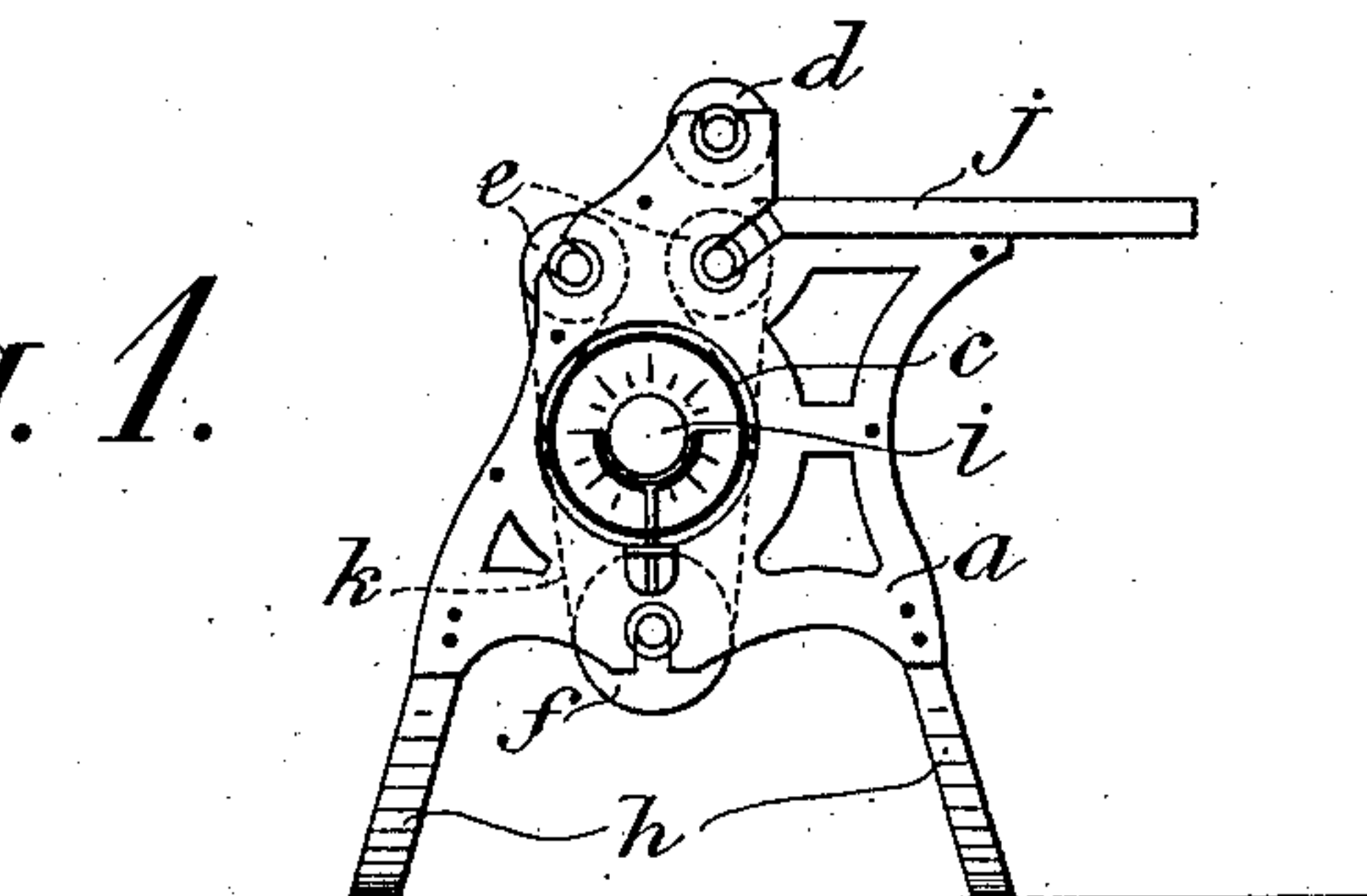


T. T. SABROE.  
 PHOTOGRAPHIC PRINTING APPARATUS.  
 APPLICATION FILED APR. 16, 1907.

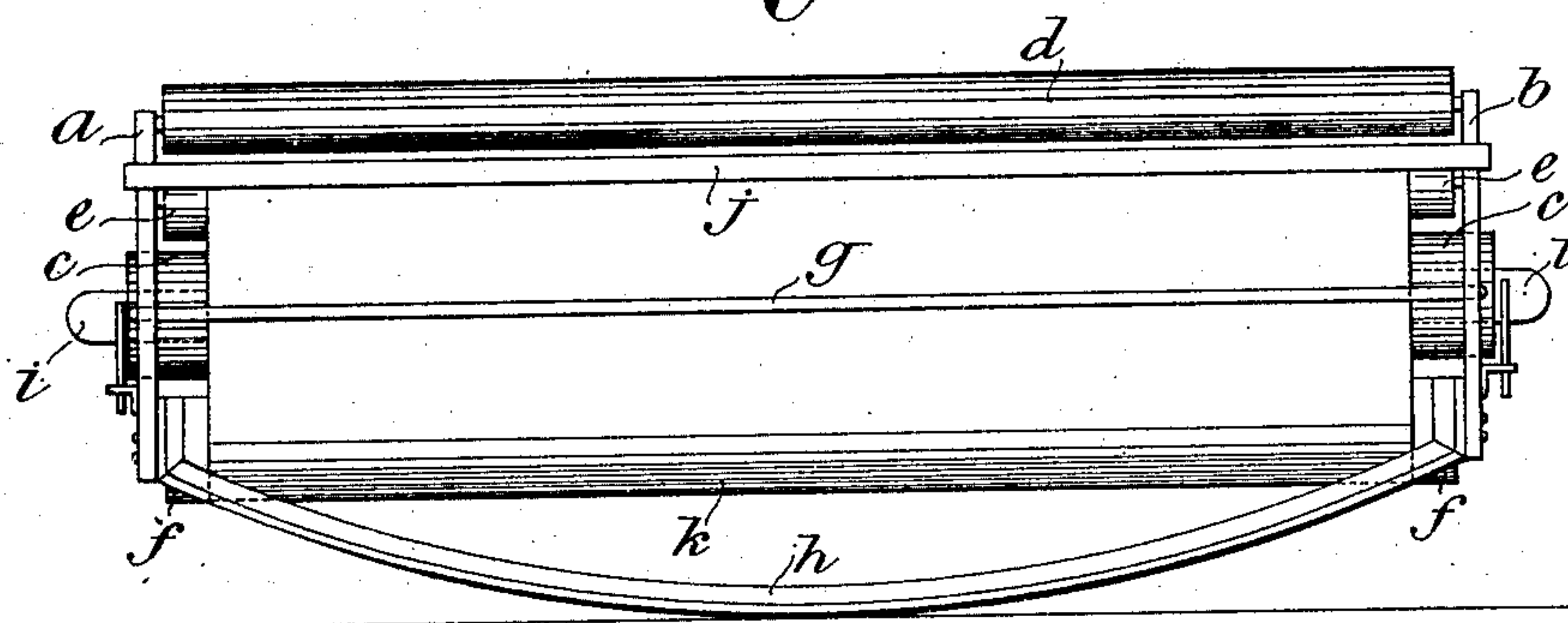
915,044.

Patented Mar. 9, 1909.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

THOMAS THOMASSEN SABROE, OF COPENHAGEN, DENMARK.

## PHOTOGRAPHIC-PRINTING APPARATUS.

No. 915,044.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed April 16, 1907. Serial No. 368,534.

*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  
5 invented new and useful Improvements in Photographic-Printing Apparatus, of which the following is a specification.

In photographic-printing apparatus with the printing cylinder inclosing one or more  
10 mercurial vapor lamps which are lighted by a tilting movement, such movement has hitherto usually been effected inside the surface of the cylinder. Usually only the lamp or the lamps were tilted the cylinder  
15 remaining a fixture. This necessitates a movable arrangement or suspension of the lamps and involves a frequent handling of these. They are thus liable to being frequently broken. Furthermore the printing-  
20 cylinder for the lengths in common use (about 1 meter) must be made of a certain considerable diameter, say at least about 15 cm. when a single centrally placed lamp is used and about 20 to 25 cm. when two or  
25 more lamps are used, in order to allow sufficient room for raising and lowering the ends of the lamp-tube or -tubes. Thereby an unnecessary limit is established for how near to the source of light it is possible to place  
30 the printing material. The cylinder being large, it must in order to be of sufficient strength also be made with thick walls, whereby the absorption of the more refrangible light is increased.

35 In the present invention the risk of breakage is avoided and the possibility of a better utilization of the light is created by arranging the entire apparatus to be tilted. Besides this principal arrangement the invention  
40 also refers to certain other arrangements resulting therefrom, particularly the use of narrow printing-cylinders and the guiding of the stretching-cloth or apron under these.

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

Figures 1 and 2 show a photographic-printing apparatus for continuous printing in end- and side-view respectively, some details having been omitted.

50 The continuous apparatus shown in Figs. 1 and 2 consists as usual of supports *a* and *b* having a recess for the printing-cylinder *c* and bearings for the top-roller *d* and the guiding-rollers *e* and *f* of the apron. The  
55 supports which are mutually stiffened by bolts *g* or the like are not as hitherto pro-

vided with foot-pieces for being firmly attached to the bed, but are on the contrary connected to a pair of rockers *h*. By rocking the apparatus once up and down on these, 60 for instance in such a way that the right-hand end, Fig. 2, is first forced downward toward the bed, and then raised to the same elevation above the normal position shown and finally brought to rest in this, the lamp 65 will be lighted and the apparatus is now ready for use. When next, as usual, one of the rollers *e*, for instance the left-hand one in Fig. 1, is turned in a direction opposite to that of the hands of a clock by a suitable motor, not 70 shown, the printing cylinder will revolve in the direction of the clock and the printing material which has been placed on the table *j* with its edge inserted between the top-roller *d* and the right-hand roller *e* will then be 75 automatically carried around the cylinder *c*, pressed in between the latter and the apron *k*, Fig. 1, and exposed to the light of the lamp *i* so that it comes out finished at the left-hand roller *e*. 80

The rocking motion of the apparatus which makes the lighting of the lamps possible without their being directly handled, may be obtained by other means than those shown in Figs. 1 and 2. 85

The movable arrangement in question may be applied to apparatus of the types already known with loose lamps and wide printing-cylinder. It is, however, one of the advantages of this invention that even for lengths 90 of 1 meter or more the printing-cylinder may be made narrow for instance 5 to 9 cm. when using a single central lamp or about 12 cm. when using two or more lamps, and may be made of correspondingly thinner material, 95 for instance  $\frac{1}{2}$  to 2 mm. The printing material may thus be brought comparatively very near to the lamps so as to be exposed to a strongly concentrated light, which has suffered but slight weakening through absorption. 100 In continuously acting apparatus it is further possible to substitute one single roller, see the roller *f* Figs. 1 and 2, for the two hitherto used lower guiding-rollers of the apron. This roller may be suspended so as 105 to be movable axially and to act to tighten on the apron by its own weight, and it may be made of wood. In continuously acting apparatus of that kind in which the printing-cylinder, as assumed in Fig. 1, is suspended in the apron itself, the use of the narrow cylinder of thin material presents the 110



further advantage that the apron has to carry only a slight weight and may thus be made out of less stiff materials than it has hitherto been possible to use, for instance 5 india-rubber. As has been proved by experiments, this secures a particularly exact contact of the printing-paper against the tracing.

Having now particularly described and 10 ascertained the nature of this invention and in what manner the same has to be performed, I declare that what I claim is:

Photographic printing apparatus comprising a frame, a source of vacuum arc-

light carried by the same and adapted to be 15 started by tilting, a copying cylinder surrounding the source of light, rails which support the frame in the middle so that the tilting motion is permitted, and means for supporting the frame in the position re- 20 quired by the light source.

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:

P. HOFMAN BARY,  
EMIL MONRITZEN.