

H. F. E. S. DUSSERIS & J. T. F. CONTI.

LANTERN AND PLATES THEREFOR.

APPLICATION FILED APR. 4, 1910.

1,028,692.

Patented June 4, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

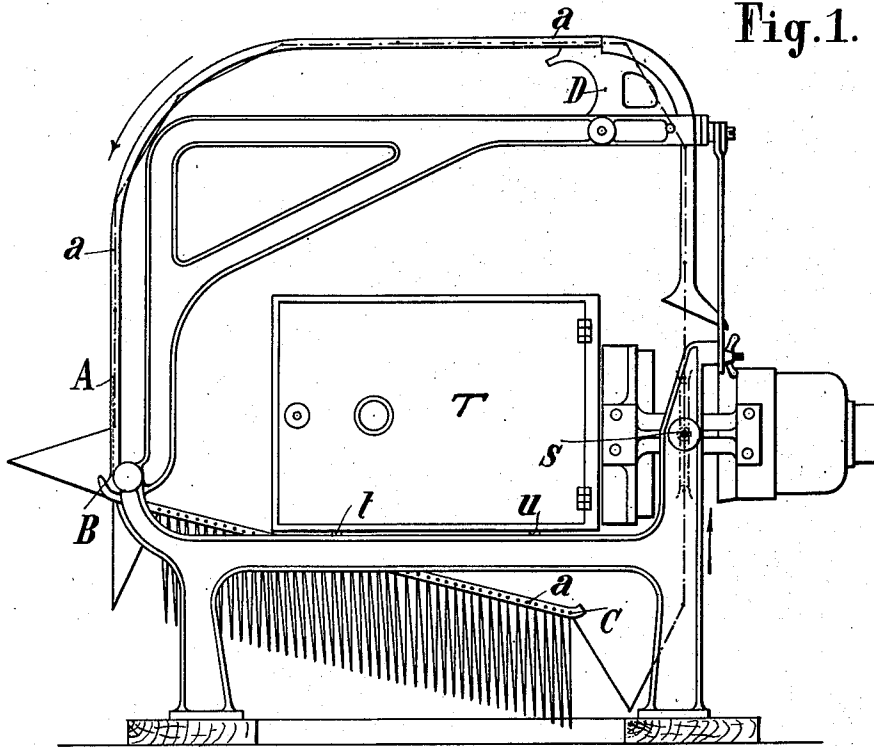


Fig. 4.

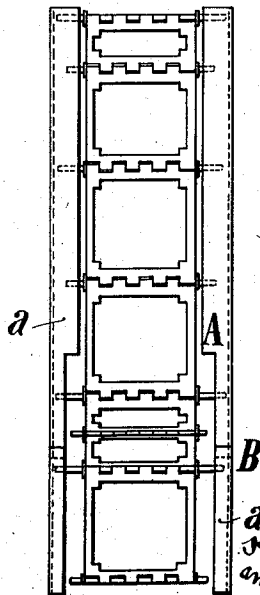


Fig. 5.



Witnesses:

J. E. Hellen.

Geo. C. Flewitt.

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2 SHEETS—SHEET 2.

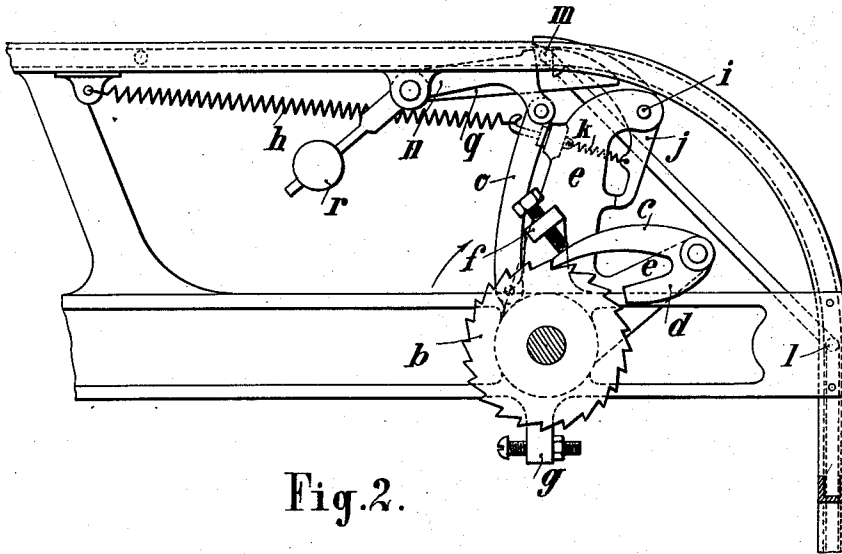


Fig. 2.

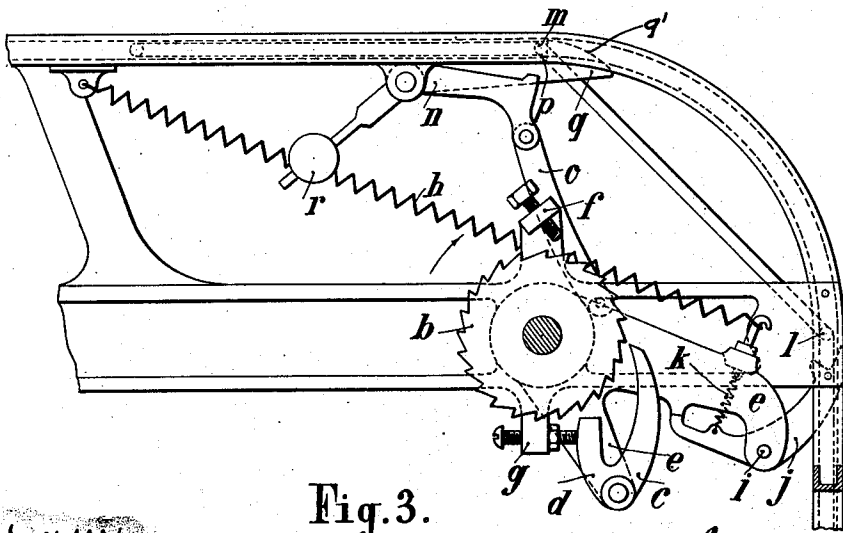


Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

HENRI FRANÇOIS ETIENNE SYLVAIN DUSSERIS AND JAMES TIBURCE FELIX CONTI,
OF PARIS, FRANCE.

LANTERN AND PLATES THEREFOR.

1,028,692.

Specification of Letters Patent.

Patented June 4, 1912.

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To all whom it may concern:

Be it known that we, HENRI FRANÇOIS ETIENNE SYLVAIN DUSSERIS, of 19 Rue Du Montparnasse, and JAMES TIBURCE FELIX CONTI, of 8 Quai D'Orleans, both citizens of the French Republic, residing at Paris, France, have invented new and useful Improvements in Lanterns and Plates Therefor, of which the following is a specification.

Our invention relates to improvements in projection lanterns enabling a variable number of plates to be projected indefinitely in succession; the plates follow each other instantaneously without any appreciable interval, the time during which the plates are exposed being variable at will and independently of the time required for replacing one by another.

This invention is characterized by: 1. The method of storing the plates. 2. The mechanism producing the instantaneous change of the plates. 3. The possibility of inclining the lantern horizontally and vertically, while at the same time the inclination of the plates to the optical axis can be caused to vary in each position.

Figure 1 shows the lantern in elevation. Figs. 2 and 3 are views to a larger scale of the plate feed mechanism in two different positions. Fig. 4 is a rear elevation of the lantern. Fig. 5 is a lateral diagram of the chain formed by the plate holders.

In the lantern all the plates are arranged in a series of frames connected one with the other by horizontal shafts around which they are pivoted, these shafts presenting this essential feature that they differ in length in pairs, that is to say a short shaft is preceded and followed by a long shaft and so on in succession so that an even number of frames should be provided, Fig. 4. In this lantern the number of frames may vary at will. For example from 18 to 120 plates and more may be arranged in the same lantern.

Heretofore plates have been stored in frames united to form a chain, but the characteristic feature of the present invention is the automatic and endless folding and unfolding. Owing to the difference in the length of the shafts the frames can be folded and suspended by the long shafts thereby constituting an endless chain. It is only necessary to cause the end of each shaft to move in U-shaped rails (a) and to provide

a passage for the short shafts for a portion of their path, for example, between the point A and the point B (Figs. 1 and 4).

The short shafts leave the rails thus constituted and the folding takes place automatically, the chain remaining suspended by the long shafts throughout the entire length of the magazine, that is to say from B to C, Fig. 1.

The feed mechanism producing the instantaneous change of the plates and which is arranged at D in Fig. 1 is shown to a larger scale in Figs. 2 and 3.

A ratchet wheel (b) is given a continuous and uniform movement in the direction indicated by the arrow by any convenient means such as an electric motor, a clockwork movement, a counterweight, hot air, motor, handle or the like. This continuous movement must be converted into an intermittent and instantaneous feed movement. This conversion is effected very simply by means of a pawl (c) mounted with considerable friction upon a lever (e) which is freely mounted upon the shaft of the ratchet wheel and which is engaged and disengaged by means of two fixed and adjustable stops (f) and (g).

The lever (e) being acted upon by a counter spring (h) (or it might be acted upon by a counterweight) the pawl (c) bears against the stop (f) thereby causing it to engage with the ratchet wheel; it is driven by this wheel until the arm (d) of the pawl encounters the stop (g) and disengagement is effected under the influence of the counter spring (h) the lever (e) is drawn back and the pawl bearing against the stop (f) re-engagement is effected and the movement begins again. It will therefore be seen that the movement of the lever from right to left is caused by the spring (h) and the movement from left to right by the ratchet wheel. The speed of this ratchet wheel can therefore be varied without altering the speed of the return movement produced by the spring (h). That is to say the time of exposure can be varied while the changing of the plates is always effected instantaneously.

It will readily be understood that the reciprocating movement of the lever (e) can conveniently be utilized for causing the chain constituted by the plates to advance suddenly. For this purpose a small lever (j) acted upon by a spring (k) is mounted

on a shaft (*i*) journaled in the lever (*e*). This lever (*j*) during the return movement of the arm (*e*) engages the shaft (*l*) of the chain (Fig. 3) and displaces it suddenly 5 to (*m*).

In order to prevent the shaft (*l*) from passing beyond the position (*m*) owing to its acquired velocity a movable stop constituted by a lever (*n*) connected by the rod (*o*) 10 to the lever (*e*) is arranged in such a manner that it is depressed (Fig. 3) to permit of the passage of the shaft (*m*) at the beginning of the movement of the lever (*e*). Similarly in order to prevent the chain from 15 moving rearward a notch (*p*) is formed on a weighted lever (*q*) acted upon by a counterweight (*r*). This lever (*q*) does not impede the movement of the shaft (*l*) from right to left because this shaft depresses it 20 by bearing upon an inclined surface (*q'*) in which it terminates.

In order that this automatic lantern may be utilized for oblique projection the chain is guided in a frame mounted upon the 25 shafts (*s*), Fig. 1, in such a manner that the plates can be suitably inclined on shafts (*s*).

Having now particularly described and ascertained the nature of our invention and what manner the same is to be performed, 30 we declare that what we claim is:

1. In projection lanterns, the combination of a chain of plate holders with alternating long and short horizontal shafts, of frames pivoted to said shafts, being adapted to be folded and to be suspended on the 35 long shafts, inclined rails adjacent said long shafts, and means to impart to the chain of plate holders an intermittent movement.

2. In projection lanterns, the combination of a chain of plate holders with alternating long and short horizontal shafts, of frames pivoted to said shafts, being adapted to be folded and to be suspended on the 40 long shafts, inclined rails adjacent said long shafts, a uniformly operated feed mechanism, and means operated by said mechanism for imparting an intermittent movement to said chain. 45

3. In projecting lanterns, the combination of a chain of plate holders with alternating long and short horizontal shafts, of frames pivoted to said shafts, being adapted to be folded and to be suspended on the 50 long shafts, inclined rails adjacent said long

shafts, a uniformly operated ratchet wheel, 55 a spring-controlled lever, a two-armed pawl frictionally mounted upon said lever, two fixed adjustable stops, and means adapted to engage and disengage said pawl and ratchet for imparting an intermittent feed 60 movement to said chain, substantially as described and for the purpose set forth.

4. In projecting lanterns, the combination of a chain of plate holders with alternating long and short horizontal shafts, of 65 frames pivoted to said shafts, being adapted to be folded and to be suspended on the long shafts, inclined rails adjacent said long shafts, a ratchet wheel, means for imparting a continuous and uniform movement to said 70 ratchet wheel and a lever rotating around the shaft of said ratchet wheel, a two-armed pawl frictionally mounted upon said lever, and two fixed adjustable stops upon the shaft of said ratchet wheel, and a spring 75 controlling said lever adapted to normally hold one arm of the pawl upon said lever against one of the stops and in engagement with the ratchet wheel and to disengage said pawl and ratchet wheel, when the second 80 arm of said pawl encounters the other stop for the purpose of varying the time of exposure but effecting the change of the plates instantaneously, substantially as described. 85

5. In a projecting device, the combination with a lantern, mechanism for guiding a plate chain throughout a complete circuit of travel and abreast of said lantern, one 90 portion of said mechanism being inclined downwardly in the direction of the advancing movement of the chain, a continuous foldable plate chain exceeding in length the combined length of its guide mechanism, and means for advancing a portion of the 95 chain abreast of the lantern and causing remaining portions of the chain to fold or collapse in said inclined portion of said guide mechanism.

In testimony whereof we affix our signatures. 100

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JAMES TIBURCE FELIX CONTI.

In the presence of—

VICTOR PREVOST,

H. C. COXE.