

No. 642,163.

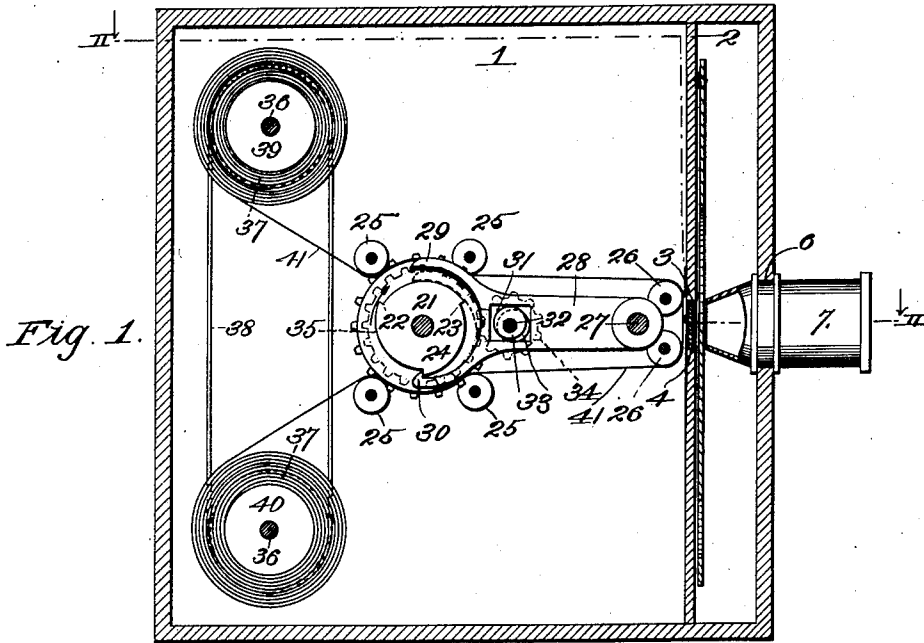
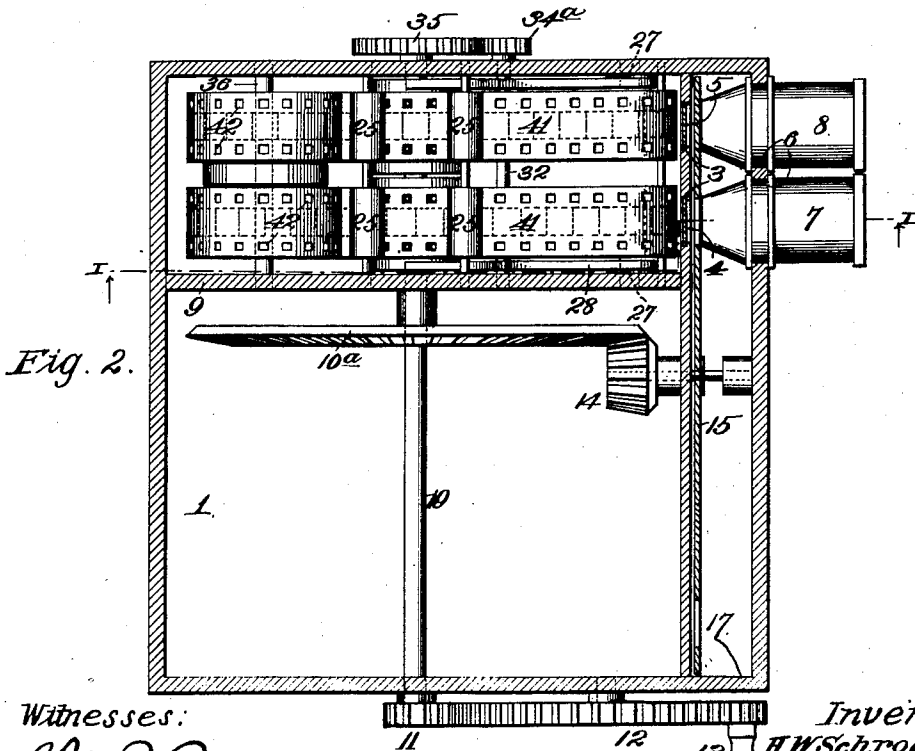
Patented Jan. 30, 1900.

H. W. SCHROEDER.  
KINETOGRAPHIC CAMERA.

(Application filed June 13, 1898.)

2 Sheets—Sheet 1.

(No Model.)



Witnesses:

P. M. R. Remy.  
J. S. Thresher.

Inventor

H. W. Schroeder.

By Higdon, Fischer & Skofe  
attys.

No. 642,163.

Patented Jan. 30, 1900.

H. W. SCHROEDER.  
KINETOGRAPHIC CAMERA.

(Application filed June 13, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 3.

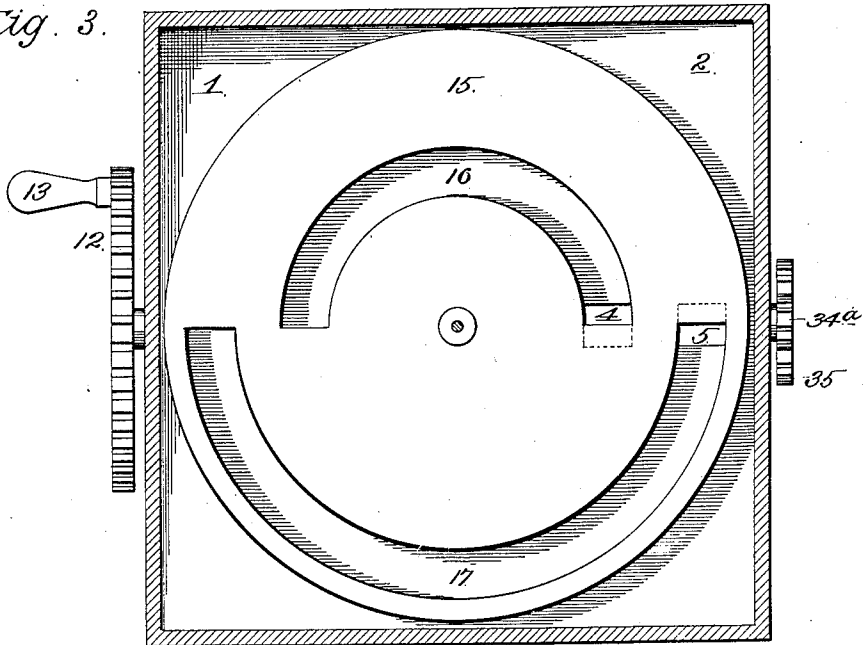


Fig. 4.

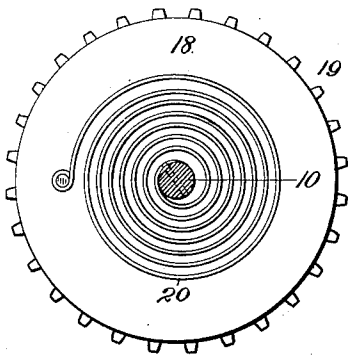
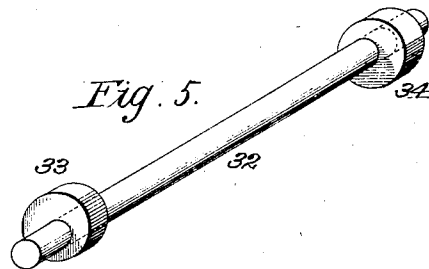


Fig. 5.



Witnesses:

M. R. Remley.  
F. S. Thacher

Inventor

H. W. Schroeder.

By Higdon, Fisher & Thorpe  
Attys.

# UNITED STATES PATENT OFFICE.

HOWARD W. SCHROEDER, OF KANSAS CITY, MISSOURI, ASSIGNOR TO THE  
EDISON AMERICAN PHONOGRAPH COMPANY, OF SAME PLACE.

## KINÉTOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 642,163, dated January 30, 1900.

Application filed June 13, 1898. Serial No. 683,807. (No model.)

*To all whom it may concern:*

Be it known that I, HOWARD W. SCHROEDER, of Kansas City, Jackson county, Missouri, have invented certain new and useful  
5 Improvements in Apparatus for Photographing Moving Objects, of which the following is a specification.

My invention relates to apparatus for taking  
10 photographs in rapid succession of a moving object, and more especially to that class by which the pictures are taken stereoscopically side by side; and the invention consists in certain novel and peculiar features of construction and combinations of parts, as will  
15 be hereinafter described and claimed.

The object of the invention is to generally improve this class of apparatus by mechanism which diminishes the speed of travel of the films, and thereby reduces chances of injury to the films, or disarrangement of the apparatus.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in  
25 which—

Figure 1 represents a vertical section taken on the line I I of Fig. 2. Fig. 2 represents a horizontal section taken on the line II II of Fig. 1. Fig. 3 represents a vertical section to disclose clearly the rotatable shutter. Figs. 4 and 5 represent detail views of parts to be hereinafter described.

In the said drawings, 1 designates the casing, in this instance rectangular, and 2 a vertical partition or diaphragm therein, having at one side of its center openings 3, arranged side by side and covered, preferably, with transparent windows 4 and 5, one being preferably tinted red and the other blue in order to add to the realistic effect produced upon the eye. In line with said windows the front of the casing is provided with openings 6, in which are mounted the usual photographic lenses 7 and 8.

9 designates a partition which divides the chamber in rear of the partition or diaphragm 2, and 10 a shaft extending through the same and also through the side walls of the casing, and mounted upon one end of said  
50 shaft is a small cog-wheel 11, meshing with a large cog-wheel 12, provided with a handle 13, by which it can be manually turned, or

said shaft 10 may be otherwise operated. A large bevel gear-wheel 10<sup>a</sup>, mounted upon said shaft, meshes with a smaller pinion 14 upon  
55 the same shaft as the circular shutter 15, the latter being disposed between the windows 4 and 5 and the lenses 7 and 8 and provided with concentric semicircular slots 16 and 17, which respectively register with the windows 4 and 60 5 once in each revolution of the shutter.

18 designates a pair of drums journaled upon the shaft 10 and provided peripherally with the teeth 19.

20 designates springs which are coiled  
65 around and secured at their inner ends to the shaft 10 and at their outer ends are secured to the toothed drums 18, (see Fig. 4,) the tendency of these springs being to unwind against the resistance of the shaft 10 in a manner  
70 and for a purpose which will hereinafter appear.

Secured to the end of each drum is a cam-wheel 21, provided with three equidistant shoulders 22, 23, and 24. These cams form  
75 a part of an escapement, and their function will be hereinafter explained.

25 designates four guide-rollers arranged in practice above and below the drum, and 26 a pair of superposed guide-rollers arranged  
80 adjacent to the rear side of the partition or diaphragm 2 at the upper and lower margins of the windows.

23 designates stub-shafts projecting inwardly from one side wall and the partition  
85 9, and pivoted thereon are a pair of levers 28, provided with segmental arms at their rear ends arranged above and below, respectively, the cam-wheels 21, the arms 29 being adapted to peripherally engage said cams and by occupying the path of shoulders 22 23 24 arrest the movement of the drums at certain intervals, while the lower arms 30 are provided with upwardly-projecting teeth and alternate with arms 29 in arresting movement of said  
90 drums, said bifurcated levers forming the other member of the escapement hereinbefore referred to. The escapement-levers 28 are provided with openings 31, and extending through said openings is a shaft 32, provided with eccentrics 33 and 34, fittings snugly in said openings, and said shaft is provided at one end with a small cog-wheel 34<sup>a</sup>, meshing with a larger cog-wheel 35 upon the corre-  
100

sponding end of shaft 10. By this arrangement it is obvious that the constantly-rotating shaft 10 imparts a continuous movement to the eccentrics set quartering to each other, for a purpose presently explained, and said eccentrics in turn cause the escapement-levers to oscillate in a vertical plane, the arrangement being such that the two drums are never stationary at the same time and alternately operate, each drum making six steps to each revolution—that is to say, when the arm 30 of one of the escapement-levers engages the shoulder 24 the arm 29 of the other lever is depressed and in position to arrest the movement of its respective drum by engagement with the approaching tooth 22 of its cam-wheel 21, as shown in dotted lines, Fig. 1, and at the same instant said approaching shoulder 22 is stopped by said arm 29 the cam 33 depresses its respective escapement-lever and causes its toothed arm 30 to release the shoulder 24 and its arm 29 to assume a position in the path of its shoulder 22. At the instant this action takes place the spring 20 rotates the drum of said cam in the direction indicated by the arrow, Fig. 1; until the shoulder 22 strikes and is stopped by the arm 29 of the lever, and synchronously the other cam adjusts its lever and permits its drum to make an additional step of one-sixth of a revolution. Thus it will be seen that said drums take alternate steps of one-sixth of a revolution each, a total of twelve steps being necessary in a complete revolution of both drums. 36 designates a pair of superposed shafts occupying positions above and below said drums, and 37 wheels thereon and connected by a belt 38 in order that the movement of said shafts shall be synchronous. 39 and 40 designate reels mounted upon said shaft, and 41 a photographic film of hundreds or thousands of feet in length, if necessary, and secured at its opposite ends to said reels. Said film is provided with holes 42 for engagement with the toothed drums, so as to insure a positive feed, and it is held in engagement with said drums by means of the idlers 25, as shown clearly. From said idlers it extends forwardly and around the idlers 26, the latter serving to hold the films opposite the windows 4 and 5 in order that the pictures may be photographed properly on the film.

When photographing a moving object or objects with this apparatus, the pictures will be alternately photographed on said films in a well-known manner, twelve pictures being taken with each revolution of the shaft, because it requires twelve steps of said drum to make one revolution. The shutter operates by preference at six times the speed of the drums, therefore giving the pictures an exposure equal to the length of time the slot 16 or 17, as the case may be, registers with the window 4 or 5, as will be made by reference particularly to Fig. 3.

From the above description it will be apparent that I have produced an apparatus of

the character described which is of simple, compact, durable, and inexpensive construction, and it is to be understood that I reserve the right to make such changes as do not involve a departure from the spirit and scope of the invention.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for photographing moving objects, a pair of drums which tend to rotate continuously and impart movement to a pair of films, a pair of shouldered cams secured to said drums, and a pair of escapement-levers, provided with arms at opposite sides of said shouldered cams, and means to oscillate said levers and thereby cause them to alternately engage and arrest the movement of said cams, substantially as described.

2. In a machine for photographing moving objects, a pair of drums which tend to rotate continuously and impart movement to a pair of films, shouldered cams movable with said drums, a pair of escapement-levers having arms at opposite sides of the shouldered cams, and a pair of driven eccentrics arranged at an angle to each other and imparting oscillatory movement to said levers, substantially as and for the purpose described.

3. In a machine for photographing moving objects, a suitable casing having a pair of windows, a pair of drums which tend to rotate continuously and impart movement to a pair of films, shouldered cams movable with said drums, a pair of escapement-levers having arms at opposite sides of said cams to alternately engage and arrest the movement of the latter, means to oscillate said levers, and a rotating shutter provided with two semicircular slots, one of said slots being adapted to register with one window and film and the other slot with the other window and film, the slots being so arranged that they never register simultaneously with said windows, substantially as described.

4. In a machine for photographing moving objects, a suitable casing, a driven shaft therein, a pair of eccentrics geared to said shaft, a pair of spring-actuated drums journaled upon said driven shaft and adapted to impart movement to a pair of films, a pair of shouldered cams carried by said drums, and a pair of escapement-levers provided with openings to snugly receive said eccentrics, and provided also with arms at opposite sides of the shouldered cams, said arms being adapted under the oscillatory movement imparted to the levers by the eccentrics to alternately engage said cams and thereby arrest the movement of said drums, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

HOWARD W. SCHROEDER.

Witnesses:

M. R. REMLEY,  
F. S. THRASHER.