

No. 884,297.

PATENTED APR. 7, 1908.

T. T. SABROE.
PHOTOGRAPHIC PRINTING APPARATUS.

APPLICATION FILED APR. 3, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

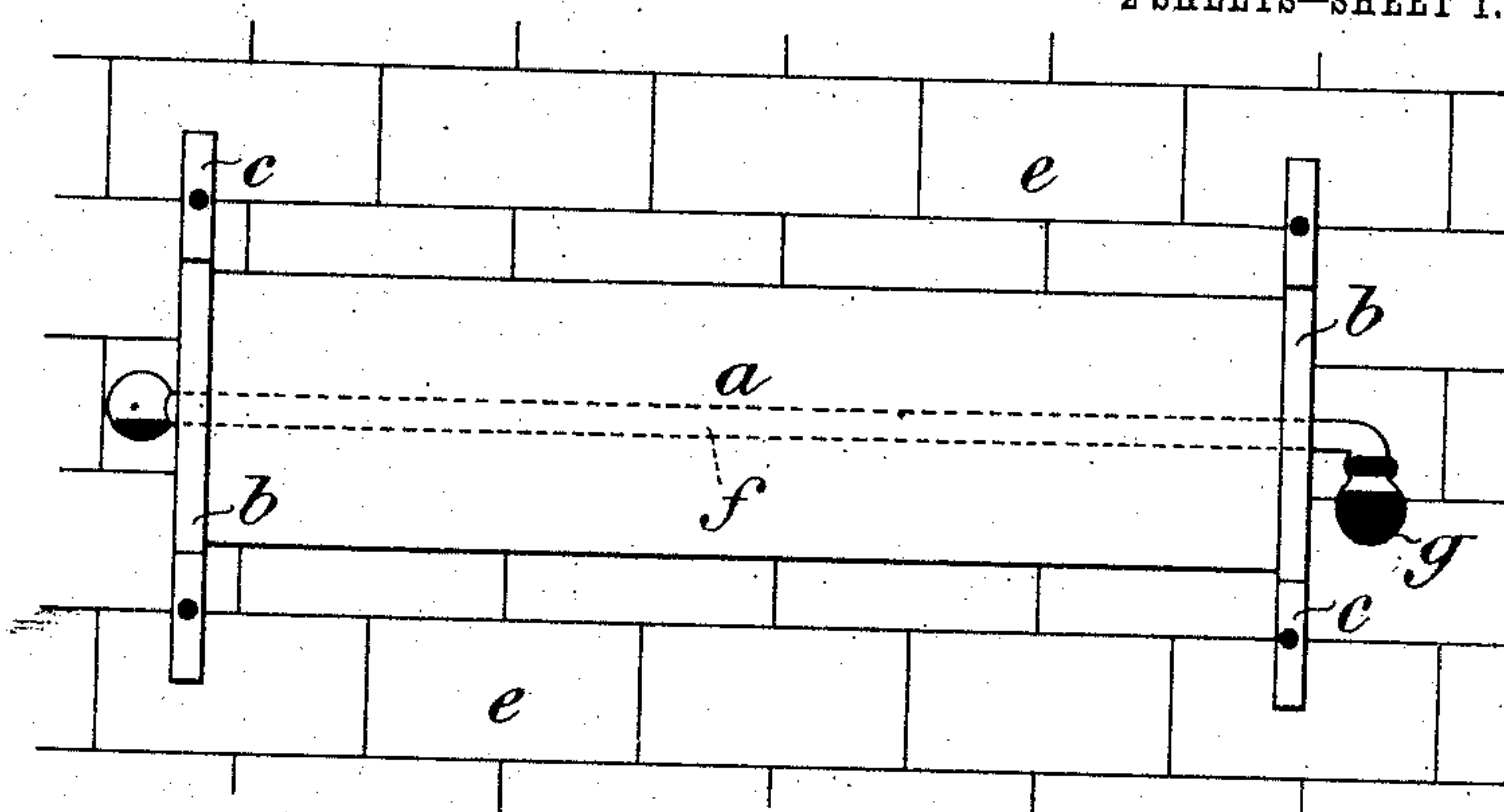


Fig. 2.

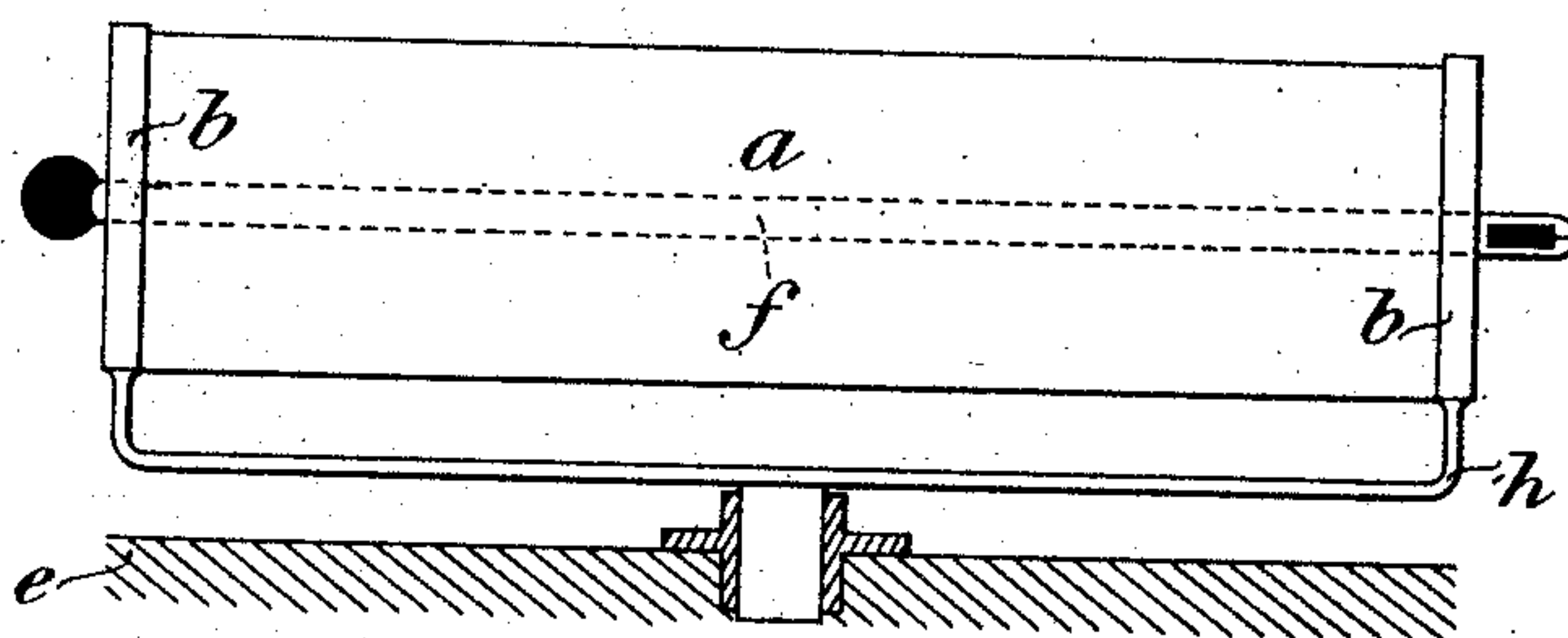


Fig. 3.

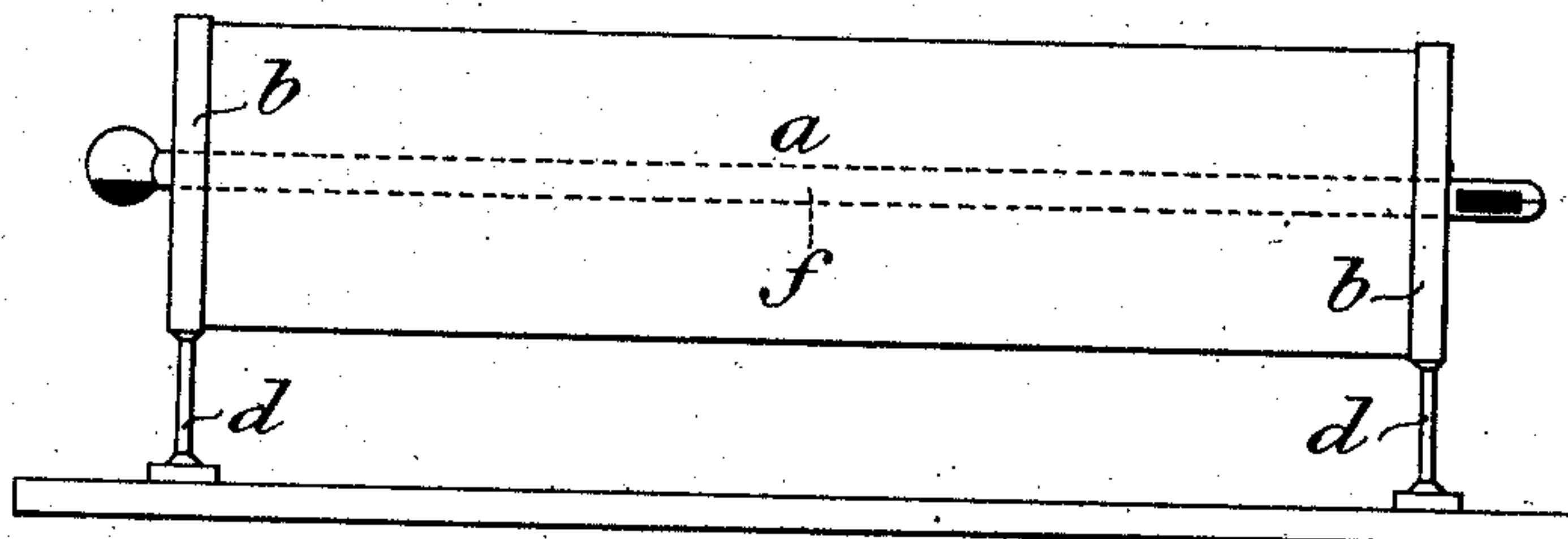
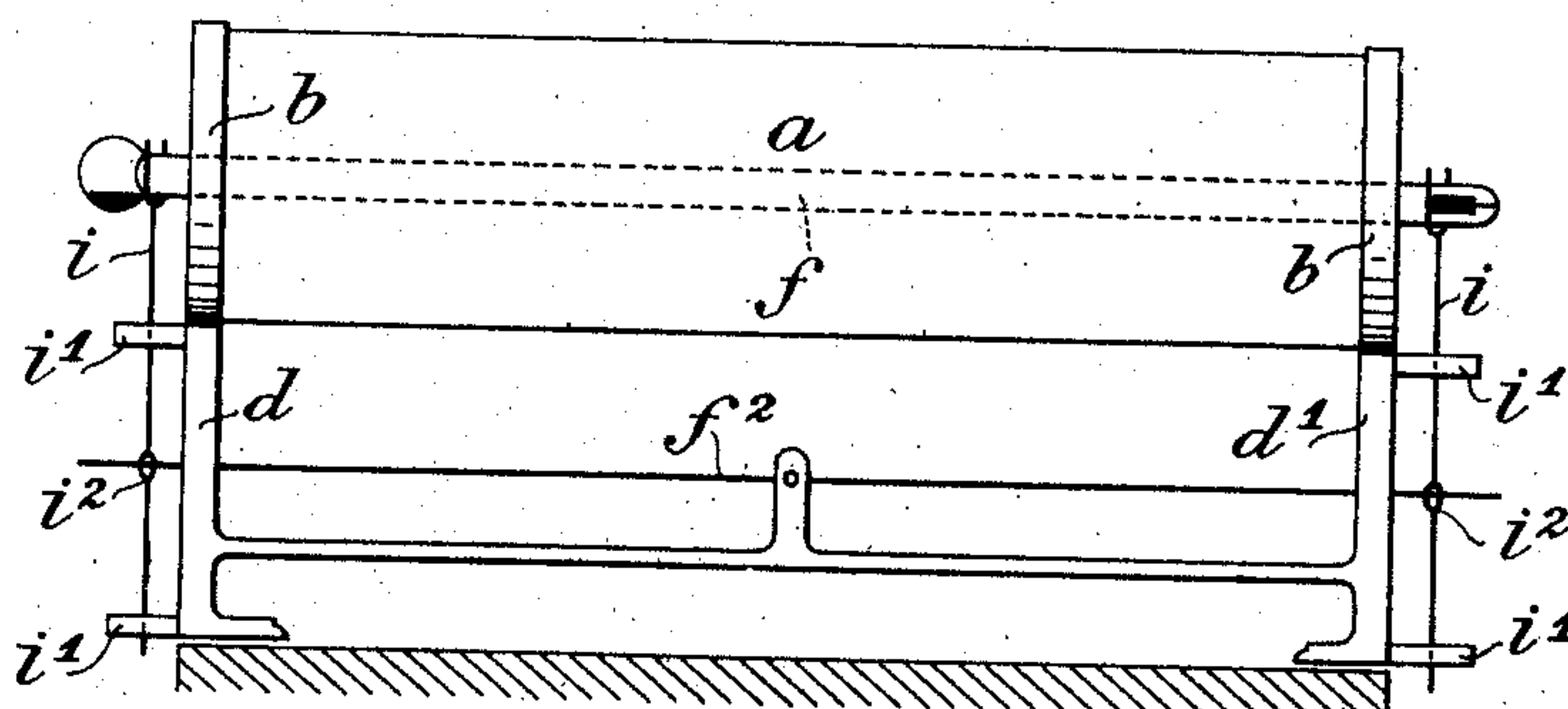


Fig. 8.



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2 SHEETS—SHEET 2.

Fig. 4.

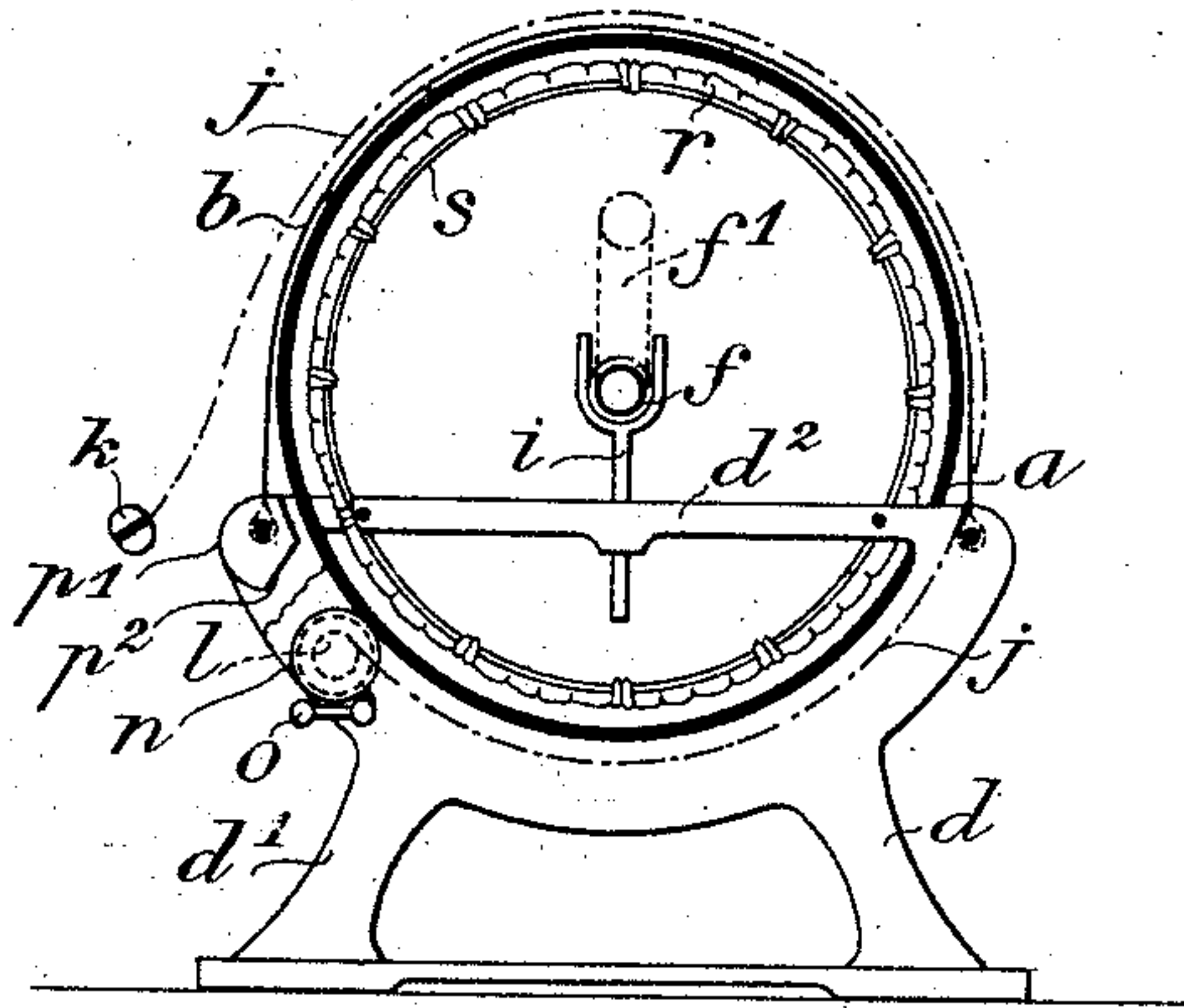


Fig. 5.

Fig. 6.

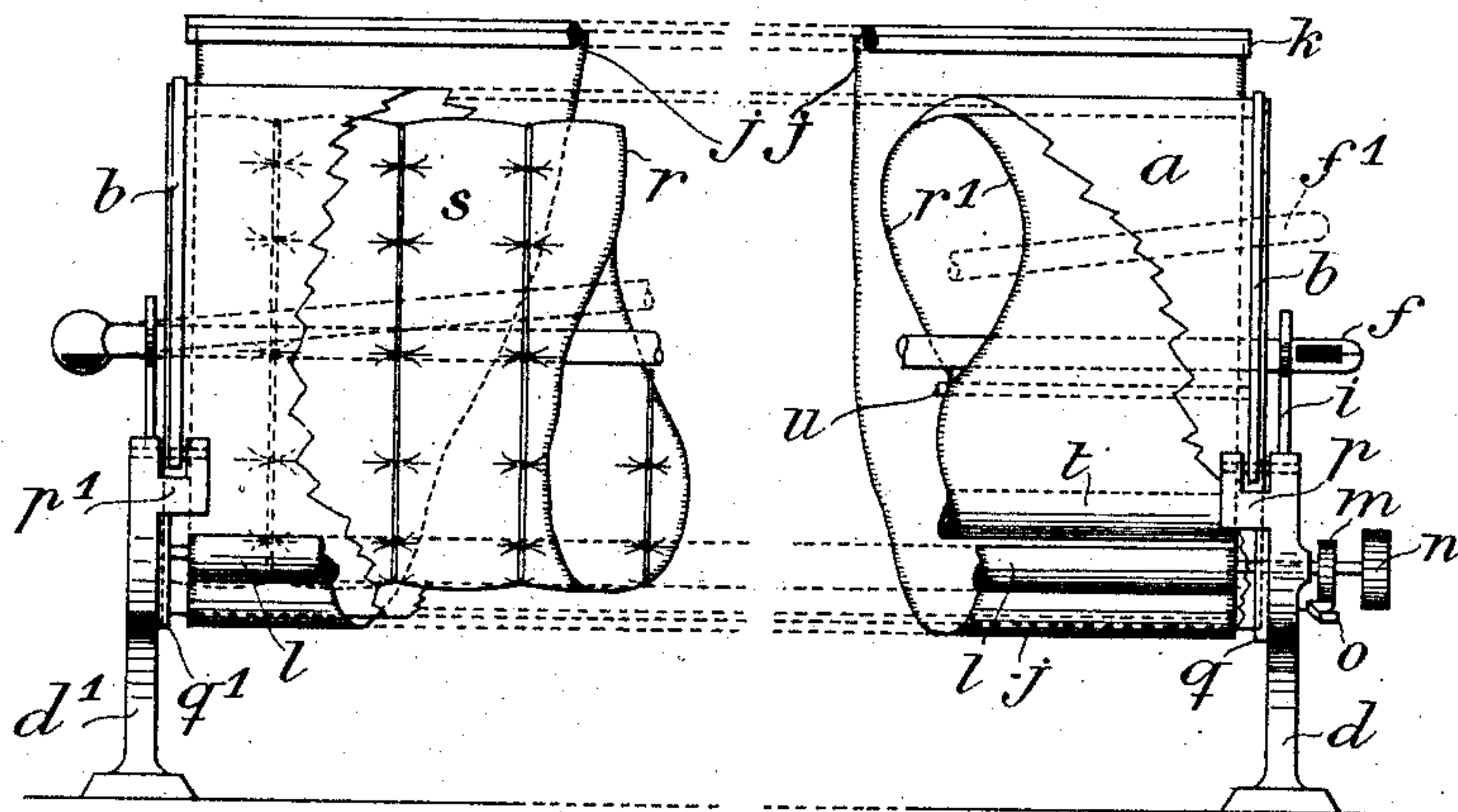
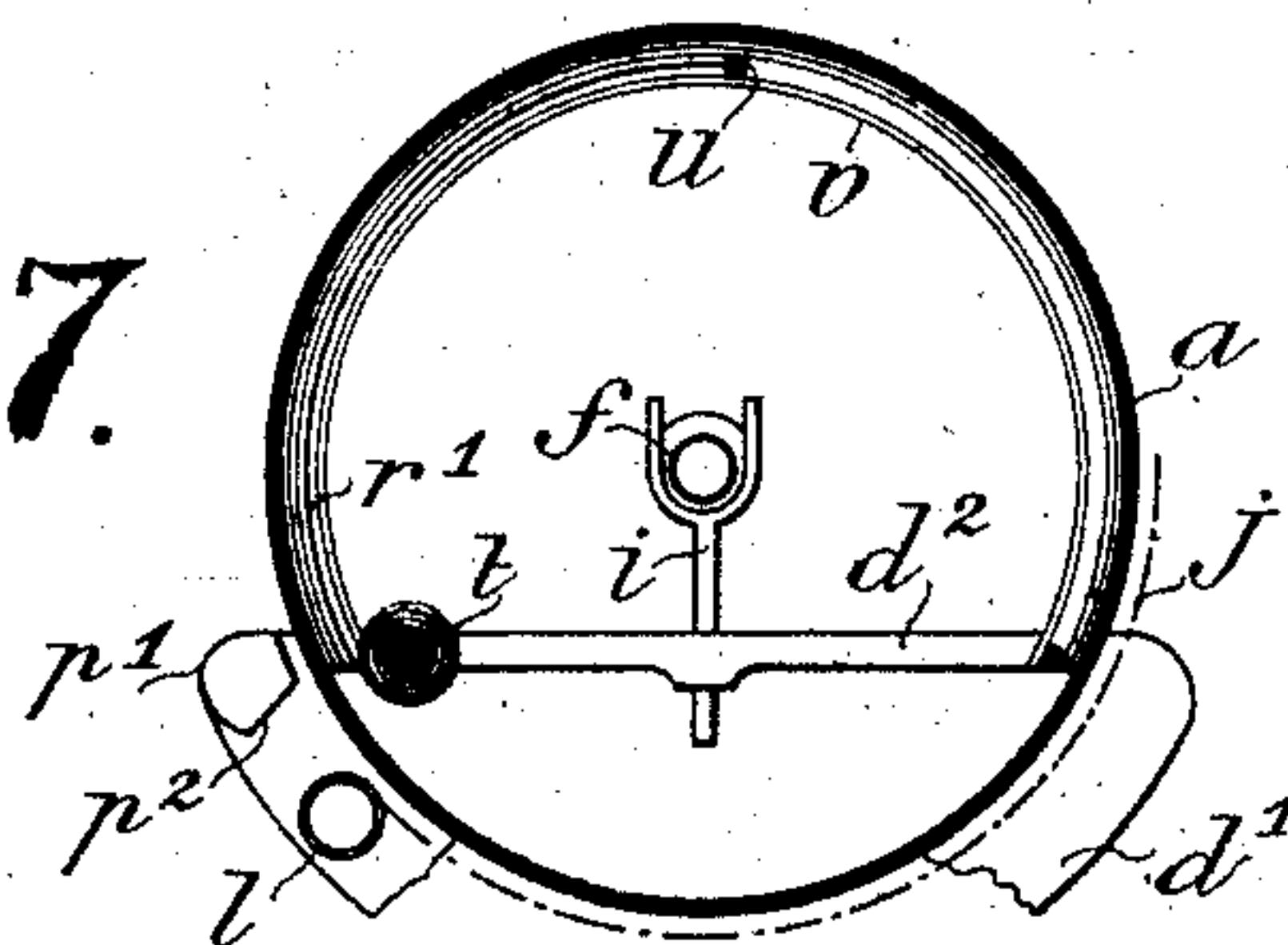


Fig. 7.



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PHOTOGRAPHIC-PRINTING APPARATUS.

No. 884,297.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed April 3, 1907. Serial No. 366,081.

To all whom it may concern:

Be it known that I, THOMAS THOMASSEN SABROE, of No. 12 Colbjørnsensgade, Copenhagen, in the Kingdom of Denmark, have invented new and useful Improvements in Photographic-Printing Apparatus, of which the following is a specification.

This invention relates to a photographic-printing apparatus with one or several vacuum-arc lamps (mercurial vapor lamps) with the copying cylinder arranged around them.

As compared to the hitherto known photographic-printing apparatus with vacuum-lamps or other sources of light, this apparatus has the principal advantage that the printing cylinder as well as the lamp or series of lamps are connected to the frame and do not move during the printing process.

In some of the apparatus hitherto used either the printing cylinder or the source of light moved during the printing operation, involving a complicated arrangement and sometimes even necessitating the printing-cylinder being placed vertically.

The invention further relates to a suitable arrangement of the stretching-cloth or apron which holds the materials (tracing, sensitized paper, or the like) up against the fixed, horizontally placed printing-cylinder as well as to an arrangement for protecting the printing material against the light while it is being placed in position, in such a manner that this work may be done conveniently without necessitating the lamps being extinguished meanwhile.

The invention is shown in the accompanying drawing, in which:

Figures 1 to 3 show schematically three different forms of the apparatus in a fixed position. Fig. 4 is a front-view, on a larger scale, of an apparatus of the construction shown in Fig. 3 designed for being fitted on to a table, with apron and light-screen. Fig. 5 is a side-view of one end of the same. Fig. 6 is a detail side view of another form of the apparatus. Fig. 7 is a section of part of the apparatus fitted with a light-screen of the form shown in Fig. 6, and Fig. 8 is a schematic view of the apparatus fitted with a contrivance for lighting the lamp.

a is the printing-cylinder, made out of some material sufficiently transparent to the actinic light. The ends of the cylinder are inserted in or provided with rings or parts of rings or similar supporting contrivances, by

means of which the cylinder is fastened to suitable flanges *c*, Fig. 1, or feet *d*, Fig. 3, for being fitted on to a wall *e* or placed on a table, Fig. 3, or on the floor.

The rings, clutches or forkpieces carrying the lamp (or lamps) *f* are also fixed on to the parts *b*, *c* or *d*. This arrangement for carrying the lamps is not shown in Figs. 1 to 3. While the lamp *f* represented in Fig. 1 is lighted by turning the globe-reservoir *g* first upwards and then back into the position shown, so that the lamp is lighted by being turned on its axis, the lamps shown in Figs. 2 and 3 are lighted by a tilting movement. This tilting movement is effected in the form of construction shown in Fig. 3 inside the printing-cylinder itself, as will be explained below. In the form of construction shown in Fig. 2 the printing-cylinder itself participates in the tilting movement, the ring or holder *b* being connected to a forkpiece *h* which is fitted so as to turn in a socket or the like arranged in the wall *e*.

The tilting movement for lighting the lamp inside the cylinder will be understood from Figs. 4, 5 6 and 8. The lamp *f* is supported by forks *i* fitted into cross pieces *d*², of the feet *d* and *d*¹, Figs. 4 and 5. When the lamp is to be lighted, one end, say the right-hand one, is raised so that the lamp assumes the position *f*¹, Figs. 5 and 6. When then lowered back into the forks, it will be lighted. Fig. 8 shows a mechanical arrangement for this lighting-movement, by which, as in Fig. 2, the undesirable direct handling of the lamp is avoided. In this case the feet *d* and *d*¹ are provided with guides *i*¹, in which the forks *i* or similar contrivances may be moved up and down. The forks are provided with eyes *i*² in which the ends of a rod or a double-armed lever *f*² which turns on a pivot in the frame, are placed. The lamp is lighted by tilting this rod.

The apron or stretching-cloth *j*, Fig. 4 to 7, is fixed at one end and free at the other. The free end is fitted into a split stick *k* or the like. The fixed end is fastened to a roller *l*, whose axle is on the end protruding beyond the feet *d* provided with a ratchet-wheel *m* and a hand-wheel *n* or the like. A pawl *o*, pressed by a weight or spring, engages the ratchet-wheel so as to prevent the roller *l* from turning in the direction of the hands of a watch. On the inner side of the feet *d* and *d*¹ are placed projections or brackets *p*, *p*¹ with an

oblique surface p^2 , under which the stick k (the free end of the apron) may be inserted. By now turning the hand-wheel n and roller l in the direction opposite to that of the hands of a watch, the apron will be rolled up on the roller l until it lies suitably tight around the printing-cylinder. The projections p and p^1 also serve to carry the bands b by means of which the cylinder is fastened at the ends to the feet d and d^1 , which are provided with supporting flanges q and q^1 for the printing-cylinder. The screen which serves to protect the operator as well as the printing materials against the detrimental action of the light is shown in two forms:

In the first form, Figs. 4 and 5, the screen consists of a sufficiently opaque, thick stuff r , mounted on a number of rings s . The outermost one of the rings at one end of the screen, for instance the one seen in Fig. 4, is rigidly connected to the cross piece d^2 . The other, free end is connected in the way well known from curtains to two cords (not shown) by means of which the screen may be pulled forward, so as to shut off the light from the whole length of the printing-cylinder—or be drawn together so that the screen only covers a narrow belt at one end of the cylinder.

In the form shown in Figs. 6 and 7, the screen is arranged in the same way as the automatic curtains or blinds. It consists of a roller t placed exactly opposite to that part of the printing-cylinder that is not covered by the apron and consequently does not come into contact with the printing material *i. e.* between the parts k and l . The roller t is in the usual manner provided with a spiral spring (not shown) in such a way that when the screen r^1 is rolled off the roller, the spring is wound up and winds the screen back onto the roller when the pull ceases. The free end of the screen is fastened to a stick u , the ends of which, and consequently also the edges of the screen are guided in a groove v , Fig. 6 at each end of the cylinder.

The working of the apparatus described above is as follows: When the lamp (or lamps) has been lighted and the screen r or r^1 pulled out, the apron j with the stick k is brought into the position shown in Fig. 5, so that the printing-cylinder is uncovered. The tracing and the sensitized paper, or other copying material is then placed in position on the cylinder, and covered by the apron. The stick k is placed under the projections p and p^1 , and the apron pulled tight by means of the hand-wheel n . On then removing the screen, the printing commences. After 2 to 3 minutes exposure for negative and about twice that time for positive copies, the prints are completed. The screen is again drawn forward, the pawl o is released by hand, the stick k is unhooked from the projections p and p^1 and laid back,

and the materials may then be withdrawn and others placed in position.

The particular advantages of the present apparatus are its simple construction, its cheapness, and the easy and sure manner of working. It may further be noted that the printing-cylinder being continually at rest it may be made out of very thin material, so that the absorption of light and the heating are brought down to a minimum. In many cases the screen may be done away with. The main feature is that the printing-cylinder and the source of light are immovable, whereby the manufacturing and the working of the apparatus are both facilitated.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is:

1. Photographic printing apparatus comprising a frame, a printing-cylinder firmly supported in said frame, a vacuum arc light source inside the said cylinder, an apron corresponding in length to the circumference of the said cylinder, and means for holding the apron against the cylinder.

2. Photographic-printing apparatus comprising a tilting frame, a printing-cylinder firmly lodged in said frame and a vacuum arc light source inside the said cylinder and firmly attached to the said frame.

3. Photographic-printing apparatus comprising a frame, a printing cylinder firmly lodged in said frame, a vacuum arc light source inside the said cylinder, and a support for the light source, capable of tilting in the frame.

4. Photographic-printing apparatus comprising a frame, a printing-cylinder firmly lodged in said frame, a vacuum arc light source inside the said cylinder, an apron, a stretching-roller capable of turning in the frame and connected with the one edge of the said apron, and projections on the frame for fixing the other edge of the apron.

5. Photographic-printing apparatus comprising a frame, a printing cylinder firmly lodged in said frame, a vacuum arc light source and a screen both inside the said printing-cylinder, and means for stretching out and folding together the said screen.

6. Photographic-printing apparatus comprising a frame, a printing cylinder firmly lodged in said frame, a vacuum arc light source and a screen both inside the said printing-cylinder, and an apron outside the same.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

THOMAS THOMASSEN SABROE.

Witnesses:

T. HOFMAN BANG,
ERNEST BOUTARD.