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KINEMATOGRAPH AND LIKE INSTRUMENT.  
APPLICATION FILED NOV. 8, 1907.

939,135.

Patented Nov. 2, 1909.

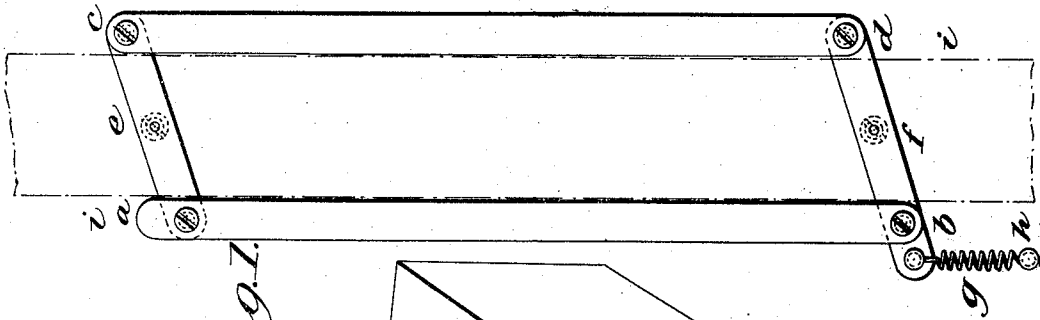


Fig. 1.

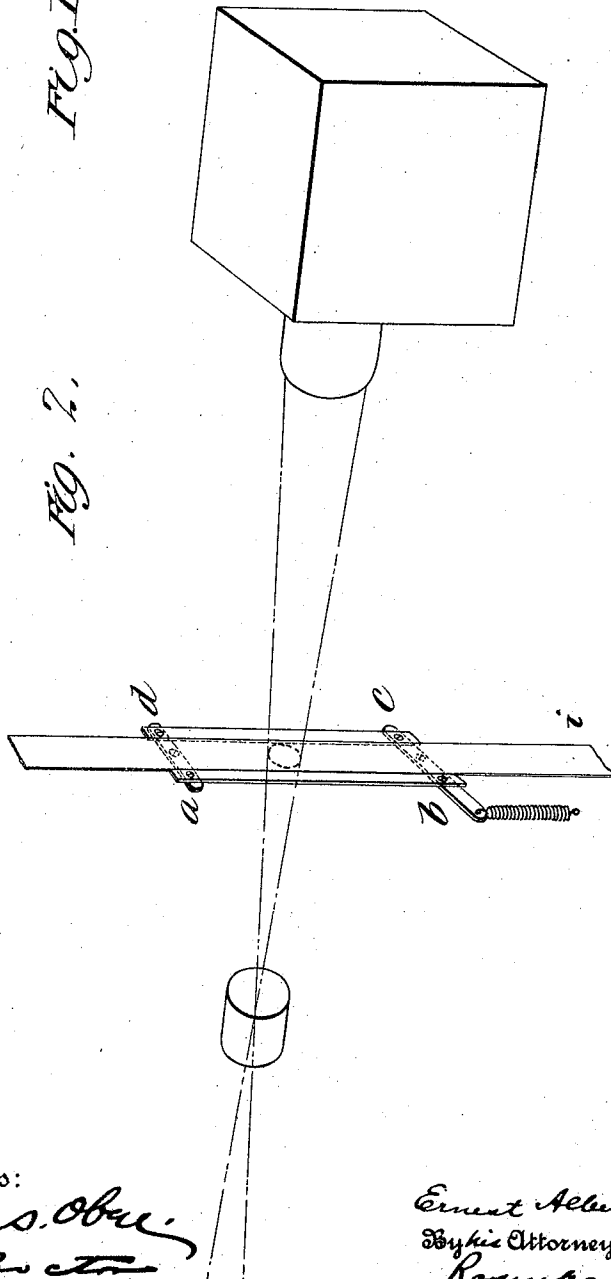


Fig. 2.

Witnesses:  
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By his Attorneys  
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# UNITED STATES PATENT OFFICE.

ERNEST ALBERT IVATTS, OF PARIS, FRANCE, ASSIGNOR TO COMPAGNIE GENERALE DE PHONOGRAPHES CINEMATOGRAPHES ET APPAREILS DE PRECISION, OF PARIS, FRANCE.

KINEMATOGRAPH AND LIKE INSTRUMENT.

939,135.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed November 8, 1907. Serial No. 401,228.

To all whom it may concern:

Be it known that I, ERNEST ALBERT IVATTS, citizen of Great Britain, residing at Paris, in the Department of the Seine, Republic of France, have invented new and useful Improvements in and Relating to Kinematographs and Like Instruments, of which the following is a specification.

The present invention has for its object a special arrangement for the centering of the band and its application to apparatus used in the kinematographic industry.

With the usual apparatus the band carrying the pictures runs in a groove which is primarily intended for the lateral guidance of the band, and so by this means to decrease the vibrations of the pictures. Theoretically the groove should be very close in width to that of the band, but in practice, the bands at present used vary considerably in width and it is necessary to give the groove a width sufficient to avoid catching the band; the result is that the latter is often free to move sidewise, the extent of the movement being, it is true, small, but, on account of the enlargement by optical projection this produces very large movements of the projected picture.

The arrangement forming the subject of this invention has for its object to obviate the play between the groove and the band, while insuring the perfect coincidence of their longitudinal axes. To effect this centering of the band, the mechanical properties of a parallelogram jointed at its four angles are used. It is known that in its movements this system always keeps its sides parallel one to the other. This invention is illustrated in the accompanying drawing.

Figure 1 is a front view of a centering apparatus embodying the principles of my invention. Fig. 2 is a perspective view showing the same applied to a kinematograph.

Let  $a b c d$  be a parallelogram jointed at its four angles  $a b c d$  and let  $e$  and  $f$  be the centers of the sides  $a c$  and  $b d$ ; the two longer sides  $a b$  and  $c d$  will form the edges

of a groove of variable width having for its axis the line  $e f$ . This axis is made immovable by fixing the short sides  $a c$  and  $b d$  by their centers to the base of the instrument by means of suitable axes  $e f$ ; a spring  $g$  suitably fitted tends to constantly bring together the two sides  $a b$  and  $c d$  and consequently to narrow the groove  $i$ . If a band of variable width is now imagined moving in the groove thus formed it will be seen that the middle axis of this will coincide perfectly at all times with the fixed axis  $e f$  of the groove, and furthermore all side play will be overcome by the action of the spring  $g$ . This arrangement may also be applied to the perforating apparatus for the bands as well as to the kinematographic apparatus properly so-called producing the analysis or the synthesis of the movement, and in general to all apparatus utilized in the kinematographic industry and necessitating the exact running of one or more bands.

Having now described this invention what I claim and desire to secure by Letters Patent is:—

A frame for guiding the movable film or band of a kinematograph in properly centered relation, comprising a jointed structure of parallelogram formation having two of its opposite sides pivoted at their center to a fixed support, and a tensile spring attached at one corner of the parallelogram deflecting said pivoted sides of the structure toward a more acute angle with the length of said film or band, whereby the other two sides of the parallelogram are caused to contact with both edges of the film or band and maintain the same constantly centered, regardless of a varying width.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ERNEST ALBERT IVATTS.

Witnesses:

HENRY DANTER,  
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