

No. 741,213.

PATENTED OCT. 13, 1903.

C. A. BARRETT & R. W. PAGE.
PHOTOGRAPHIC DEVELOPING APPARATUS.

APPLICATION FILED OCT. 17, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

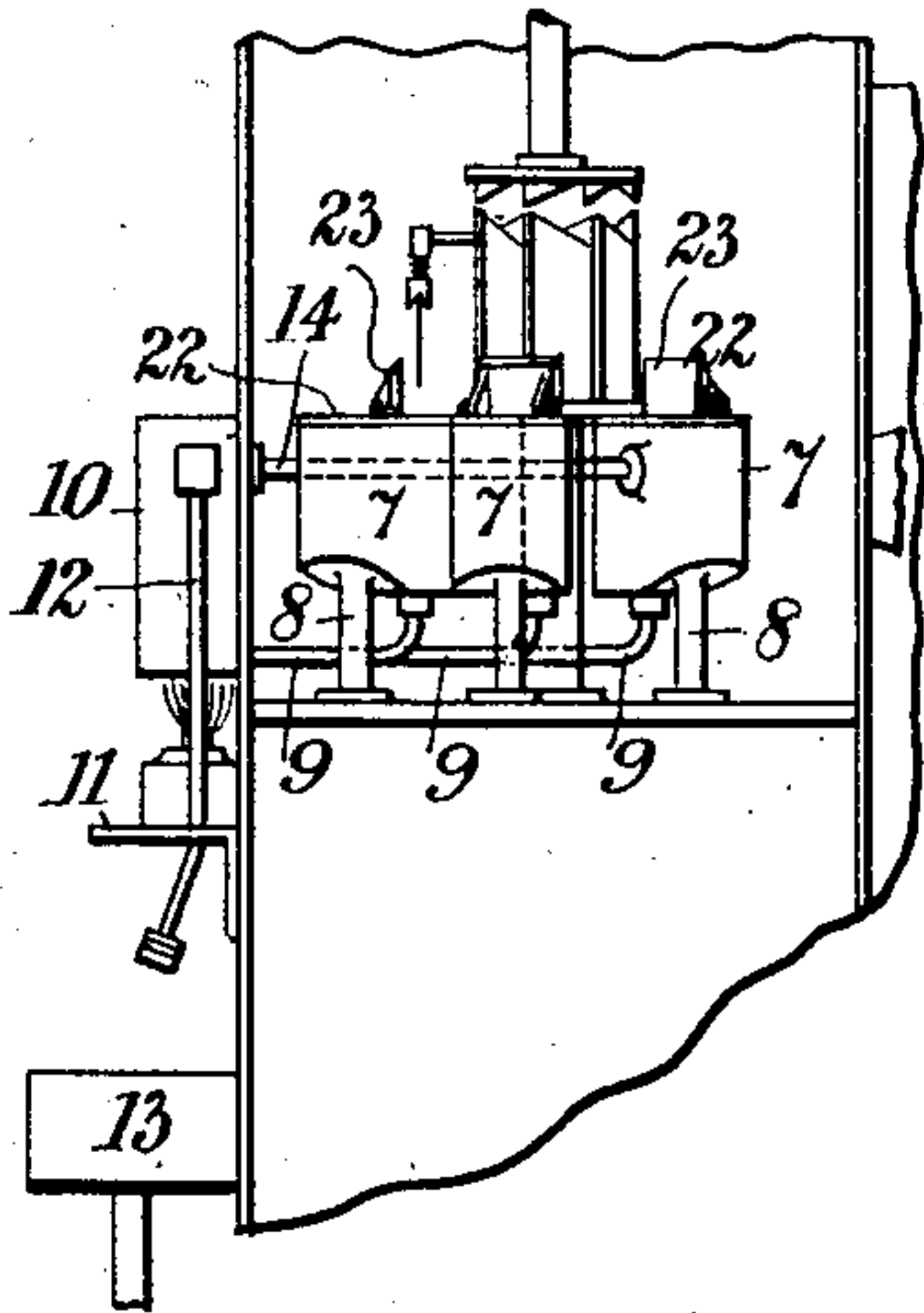


Fig. 4.

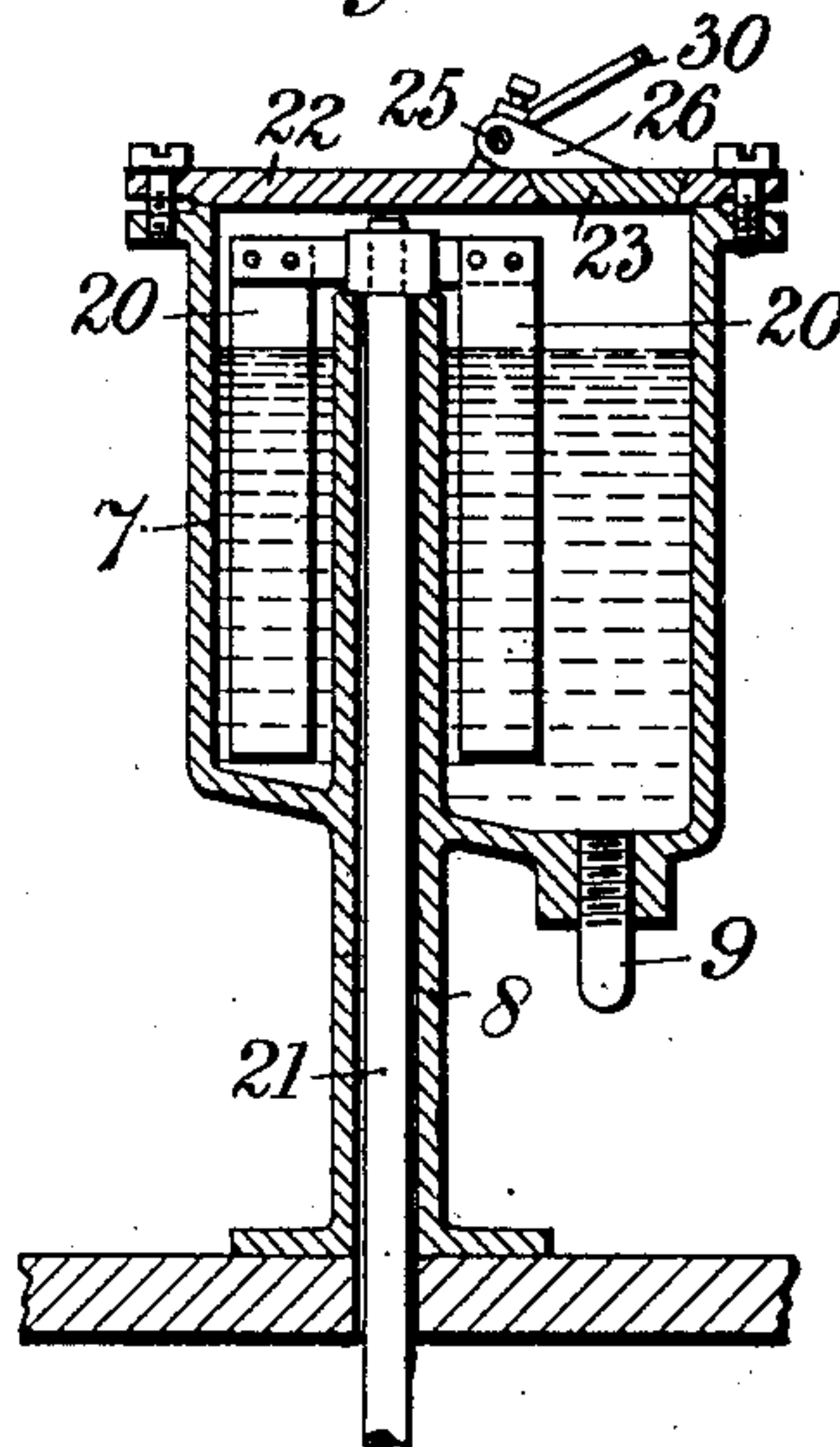
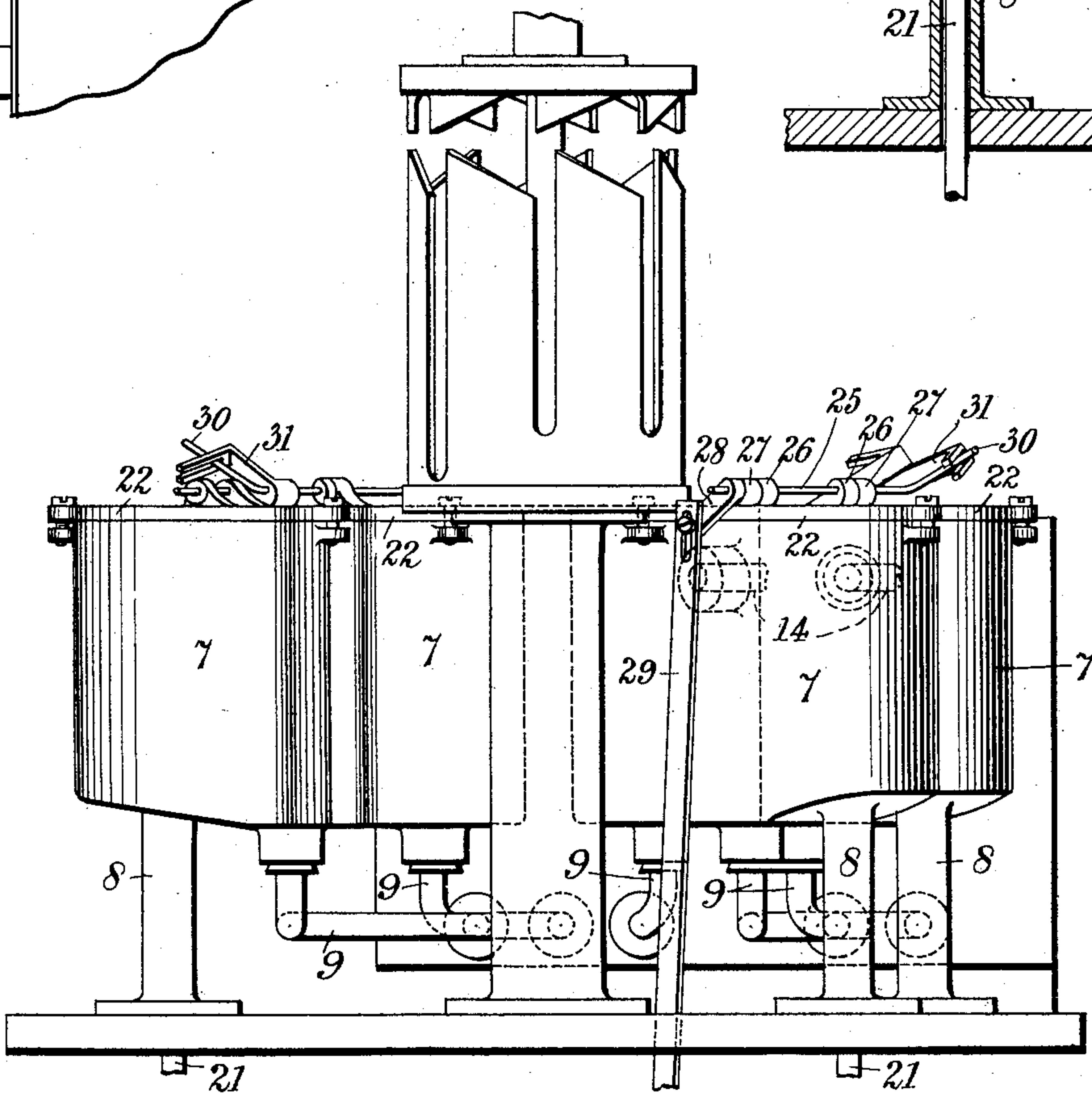


Fig. 3.



WITNESSES.

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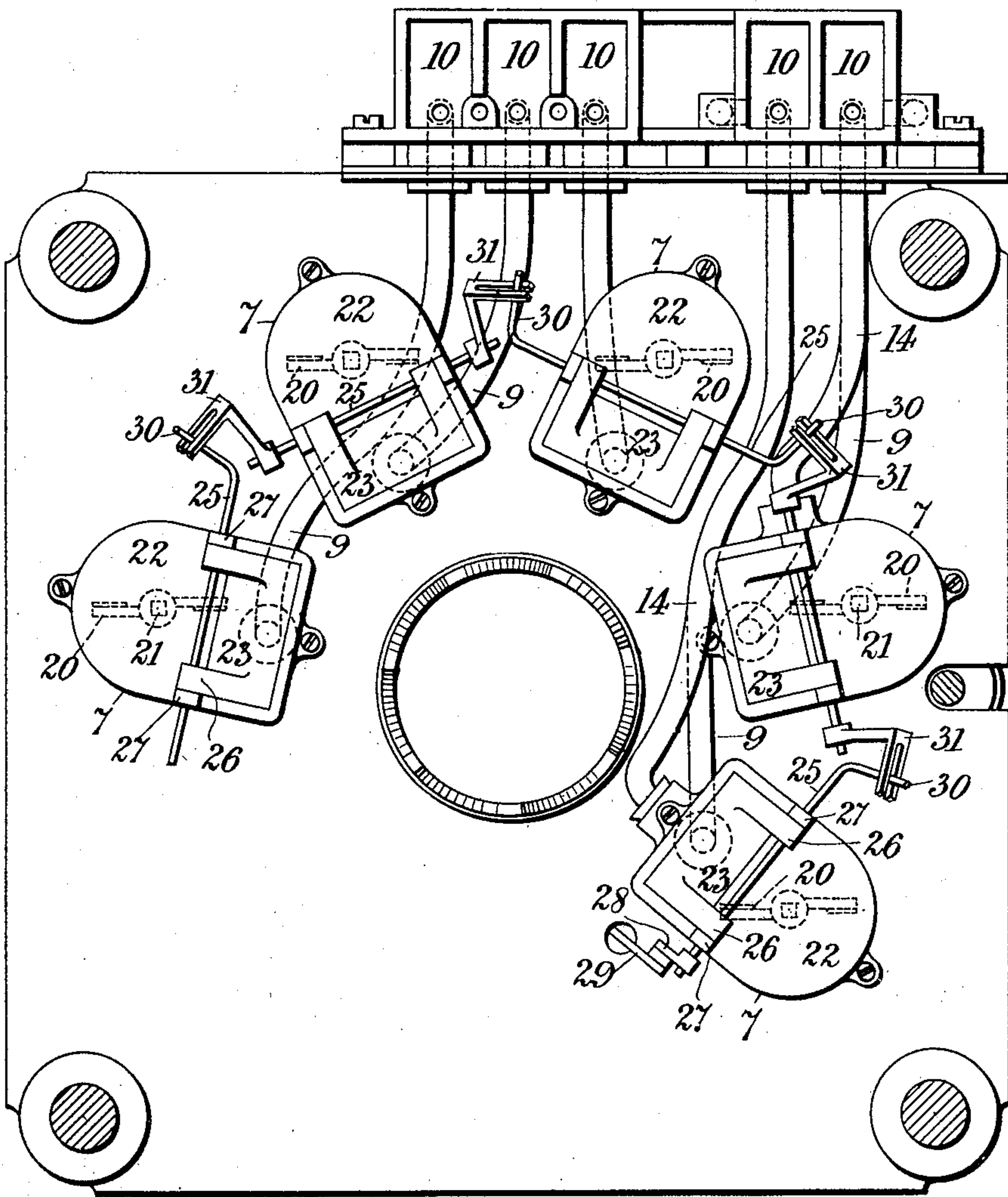
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2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES ARTHUR BARRETT AND ROBERT WILLIAM PAGE, OF LONDON, ENGLAND, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO R. BARRETT & SON, LIMITED, OF LONDON, ENGLAND, A COMPANY OF GREAT BRITAIN.

PHOTOGRAPHIC DEVELOPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 741,213, dated October 13, 1903.

Application filed October 17, 1902. Serial No. 127,738. (No model.)

To all whom it may concern:

Be it known that we, CHARLES ARTHUR BARRETT and ROBERT WILLIAM PAGE, subjects of His Majesty the King of Great Britain, residing at London, England, have invented a certain new and useful Photographic Developing Apparatus, of which the following is a specification.

The invention relates to certain parts of an apparatus for taking photographs mechanically or automatically. In such apparatus the means by which the plate is developed usually consists of a series of baths into which the plate is dipped in succession by a mechanically-operated plate-carrier. In apparatus of this character, which frequently has to be placed out of doors, or at least operated in many variations of temperature, it has been found desirable to secure uniform results that the baths should be kept at an even temperature, and they have been heated for this purpose, but with the result that the evaporation of the liquid and its condensation inside the apparatus (which must necessarily be closed) are disastrous to the operation of the mechanism and the life of its parts. It has also been found necessary to keep the solutions in the baths in motion more effectively than by the previously-employed means of rotating the bath or oscillating the plate, not only in order that the chemicals in the solutions shall be prevented from depositing, but in order that both they and the wash-water shall be dashed against the plate to increase the effect or action on same.

According to our invention we provide means for heating the solutions in the baths from the outside of the apparatus, for closing said baths except when actually in use, and for effecting an efficient stirring or dashing action in same.

In the accompanying drawings, Figure 1 is a view on a small scale of a part of the apparatus, showing the baths and connected parts. Fig. 2 is a plan on an enlarged scale. Fig. 3 is a front elevation of Fig. 2, and Fig. 4 is a sectional elevation of one of the baths.

The various solutions for carrying out the operations are contained in baths 7, supported on tubular pillars 8, carried on the floor or

tier of the apparatus allotted to the developing operation. The bottom of each bath slopes toward one end, where there is attached a pipe 9, which passes outside of the casing to a tank 10, beneath which is a shelf 11 for carrying a lamp or lamps whereby any or all of the tanks 10 may be heated. Each tank 10 may be provided with a suitable discharge-outlet for emptying and an overflow-pipe 12, whereby excess liquid can be discharged into a waste-tank 13. Owing to the level of the bottom of the baths 7 being higher than the level of the bottom of the tanks 10, the former can be drained off completely from the outside of the apparatus by way of such tank 10. Further, it will be seen that the filling of the baths 7 can be effected by way of the tanks 10, so that the interior of the apparatus need not be exposed for either emptying or filling purposes.

If desired, any of the baths 7 can have a flow and return pipe instead of a single pipe 9 connecting with its tank 10, so that a better circulation of the heated liquid is obtained, this arrangement being shown in connection with the first two tanks on the right-hand side in Figs. 2 and 3, where 14 is the flow-pipe and 9 the return.

In the arrangement shown there are five baths 7 and five tanks 10. The first bath on the right-hand side, Fig. 2, will contain developing solution, the next a fixing solution, and the other three wash-waters. By this arrangement of exterior heating the apparatus is rendered independent of any variations of temperature so long as the solutions are maintained at the desired temperature by the attendant, thus enabling the time of developing (with a constant artificial light) to be alike in all cases. This, however, does not avoid the dispersion of vapor from the warmed solutions inside of the apparatus, and therefore to prevent this we provide the baths 7 with covers 22, to which are hinged the lids 23, such lids covering that part of the baths into which the plate is to be dipped and which part, as will be seen, is not in the path of stirrers 20, which we arrange inside the tank. It is necessary, however, to open the lids 23 when the plate is to be dipped in the baths, and to

this end all the lids are connected by cranks, bevel-gearing, or in other suitable ways, so that they may be opened simultaneously when the operation begins. In the arrangement
 5 shown the lids have bosses 26, fixed on rods 25, passing through similar bosses 27 on the covers 22, said rods having in the case of the first bath a crank 28, to which is attached a link
 10 29, passing down to suitable operating mechanism, which is adapted to give it a vertically-reciprocating motion, while the other end of the rod 25 has a bent end 30, which engages in a slot in a cranked arm 31 on one end of rod 25 of the next lid, the other end having a
 15 similar cranked arm 31, engaging with the bent end of rod 25 of the next lid, which rod has its other end similarly bent and engaging with cranked arms 31 of the next lid, a similar arm carried on the opposite end of the rod 25 en-
 20 gaging the end 30 of the rod of the last lid, so that an upward or downward movement of link 29 will open or close all the lids.

Inside the baths we arrange, as described, the stirrers 20, which are carried by rods 21,
 25 passing up the tubular part 8, and are rotated from the mechanism of the apparatus which effect the operation of the other parts.

What we claim is—

1. In photographic developing apparatus,
 30 the combination with a series of fixed baths for containing liquids, and an inclosing casing, of a tank for each bath outside said casing, a pipe connection between each tank and its bath, whereby the liquid from any bath
 35 may be filled into same from its tank or discharged from said bath by way of the tank all from the outside of the casing, means for heating the tanks from outside the casing, a lid for each bath, and means for raising and
 40 lowering such lids.

2. In photographic developing apparatus, the combination with a series of fixed baths for containing liquids, and an inclosing casing, of a tank for each bath outside said cas-

ing, and flow and return pipes for circulating 45 the liquid communicating with each bath and its respective tank.

3. In photographic developing apparatus, the combination with a casing, a bath inside same, a supply-tank exterior to the casing 50 and connections between the bath and tank, of stirrers in said bath, occupying a portion only of same, and a spindle by which said stirrers are carried and rotated.

4. In photographic developing apparatus, 55 the combination with a casing, baths inside same, supply-tanks exterior to the casing, and connections between the baths and tanks of lids carried by said baths, and means for connecting and operating all of said lids simul- 60 taneously so that they may be opened and closed together.

5. In photographic developing apparatus, the combination with a casing, baths inside same, supply-tanks exterior to the casing and 65 connections between the baths and tanks of lids carried by the baths, rods connected to said lids, and means for connecting all of said rods so that rotative movement imparted to one will be transmitted to the others to open 70 and close said lids.

6. In photographic developing apparatus, and in combination, a casing, baths inside same, supply-tanks exterior to the casing, connections between the baths and tanks, lids 75 for the baths, means for connecting and operating all of said lids simultaneously, stirrers inside said baths and means for rotating the stirrers.

In testimony whereof we have hereunto set 80 our hands in the presence of two subscribing witnesses.

CHARLES ARTHUR BARRETT.
 ROBERT WILLIAM PAGE.

Witnesses:

ERNEST BARRETT,
 C. H. BANYARD.