

R. L. BURTON.
FILM DEVELOPING MACHINE.
APPLICATION FILED MAY 23, 1908.

920,263.

Patented May 4, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

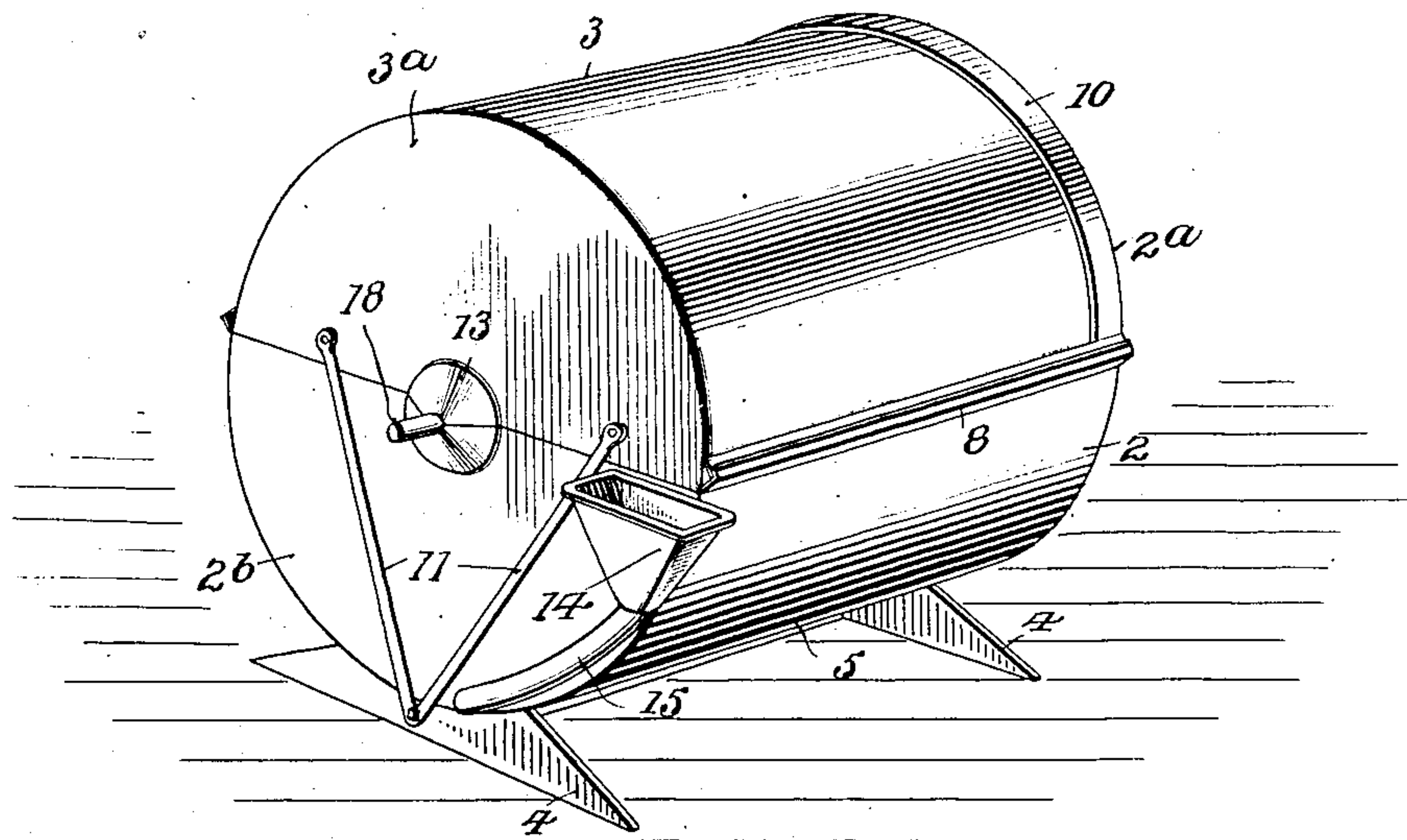
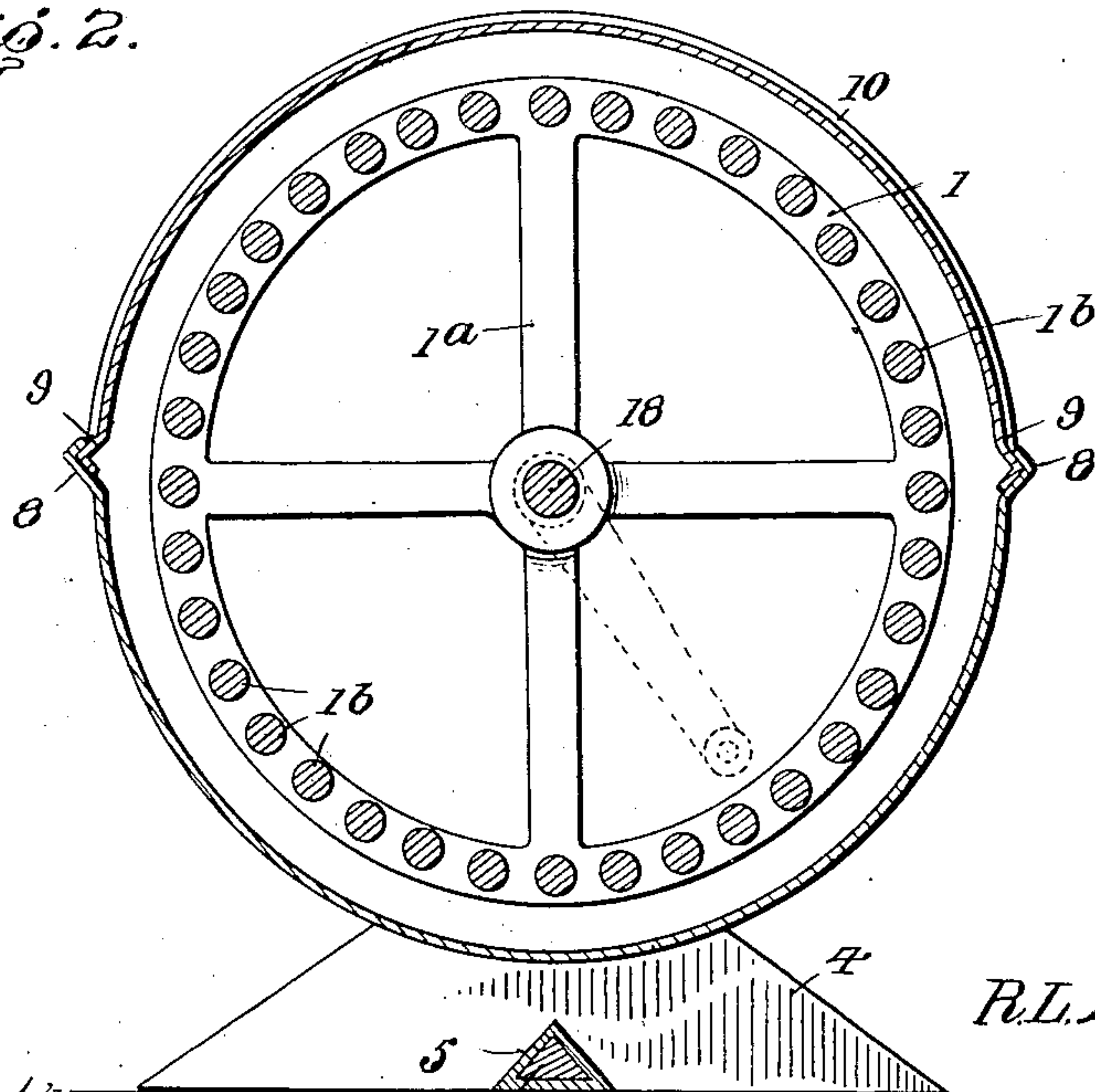


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

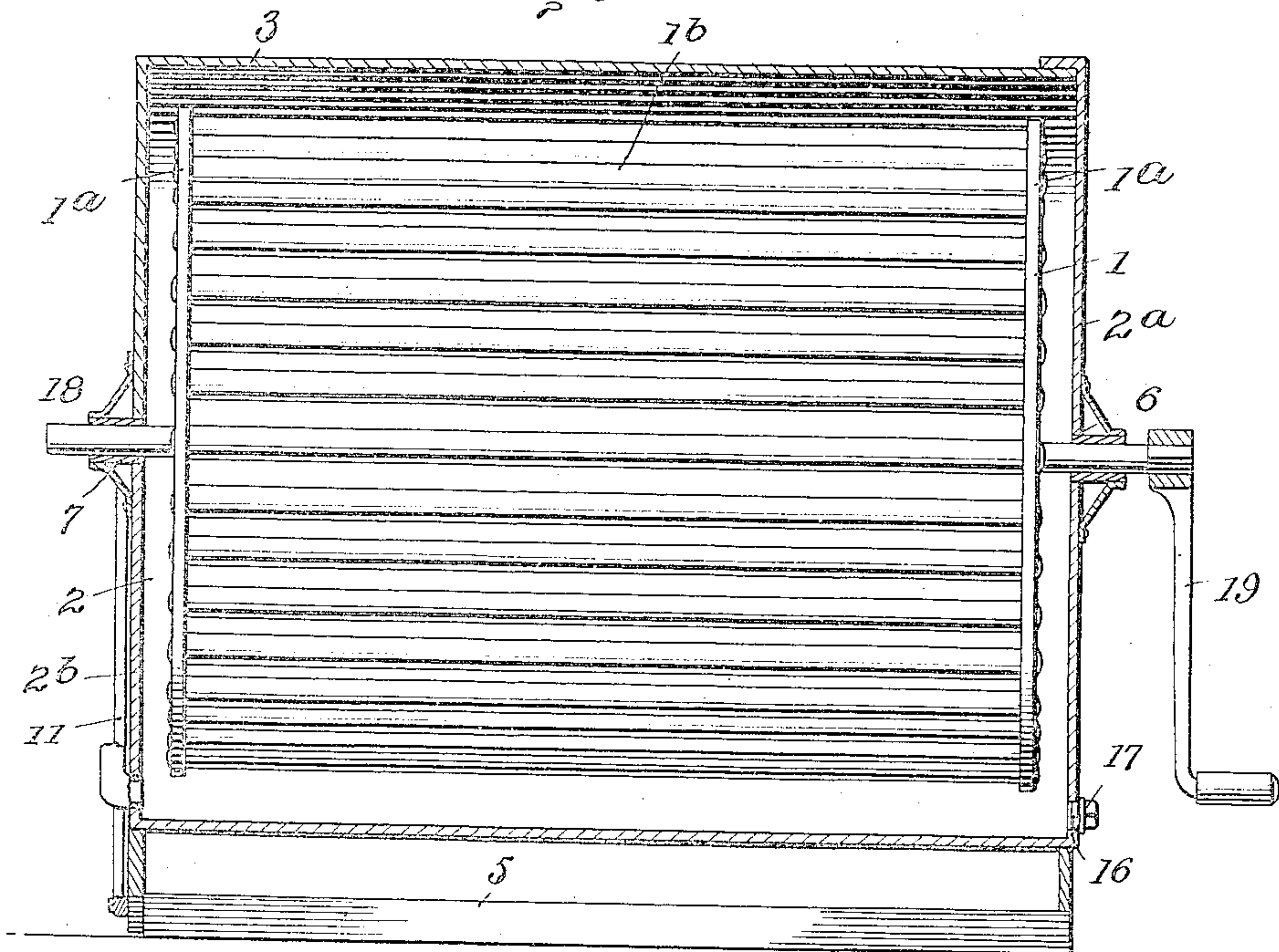


Fig. 4.

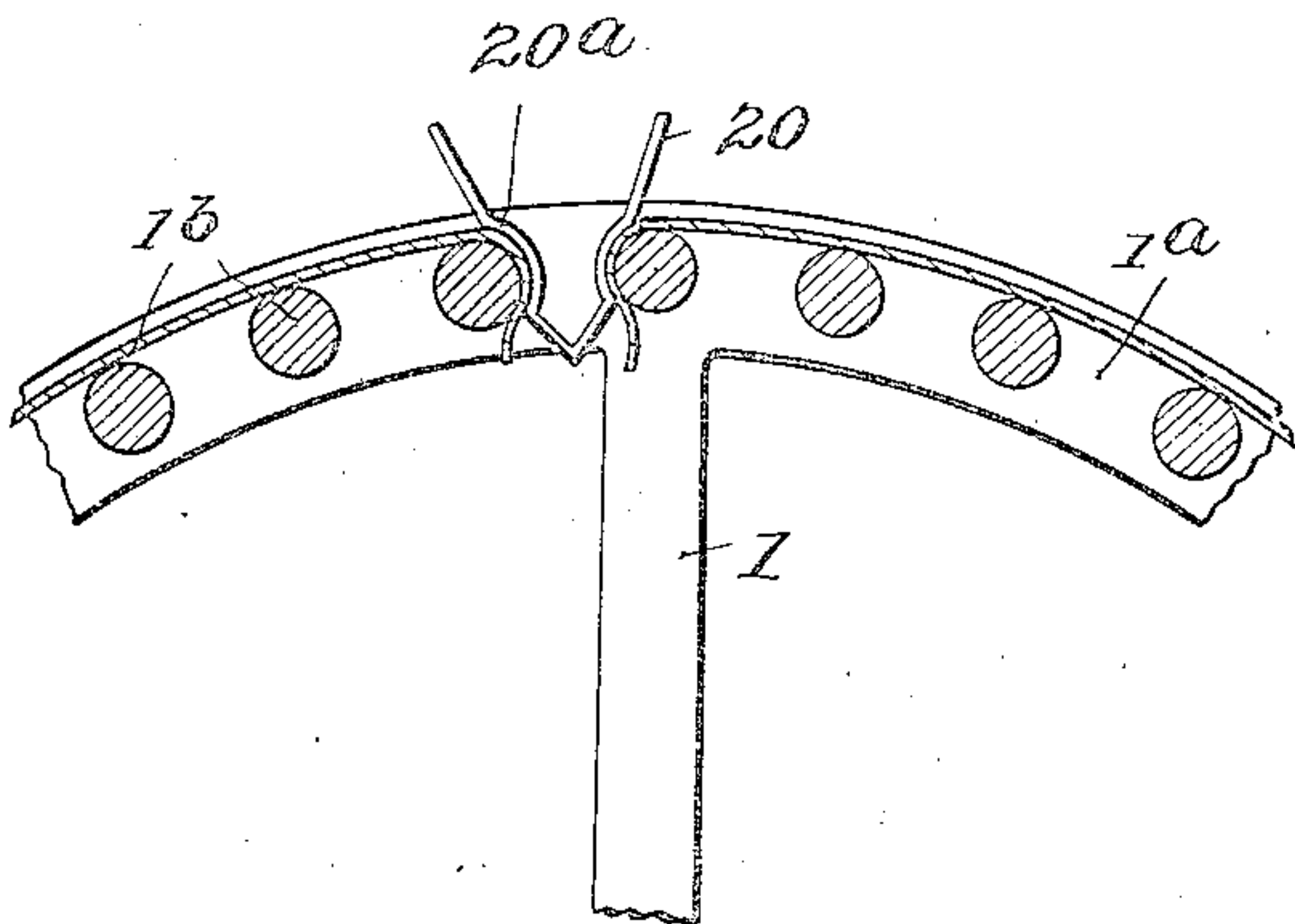
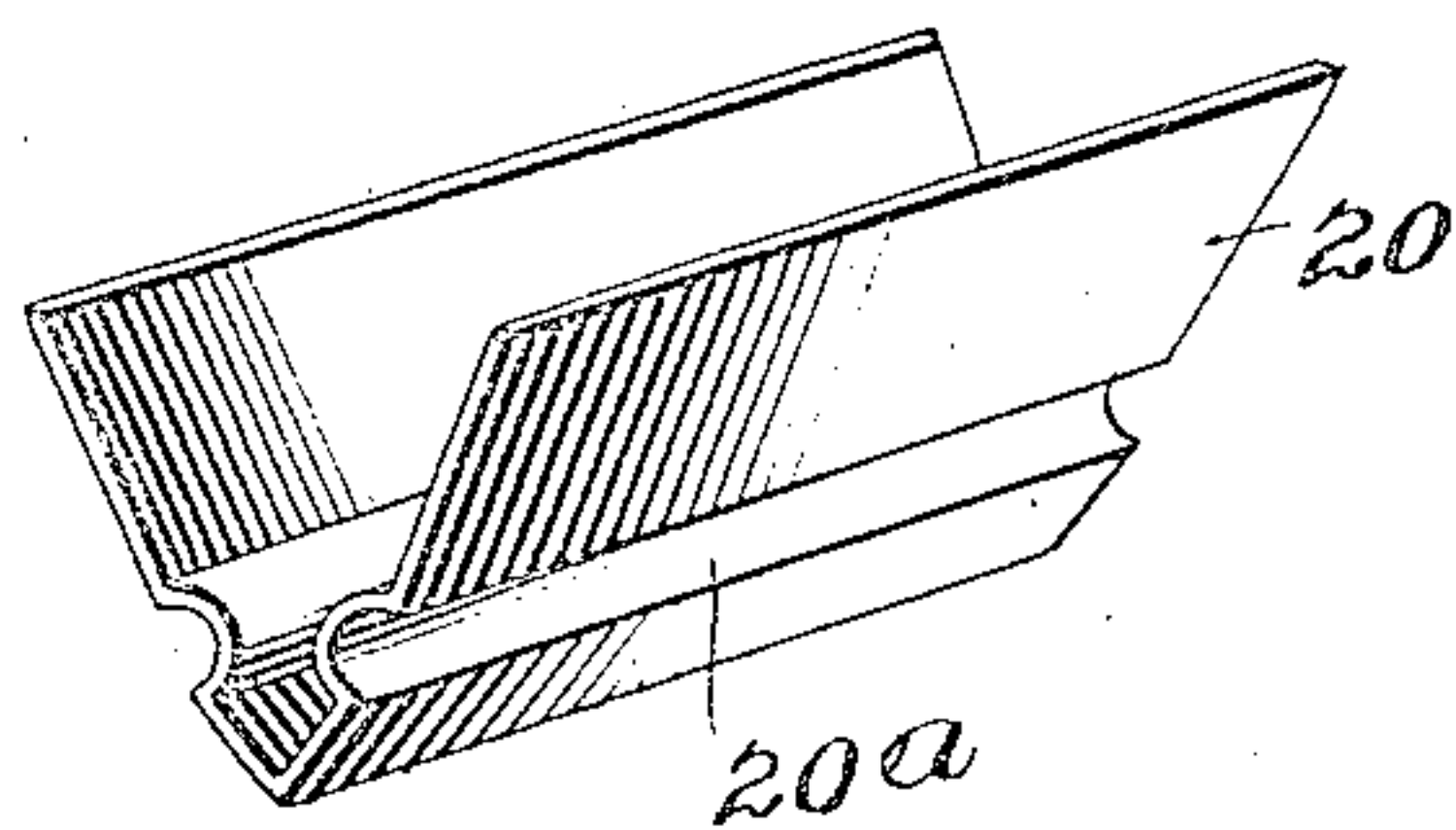


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALPH L. BURTON, OF ORTONVILLE, MINNESOTA, ASSIGNOR OF ONE-HALF TO CHARLES E. CHRISMAN, OF ORTONVILLE, MINNESOTA.

FILM-DEVELOPING MACHINE.

No. 920,263.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed May 23, 1908. Serial No. 434,655.

To all whom it may concern:

Be it known that I, RALPH L. BURTON, citizen of the United States, residing at Ortonville, in the county of Bigstone and State of Minnesota, have invented certain new and useful Improvements in Film-Developing Machines, of which the following is a specification.

The present invention relates to improvements in machines of that type which are utilized for developing the exposed surface of photographic films, and the object of the invention is the provision of a highly efficient machine of this character which is simple and inexpensive in its construction and economical in the use of the developing fluid.

The invention further contemplates a photographic developing machine, by means of which a comparatively large number of films may be simultaneously developed, and which embodies novel means for engaging the films and retaining them in proper position.

With these and other objects in view that will more fully appear as the description proceeds, the invention consists in certain constructions and arrangements of the parts that I shall hereinafter fully describe, and then point out the novel features thereof, in the appended claims.

For a full understanding of the invention and the merits thereof, and to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a photographic film developing machine constructed in accordance with the invention; Fig. 2 is a transverse sectional view through the same; Fig. 3 is a longitudinal sectional view; Fig. 4 is an enlarged sectional view through a portion of the developing drum; and, Fig. 5 is an enlarged detail view of one of the wedge members by means of which the films are applied to the developing drum.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawings, by the same reference characters.

The improved photographic developing machine embodying the present invention, comprises essentially a cylindrical drum 1 designed to have the films applied to the periphery thereof, the said drum being jour-

naled within a casing comprising a lower section 2 and an upper section 3 which is slidably mounted upon the lower section and co-operates therewith to form a light-proof construction, the developing fluid being placed in the lower section 2 so as to act upon the exposed sensitive surface of the films, as the drum is rotated. The casing within which the drum is mounted, is shown as cylindrical in shape and as supported upon the end standards 4 which have their lower edges notched to receive the ends of a tubular guide member 5 which is arranged longitudinally with respect to the casing and extends under the same. As shown, on the drawing, this tubular guide member 5 has a triangular cross section.

Specifically describing the lower section 2 of the casing, it will be observed that one end 2^a thereof is circular in shape and is provided at its central portion with a bearing 6, while the opposite end 2^b is semicircular in shape and is provided with a bearing 7, the two bearings 6 and 7 receiving the trunnions or shaft upon which the drum 1 is mounted. The upper longitudinal edges of the lower section 2 are suitably bent to provide the V-shaped grooves 8 which are designed to receive the triangular ribs 9 projecting outwardly from the lower longitudinal edges of the upper section 3 of the casing. One end of this upper section 3 is open, and when the casing is closed, this open end abuts against the upwardly projecting portion of the circular end 2^a of the lower section 2 which is provided with an inwardly projecting flange 10. This flange 10 overlaps the upper section of the casing so as to provide a light-proof joint when the two sections of the casing are in an operative position. The opposite end 3^a of the upper section of the casing is semicircular in shape and is connected by upwardly diverging braces 11 to a triangular rod 12 which is slidably mounted within the tubular guide 5 at the base of the machine. It will thus be obvious that when the upper section 3 is withdrawn, the braces 11 will serve to support the same. It will also be observed that the rod 12 which telescopes within the tubular guide 5, will tend to direct the upper section 3 of the casing in its movements, so as to prevent any binding thereof. For the purpose of preventing light from entering the casing around the bearing 7,

the end 3^a of the upper section of the casing is shown as provided with an approximately conical boxing 13 which fits around the bearing 7 when the casing is closed.

5 A funnel 14 is applied to the exterior of the casing, and in the present instance, is shown as secured to the end 2^b of the lower section of the casing. A tube 15 leads downwardly from the funnel and communicates
10 with the interior of the casing at the bottom thereof, so that should any liquid such as developing fluid be poured into the funnel, it will be directed into the casing. The opposite end of the casing is provided at the
15 base thereof with a discharge opening 16 which is normally closed by a removable plug 17 which constitutes a means for withdrawing the developing fluid from the casing.

The cylindrical drum 1 is mounted upon a
20 shaft 18 which is journaled within the bearings 6 and 7, and the said drum comprises the heads 1^a connected by a peripheral row of slats 1^b, the said members being formed of any suitable material, although as shown on
25 the drawing, they are preferably formed of metal, so as not to absorb or be acted upon by the developer. When the upper section 3 of the casing has been moved to one side, the developing drum 1 may be completely
30 removed from the casing, if desired, that end of the shaft 18 which projects through the bearing 6 having a handle 19 detachably applied thereto. Under some conditions, it might be found desirable to dispense with
35 this handle 19, and to provide means for rotating the drum by a motor or similar device.

The films which are to be developed are applied to the slatted surface of the drum,
40 with their exposed sensitive surface facing outwardly, and the ends of the films are engaged by wedges 20 which are inserted between the slats 1^b. In the present instance, these wedges 20 are shown as composed of
45 V-shaped pieces of sheet metal, the wings of which have a spring action and are designed to be forced together when applying the wedges to the drum. It will also be observed that the two wings of each of the
50 wedge members are provided with a depression 20^a designed to receive one of the slats 1^b of the drum. Then applying these wedges they are grasped with the hand, and the two wings forced together so that they
55 may be readily inserted in the required position between the slats of the drum. As soon as the pressure upon the wings is released, they immediately spring apart so that the depressions 20^a engage the slats 1^b, the
60 wedge member being thereby securely held in position, and the film being clamped against one of the slats. The entire surface of the drum may be covered with these films, and as the drum is revolved, all of the
65 various films are simultaneously subjected

to the action of the developing fluid in the bottom of the casing.

Having thus described the invention, what I claim is:

1. In a photographic developing machine, 70 the combination of a casing comprising a lower section and an upper section mounted upon the lower section to slide horizontally thereon and designed to cooperate therewith to provide a light-proof structure, and a de- 75 veloping drum rotatably mounted within the casing.

2. In a photographic developing machine, the combination of a casing comprising a lower section and an upper section mounted 80 upon the lower section to slide horizontally thereon, means for supporting the upper section when moved to one side, and a developing drum rotatably mounted within the casing. 85

3. In a photographic developing machine, the combination of a casing comprising a lower section and an upper section mounted upon the lower section to slide horizontally 90 thereon, a slide at the base of the casing, means cooperating with the slide to support the upper section of the casing when it is moved to one side, and a developing drum rotatably mounted within the casing.

4. In a photographic developing machine, 95 the combination of a casing comprising a lower section and an upper section mounted upon the lower section to slide horizontally thereon, a standard for supporting the casing, a tubular guide carried by the standard, 100 a rod slidably mounted within the tubular guide, means cooperating with the rod for supporting the upper section of the casing when the latter is moved to one side, and a developing drum revolubly mounted within 105 the casing.

5. In a photographic developing machine, the combination of a casing comprising a lower section and an upper section mounted upon the lower section to slide horizontally 110 thereon, standards for supporting the casing, a tubular guide connecting the standards and having a triangular cross section, a triangular rod slidably mounted within the tubular guide, braces connecting the rod and 115 the upper section of the casing for supporting the latter when it is moved to one side, and a drum revolubly mounted within the casing.

6. In a photographic developing machine, the combination of a cylindrical casing com- 120 prising a lower section and an upper section mounted thereon to slide horizontally, the lower section having a circular end and a semicircular end and being provided at its upper longitudinal edges with grooves, while 125 the upper section is open at one end which abuts against the circular end of the lower section, the opposite end of the upper section being semicircular, and the longitudinal edges of the upper section being formed with 130

ribs which are received within the grooves of the lower section, and a developing drum rotatably mounted within the casing.

7. In a photographic developing machine, 5 the combination of a casing comprising a lower section and an upper section removably applied to the lower section and cooperating therewith to provide a light-proof structure, one end of the lower section being 10 provided with a discharge opening, a closure normally closing the discharge opening, a funnel upon the exterior of the casing, a tube leading from the funnel and communicating with the lower portion of the casing, and a 15 developing drum mounted within the casing.

8. In a photographic developing machine, the combination of a casing, a slatted drum revolubly mounted within the casing, and 20 wedges cooperating with the slats of the drum to retain the films in position thereon.

9. In a photographic developing machine, the combination of a casing, a slatted drum revolubly mounted within the casing, and 25 wedges adapted to be inserted between the

slats of the drum for retaining the films in 25 position, the said wedges being formed with spring-acting wings.

10. In a photographic developing machine, the combination of a casing, a slatted 30 drum revolubly mounted within the casing, and V-shaped wedges adapted to be inserted between the slats to retain the films in position upon the drum, the said V-shaped 35 wedges being formed with spring-acting wings each of which is formed with a depression for receiving one of the slats.

11. In a photographic film developing machine, the combination of a casing, a slatted 40 member movably mounted within the casing, and wedges cooperating with the slats of the slatted member to retain the films in position thereon.

In testimony whereof I affix my signature in presence of two witnesses.

RALPH L. BURTON. [L. s.]

Witnesses:

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J. H. KING.