

No. 750,621.

PATENTED JAN. 26, 1904.

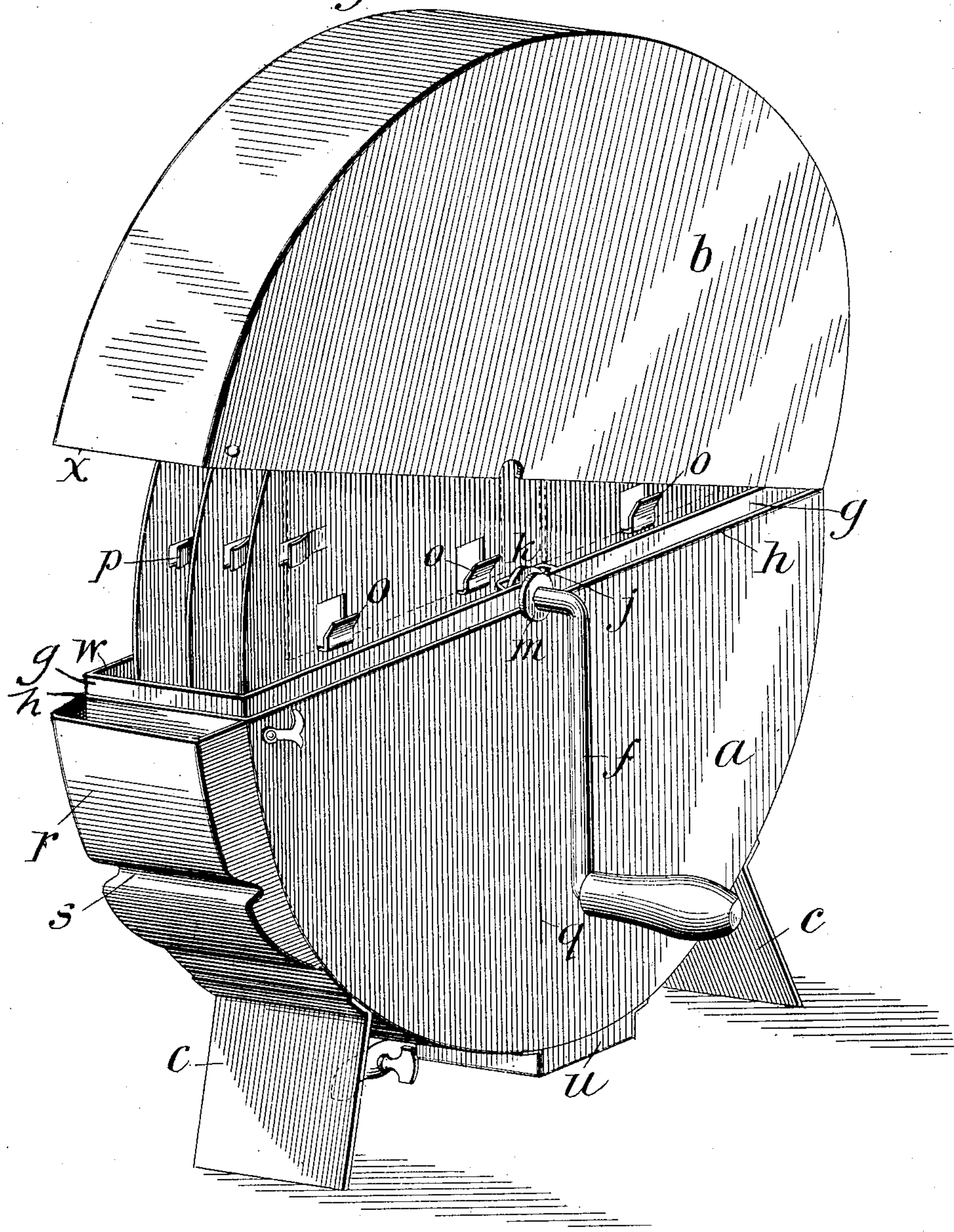
G. H. DORR.
PHOTOGRAPHIC PLATE TREATING APPARATUS.

APPLICATION FILED JUNE 27, 1903.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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E. P. Barges

Inventor:
George H. Dorr.

by William F. Hall
his Atty.

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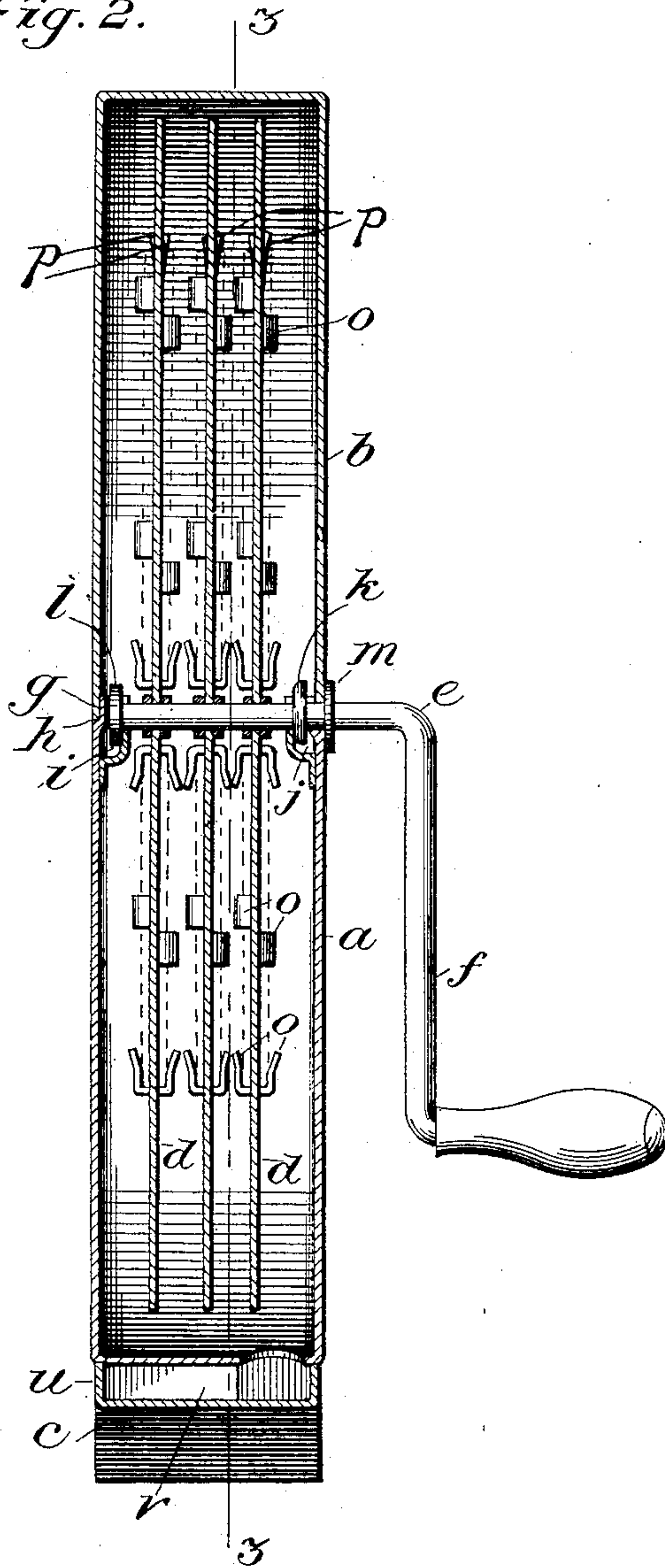
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APPLICATION FILED JUNE 27, 1903.

NO MODEL.

4 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

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NO MODEL.

4 SHEETS—SHEET 3.

Fig. 3.

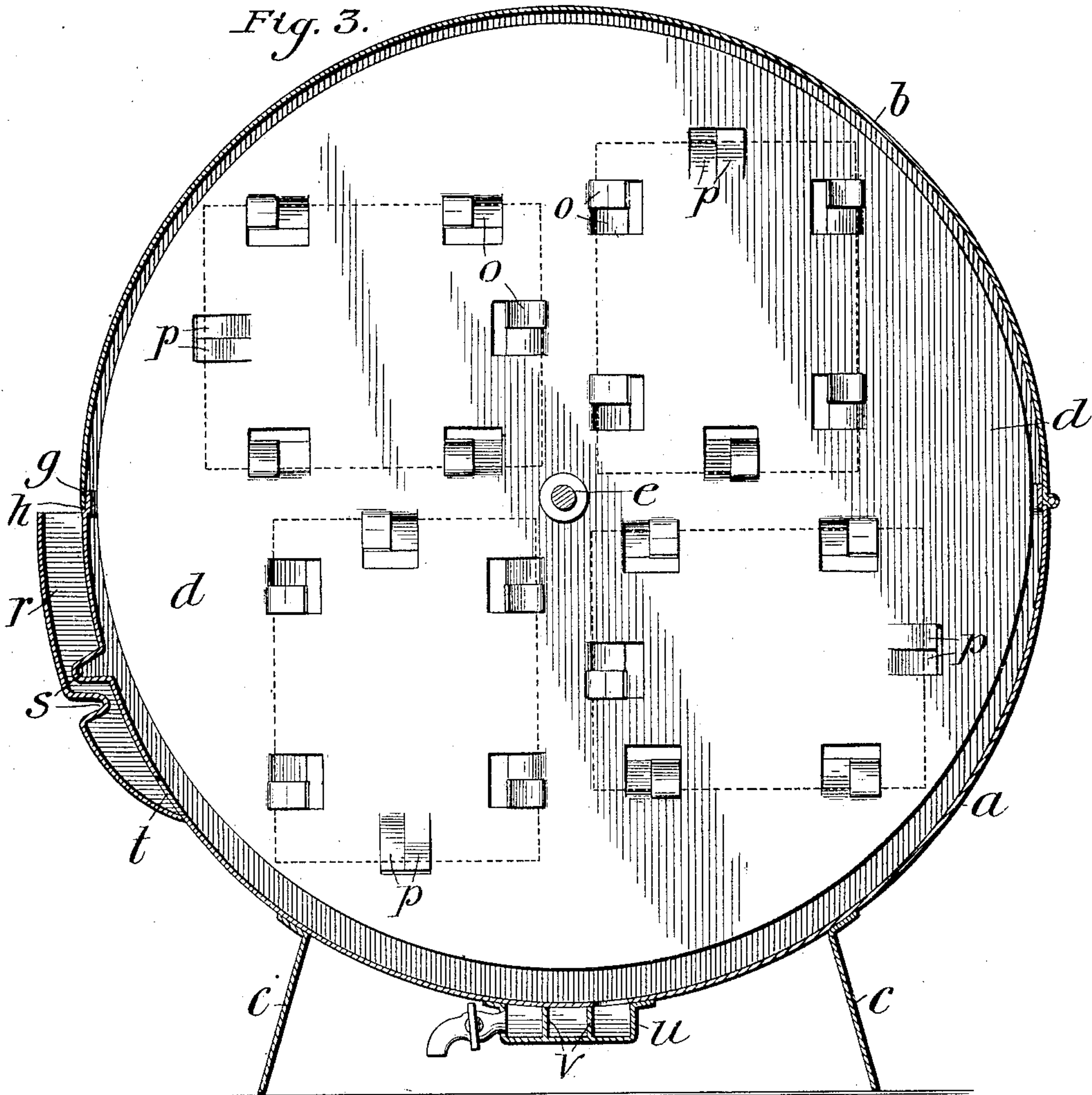


Fig. 4.

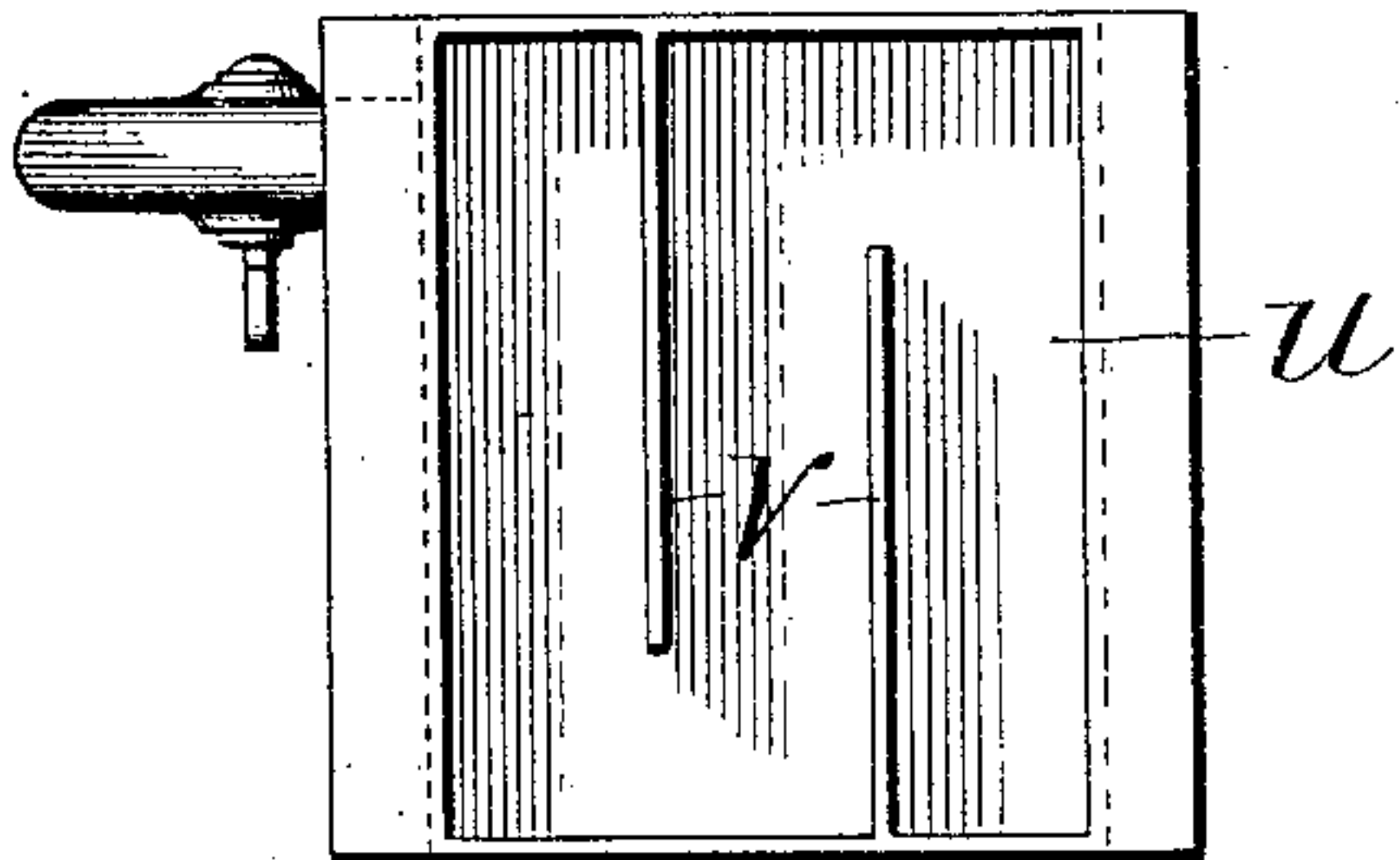
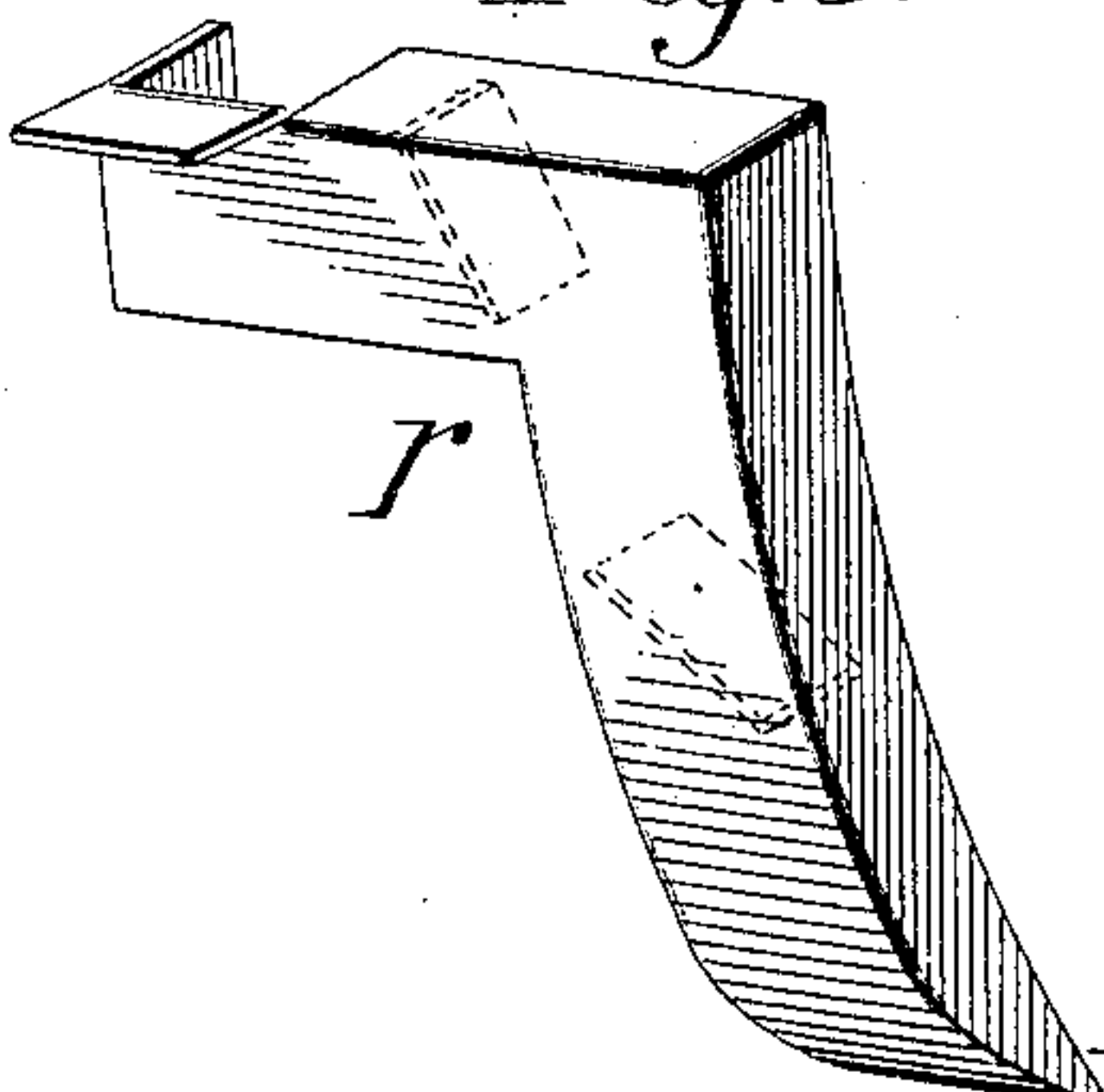


Fig. 5.



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NO MODEL.

4 SHEETS—SHEET 4.

Fig. 6.

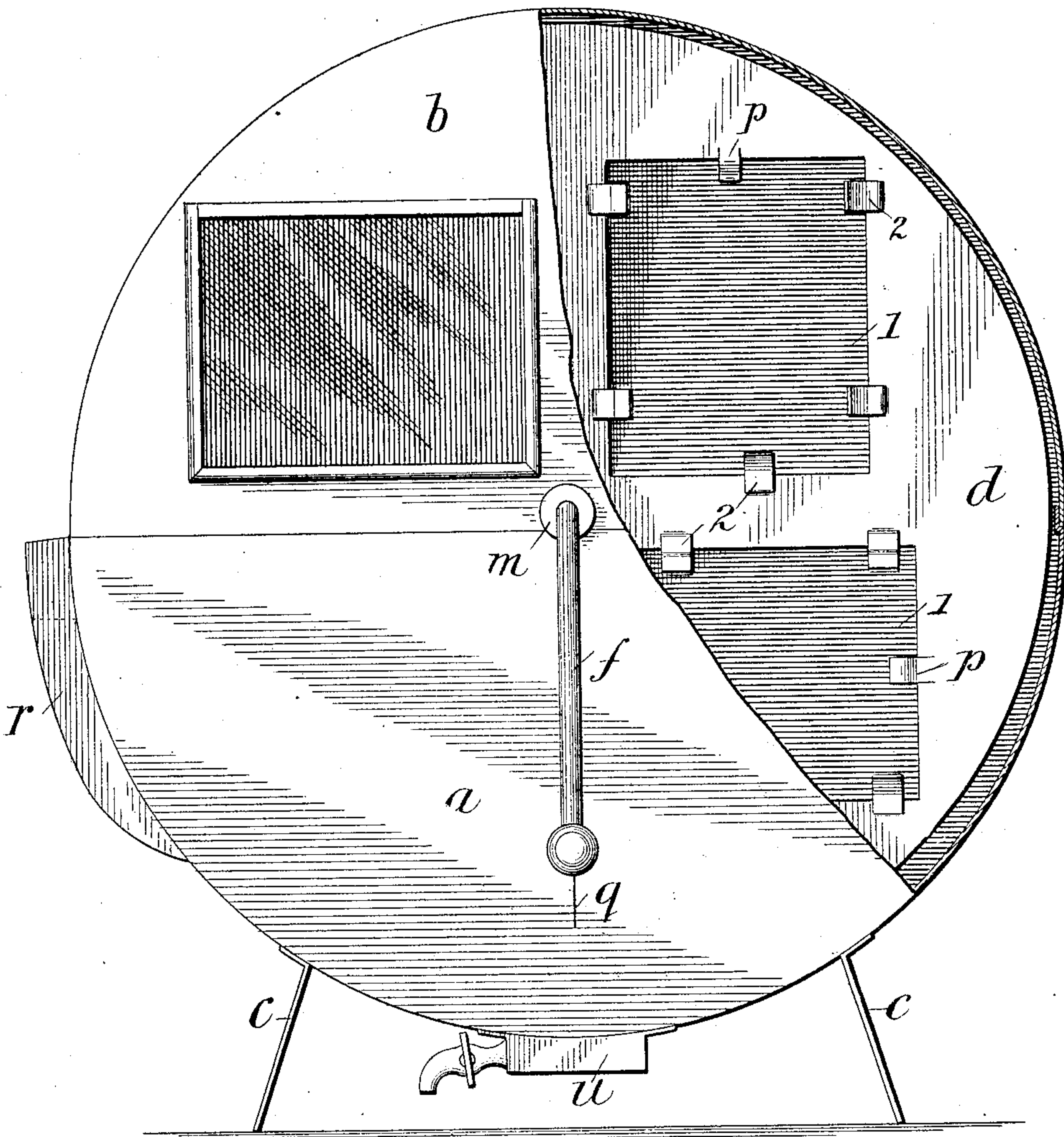
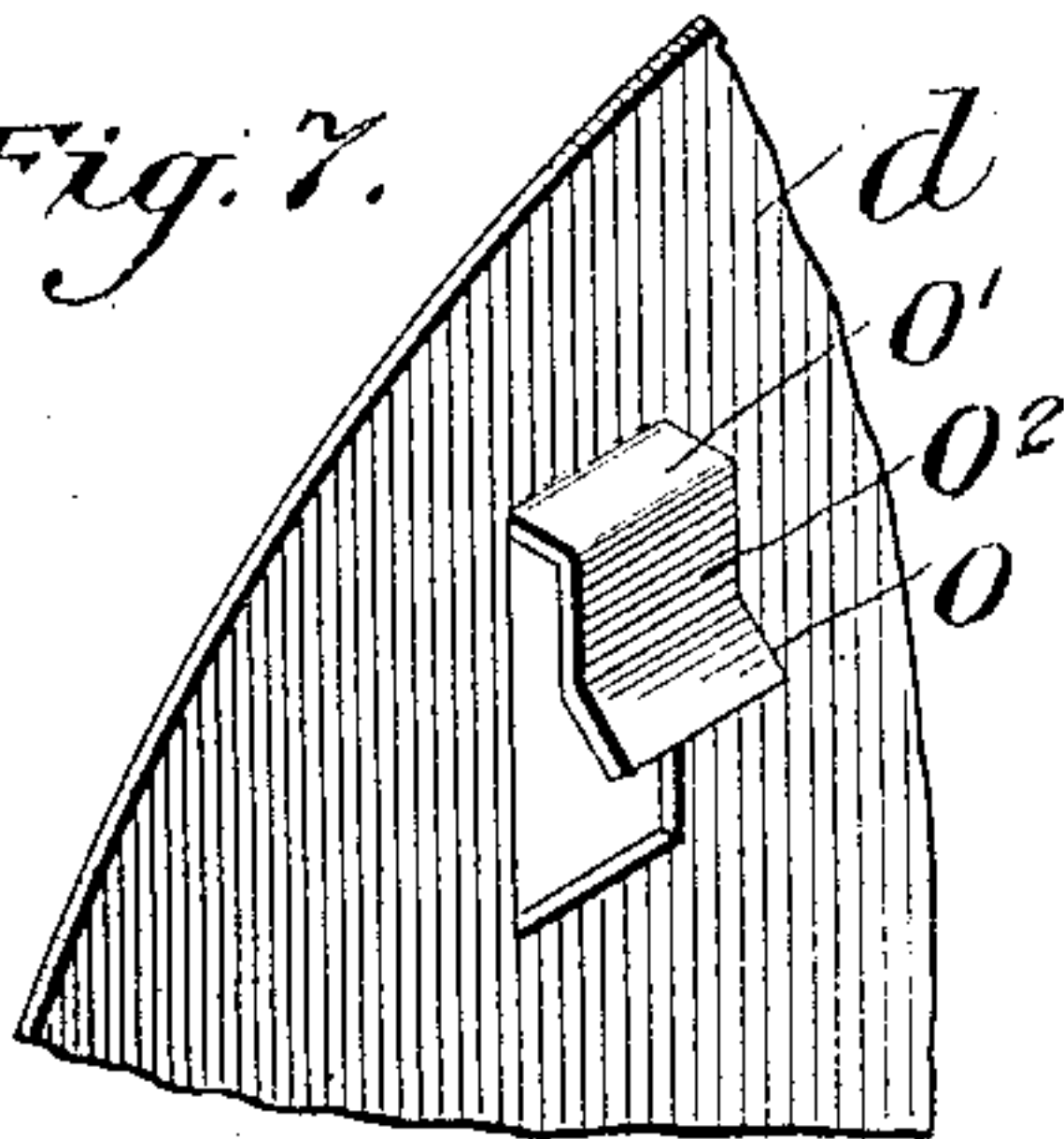


Fig. 7.



Witnesses:

R. A. Baldwin.
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Inventor:
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Att'y.

UNITED STATES PATENT OFFICE.

GEORGE H. DORR, OF NEW ROCHELLE, NEW YORK.

PHOTOGRAPHIC-PLATE-TREATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 750,621, dated January 26, 1904.

Application filed June 27, 1903. Serial No. 163,375. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. DORR, a citizen of the United States, and a resident of New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Photographic-Plate-Treating Apparatus, of which the following is a specification.

My invention relates to photographic apparatus; and one of the primary objects thereof is to provide a compact, inexpensive, and highly efficient machine or device by the use of which a large number of photographic plates may be rapidly developed and fixed with great facility.

Another primary object of the invention is to provide a machine for developing and fixing plates which may be used in the daylight or in the presence of artificial light without having the sensitive surfaces of the plates deleteriously affected.

Other objects of the invention will appear and the many advantages of the same be appreciated when the invention is more fully understood.

The invention includes the combination and arrangement of component parts and details of construction to be hereinafter described, and particularly pointed out in the claims.

While the invention is susceptible of various modifications, the accompanying drawings disclose and I shall hereinafter describe in connection therewith what is now conceived to be the preferred embodiment of my invention, and I shall also disclose certain modifications of the apparatus and machine in order that it may be obvious that the invention is capable of being varied more or less from the preferred form without departing from its spirit.

In the accompanying drawings, Figure 1 is a perspective view of the apparatus, showing the cover portion thereof tilted into position to give access to the plate-receiving pockets. Fig. 2 is a transverse sectional view of the apparatus. Fig. 3 is a sectional view taken on the line 3-3, Fig. 2. Fig. 4 is a detail view of the drain-chamber. Fig. 5 is a detail view of a modified construction of the filling-conduit. Fig. 6 is a side elevation of a modi-

fied form of my apparatus, parts being broken away; and Fig. 7 is a detail view.

The invention includes generally a tank designed to be closed light-tight, having a pool-chamber therein, a carrier-disk or plurality of such disks mounted in the tank to rotate in the pool-chamber thereof, each disk having a plate-retainer or plurality of plate-retainers on the face or side thereof, filling and drain openings associated with the tank, and means for giving access to the carrier disk or disks.

In the present exemplification of my invention the tank is shown as cylindrical in shape and includes a lower body portion *a*, forming the pool-chamber, and an upper displaceable cover portion *b*, preferably hinged at one peripheral edge to the contiguous edge of the body portion *a*. The tank is preferably comparatively narrow in width and is supported in an upright position or with its axis in a horizontal plane by means of suitable legs *c*, projecting from the periphery of the body *a* at equidistantly-spaced points on opposite sides of a vertical plane intersecting the said axis.

In the present embodiment of my invention a plurality of plate-carriers or disks are employed, in the accompanying drawings three being shown, although, as will be appreciated, the number of said carriers is not of primary importance. The carriers *d* are rigidly fixed to a shaft *e*, journaled in the body *a* and provided with an end projecting beyond one of the sides of said body and terminating in an operating-crank *f*. The particular arrangement and construction of the shaft *e* and the bearings therefor illustrated in the accompanying drawings constitute an important subsidiary feature of my invention, as such construction provides highly efficient means for excluding light from the interior of the tank. As shown, the upper edge portion of the body *a* is rabbeted or provided with an offset rim *g* and shoulder *h*, the latter providing a seat or rest for the edge of the cover *b*, while the former laps said edge upon the inside of the tank. The shoulder *h* is disposed in a horizontal plane slightly below the axis of the shaft *e*, while the rim *g* projects from

said shoulder above said plane. Upon the side of the tank through which the end of the shaft *e* extends the rim *g* is recessed and directly to the rear of said recess is provided
 5 with a cup-shaped socket *i*. A similar cup-shaped socket *j* is secured to the rim *g* diametrically opposite the socket *i*. The shaft *e* is provided with two disks or washers *k* *l*, which find bearings in said sockets *i* *j*, the
 10 washer *k* overlapping the edge of the recess in said rim to prevent the penetration of light between the same and the shaft *e*. Upon the exterior portion of the shaft a third disk or washer *m* is arranged, which overlaps the edge
 15 of a recess provided in the cover *b* for the accommodation of the projecting end of said shaft, and this washer also acts to exclude light from the interior of the tank.

Each of the carriers *d* preferably comprises
 20 a flat disk rigidly coupled to the shaft *e* to turn with the latter, and either one or both of the faces of each of said disks are provided with plate-receiving pockets formed by retainers projecting from said face or faces. While my
 25 invention contemplates any desired location or construction of these retainers, the particular construction and arrangement of the same illustrated in the accompanying drawings form a very important feature of my apparatus.
 30 In the present exemplification of my invention a set of retainers is provided to hold each plate to be treated, and, as shown, one of said sets is arranged upon each face of each disk in each of the quadrants thereof defined by
 35 the diameters of the same. Each set of retaining devices includes side and end alining abutment and overlapping surfaces *o* and an end yielding retaining member *p*. The members *o* include alining portions *o'*, extending
 40 at an angle to the face of the disk with which they are associated, and surfaces *o''*, disposed parallel with the face of said disk. The member *p* has a free portion normally projecting beyond the face of the disk to rest in the path
 45 of the end of the photographic plate held by the retainers *o* *p*, but designed to be pressed out of the path of the plate in order to permit of its removal or to facilitate the same being inserted. The opposite faces of each
 50 disk are preferably provided with retaining devices, as shown in Fig. 2; but, as has been before indicated, only one face of each disk may be provided with such retaining means.

The crank *f*, before referred to, is arranged
 55 in alinement with one of the diameters of the disk which define the quadrants thereof, and the exterior of the tank is provided with a suitable indicating-mark *q*, so that when the crank is brought into register therewith it will
 60 denote to the operator that one half of the plate-receiving pockets are held entirely above a horizontal plane intersecting the axis of the disk, while the other half of said receiving-pockets are held below said plane, and thus
 65 if all of the pockets are filled with plates one

half of the latter will be in the pool-chamber in the body *a*, while the remaining plates will be entirely out of said pool-chamber.

In the operation of the apparatus the treating-bath is intended to fill the pool-chamber,
 70 so that certain of the plates are first subjected to this bath, while others are held entirely out of the same, and the operator is advised of this condition by noting the position of the
 75 crank *f* relative to the mark *q* and is accordingly guided in his further procedure, so that the liability to overdeveloping certain of the plates or parts of the plates at the expense of the other plates is avoided.

As my apparatus is designed to both de-
 80 velop the plates and fix the same, it is important to provide means for rapidly filling and draining the pool-chamber while the tank is completely closed, and this means must be of
 85 such construction as to prevent the entrance of light into the tank. For filling the pool-chamber in the particular exemplification of my invention disclosed in the accompanying
 90 drawings an exterior peripherally-arranged conduit *r* is provided, having light-baffling surfaces *s* extending transversely of the same. This conduit is located contiguous to the up-
 95 per edge of the bottom portion *a* upon the periphery thereof, is open at its upper end, and communicates with the pool-chamber at its lower end through an opening *t* in the periph-
 100 ery of the portion *a*. Intermediate of the mouth of the conduit and the opening *t* the baffle-surfaces *s* are located. The latter surfaces may be formed by ribs spun or pressed
 105 out of the metal forming the conduit-wall and periphery of the tank, respectively, or, as shown in Fig. 6, the baffle-surfaces may be formed by separate plates projecting from the
 110 walls of the conduit. For draining the pool-chamber a supplemental chamber *u* is preferably associated with the body *a*, this chamber communicating at one end with the pool-chamber, having a drain-cock preferably associated
 115 therewith at its opposite end and having baffle-surfaces arranged intermediate of said ends. These surfaces *v* are preferably formed by two sets of transversely-extending parti-
 120 tions, the members of the first set projecting from one of the walls of the chamber *u* to within close proximity to the opposite wall thereof, while the members of the second set project from said opposite wall toward the first wall and extend in between the members
 125 of the first set.

As premised, the cover *b* is hinged at one edge to the contiguous edge of the body portion *a*, and consequently the greatest separation between said cover and body portion *a*
 130 when the former is opened is between the edges *w* *x* of said parts *a* *b*, which edges *w* *x* are located opposite to said hinged connection.

My invention is designed, primarily, to be used as a daylight developer or to be capable
 135 of use in the presence of artificial light, for

which purpose it is used in conjunction with a portable loading-chamber of any well-known or improved construction. As such chambers are of necessity comparatively small, being, 5 in fact, but a little larger than my apparatus, as indicated, it is essential that the latter be so constructed that the same may be filled with a minimum displacement of the cover *b* or separation between the edges *w x*, and the 10 construction by which this purpose is effected constitutes an important feature of my invention. As disclosed herein, the pockets or recesses formed by each set of retainers open out toward the periphery of the disk, are 15 closed by the end retainers at the ends of the pockets contiguous to the diameters defining the quadrants, and said pockets of each face of each disk are alternately disposed at right angles to one another. In the construction 20 shown herein as the diameters defining the quadrants before referred to are brought into vertical and horizontal planes the mouth of a plate-receiving pocket is presented toward the edges *w x*, with the lower edge of said 25 mouth in alinement with or slightly above the horizontal plane of the edge *w* and the sides of the pockets in parallelism with the upper edge of the body *a*. Thus only a minimum opening of the cover portion or separation of 30 the edges *w x* is required to introduce a plate into position. As will be noted, the plate-pockets or receiving-recesses are alternately disposed at right angles to each other, so that upon each quarter-revolution of the disk a re- 35 ceiving-pocket will be brought into filling position, as described. When both faces of one of the disks are provided with receiving-pockets, those upon one face are disposed in the same position and substantially in trans- 40 verse alinement with the registering pockets on the opposite face.

As before premised, to load the apparatus in daylight or in the presence of an artificial light, which might deleteriously affect the sen- 45 sitized surfaces of the plates, a small portable light-tight box *g* is preferably provided. The chamber in this box is of sufficient size to receive the apparatus described and permit of the displacement of the cover *b* necessary for 50 the introduction of the plates into the pockets on the carrier-disks and is also of sufficient size to accommodate the plates in their holders, which are to be placed in the apparatus. After the plates are all introduced into the 55 treating apparatus the cover thereof is closed and the entire devices removed from the box. The developing-bath is then introduced into the pool-chamber through the filling-conduit *r* and the disk *c* rotated by manipulating the 60 crank *f* of the shaft *e* to carry all of the plates held thereby through the pool of developing material. After this has acted upon the plates for the required period of time the same is drawn off through the chamber *u* and the fix- 65 ing material run into the pool-chamber. The

disks are then rotated as before to carry the plates through the fixing-bath.

As will be appreciated, in an apparatus comprising three disks with carriers on both faces of each of the same twenty-four plates 70 may be simultaneously treated.

Instead of using three disks I may construct my apparatus with but a single disk and provide the latter with openings *l* through the same in register with the plate-pockets, 75 leaving only marginal retaining-flanges 2 as seats for the edges of the plates. In an apparatus provided with this construction of disk the cover portion *b* will be provided with 80 oppositely-arranged windows of translucent material, with which the plates may be registered while in the pockets of the disks to note the action of the treating-bath upon the same.

It will be understood that the term "plate" or "plates" used throughout the specification 85 and claims comprehends any well-known or improved body adapted to be suitably sensitized or treated to receive an image by the process of photography and having sufficient stiffness or rigidity to permit the same being 90 introduced into a receiving-pocket.

The construction and operation of my invention will be readily understood upon reference to the foregoing description and accom- 95 panying drawings, and it will be appreciated that the parts and combinations recited may be varied within a wide range without departing from the spirit and scope thereof.

Having thus described my invention, what is claimed as new, and desired to be secured 100 by Letters Patent, is—

1. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber, and a disk rotatably 105 mounted in said tank having a plate-receiving pocket upon one face of the same arranged to hold a plate with its face substantially parallel with the face of said disk and to pass said plate through said pool-chamber as the disk is rotated, substantially as described. 110

2. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber, and a plurality of disks rotatably mounted in said tank each hav- 115 ing a plate-receiving pocket upon one face of the same arranged to pass through said pool-chamber as the disk is rotated, the pocket of each disk operating independently of the pockets of the other disks in carrying the plates, substantially as described. 120

3. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber, and a disk rotatably mounted in said tank having a plurality of 125 plate-receiving pockets upon one face of the same arranged to hold a plurality of plates in substantially the same plane and to pass said plates through said pool-chamber as the disk is rotated, substantially as described.

4. In a photographic-plate-treating appa- 130

ratus and in combination, a light-tight tank having a pool-chamber, and a disk rotatably mounted in said tank having plate-receiving pockets upon both faces of the same arranged to hold plates upon opposite sides of said disk with their faces substantially parallel to the faces of the latter and to pass said plates through said pool-chamber as the disk is rotated, substantially as described.

5. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber therein, a plurality of disks mounted in said tank, each of said disks having a plurality of plate-receiving pockets upon one of the faces of the same arranged to hold a plurality of plates in substantially the same vertical plane and to pass said plates through said pool-chamber as the disk is rotated, said planes of the plates of the several disks being substantially parallel to one another, substantially as described.

6. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber therein, a disk rotatably mounted in said tank, said disk having a plurality of equidistantly-spaced plate-receiving pockets on the face thereof arranged to be passed through said pool-chamber as the disk is rotated, each of said pockets including surfaces coacting with the end and side edges of the plates, whereby each pocket is constructed to support a plate unassisted, substantially as described.

7. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber therein, a single disk rotatably mounted in said tank, carrying a plurality of plates, said disk having a plate-receiving pocket associated with each quadrant thereof arranged to be passed through said pool-chamber as the disk is rotated, substantially as described.

8. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber therein, a disk rotatably mounted in said tank, said disk having a plate-receiving pocket associated with each quadrant thereof, said pockets being alternately disposed at right angles to one another, and arranged to be passed through said pool-chamber as the disk is rotated, substantially as described.

9. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber therein, a disk rotatably mounted in said tank, said disk having a plate-receiving pocket associated with each quadrant thereof, to hold a plate with its face substantially parallel to the face of said disk, said pockets having their mouths presented outwardly and their opposite ends closed, and arranged to be passed through said pool-chamber as the disk is rotated, substantially as described.

10. In a photographic-plate-treating appa-

ratus and in combination, a light-tight tank having a pool-chamber therein, a disk rotatably mounted in said tank, and a plurality of sets of retainers projecting from one of the faces of said disk, said retainers comprising members having alining surfaces and overhanging surfaces and other yielding members, substantially as described.

11. In a photographic-plate-treating apparatus and in combination, a tank comprising a lower portion constituting a pool-chamber, an upper cover portion displaceable at one peripheral edge from the contiguous edge of the lower portion, a disk revolubly mounted in the lower portion, and a plurality of plate-receiving pockets on the face of the disk having mouths opening outwardly designed to be successively presented toward the spaces between said edges of the bottom and cover when the latter is displaced and above the upper edge of the former, with the lower sides of said pocket parallel with the upper edge of the lower portion of the tank, substantially as described.

12. In a photographic-plate-treating apparatus and in combination, a tank, a shaft journaled therein, a disk having the quadrants thereof defined by diametrical lines intersecting said shaft, and a plate-receiving pocket located in each of said quadrants, arranged to hold a plate with its face parallel to the face of said disk, substantially as described.

13. In a photographic-plate-treating apparatus and in combination, a tank, a shaft journaled therein having one end extending through one of the sides of said tank and provided with a crank, said tank having a pool-chamber below a horizontal plane intersecting said shaft, a disk fixed to said shaft, a plate-holder on the face thereof to one side of a plane at right angles to said crank and intersecting said shaft, and a second holder upon the opposite side of said plane, said holders retaining the plates carried by the same with their faces parallel to the face of said disk, substantially as described.

14. In a photographic-plate-treating apparatus and in combination, a tank, a shaft journaled therein having one end extending through one of the sides of said tank and provided with a crank, said tank having a pool-chamber below a horizontal plane intersecting said shaft, a single disk fixed to said shaft, carrying a plurality of plates, a plurality of plate-holders on the face thereof to one side of a plane at right angles to said crank and intersecting said shaft, and a plurality of holders upon the opposite side of said plane, substantially as described.

15. In a photographic-plate-treating apparatus and in combination, a tank, a shaft journaled therein having one end extending through one of the sides of the tank and terminating in a crank, said tank having a pool-chamber below a horizontal plane intersecting

said shaft, a disk fixed to said shaft having the quadrants thereof defined by diametrical lines, one of said lines registering with said crank, a plate-receiving pocket located in each quadrant, constructed to hold a plate with its face parallel to the face of the disk, and a mark on the exterior of the tank with which said crank is designed to coact, substantially as described.

16. In a photographic-plate-treating apparatus and in combination, a cylindrical tank including a lower portion providing a pool-chamber, and a cover portion hinged at one peripheral edge to said lower portion, the latter portion having a rabbeted edge providing a shoulder to receive the edge of the cover, and a rim overlapping the edge of said cover upon the inner side of the tank, cup-shaped sockets secured to the opposite sides of the rim, a plate-carrying disk, a shaft having said disk secured to the same, the edge of said cover portion and the said rim of the bottom portion being recessed to accommodate said shaft, washers carried by the shaft finding bearings in said cups, one of said washers overlapping the edges of the recess in said rim, and a third washer overlapping the edge of the recess in said cover, substantially as described.

17. In a photographic-plate-treating apparatus and in combination, a cylindrical tank including a lower portion providing a pool-chamber, and a cover portion hinged at one peripheral edge to said lower portion, the latter portion having a rabbeted edge providing a shoulder to receive the edge of the cover, and a rim overlapping the edge of said cover upon the inner side of the tank, cup-shaped sockets secured to the opposite sides of the rim, a plate-carrying disk, a shaft having said disk secured to the same, the edge of said cover portion and the said rim of the bottom portion being recessed upon one side to accommodate said shaft and imperforate upon the opposite side, washers carried by the shaft finding bearings in said cups, one of said washers overlapping the edges of the recess in said rim, and a third washer overlapping the edge of the recess in said cover, substantially as described.

18. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber therein, a plate-carrying disk revolubly mounted therein, and filling and draining means for said tank, said draining means comprising a supplemental chamber communicating at one end with the pool-chamber in the tank and having a discharge at its opposite end, and baffle-surfaces extending across the intermediate portion of said chamber, substantially as described.

19. In a photographic-plate-treating apparatus and in combination, a light-tight tank having a pool-chamber in the lower portion thereof, and sight-openings through the upper portion of the side walls of the same, a disk rotatably mounted in said tank having an opening through the same designed to register with the sight-opening in the tank, and means associated with said disk for holding a plate thereon in register with said opening, substantially as described.

20. In an apparatus for developing or fixing photographic plates and in combination, a light-tight tank having a pool-chamber therein and a displaceable portion, a carrier mounted in the tank, means extending outside of the tank for rotating the carrier, and a plurality of plate-receiving means associated with the carrier arranged to be registered with the opening exposed by the shifting of said displaceable portion of the tank, whereby the plates may be inserted into or removed from the carrier, said means being so disposed as to hold the plates with their sensitized surfaces parallel to a plane at right angles to the axis of the carrier, whereby when the latter is rotated the plates will be moved edgewise through the pool of treating liquid, substantially as described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at New Rochelle, in the county of Westchester and State of New York, this 15th day of June, 1903.

GEORGE H. DORR.

Witnesses:

ARTHUR G. SCHOLL,
ADOLPH LASUS.