C. BANCAREL.

PORTABLE CINEMATOGRAPHIC APPARATUS.

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1,349,650. **Patented Aug. 17, 1920.**

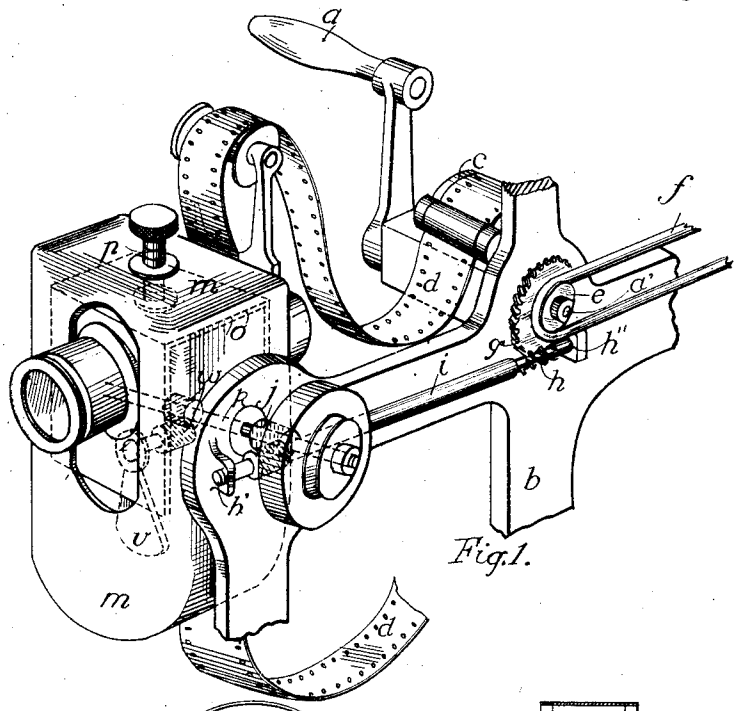


Fig. 1.

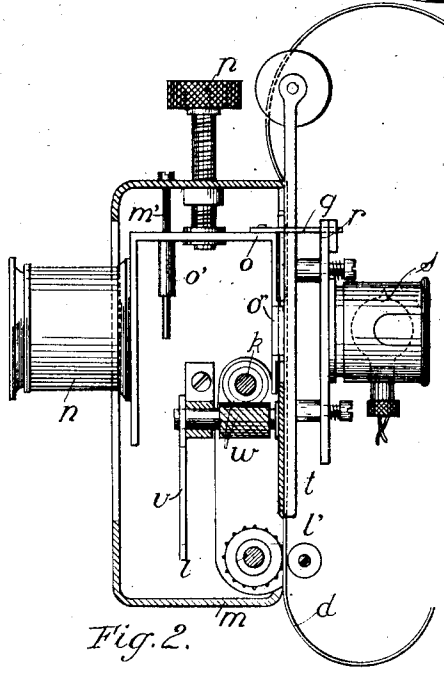


Fig. 2.

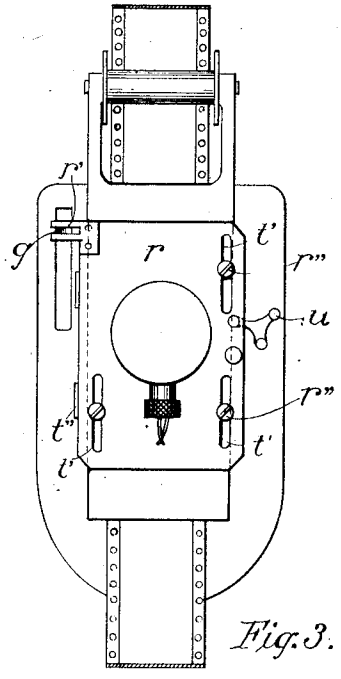


Fig. 3.

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PORTABLE CINEMATOGRAPHIC APPARATUS.

1,349,650. Specification of Letters Patent. Patented Aug. 17, 1920.

Application filed January 13, 1919. Serial No. 270,963.

To all whom it may concern:

Be it known that I, CHARLES BANCAREL, engineer, of 14 Villa Chaptal, Levallois-Perret, Seine, France, have invented new and useful Improvements in Portable Cinematographic Apparatus, which improvements are fully set forth in the following specification.

This invention has for its object light portable cinematographic apparatus of comparatively small size which is silent in action and may be used by unskilled persons.

The apparatus is provided with the same essential parts as apparatus of the same type hitherto known but contains the following novel features:

1. The drive comprises a worm actuated by a toothed wheel while one end of the worm shaft forms a stop and the other end a spindle so that the shaft can rotate in one direction only, whichever direction the operating handle is turned.

2. The shaft of the obturator arranged between the lens and the lantern is directly driven from the shaft of the driving plate of the Maltese cross by toothed pinions, which renders the apparatus much more silent and allows all the parts to be arranged very compactly in a box free from shock and dust.

3. The decentralizing plate which is provided with guiding tubes sliding upon fixed rods is moved by the aid of a screw of quick pitch and with it the lantern supported by the aid of a projection and a slotted plate; the projection and slot are such that the projection remains in engagement with each other even when the rear door of the box is open.

In this apparatus therefore the shaft of the Maltese cross directly actuates all the parts without the interposition of any parts such as chains or the like. The obturator therefore exactly follows the movement of the Maltese cross which eliminates all vibration upon the screen and insures absolute immobility of the image.

In the accompanying drawings, Figure 1 is a perspective view showing the essential parts of the apparatus, its drive in particular, Fig. 2 is a section of the box carrying the lens and Fig. 3 is a front elevation of the box from the side opposite the lens, the lamp being removed.

Referring more particularly to Fig. 1 of the drawing, a is a handle actuating a shaft a' mounted on the frame b and carrying the toothed disks c which drive the film d; e is a pulley mounted on the shaft a' which in the ordinary manner by means of a belt f drives the spool (not shown in the drawing) upon which the film is wound.

The Maltese cross (not shown) which serves to produce the intermittent movement of the film in its passage in front of the lens is driven from the shaft a' by means of a pinion g, a worm h, a shaft i, helicoidal gearing j and the shaft k of the driving plate (not shown) of the Maltese cross. Upon the shaft l, Fig. 2, of this Maltese cross are mounted toothed disks l' which drive the film. One end h' of the shaft i of the worm h forms a spindle and insures a very smooth normal movement while the other end h'' forms an abutment of large surface which is preferably roughened.

When the crank a is turned contra-clockwise, as shown in Fig. 1, to feed the film forward, the engagement of the gear g with the worm h tends to move the shaft i toward the right until the abutment or shoulder on the end h'' bears against the adjacent bracket on the frame b. With the shaft i in this position the helicoidal gears j engage and the shaft k is driven. Should the crank a be turned in the opposite direction, the shaft i would be moved to the left and the gears j would be separated, so there could be no rotation of the shaft i when the crank is so turned.

By this arrangement of the worm any back movement from the handle a is rendered absolutely impossible thus avoiding all wear of the film.

The worm shaft turns one turn per image which allows all the other parts to be actuated by this shaft through pinions of equal size.

All the lantern portions are contained within a casing or box m fixed to the frame b. n is a lens fixed upon a support o (Fig. 2) of U shape which forms a decentralizing plate; o' are tubes fast with the plate o which engage with rods m' fast with the box m so that the plate o is maintained perfectly rigid while sliding upon the rods m'. This plate o can be raised or lowered by a screw p of quick pitch and is provided with an opening o'' for the passage of the luminous rays.

q is a projection fast with the plate o

which engages with a slotted plate r' fast with the support r of the lantern s so that when the lens is decentralized by being raised or lowered the lantern is also moved.

The lantern support r slides upon the door t in the ordinary manner by the aid of pins r'' and grooves t'; the door t is provided with hinges t'' and a closing bolt u and closes the rear of the box m; it also forms a guide for the film on its passage between the lens and the lantern.

As the pin q and the slotted plate r' are placed at the side of the hinges t'', the pin q will still engage the slot even when the door t is open, and the decentralizing plate o, the lens and the lantern s will always therefore remain fast with each other during their vertical movements and there is no need whenever the door is closed to replace by hand the pin q in the slotted plate r'.

Instead of being placed in front of the lens as in the usual cinematographic apparatus, the obturator v is placed between the source of light and the lens and receives its movement direct from the shaft k through helicoidal gearing w; this drive is therefore very short and very silent and protected from dust as the assemblage of parts, the Maltese cross and its finger plate, the obturator, its shaft and its driving pinions are inclosed in the box m.

Claim—

In a cinematographic apparatus, driving mechanism comprising a manually rotatable shaft carrying a gear, an intermediate shaft having limited longitudinal movement carrying a worm engaging the gear on the manually operated shaft, a cross-shaft for actuating operative parts of the device, and helicoidal gears on the intermediate shaft and the cross-shaft, the rotation of the manually operated shaft in one direction operating through the worm and gear connection to position the intermediate shaft to engage the helicoidal gears to drive the cross-shaft, and the rotation of the manually operated shaft in the opposite direction operating through the worm and gear connection to move the intermediate shaft to separate said gears to prevent the drive of the cross-shaft.

In testimony whereof I have signed this specification.

CHARLES BANCAREL.

Witnesses:

GASTON DE MESTRAL,

JOHN F. SIMONS.