No. 667,436. Patented Feb. 5, 1901.

L. E. GRANICHSTAEDTEN.

KINEMATOGRAPH.

(Application filed Aug. 30, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

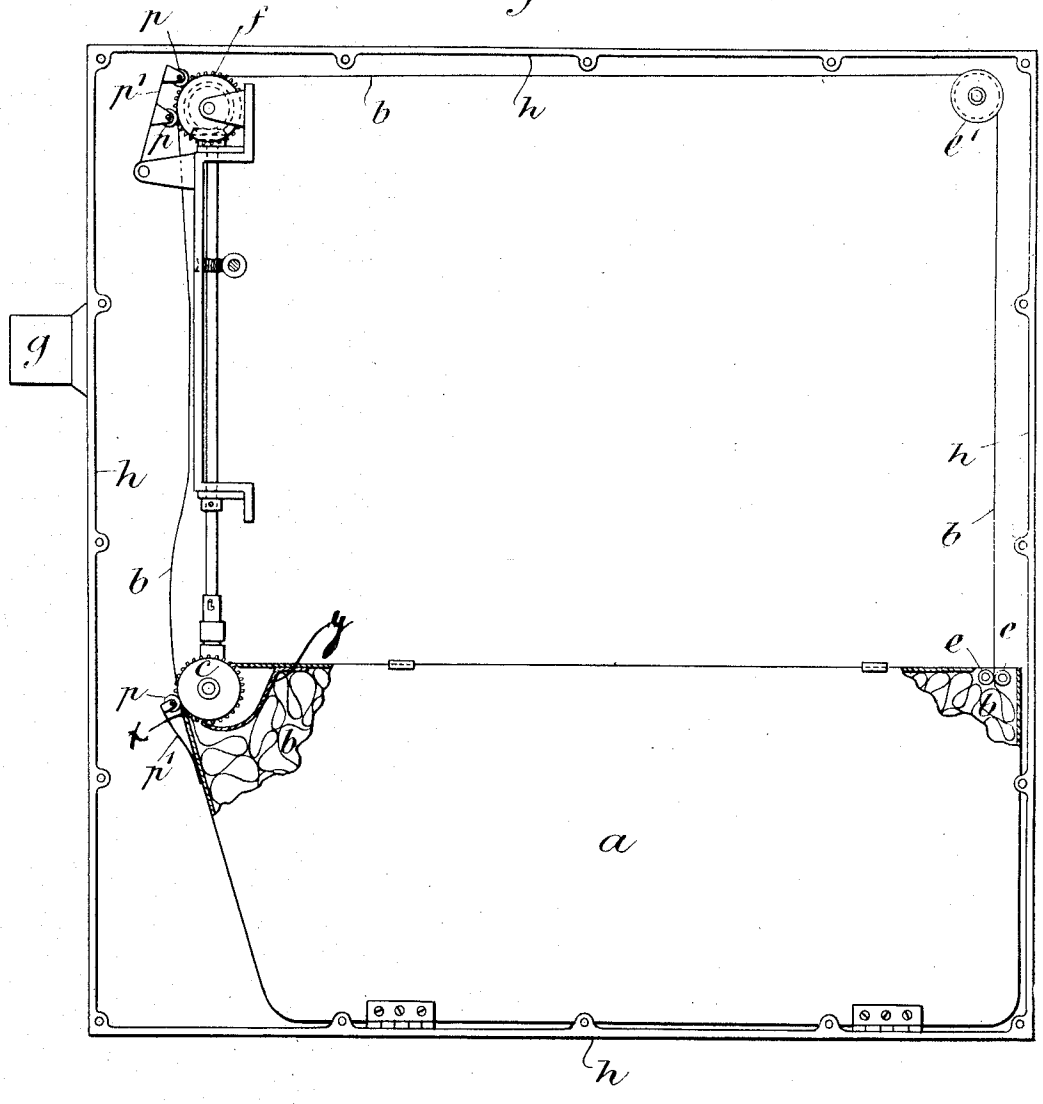

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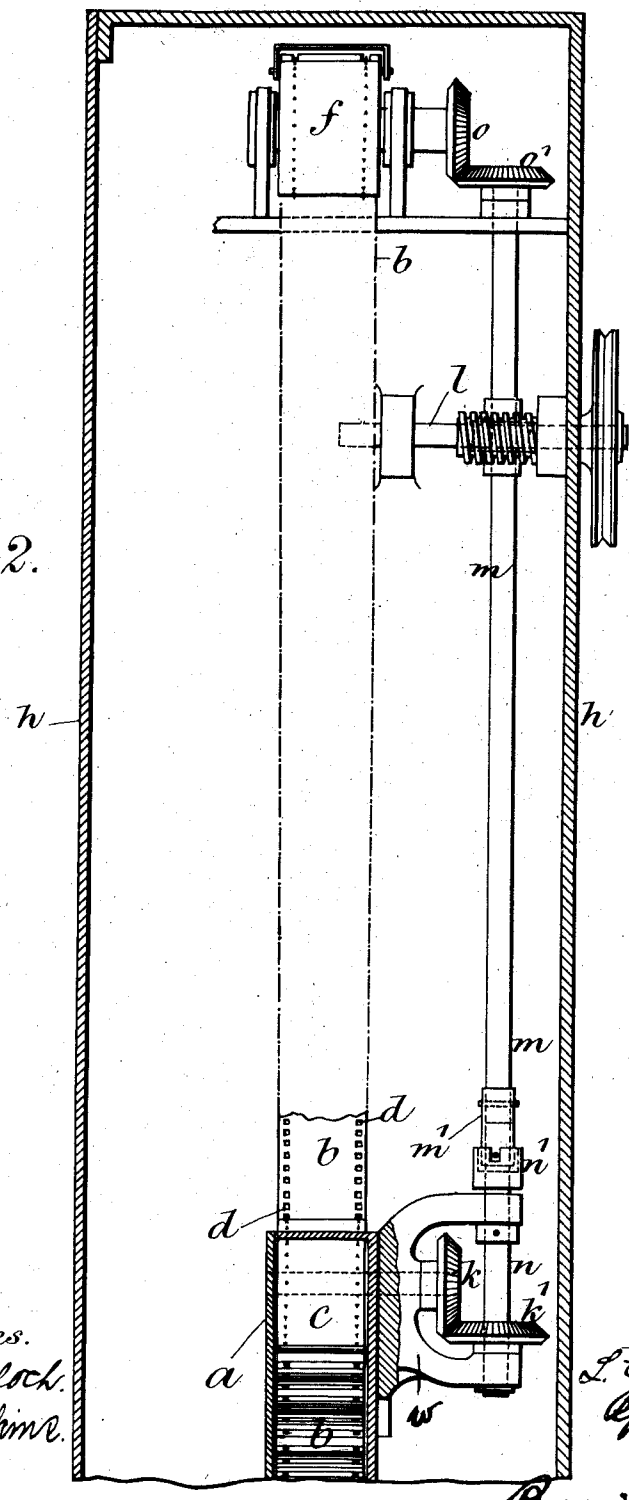
Fig. 2.



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UNITED STATES PATENT OFFICE.

LADISLAUS EMANUEL GRANICHSTAEDTEN, OF LONDON, ENGLAND.

KINEMATOGRAPH.

SPECIFICATION forming part of Letters Patent No. 667,436, dated February 5, 1901.

Application filed August 30, 1900. Serial No. 28,533. (No model.)

To all whom it may concern:

Be it known that I, LADISLAUS EMANUEL GRANICHSTAEDTEN, merchant, a subject of the Emperor of Austria-Hungary, residing at 28ª Basinghall street, in the city of London, England, have invented certain new and useful Improvements in Kinematographs, of which the following is a specification.

This invention relates to means for storing the film of a kinematograph. The film (which may be endless or otherwise) is stored in loose folds or convolutions in a closed box which has both an inlet and an outlet. The film is positively driven into the box by means of rollers, wheels, or pulleys, and at the same time it may be fed out through the outlet.

Figure 1 of the drawings annexed shows a kinematograph-casing with one side removed, and Fig. 2 shows to a larger scale the mechanism for driving the film.

a is a box into which the film *b* is driven by the pin-wheel *c* engaging the holes *d* in its edge. The film is shown as endless and issues from the box between the guide-rollers *e*, whence it passes over other guide-rollers *e'* to a pin-wheel *f* similar to *c* and past the lens *g*. As the means for drawing the film intermittently past the lens and for holding it during exposure form no part of this invention they are omitted from the drawings. After exposure, the film is drawn down by the wheel *c* and driven into the box *h* in the casing of the machine.

The wheel *c* is continuously driven by means of the bevel-wheels *k k'* from the shaft *m*, driven by worm-gearing from the main shaft *l* of the machine. Fast with the wheel *k'* is a short spindle *n*, carried by a bracket on the box and ending in a cup *n'*, into which fits a sleeve *m'*, adjustable in height on the bottom of the shaft *m*. By this means the box can be readily disconnected from the machine, if required. The shaft *m* also drives the pin-wheel *f* through the bevel-wheels *o o'*. In proximity to each pin-wheel is a roller or pair of rollers *p*, carried on a blade-spring *p'* to keep the film against the roller.

When it is desired to change the film, the side of the box is opened and the film drawn out, when another can be placed around the guide-rollers and by operating the main shaft can be driven into the box.

As will be seen from an inspection of Fig. 2, the box *a* is narrow, but little wider than the film, so that the film is caused to be folded therein without being distorted or tangled. The box has an unobstructed chamber for the storage of the film and is closed at all points except at the exit and entrance openings, so that the film is confined to the storage-chamber and is cut off from any communication with the other parts of the apparatus, and danger of fire is thereby avoided. The entrance and exit openings are both restricted, being preferably of just sufficient size to permit the passage of the film. The entrance-opening for the film is preferably arranged, as shown, at the upper portion of one end of the box, and the entrance for the film is preferably below the roller, there being just sufficient space above the edge *x* of the side of the box to permit the passage of the film, and within the box I preferably employ a shield *y* to cover that side of the roller within the box to prevent the folds of the film from engaging therewith. The box *a* has a side provided with hinges, as indicated in Fig. 1, by which it may be opened, and, as before stated, the box is detachable or removable from the casing. The gearing for the roller *c* is all carried on a bracket *w*, attached to the box, as indicated in Fig. 2, while this gearing is connected with the main shaft *m* by clutch mechanism. By uncoupling the clutch the box with its film and the gearing for the roller *c* may be detached and removed without changing the other parts of the apparatus. A film of great length may be employed, sufficient for an entire evening's entertainment, and another box containing another film may readily be inserted in place of the first one.

What I claim is—

1. In a kinematograph, the combination of a casing having a detachable portion, a box removable from the casing through the opening left by the detachable portion, said box having an unobstructed chamber of substantially the same width as the film, and provided with a restricted opening, and an exit-opening, a film folded loosely upon itself within the chamber, a wheel engaging the film at its entrance into the box for driving the film thereinto, a second wheel engaging

the film and withdrawing it from the box, and means for rotating the two wheels continuously at the same speed.

2. In a kinematograph, the combination of a casing having a detachable portion, a box removable from the casing, having an unobstructed chamber provided with a restricted entrance-opening and an exit-opening for the film, and which is closed and out of communication with the apparatus above it except through the exit and entrance openings, a film folded loosely upon itself within the box, a wheel engaging the film at its entrance into the box, for driving the film thereinto, a second wheel engaging the film and withdrawing it from the box, and means for rotating the two wheels continuously at the same speed.

3. In a kinematograph, the combination of a casing, a box removable from the casing, having a restricted entrance-opening and an exit-opening, but closed at all points except at the entrance and exit openings, a film folded loosely upon itself within the box, a wheel at the entrance-opening engaging the film and driving it into the box, a roller pressing the film against said wheel at the entrance-opening, a shield within the box for preventing the film from engaging the driving-in wheel, a second wheel engaging the film and drawing it from the box, and means for rotating the two wheels continuously at the same speed.

4. In a kinematograph, the combination of a casing, a box removable from the casing and having entrance and exit openings, a film folded loosely upon itself within the box, a wheel arranged at the entrance of the box engaging the film and driving it into the box, gearing for said wheel supported on the box, a driving-shaft, clutch mechanism for connecting and disconnecting the gearing for said wheel with the shaft, a second wheel engaging the film and withdrawing it from the box, and connections between the main operating-shaft and said second wheel.

5. In a kinematograph, the combination of a casing, a box removable from the casing having entrance and exit openings, and closed at all points except at the entrance and exit openings, a film folded loosely upon itself within the box, a wheel arranged at the entrance of the box engaging the film and driving it into the box, a short shaft mounted in bearings secured to the box, gearing between said shaft and the wheel which drives the film into the box, a main operating-shaft, clutch mechanism for connecting the main operating-shaft with the short shaft, a second wheel engaging the film and withdrawing it from the box, and connections between the main operating-shaft and said second wheel.

6. In a kinematograph, the combination of a casing, a box removable therefrom having entrance and exit openings and closed at all points except at the entrance and exit openings, a film folded loosely upon itself within the box, a wheel arranged at the entrance-opening within the box for driving the film thereinto, a guide operating in connection with the film for facilitating the entrance thereof into the box, a second wheel engaging the film and withdrawing it from the box, a driving-shaft, and detachable connections between the driving-shaft and the wheel for driving the film into the box, whereby the box with the film may be readily removed from the machine.

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Witnesses:
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