

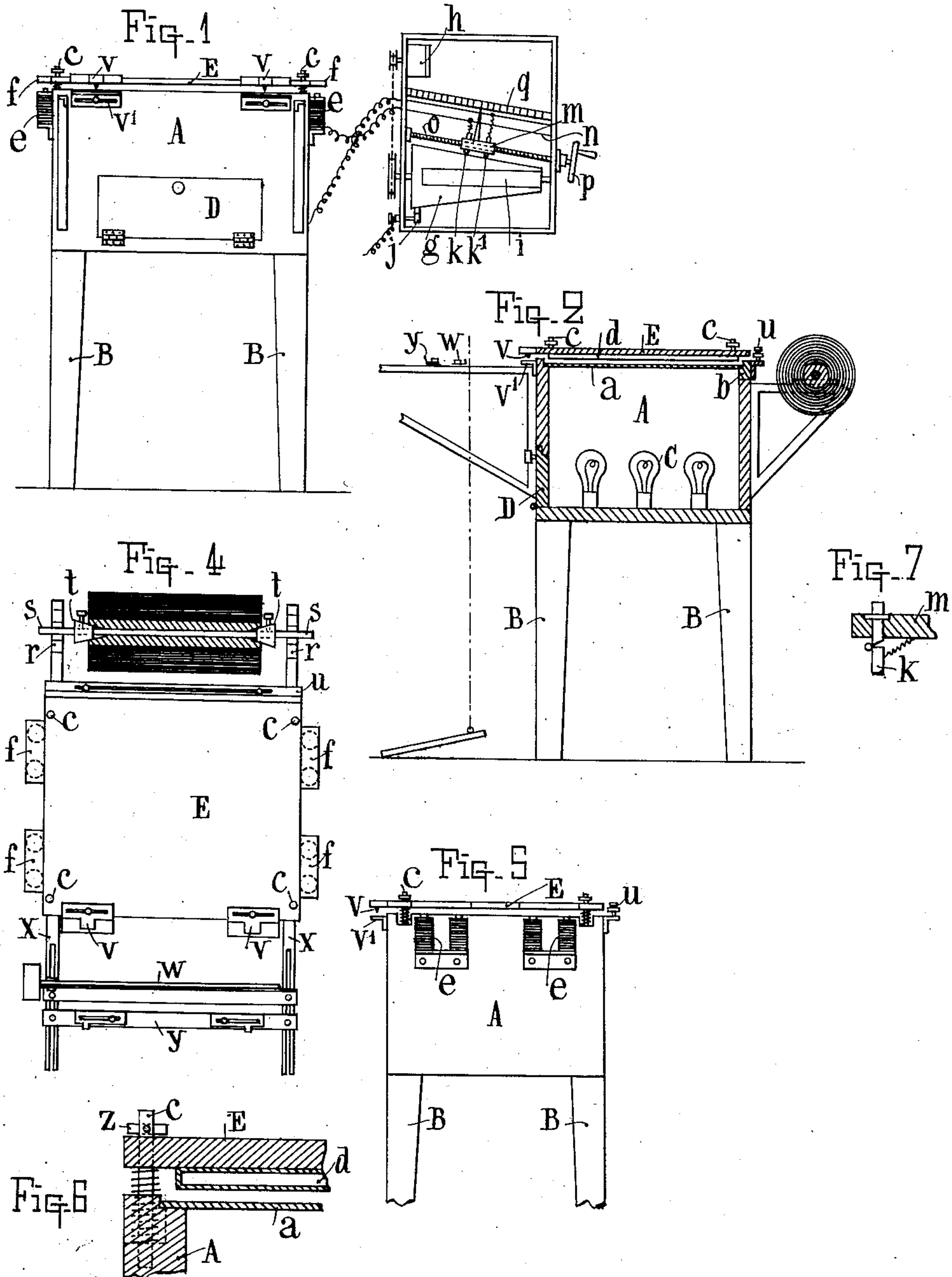
No. 889,443.

PATENTED JUNE 2, 1908.

A. COTTILLON.  
PHOTOGRAPHIC PRINTING APPARATUS.

APPLICATION FILED JAN. 29, 1907.

2 SHEETS—SHEET 1.



Witnesses:  
H. K. Bollen  
L. M. Bollen

Inventor  
Adrien Cottillon,  
By J. M. Boulton,  
Attorney

No. 889,443.

PATENTED JUNE 2, 1908.

A. COTTILLON.  
PHOTOGRAPHIC PRINTING APPARATUS.

APPLICATION FILED JAN. 29, 1907.

2 SHEETS—SHEET 2.

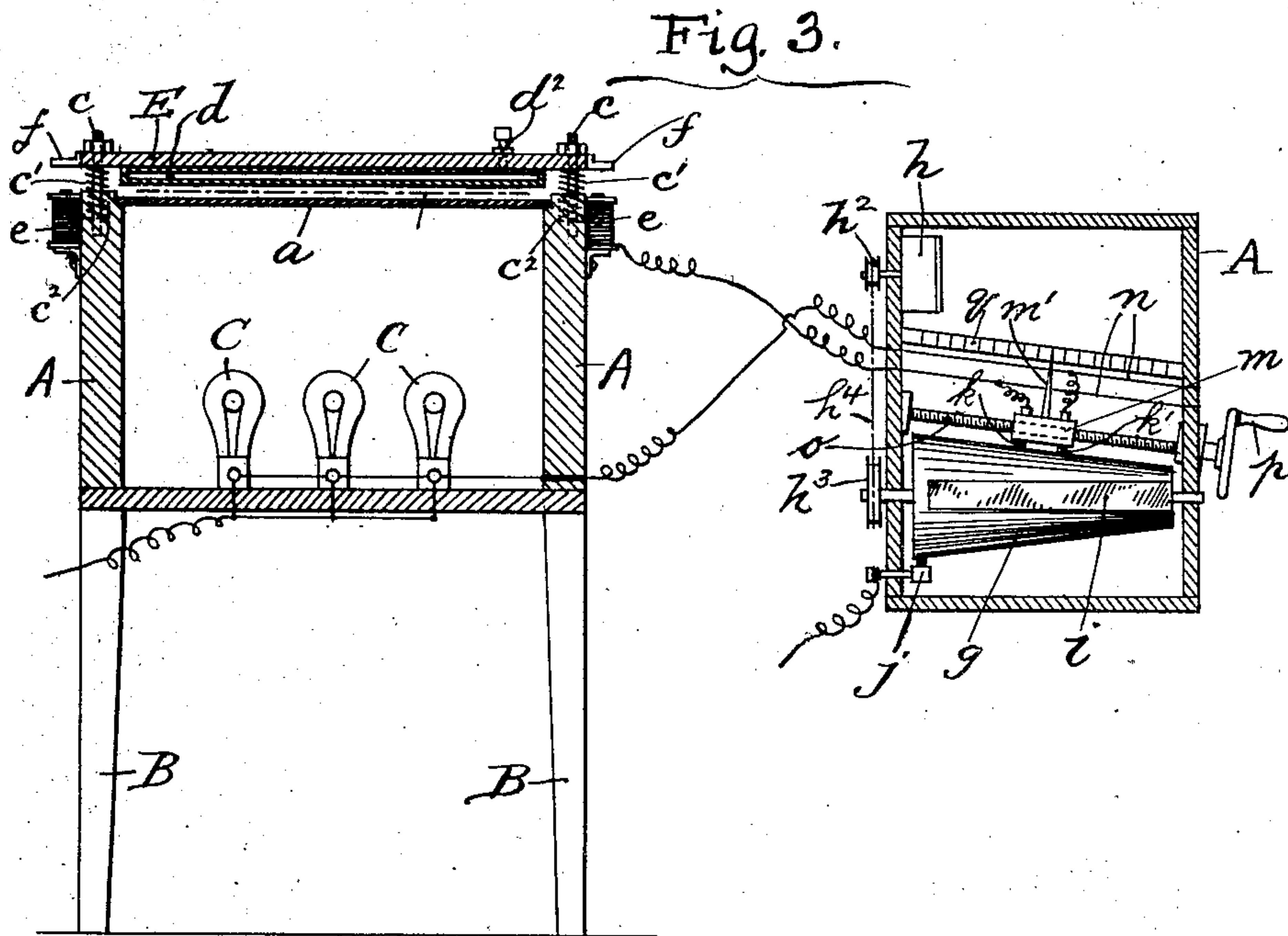


FIG. 8.

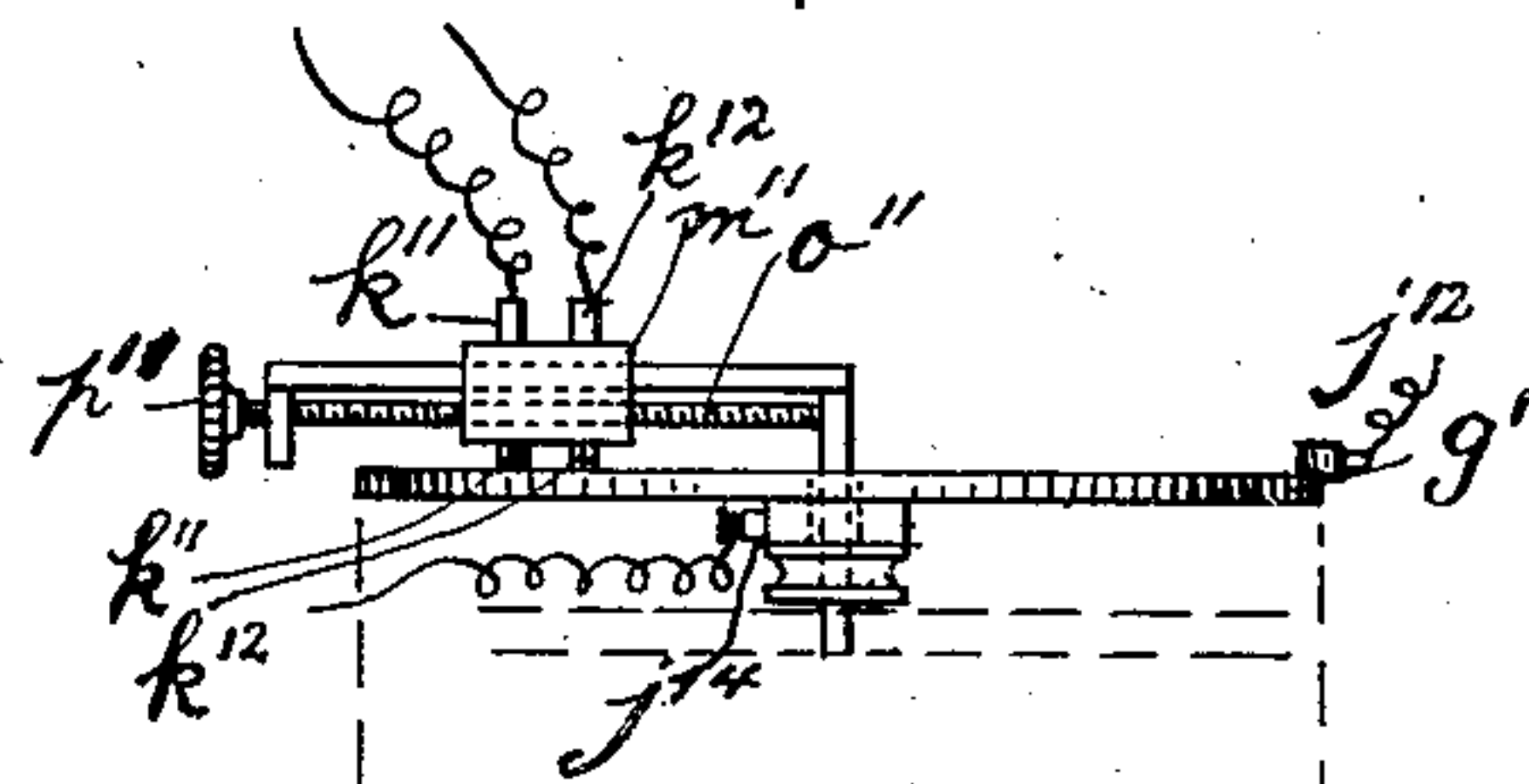
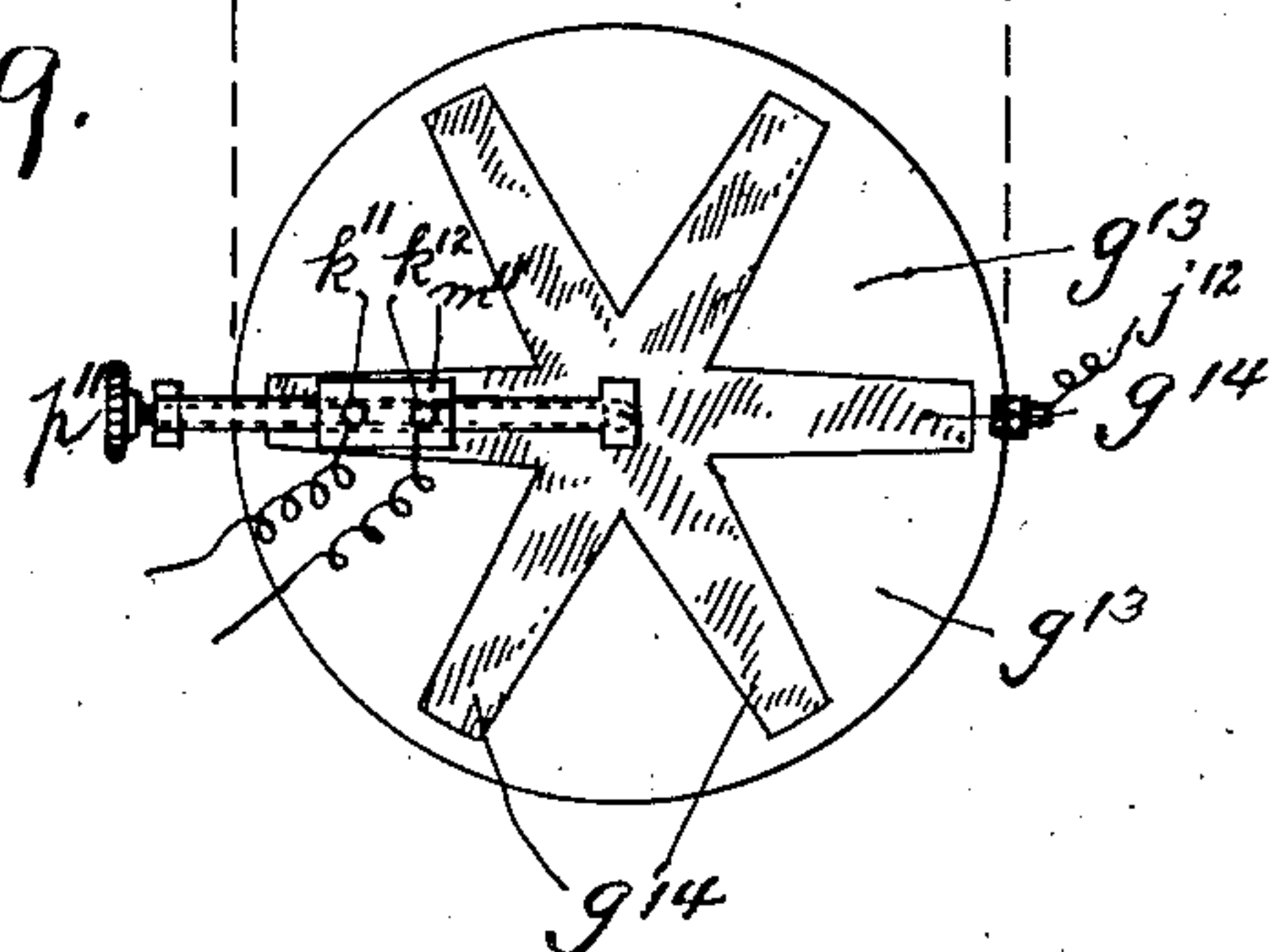


Fig. 9.



Witnesses,

W. K. Boulton

*[Signature]*

Inventor

Adrien Cottillon

By *[Signature]* W. K. Boulton

attorney



# UNITED STATES PATENT OFFICE.

ADRIEN COTTILLON, OF ASNIÈRES, FRANCE.

## PHOTOGRAPHIC-PRINTING APPARATUS.

No. 889,443.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed January 29, 1907. Serial No. 354,771.

*To all whom it may concern:*

Be it known that I, ADRIEN COTTILLON, a citizen of the Republic of France, and resident of Asnières, in France, have invented certain new and useful Improvements in Photographic-Printing Apparatus, of which the following is a full, clear, and exact description.

This invention has for its object an apparatus which allows the rapid and uniform printing of positive photographs obtained by gelatino-bromid. The said apparatus includes a closed box containing electric lamps located under a thick glass supporting the negatives to be printed upon which the bromid paper is placed.

The pressure necessary for the contact of the paper on the negatives is obtained by means of electro-magnets, which draw the cover downwards, such pressure, as well as the ignition of the lamps, being effected by a distributor of electric current, so constructed as to be capable of causing the time of exposure to be easily varied according to the negatives to be printed and the rapidity of the paper used.

The apparatus is shown in the accompanying drawings, in which:—

Figure 1 is a front view. Fig. 2, a cross section. Fig. 3, a vertical section of the parts seen in Fig. 1 slightly enlarged. Fig. 4, a plan of the left hand portion of Fig. 1. Fig. 5, an exterior view of one of the sides. Fig. 6 shows, on an enlarged scale, the details of the construction of the pressure plate. Fig. 7 shows the details of the fittings of one of the brushes taking the current. Fig. 8 and 9 show in elevation and plan a modification of the current distributor.

The apparatus consists of a rectangular wooden box A mounted on feet B, in which box are arranged electric lamps C, which can be changed as desired by opening a hinged door D provided in the front.

In the recess formed in the upper part of the box is located a thick glass *a* upon which are placed the negatives to be printed from. Said glass is arranged so as to be capable of being withdrawn from the back of the apparatus by raising a movable part *b*. It can also be removed from the top.

Upon the top of the box is arranged a cover E, the purpose of which is to press the sensitized paper upon the negative placed under the glass *a*. For this purpose it is capable of sliding vertically on four rods *c* at-

tached to the body of the box and around which are arranged spiral springs *c'* tending to continually raise the cover E. Around each rod *c* is provided a cavity *c<sup>2</sup>* in which the spring takes its position when the cover is lowered to press the paper.

In order to obtain an elastic pressure, the under part of the cover E is provided with an india rubber rectangular pocket *d*, which is filled with air under pressure, through a valve *d<sup>2</sup>*. The lowering of the cover E, for the purpose of causing the sensitized paper to adhere to the negatives, is effected by means of electro-magnets *e* which attract the soft iron armatures *f* fixed to the cover.

The electric current necessary for the ignition of the lamps and the working of the electro-magnets is distributed automatically at regular intervals of time by means of a device located near the box A. Said device comprises a wooden cone *g* which rotates under the influence of a small electric motor or clock-work *h*, of which the number of revolutions and the modes of transmission as well as the shape of the insulating strip are calculated so that the circumference of the base of the cone corresponds to about 18 seconds, while the apex or point corresponds to 6 seconds. The clock-work transmits rotation to the cone by belt pulleys *h<sup>2</sup>*, *h<sup>3</sup>* and belt *h<sup>4</sup>*. Said cone *g* is covered with a copper plate, except at *i*, which is an insulating part; said plate is used for the reception of the current, which is brought by a friction conductor *j*. One of the two brushes *k k<sup>1</sup>* which press continually on the cone *g* sends the pressure current to the pressure electro-magnets *e*, and the other to the lamps C.

If the cone is set in motion, the insulating part *i* being placed under the brushes *k k<sup>1</sup>*, the pressing cover E is raised by its springs, and the bromid paper, in a roll or cut in sheets, can be placed in its position. While the cone rotates, the copper plate which covers it comes into contact first with the brush *k* which sends the current in the electro-magnet *g* and the armatures *f* are attracted and the rubber pocket cover E presses the paper on the negative. The copper plate shortly after comes in contact with the brush *k<sup>1</sup>*, and the lamps C become ignited so as to impress the paper, while the cone continuing its rotation, the brush *k<sup>1</sup>* touches first the insulating material *i*, the lamps are extinguished, the brush *k* enters into contact with said part *i*, the current no longer passes



through the electro-magnet *e*, the tray E is lifted and the printed paper can be drawn forward.

By the foregoing, it will be seen that the ignition of the lamps C must take place shortly after the electro-magnets come into operation and cease a little before. That is why the two friction contacts or brushes are placed on the same line side by side in an insulating block *m*, while the brush which is intended for the pressure is placed towards the base of the cone. Each brush is connected by a trolley spring *n* in order to avoid any interruption in the current, and said trolleys are themselves connected one with the circuit of the lamps and the other with the circuit of the pressure electro-magnets.

In order to vary at will the duration of the burning of the lamps, according to the negatives to be printed and the rapidity of the paper used, the block *m* carrying the friction conductors *k k*<sup>1</sup> is made movable. For this purpose it forms a nut on a screw *o*, which can be rotated by means of a hand wheel *p*; the block *m* carries a pointer *m*<sup>1</sup>, which is capable of displacement along a graduated index *q* which makes it possible to regulate exactly the time of exposure.

The insulating surface *i* of the cone *g* should correspond to a period of about 5 seconds, such time being considered necessary to draw the paper forward, the time for ignition at the smaller end of the cone may be 1 second and extend to 12 seconds at the larger end. If a period of 5 seconds appears too long or too short, according to the skill of the operator, for the manipulation of the sensitized paper, it may be altered, either by reducing the insulating surface, or by altering the speed of rotation of the cone.

A modification of the distributor is shown in Figs. 8 and 9. It is based on the same principle as the distributor above described and consists of a circular wooden plate *g*<sup>1</sup> where the wooden and copper surfaces *g*<sup>13</sup>, *g*<sup>14</sup> respectively are alternated at regular intervals; the copper plates receive the current either through a friction contact *j*<sup>12</sup> placed on the edge of the disk, or through the center at *j*<sup>14</sup>.

In Figs. 8 and 9, the block *m*<sup>11</sup> carrying the friction conductors *k*<sup>11</sup> *k*<sup>12</sup> constitutes a nut working on the screw *o*<sup>11</sup>, which can be rotated by a hand wheel *p*<sup>11</sup>. The bromid paper which is to be used for printing the negatives may be made of sheets cut beforehand, but it is preferable to use it in rolls and to cut the paper after the printing. With this in view, the back of the apparatus is provided with two supports provided with bearings *r* in which is placed the rod *s* which passes through the mandrel of the roll. In order that the roll may be properly fixed at the right point on the rod, the latter has two movable wedges *t* which enter the ends of the

mandrel and are held in position by binding screws. The movable part *b* of the box A carries a metallic rod *u* provided with two movable screws which assume the desired position according to the width of the paper used, and serve as guides for preventing it from going to the right or the left. The front edge of the cover E is provided with two perforating points *v*, horizontally movable, corresponding to the counterparts *v*<sup>1</sup>, also movable, secured to the front of the box A; punctures made by these parts at each descent of the pressing plate E, serve as guide marks for the subsequent cutting of the paper. Such cutting can be effected immediately after the impression, by means of a cutter *w* operated by a treadle and mounted on a support *x* on which it can be moved forward or backward at will. This support receives a bar *y* provided with two small metallic rods corresponding to the perforating points, the bar being capable of being brought forward or backward on the support *x*. The cutter may be omitted or replaced by a device which would hold the paper in rolls, such paper would then be cut at the desired points as required.

For the easy removal of the cover E the rod C may be constructed, as shown in Fig. 6, with a pivoting part *z* which may be made to go into the rod for the purpose of removing the cover. The springs which raise the cover may be replaced by a system of counter weights or any other analogous arrangement. It is obvious that the arrangement of cover and lamps shown in Figs. 2 and 3 can be inverted, *i. e.*, the lamps may be located on the upper part and the paper will pass on the bottom of the box A.

I claim:—

1. The combination of a box, a cover normally held raised therefrom, an air cushion fixed to said cover and adapted when drawn down to press the paper upon a negative, electro-magnets for operating the cover, electric lamps within the box, and a distributor of electric current adapted to operate the lamps and the said electro-magnets as set forth.

2. The combination of a box, a cover, and compression springs arranged to normally hold the cover raised from the box, an air cushion fixed to the said cover and adapted when drawn down to press the paper upon a negative, electro-magnets for operating the cover, electric lamps within the box, and a distributor of electric current adapted to operate the lamps and the said electro-magnets as set forth.

3. The combination of a box, a cover normally held raised therefrom, an air cushion fixed to said cover and adapted when drawn down to press the paper upon a negative, electro-magnets for operating the cover, electric lamps within the box, and a distrib-

uter of electric current adapted to operate the lamps and the said electro-magnets, said distributor comprising a truncated cone covered with a metallic conductor movably arranged brushes bearing on the cone, a strip of insulating material arranged on the cone longitudinally from the base towards the apex to produce varying durations of con-

ductivity according as the brushes are moved towards the base or the apex of the cone.

In testimony whereof he affixes his signature in presence of two witnesses.

ADRIEN COTTILLON.

Witnesses:

HUNSEN A. WARD,

EDMOND LECONTWIER.