(No Model.)

F. MORAND.

KINETOGRAPHIC CAMERA.

No. 590,766. Patented Sept. 28, 1897.

Fig. 1.

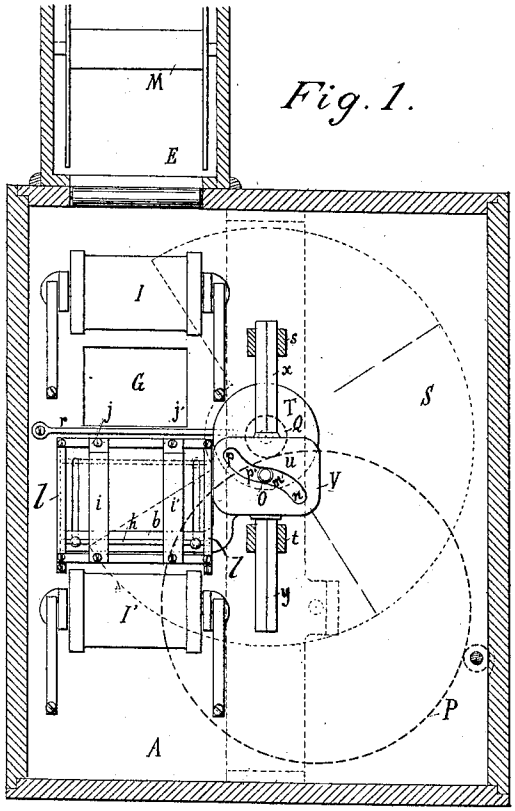


Fig. 2.

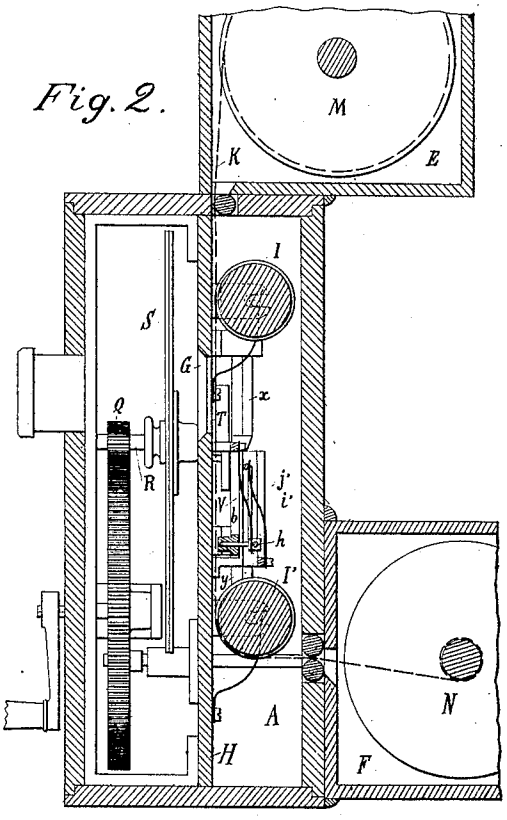


Fig. 3.

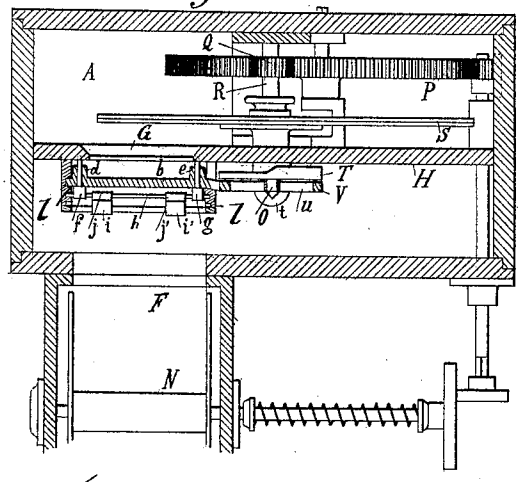


Fig. 4.

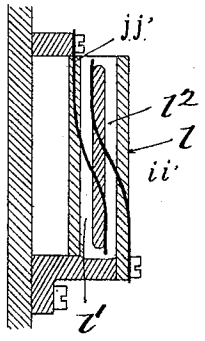
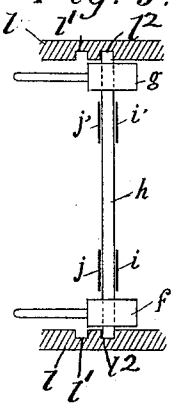


Fig. 5.



Witnesses

A. D. Maddox

A. L. Melvish

Inventor

François Morand,

by his Attorney A. D. Maddox

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANÇOIS MORAND, OF AIX-LES-BAINS, FRANCE.

KINETOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 590,766, dated September 28, 1897.

Application filed February 16, 1897. Serial No. 623,753. (No model.)

To all whom it may concern:

Be it known that I, FRANÇOIS MORAND, a citizen of the French Republic, and a resident of Aix-les-Bains, France, have invented certain new and useful Improvements in Apparatus for Obtaining and Exhibiting Chronophotographs, of which the following is a specification.

The construction of this apparatus is shown in the annexed drawings.

Figure 1 is a vertical sectional view of the apparatus. Fig. 2 is a transverse sectional view. Fig. 3 is a horizontal cross-sectional view. Figs. 4 and 5 are detail views of parts.

The apparatus as arranged for taking the photographs is composed of a box A, in which the mechanism is arranged.

E is the box containing the sensitive pellicle or film.

F is a box in which the exposed pellicle is rolled up in proportion to its movement.

H is a plate carrying the principal parts of the mechanism.

I I′ are rollers for guiding the pellicle along the plate.

The pellicle K, starting from the roller M, is partly rolled at each action of the mechanism upon the roller N and passes before the window G in the plate.

The mechanism is composed of a wheel P, operating by means of a pinion Q a shaft R, which carries the screen S. At the extremity of this shaft is fixed a plate T, which carries a crank-pin O, the total displacement of which corresponds to the height of the picture to be produced. The screen S may be a transparent disk of mica or any other material and is cut away for about a quarter of its circumference. It is formed of or carries three colored sectors, of which the sum with equal quantity and radiations gives white light on the rotation of this disk. The first quadrant is red-orange. The second quadrant is green-yellow, and the third quadrant is blue-violet. This disk allows in its rotation the change of the pictures without the retina undergoing any absolute suppression of the light in any one of the periodical actions of the movement. This avoids scintillation. The same disk can serve for obtaining negative photographs by varying the size of the cut. A curved slot u is provided in a plate V, carrying two rods X and y, guided by supports s and t, fixed upon the plate. The curve is so traced as to give at the start and the end of each course a stoppage allowing the engaging and the disengaging of the pins which produce the displacement of the pellicle for an equal and regular quantity at each turn of the crank-pin. Upon the plate V is an arm b, carrying two nipples d e, through which are holes which serve as guides for the pins f g, connected by the rod h. The pins f g follow, therefore, the movement of the arm b. These pins are pushed outward for engaging the film by two springs i i', and for the disengagement at the end of the course they are pushed back by the two springs j j'.

Referring to Figs. 4 and 5, the two side plates or guides l l, in which the arm b is guided, are provided also each with two parallel grooves l' l^2, communicating with each other at their upper and lower ends. In these grooves l' l^2 are guided the ends of the rod h.

Each course of the apparatus is as follows: The plate V with its arm b being at the top of its course, the rod h will lie with its extremities engaged in the grooves l', provided on the sides of the lateral cheeks guiding the arm b. The rod h, carrying the two pins, is therefore at the top of its course and has been pushed by the two springs i' i so that the pins f g penetrate into the holes provided along the sides of the pellicle. While this engagement is effected the crank-pin O is passing in the curve n the concentrical part m n, which provides a dead-point. As soon as the engagement is effected the carriage V sinks the whole length of its course, and thus displaces the pellicle, while the screen S covers the window. At the end of the course the springs j j' push the rod h with the pins f g back during the movement of pin O in the part p p' of the slot, and the mechanism rises again while the section of pellicle uncovered by the screen S is exposed or in view, and so on. A small spring r is caused to press on the pellicle by means of the cam-face which the back of the plate T forms while the picture is stationary.

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

1. In means for taking and exhibiting chronophotographs, the combination with means for guiding a pellicle of guides *l* each having connected grooves *l' l²* with a rod *h* having its ends engaging in the grooves of the guides *l*, springs *i i'* and *j j'* for transferring the rod from each groove to the other, pins on said rod *h* for engaging the pellicle while said rod *h* is in the grooves which are nearer the pellicle and means for reciprocating the rod in direction of the movement of the pellicle for the purpose set forth.

2. The combination of a rotary shaft, a crank-pin O, a plate V with slot *u* for engagement of said pin, means for rectilinear guiding of said plate, an arm *b* on said plate, perforated nipples *d e*, pins *f g* loose in said nipples, a rod *h* carrying said pins and means for approaching said rod *h* to the arm prior to movement of the latter in one direction, and withdrawing it therefrom prior to movement thereof in the reverse direction for the purpose set forth.

3. The combination with a window and means for causing a pellicle to pass across said window, of a screen adapted to revolve in a center laterally of the window the said screen having a sector-shaped recess and having the remainder composed of transparent colored sectors, the sum of the colors of which with equal quantity and radiation are equivalent to white light.

In witness whereof I have signed this specification in presence of two witnesses.

FRANÇOIS MORAND.

Witnesses:

PAUL BROCARD,

MARIUS VACHON.