N° 6793 A.D. 1899

Date of Application, 29th Mar., 1899—Accepted, 13th May, 1899

COMPLETE SPECIFICATION.

Improvements in Moving Pieture or Consecutive View Apparatus.

I, WILLIAM KENNEDY LAURIE DICKSON, of 18 and 19, Great Windmill Street, near Piccadilly Circus, London, Gentleman, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and as ascertained in and by the following statement:—

My invention relates to moving picture or consecutive view apparatus, and consists in the use, in connection with mechanism for feeding a film, picture strip, or other view carrier, through a field of view, illumination, or exposure, of a prism of variable angle located in the optical axis and mechanism for varying the angle of said prism in such manner that although the film or other view carrier is moving constantly through the field of the apparatus, it is held optically stationary, at intervals, with respect to the lens or point of view. The effect of an intermittently moving view carrier, which is stationary during the periods of exposure, is thus obtained, without the disadvantages incident to intermittent or irregular movement of the view carrier, such as vibration of the view carrier and apparatus, producing indistinctness of the picture, and, if the view carrier be a film or picture strip, strain upon and wear of such strip. And my invention further consists in the novel combination, construction, and arrangement of the parts of the apparatus.

The objects of my invention are, to improve and simplify that type of consecutive view apparatus in which the film or view carrier moves continuously, and in which means are employed for causing the rays of light to move in accordance with the movement of the view carrier, during the intervals of exposure or illumination, so that during such intervals the film or view carrier, although moving continuously, is optically stationary with reference to the lens or the point of view; and also to make the apparatus as simple and compact as possible, not liable to derangement, and easily operated.

These objects are attained in the invention herein described and illustrated in the drawings which accompany and form a part of this specification, in which the same reference numerals indicate the same or corresponding parts, and in which:—

Figure 1 is a side elevation of the mechanism of the apparatus, the enclosing case being sectioned; and Figure 2 is a detail view, looking from the right of Figure 1, of the prism of variable angle, the cam, and the connections by which the sections of said prism are vibrated as the cam revolves.

The apparatus shown in the drawings is adapted for the use of a long flexible film as a view carrier. But other types of view carriers may be used instead. The apparatus shown is a projecting apparatus (the lantern being omitted) but the same mechanism may be used in a camera, or in a direct vision reproducing apparatus.

In the drawing, 1 indicates a supply reel, and 2 a winding up reel. 3 is a driving shaft. 4 is a feeding roller, driven from the shaft 3 by a friction wheel 5

[*Price* 8*d.*]

and friction disk 6, the former being radially movable with respect to the latter, so that the rate at which the film is fed may be varied. 7 is an idler roller which holds the film against the feeding roller 4. The winding up reel 3 is driven by a belt 8 deriving its motion from a shaft 9 driven by gearing from the driving shaft 3. 10 is a guide roller for the film, and 11 and 12 are guide frames between which the film passes.

13 is the objective lens of the projecting apparatus. In rear of this lens is a prism of variable angle, 14, suitably supported, and consisting of two parts, 14^{I} and 14^{II}, each of which is a prism. The two parts 14^{I} and 14^{II} are mounted to rotate about the optical axis, and are provided with downwardly extending fingers 15, the ends of which enter cam grooves in a cam 16 mounted on the main driving shaft 3. When this shaft rotates, therefore, the prisms 14^{I} and 14^{II} rotate back and forth, in opposite directions, through arcs of circles, the effect of this being to alternately increase and decrease the angle between their adjacent surfaces. The "angle" if a prism of this character, composed of two separate parts, the outer surfaces of which are parallel, is the angle between the inner surfaces of the two parts of the prism; and the effect produced by such a prism is the same as though the prism were composed of but one part, the angle between the sides of which is the same as the angle between the adjacent surfaces of the parts of the composite prism.

The effect of the variation in angle of the prism 14, produced by the relative motion of the parts 14^{I} and 14^{II}, is to deflect the rays of light in such manner as to compensate for the movement of the film during the intervals of exposure, holding the pictures thereon optically stationary with reference to the lens 13 during such intervals of exposure, notwithstanding the movement of the film.

17 is the shutter disk upon the driving shaft 3. 18 is a condensing lens. 19 is a shifting lever by which the radial position of the friction wheel 5, with reference to the friction disk 6, may be varied, for the purpose of compensating for slipping or shrinkage of the film.

In the operation of the apparatus, as the shaft 3 rotates, the film is fed downward from the reel 1 and wound upon the reel 2, the belt 8 slipping to compensate for the gradually increasing diameter of the winding up reel. As the shaft 3 rotates the prisms 14^{I} and 14^{II} vibrate through arcs of circles, in opposite directions, thus varying the angle of prism 14, and deflecting the optical axis and the rays of light upward and downward alternately. During the upward movement of the optical axis the light is shut off from the lens 13; but during the downward movement, which is in the direction of motion of, and at the same speed as, the movement of the film, the shutter is open.

I do not limit myself to the details of construction and arrangement of the apparatus illustrated, but believe my invention to cover, broadly, the use of a prism of variable angle for holding a moving view carrier optically stationary with reference to a lens or point of view at intervals.

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

1. In a consecutive view apparatus, the combination, with means for feeding a view carrier through the field of the apparatus, of a prism of variable angle, and means for varying the angle of said prism in synchronism with the passage of sections of the view carrier through the field of view, whereby sections of said view carrier may be held optically stationary with reference to a fixed point during their passage through the field of the apparatus, substantially as described.

2. In a consecutive view apparatus, the combination, with film or strip feeding mechanism adapted to feed a flexible film or picture strip through the field of the apparatus, of a prism of variable angle, and means for varying the angle of said prism in synchronism with the passage of sections of the film or picture strip through the field of the apparatus, whereby sections of the film or strip may be

held optically stationary with reference to a fixed point during their passage through the field of the apparatus, substantially as described.

3. In a consecutive view apparatus, the combination, with means for feeding a view carrier through the field of the apparatus, of two prisms revolubly mounted and together constituting a prism of variable angle, and means for vibrating said prism about their centers of rotation, substantially as described.

4. In a consecutive view apparatus, the combination, with means for feeding a view carrier through the field of the apparatus, of two prisms revolubly mounted and together constituting a prism of variable angle, and means for vibrating said prisms in opposite directions about their centers of rotation, substantially as described.

5. In a consecutive view apparatus, the combination, with a main driving shaft, and mechanism for feeding a view carrier through the field of the apparatus, driven from said shaft, of two prisms revolubly mounted and together constituting a prism of variable angle, a cam deriving its motion from said driving shaft, and means operated by said cam for vibrating said prisms about their centers of rotation, substantially as described.

6. In a consecutive view apparatus, the combination, with means for feeding a view carrier through the field of the apparatus, of a prism of variable angle, means for varying the angle of said prism in synchronism with the passage of sections of the view carrier through the field of view, and a shutter, substantially as described.

7. The combination, with a movable object, of a prism of variable angle, and means for varying the angle of the prism in accordance with changes in the position of said movable object relative to said prism, whereby rays of light from said movable object will be held stationary during movement thereof, with reference to a fixed point, by the prism, substantially as described.

9. In a consecutive view apparatus, the combination, with view carrier feeding mechanism, of a prism of movable angle, and connecting devices, substantially as described.

Dated this 29th day of March 1899.

WILLIAM KENNEDY-LAURIE DICKSON.

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DICKSON'S Complete Specification.

2 SHEETS)

SHEET 1

SHEET 2

Fig. 1.

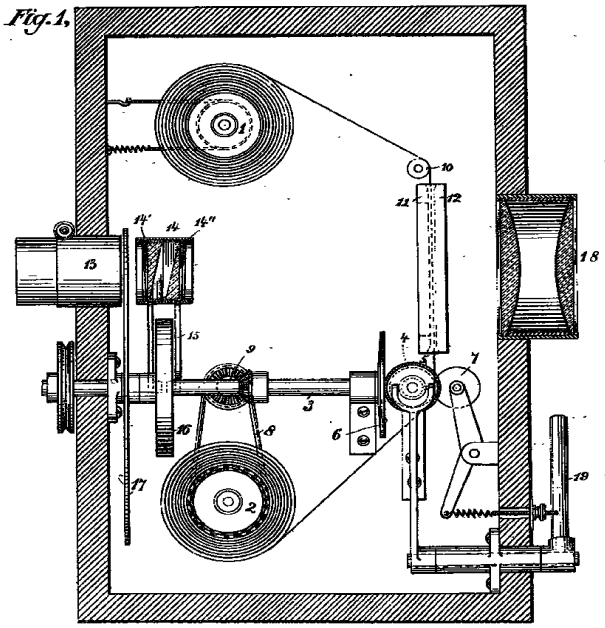
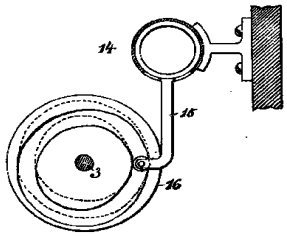


Fig. 2.



[This drawing is a reproduction of the Original, on a reduced scale.]

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Fig. 1.

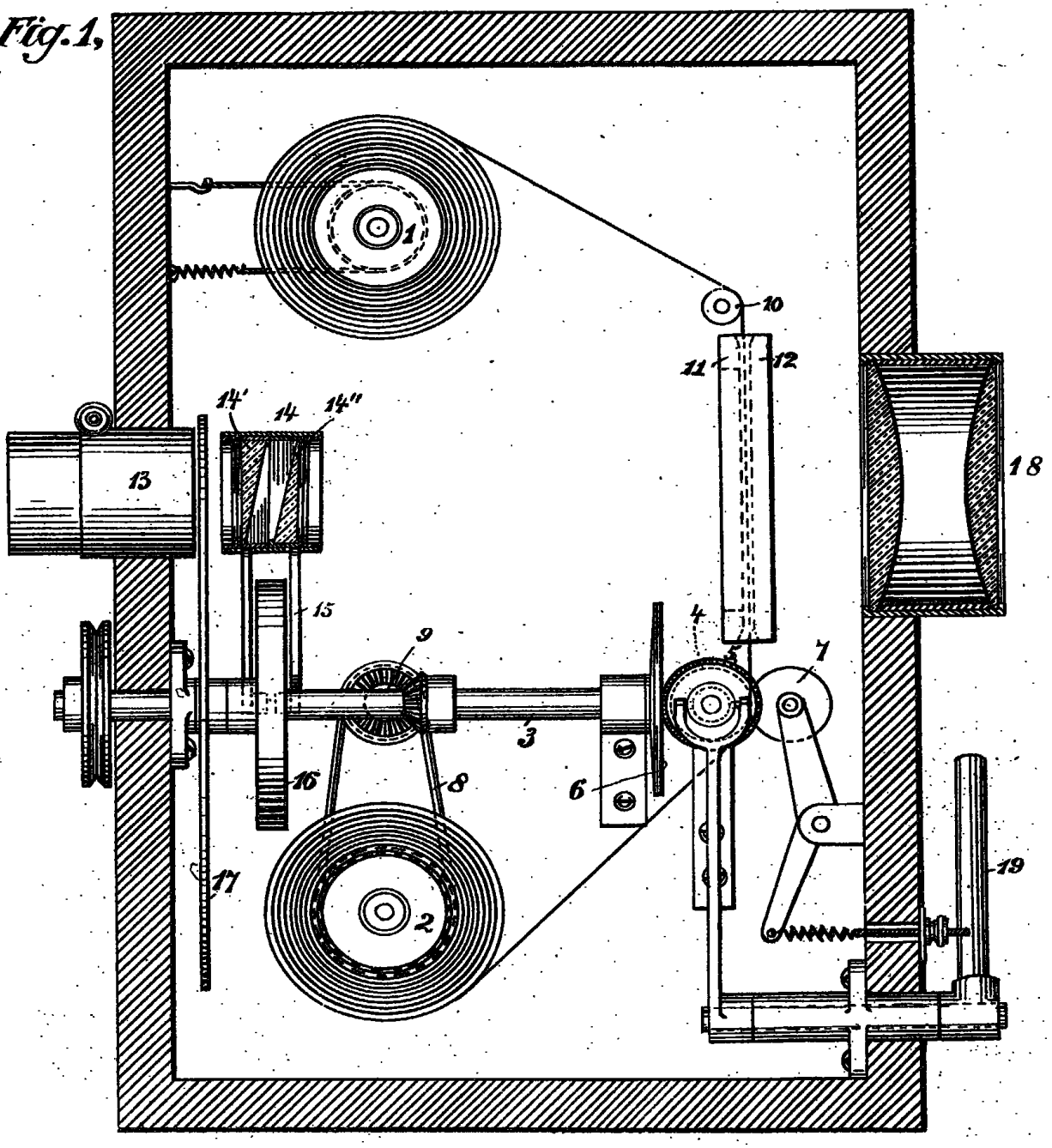
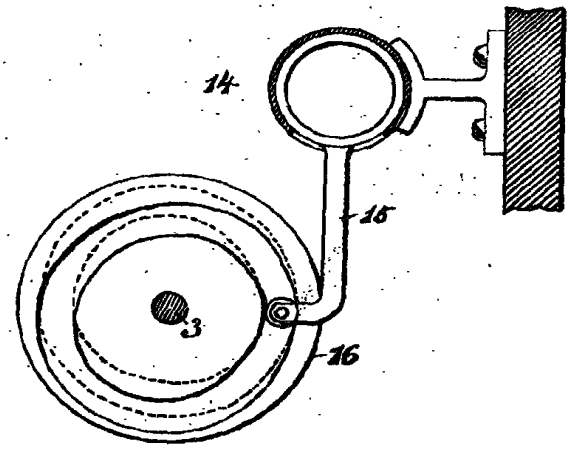


Fig. 2.



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