in Fig. 2,) of ivory or other flexible material, located beneath and adjacent to the passage b for directing the emulsion onto the plates d .

In the table c , immediately beneath the passage b , is formed a trough, t , into which the emulsion that has flowed from the passage b , after the plate d has passed the apron s , is collected, and waste of the emulsion thereby avoided.

I claim—

1. In an apparatus for coating photographic plates with emulsion, the combination of a tank having an outlet-passage, a cylindrical-shaped valve pivoted axially and having arms connected by springs to said tank, a spring connecting one of said arms to a lever fixed on a shaft mounted in bearings and having an arm, whereby, when the plate to be coated is brought into contact with the lever, the valve is opened and the emulsion is permitted to flow, substantially as shown, and for the purpose described.

2. In an apparatus for coating photographic plates with emulsion, the combination of a tank having an outlet-passage, a cylindrical-shaped valve pivoted axially and having arms connected by springs to said tank, an arm carried by the valve and having a projecting stud or pin, and a spring connecting one of said arms to a lever fixed on a shaft mounted in bearings and having an arm, with a hand-lever having a ratchet or clicking device, whereby, when the plate to be coated is brought into contact with the lever, the valve is opened and the emulsion is permitted to flow, substantially as shown, and for the purpose described.

3. In an apparatus for coating photographic plates with emulsion, the combination of a tank having an outlet-passage, a cylindrical-shaped valve pivoted axially and concentrically, with an adjustable portion formed on its edge with notches, said valve having arms connected by springs to said tank, and an arm having a projecting stud or pin, a spring connecting one of said arms to a lever fixed on a shaft mounted in bearings and having an arm, a slotted arm fixed on the pivot of the adjustable portion of the valve and adjustably confined to the arm having the stud or pin, with a hand-lever having a ratchet or clicking device, whereby, when the plate to be coated is brought into contact with the lever, the valve is opened and the emulsion is permitted to flow, substantially as shown, and for the purpose described.

4. In an apparatus for automatically coating photographic plates with emulsion, the combination of a tank for holding the emulsion, an outlet-passage in the said tank for the escape of the emulsion, a flexible apron for directing the emulsion onto the plate to be coated, a valve for opening and closing said outlet-passage, and mechanism for operating said valve, substantially as described, whereby, when the plate to be coated is brought into contact with the lever, the valve is opened and the emulsion is permitted to flow, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 2d day of January, 1889.

ROBERT E. M. BAIN.

Witnesses:

S. L. SCHRADER,
PAUL BAKEWELL.