

No. 610,560.

Patented Sept. 13, 1898.

A. F. PARNALAND.
KINETOGRAPHIC CAMERA.

(Application filed July 8, 1896.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 2.

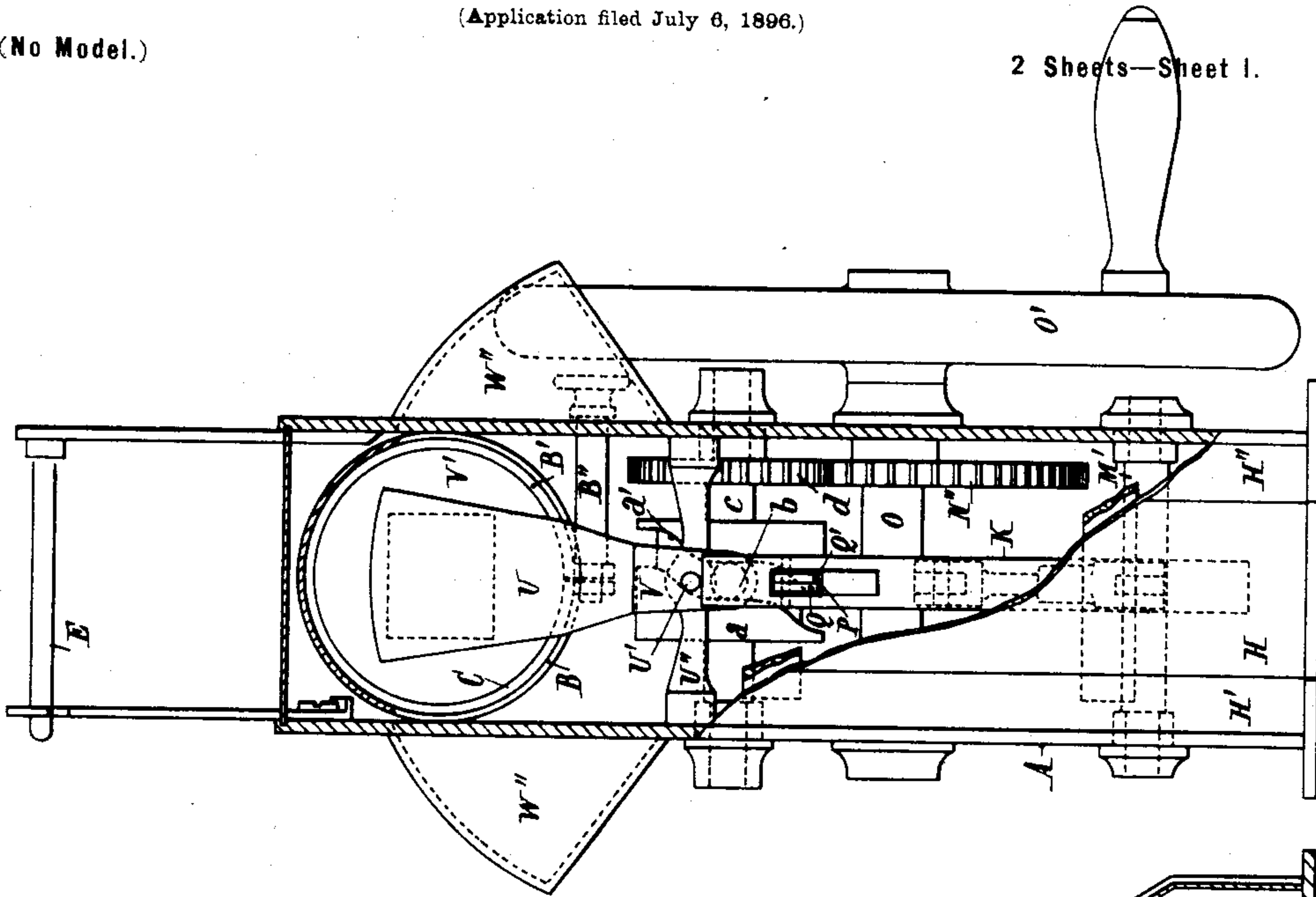
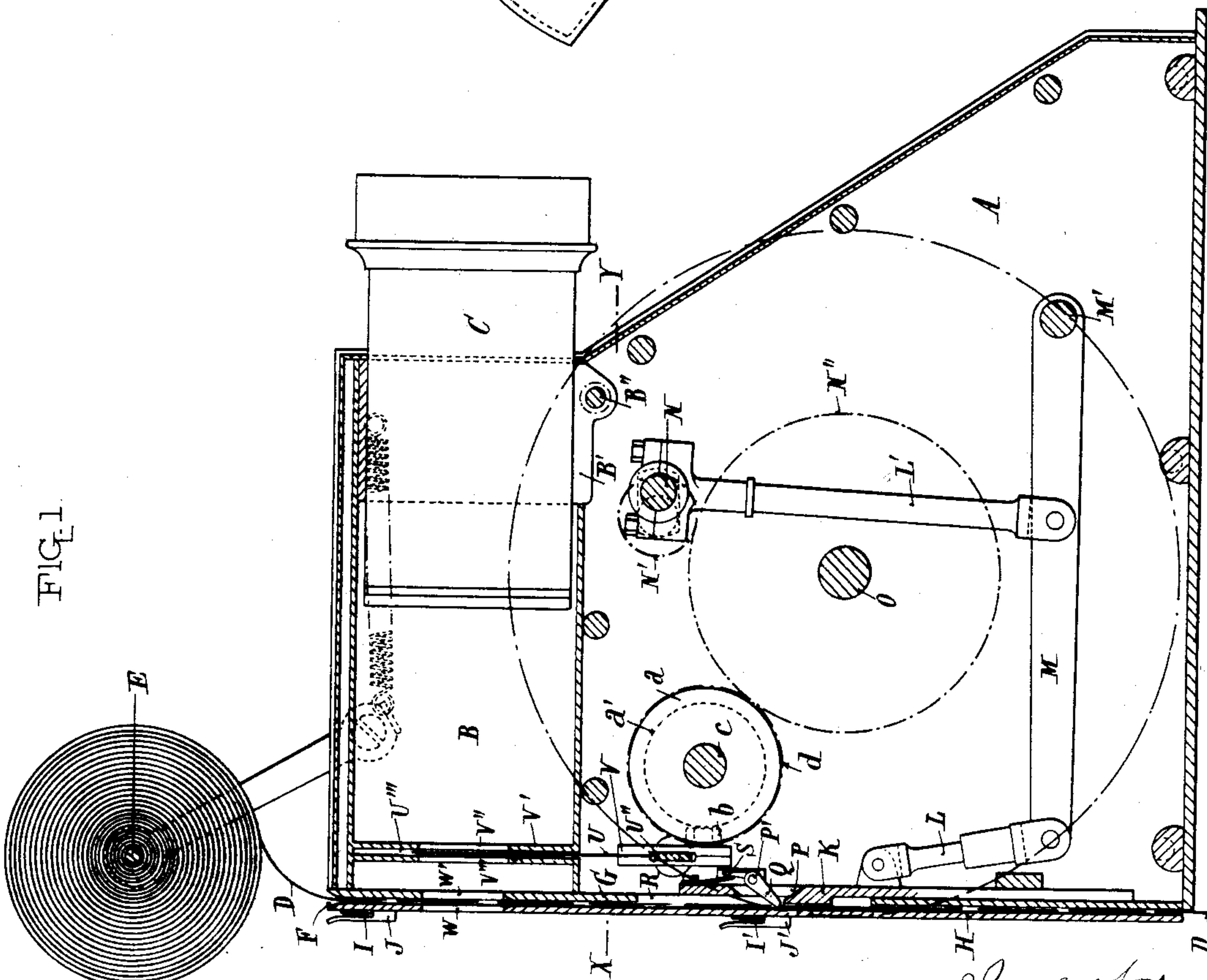


FIG. 1.



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No. 610,560.

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A. F. PARNALAND.
KINETOGRAPHIC CAMERA.

(Application filed July 6, 1896.)

(No Model.)

2 Sheets—Sheet 2.

FIG. 4.

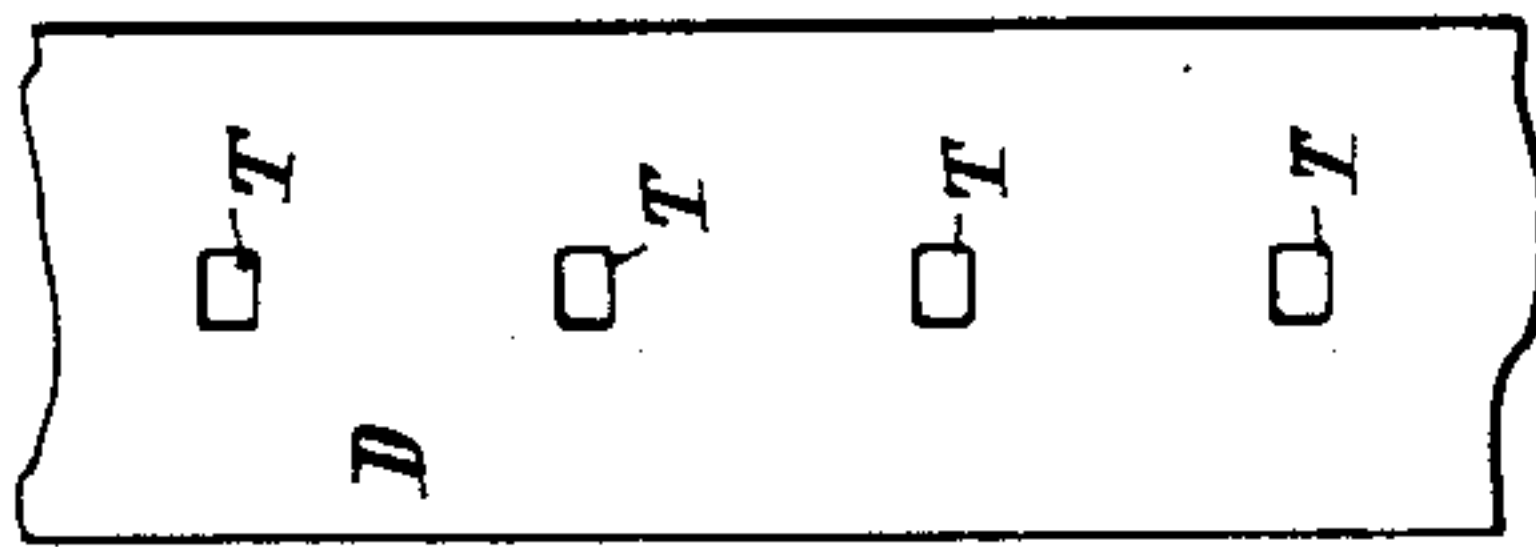
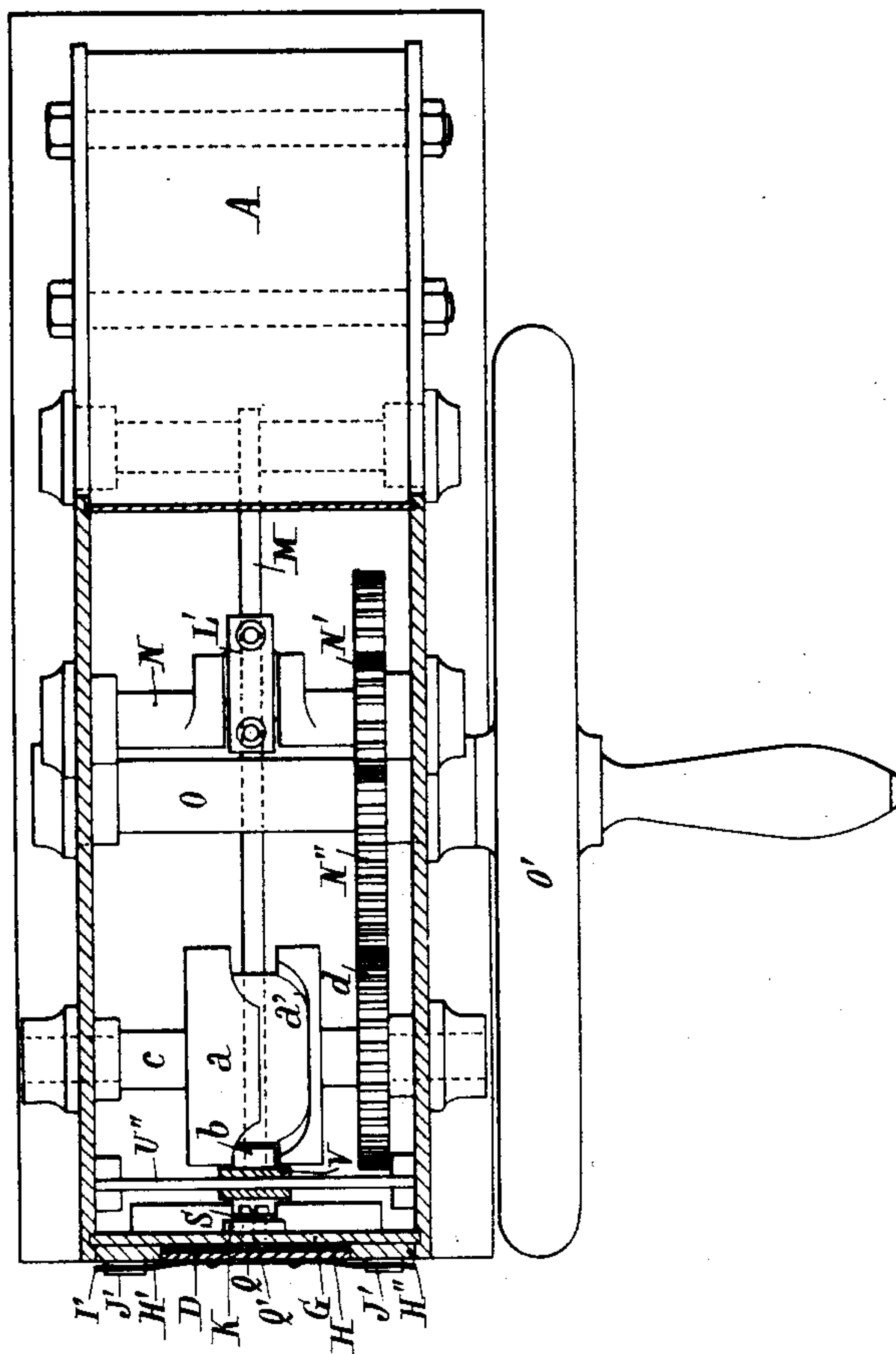


FIG. 3.



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UNITED STATES PATENT OFFICE.

AMBROISE FRANÇOIS PARNALAND, OF PARIS, FRANCE.

KINETOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 610,560, dated September 13, 1898.

Application filed July 6, 1896. Serial No. 598,152. (No model.) Patented in France June 9, 1896, No. 257,089.

To all whom it may concern:

Be it known that I, AMBROISE FRANÇOIS PARNALAND, a citizen of the Republic of France, residing at Paris, France, have invented certain new and useful Improvements in or Relating to Apparatus for Use in Receiving and Projecting Photographic Images, (for which Letters Patent have been obtained in France, No. 257,089, dated June 9, 1896,) of which the following is a full, clear, and exact description.

The apparatus forming the object of the present application is for use in photographing animated scenes and for subsequently projecting them.

Its construction and mode of operation will be better understood by reference to the accompanying drawings, in which—

Figure 1 shows the apparatus in vertical longitudinal section; Fig. 2, rear elevation, a part of the cover being broken off to allow the inner mechanism to be seen. Fig. 3 is a plan of the same in horizontal section on line X Y of Fig. 1.

The mechanism of the apparatus is inclosed in a casing A, the lateral sides of which, strengthened by cross-stays and the back plate, support the different parts. At the upper part of this casing is placed longitudinally a fixed tube B, in which the objective C (for photographing or projecting) is held toward the front and may be fixed in any adjusted position.

The film D is unwound from an upper transverse spindle E and descends into a passage or guide F, formed between the outer surface of the back plate G of the casing A and the inner surface of a movable plate H, held between two upright bars H' H'', carried by the plate G, by means of spring-blades I I', fitted on the latter in supporting-hooks J J', carried by the upright bars H' H''. The plate H, held in the manner described, being pressed by the springs I I', presses the film slightly in its guide F, thus insuring its proper guidance by the mechanism hereinafter described.

On the inner face of the plate G, and in the direction of its vertical axis, is arranged and works a slide K, the vertical reciprocating motion of which is caused by the combination of two connecting-rods L L', articulated at

their lower ends to the lever M, oscillating upon a shaft M', while the upper end of the rod L is connected to the slide K, and the upper end of the rod L' is connected to a crank-shaft N, the rotation of which (N) is caused by means of an intermediate pinion N', keyed on the crank-shaft and driven by a toothed wheel N'', keyed on the driving-shaft O, driven from outside the casing A by means of a hand-wheel O''.

At a certain distance from its upper extremities the slide K is provided along its vertical axis with an opening P, in which work side by side two pawls Q Q', which are mounted so that they can oscillate upon a spindle P', carried by the slide K. The lower ends of these pawls pass through the opening P of said slide K and pass against the film D, the plate G being provided for that purpose with a corresponding opening R, enabling the pawls Q Q' to pass through and to move, these pawls taking part in the reciprocating vertical motion of the slide K. The upper branches of the pawls Q Q' are under the influence of the spring S, which acts so as to keep their lower extremities pressed against the film D, which, as can be seen from Fig. 9, is provided along its longitudinal axis, corresponding exactly to the vertical axis of the slide K, with horizontal holes I, the lower edges of which are intended to cooperate with the pawls Q Q', as will be later explained.

The distance separating the lower edges of two consecutive holes T is equal to the length through which the film has to move in order to present each view or scene which it carries or each place for views which it has to carry exactly opposite the objective C for photographing or for projecting. The result of such arrangement is that the reciprocating vertical movement of the slide K, caused by the continuous rotation of the hand-wheel O' in one direction, will produce reciprocating movements of pawls Q Q', the ends of the lower branches of which being always pressed against the film D will slide on the latter and under the pressure of the spring S pass through the holes T as soon as the lower edge of said holes comes to their level. The movements of these different parts are so combined that the downward movement of

the slide K, and consequently of the pawls Q Q', takes place when the lower ends of the latter have entered into the corresponding hole T, engaging its lower edge, so that in their downward movement the said ends of the pawls Q Q' press against that lower edge and cause the film to move downward during the time that the slide K moves downward. When the upward movement of the slide K begins, the pawls Q Q' slide in their upward movement along the film D, oscillating and passing over the upper edge of the hole T, on the lower edge of which these pawls had previously been acting, and at the end of the upward movement they occupy the same relative place as before to the lower edge of the following hole T in order to cause the film D to move down again.

It is clear from the preceding that to the downward movement of the slide K, and consequently to the downward movement of the pawls Q Q', will correspond the downward movement of the film D and that during the upward movement of the same parts the film will remain stationary. These movements being successive and alternate, the result will be that the film will be successively and alternately moved and stopped, which constitutes the working of the apparatus. In combination with these movements of the film D mechanism is employed to cover the objective C when the film is moving and to uncover it again when the film is stationary. This covering mechanism is substantially constituted by a plate U of a sufficient width which oscillates behind the objective, in a plane parallel to the latter, upon a spindle U', carried by a cross-bar U'', supported by the sides of the casing A, and on which is mounted the support V of said plate U.

The upper part of the plate U, passing through a slot U''' of the tube B, works inside the latter in a frame V', with which said tube is provided and which has two apertures V'' V''', corresponding exactly on one hand to the objective C and on the other hand to the apertures W W', with which the plates G and H are respectively provided.

To insure to the plate U the full extent of its alternate oscillations to the right or to the left of the objective necessary to allow of the objective being successively and alternately covered and uncovered, the sides of the casing A have openings provided with sheaths W'' to allow the plate U to be sufficiently moved without the risk of letting light into the apparatus. The movement of the plate U is produced by a circular cam *a*, in the cam-groove *a'* of which is a roller *b*, carried by the support V of said plate U on its spindle U' under the latter. The shape *a'* of the cam *a* is so designed as to cause the plate U to stand still exactly when the objective is closed, as shown in Figs. 1, 2, and 3, and to oscillate to the right or to the left in order to uncover the said objective. These movements are combined with those of the film D

in such manner that when the latter is stationary the objective is uncovered and when the film moves the objective is closed.

The cam *a* is keyed on a transverse shaft *c*, which is caused to rotate by a pinion *d*, driven by the main wheel N'' on the driving-shaft O, the necessary ratio of the gearing being provided.

When the apparatus is to be used as a projecting apparatus, the aperture W will be open and behind it will be suitably disposed the luminous source for projection, while when the apparatus is to be used for photographing the aperture will be closed by any suitable device. In this latter case the film D will be suitably inclosed and its entering and leaving the apparatus must take place without being exposed to the outer light.

In order to insure absolute immobility of the objective C in its adjusted position, the tube B is combined with a split collar B' with a tightening-screw B'', which collar B' compresses the objective-tube C in such manner that vibrations and shocks which might be caused by the great speed of the working of the apparatus cannot move it or alter its adjusted position.

I claim—

1. In an apparatus of the character described, the combination with a casing, and a vertically-arranged plate forming between it and the back plate of the casing a guide-passage for the film, of a slide K arranged upon the inner side of the back plate and adapted to reciprocate vertically, pawls pivotally connected with the slide, and springs acting upon the pawls to cause their free ends to normally project into the film-passage, and engage perforations in the film when the slide is moving downwardly and thereby move the film correspondingly, and said pawls adapted to free the perforations of the film when the slide is moving upwardly to permit the film to remain stationary during such movement.

2. In an apparatus of the character described, the combination with a casing, and a vertically-arranged plate forming between it and the back plate of the casing a guide-passage for the film, of a slide K arranged upon the inner side of the back plate and adapted to reciprocate vertically, and being provided with an opening, pawls pivotally connected with the slide and projecting through said opening in the slide and through an opening in the back plate, springs acting upon the pawls to cause their free ends to normally project into the film-passage, and engage perforations in the film when the slide is moving downwardly and thereby move the film correspondingly and said pawls adapted to free the perforations in the film when the slide is moving upwardly to permit the film to remain stationary during such movement.

3. In an apparatus of the character described, the combination with a casing, and a vertically-arranged plate forming between it and the back plate of the casing a guide-

passage for the film, the said vertically-arranged plate being movably supported, and springs bearing thereupon to cause the same to yieldingly bear upon the film, of a slide K
5 arranged upon the inner side of the back plate and adapted to reciprocate vertically, pawls pivotally connected with the slide, and springs acting upon the pawls to cause their free ends to normally project into the film-
10 passage, and engage perforations in the film when the slide is moving downwardly and thereby move the film correspondingly, and said pawls adapted to free the perforations of the film when the slide is moving upwardly
15 to permit the film to remain stationary during such movement.

4. In an apparatus of the character described, the combination with a casing, and a vertically-arranged plate forming between
20 it and the back plate of the casing, a guide-passage for the film, of a slide K arranged upon the inner side of the back plate and adapted to reciprocate vertically, pawls pivotally connected with the slide and springs
25 acting upon the pawls to cause their free

ends to normally project into the film-passage and engage perforations in the film when the slide is moving downwardly and thereby move the film correspondingly and said pawls
30 adapted to free the perforations of the film when the slide is moving upwardly to permit the film to remain stationary during such movement, an objective arranged within the casing and means operating to cover the ob-
35 jective when the film is being moved and to uncover the objective when the film is stationary, all as and for the purposes specified.

5. The combination, with a casing and the oscillating shutter or plate, of a support for said plate, a roller on said support, and a
40 rotatable disk or roller having a cam-groove within which the roller on the support engages all for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of the two subscrib-
45 ing witnesses.

AMBROISE FRANÇOIS PARNALAND.

Witnesses:

LOUIS SULLIGER,
EDWARD P. MACLEAN.