

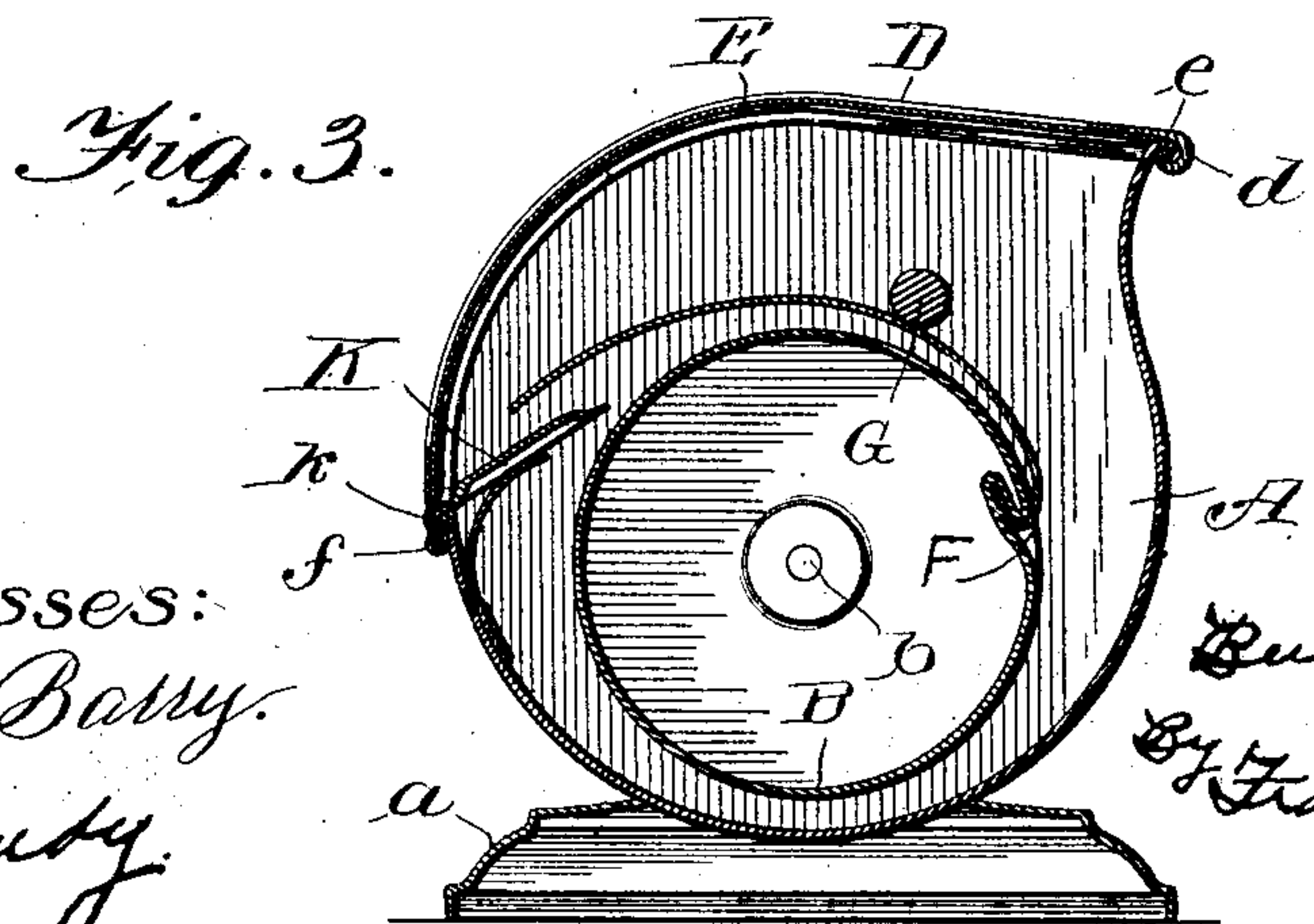
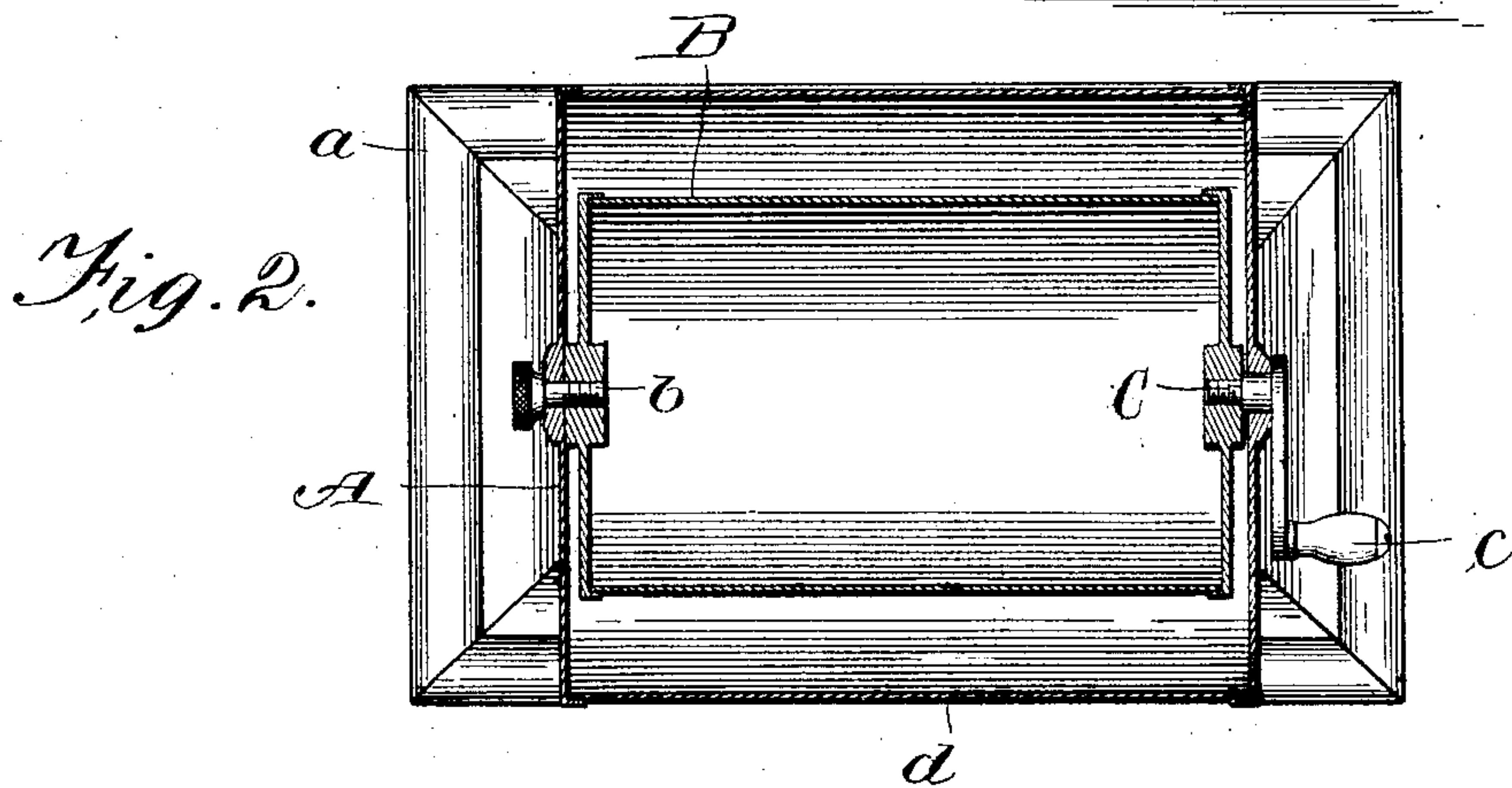
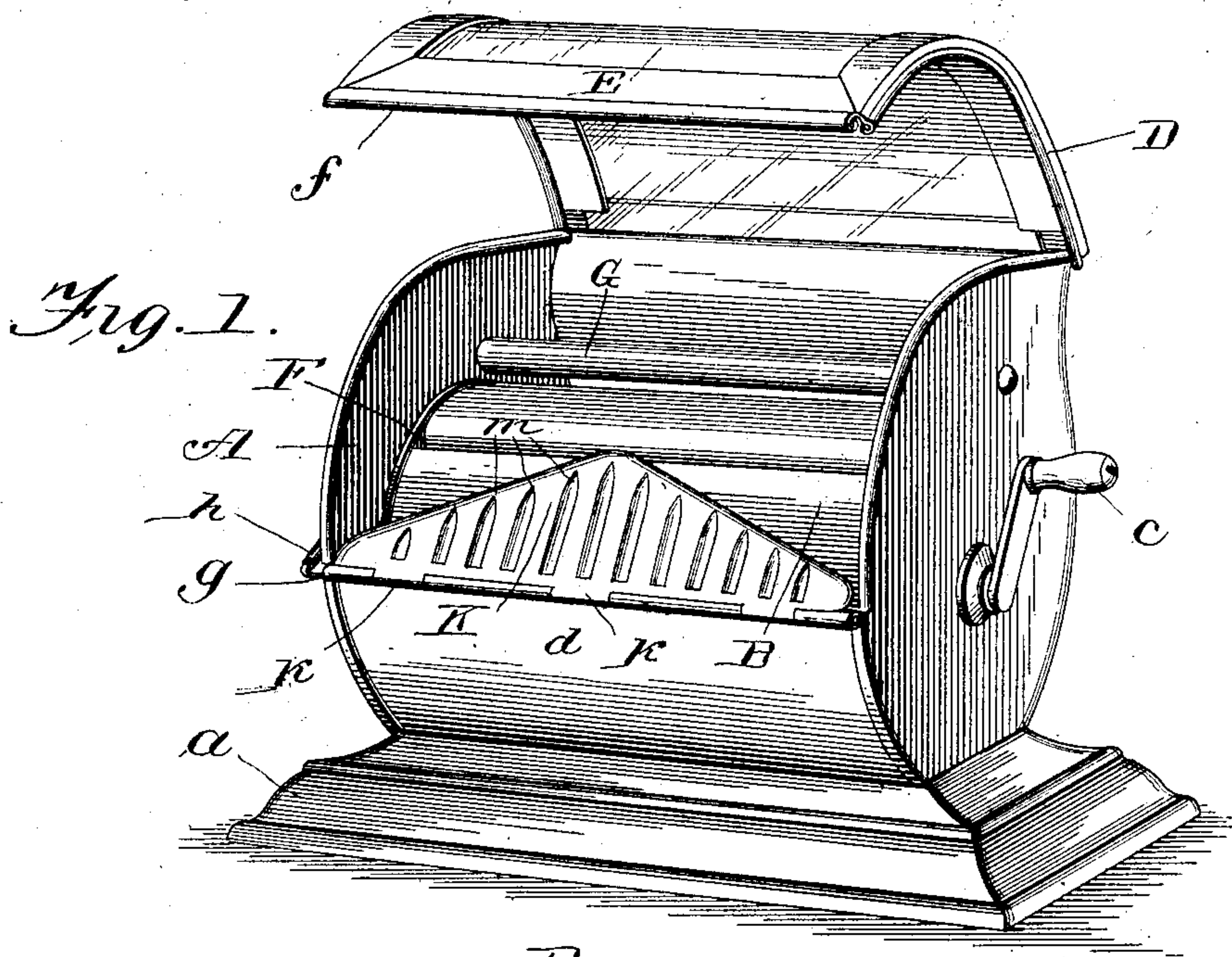
No. 746,632.

PATENTED DEC. 8, 1903

B. J. HOLCOMBE.  
PHOTOGRAPHIC DEVELOPING MACHINE.

APPLICATION FILED FEB. 9, 1903.

NO MODEL.



Witnesses:  
G. C. Barry.  
E. R. Ruddy.

Inventor:  
Benton J. Holcombe  
By Frank D. Thomas  
Attorney.



# UNITED STATES PATENT OFFICE.

BURTON J. HOLCOMBE, OF DETROIT, MICHIGAN.

## PHOTOGRAPHIC DEVELOPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 746,632, dated December 8, 1903.

Application filed February 9, 1903. Serial No. 142,537. (No model.)

*To all whom it may concern:*

Be it known that I, BURTON J. HOLCOMBE, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Photographic Developing-Machines, of which the following is a full, clear, and exact description.

Heretofore the chemicals used for developing photographic prints have been placed in a tray in the developing-closet of the photographer's laboratory exposed to the open atmosphere and the operator developed said prints either by immersing the same in the developer fluid or by wetting the sensitive surface thereof with a sponge. This method resulted in the rapid deterioration of the developer solution both by oxidation and excessive handling of the same and resulted in great waste, besides soiling and in some instances poisoning the hands of the operator.

My invention has for its objects, first, the reducing of the quantity of developing fluid to the least possible amount; second, the protection of the developer fluid from the open atmosphere and confining the same in a normally closed vessel, so as to prevent the deterioration of the same from the many causes to which it is now subject; third, avoiding the necessity of a dark room or closet; fourth, the economical distribution of said fluid; fifth, the application of the same in such manner as to avoid disturbing the molecular arrangement of the emulsion on the paper and preventing the creation of "freaky" marks. This I accomplish by the means hereinafter fully described, and as particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of my invention, showing the screen or cover raised. Fig. 2 is a transverse vertical section therethrough. Fig. 3 is a horizontal section taken on dotted line 3 3, Fig. 2, looking in the direction indicated by the arrows.

In the drawings, A represents a suitable case, which is preferably supported on a suitable base-plate *a* and has bearings in its ends for the journals of the immersing-cylinder B revoluble within the same. The bottom of the case preferably conforms in curvature to a segment of a circle struck from but slightly greater in diameter than the circumference

of cylinder B, so that when a small quantity of the developer fluid is placed in the case the circumference of cylinder B will as it revolves be immersed therein. The journals of cylinder B are preferably revoluble, so as to allow the cylinder to be removed when desired, and one of these journals consists of a shouldered screw C, the reduced inner screw-threaded portion of which is tapped centrally into the contiguous head of said cylinder, while the smooth barrel of the wider portion thereof is journaled in the bearing in case A and is extended through said bearings and has a suitable crank *c* secured on its outer extremity. The journal *b* of the opposite end of the cylinder simply consists of a screw the threaded portion of which is tapped centrally into the adjacent head of the cylinder, the smooth barrel of which is confined in and engages the bearing in the contiguous end of the case and the outer end of which is provided with a milled head to enable the operator to insert the same in place or remove it when so desired. The motion of the cylinder is in the reverse direction from that of the pitch of the screw-threaded portion of journal C, so that there is small likelihood of its unscrewing from the cylinder during the operation of the machine.

The back or rear wall of the case preferably extends in a vertical direction longitudinally upward from the curved bottom of said case, whereas the forward or front wall thereof terminates in about the horizontal plane of the bearings of cylinder B. The end walls of said case extend above the cylinder, and their upper beaded edges extend in an upward curved plane from the edge of the front wall of the case to the upper edge of the rear wall thereof. This open top of the case A, between the upper edges of its front and rear walls, is normally closed by a cover D, which conforms in superficial area to the space it is designed to cover and is curved to conform to the curvature of the upper edges of the ends of the case. Its rear edge *d'* is rolled rearward, inward, and downward in the manner of an involute, and it engages and is hinged upon the corresponding involute rolled upper edge *e* of the rear wall of the case. This construction enables me, when the cover is raised, to remove it by sliding it longitudi-



nally out of engagement with the rear edge *e* of the case and enables me to replace and hinge it to the case again, when desired, by slipping the involute edge of the cover back over the edge *e* in just the reverse manner. The side edges of the cover are flanged downward so as to overlap the engaged edges of the case, and the front edge *f* thereof is beaded and bent so that when closed down over the front edge of the case—which is preferably correspondingly beaded—it will snap over and catch upon the same against accidental dislodgment.

The cover *D* consists, preferably, of a rectangular marginal metal frame, and inclosed within this frame is a transparent non-actinic colored frame *E*, through which the development of the print being developed on the cylinder within the closed case can be easily watched.

In order to enable the print to be gripped by the cylinder, I have provided a longitudinal slot *F* in its circumference, which is preferably inclined in a somewhat tangential direction from its mouth opposite that in which the cylinder is revolved when in operation. The edge of the print is inserted in this slot, and then the cylinder is revolved away from the front of the machine. As the print is carried rearward thereby it comes in contact with a small roller *G*, the ends of which are removably journaled in the ends of the case, which folds the print, with the emulsion side outward, around the cylinder. The width of the slot *F* is preferably such that when the cylinder revolves the developing fluid will enter the same and will be dipped up and held therein, thus developing the print to its very edge, even though some part of the undeveloped picture comes within the slot when the said edge is inserted therein. The placing of the print upon the cylinder may be done in a dark room, if desired. When gripped and rolled upon the cylinder, however, the screen-cover is closed down over the same, and the machine may be operated after a small quantity of the developing fluid has been poured into the trough of the case by revolving the cylinder and watching the development of the print in the sunlight. When the print has thus been developed, it will adhere or stick very close to the surface of the cylinder. In order to strip the same therefrom, I have provided a spring-returnable stripping-apron *K*, consisting, preferably, of a triangular piece of metal, the longer straight edge of which corresponds in length to the distance between the ends of the case and is provided with knuckles *k k*, that are clamped to a horizontal spindle *g*, that is journaled in knuckles formed by beading the upper edge of the front wall of the case, to which reference has hereinbefore been made. The other two shorter sides of this apron converge toward each other and come to a more or less sharp point at about the center of length of the machine, and this

pointed edge is brought to bear against the cylinder by grasping the crank-shaped extended end *h* of spindle *g* and suitably turning the same and then reversing the motion of said cylinder and stripping the print therefrom out from under the edge of the slightly-raised cover into a dish of suitable fixing fluid placed so as to receive the same.

In order that the undeveloped print may be made to adhere to the cylinder, it is desirable to roughen its circumferential surface, so as to enable the fluid or a film of fluid to adhere thereto, which, if the circumference of the cylinder was polished and perfectly smooth, it will not do to an extent sufficient to be of practical use. The print coming in contact therewith is moistened by said fluid, and is thereby caused to stick to the cylinder while the machine is in operation. To prevent friction, it is also desirable that the surface of the apron be provided with a series of vertical ribs *m m*, which are pointed at their ends and gradually merge away into the otherwise plain surface of the apron.

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

1. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, having a continuous roughened circumference, journaled in the ends of said case and adapted to grip the edge of a photographic print.

2. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, having a continuous roughened circumference removably journaled in the ends of said case and adapted to grip the edge of a photographic print; and a cover having a transparent non-actinic colored screen therein.

3. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, having a continuous roughened circumference, journaled in the ends of said case and adapted to grip the edge of a photographic print; a roller adapted to spread said print flat against said cylinder; and a cover having a transparent non-actinic colored screen therein.

4. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, having a continuous roughened circumference, journaled in the ends of said case, and having a longitudinal slot therein; and a cover having a transparent non-actinic colored screen therein.

5. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, having a continuous roughened circumference, journaled in the ends of said case, and having a longitudinal slot therein; a roller adapted to spread said print flat against said cylinder; and a cover having a transparent non-actinic colored screen therein.

6. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, journaled in the ends of said case, and



having a longitudinal slot therein inclined in a longitudinal direction opposite to the developing movement of the cylinder; a roller adapted to spread said print against said cylinder; and a cover having a transparent non-actinic colored screen therein.

7. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, journaled in the ends of said case, and provided with a longitudinal slot in its cylindrical sides; a roller adapted to engage the photographic print, the edge of which is inserted in said slot; and a stripping-apron.

8. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, journaled in the ends of said case, and provided with a longitudinal slot in its cylindrical sides; a roller adapted to engage the photographic print, the edge of which is inserted in said slot; a stripping-apron; and a cover having a transparent non-actinic colored screen therein.

9. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, journaled in the ends of said case, and provided with a longitudinal slot in its cylindrical sides; a roller adapted to engage the photographic print, the edge of which is inserted in said slot; and a triangular-shaped stripping-apron the longer side of which is hinged to the front of the case, and the vertex of the other side edges being adapted to bear against the sides of said cylinder.

10. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, journaled in the ends of said case, and provided with a longitudinal slot in its cylindrical sides; a roller adapted to engage the photographic print, the edge of which is inserted in said slot; and a spring-returnable triangular-shaped stripping-apron the longer side of which is hinged to the front of the

case, and the vertex of the other side edges being adapted to bear against the sides of said cylinder.

11. A photographic developing-machine, comprising a suitable case; a revoluble cylinder, journaled in the ends of said case, and provided with a longitudinal slot in its cylindrical sides; a roller adapted to engage the photographic print, the edge of which is inserted in said slot; and a triangular-shaped stripping-apron the longer side of which is hinged to the front of the case, and the vertex of the other side edges being adapted to bear against the sides of said cylinder, said apron being provided with a series of ribs arranged transverse to the side of said cylinder and having their ends contiguous thereto pointed and merged into the flat surface of the same.

12. A photographic developing-machine, comprising a suitable case, which is higher in the back than in the front; a cylinder, removably journaled in the ends of said case having a longitudinal groove in its cylindrical sides; means for revolving the same; a roller journaled in the ends of said case above the plane of the journals of the cylinder; a triangular apron the longer side edge of which is hinged to the upper edge of the front of the case, and the vertex of the other converging side edges of which is adapted to bear against said cylinder; and a cover removably hinged to the upper edge of the rear of the case, and provided with a transparent non-actinic colored screen.

In testimony whereof I have hereunto set my hand this 3d day of February, 1903.

BURTON J. HOLCOMBE.

Witnesses:

CHARLES W. EARLE,  
FRANK D. THOMASON.