H. A. DE VRY.

MOTION PICTURE MACHINE.

APPLICATION FILED AUG. 16, 1915.

1,303,542.

Patented May 13, 1919.

3 SHEETS—SHEET 1.

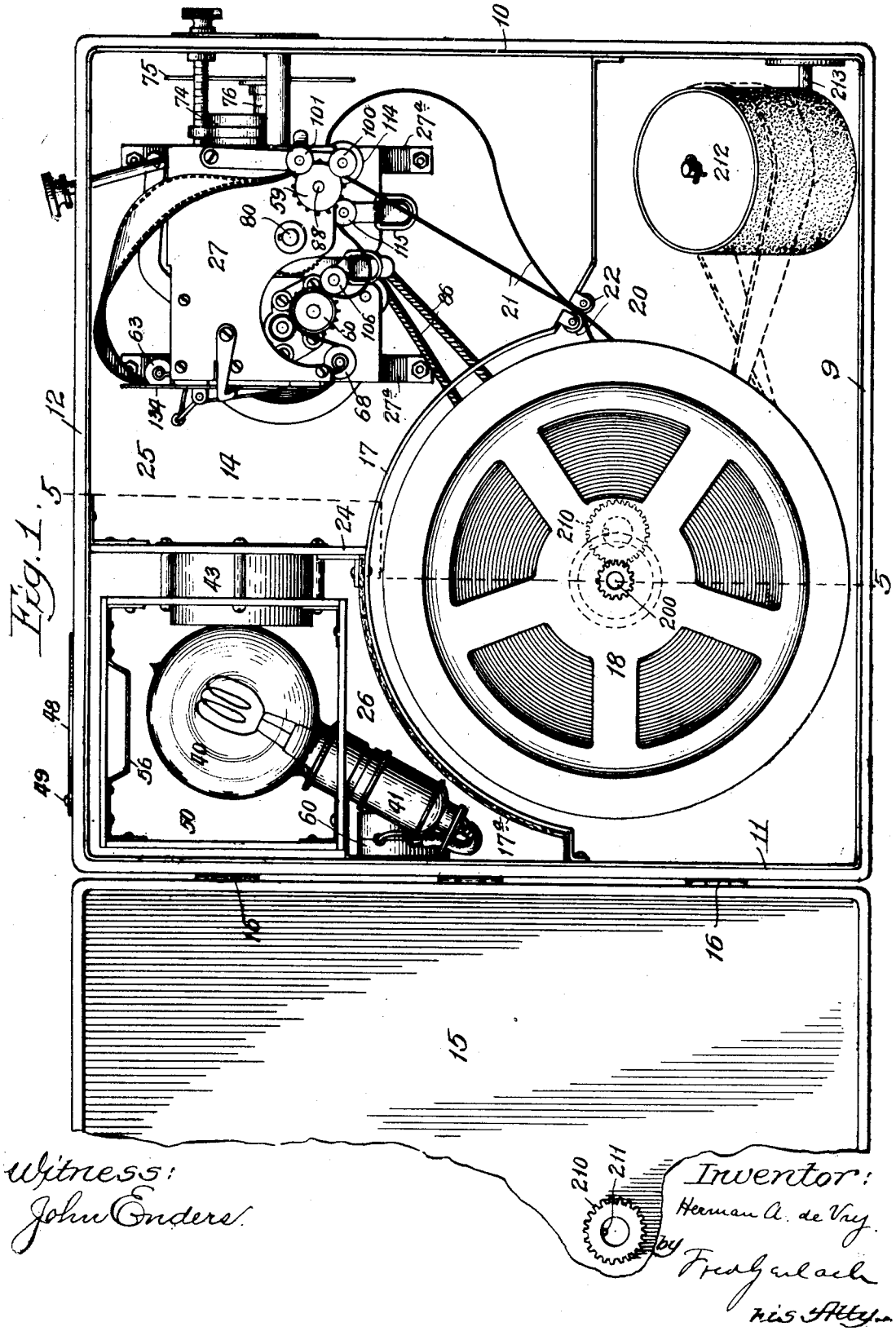


Fig. 1.

Witness:
John Enders.

Inventor:
Herman A. de Vry.
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his Attys

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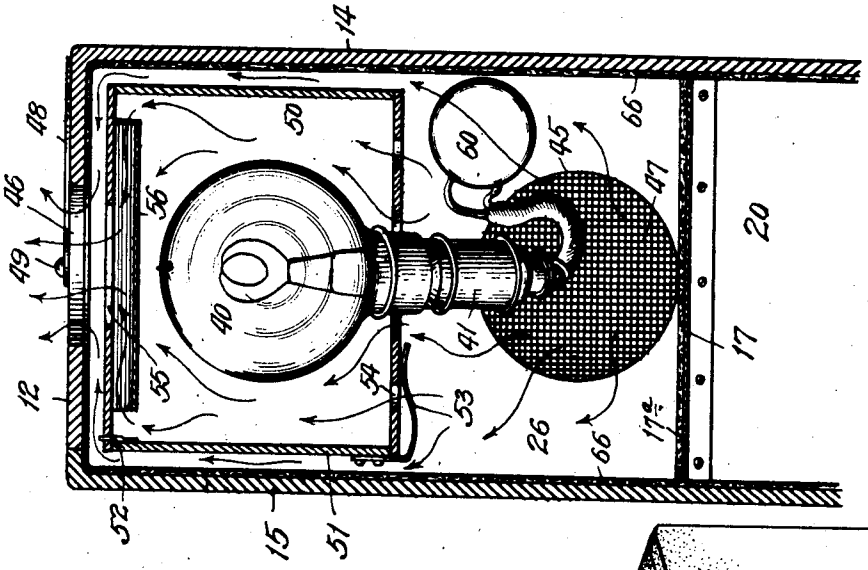


Fig. 3.

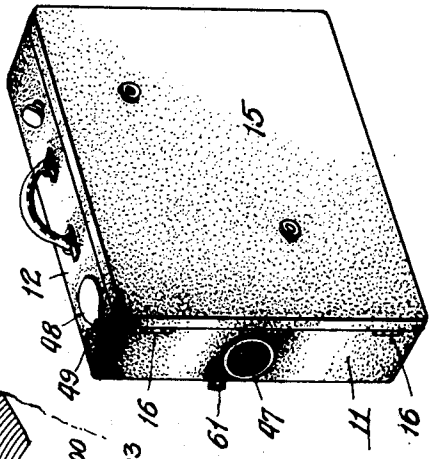


Fig. 4.

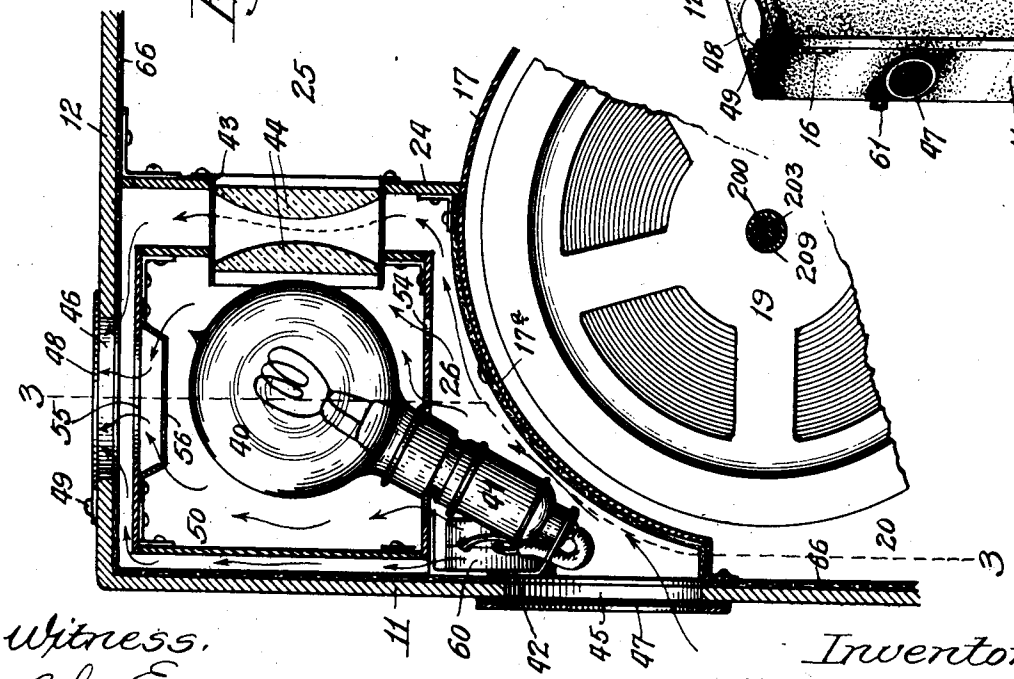


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 6.

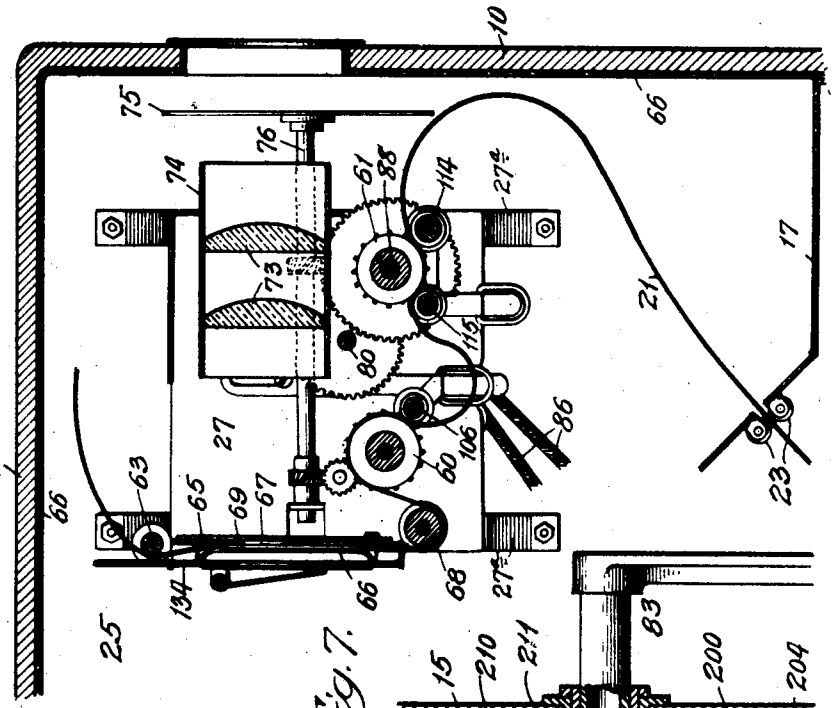


Fig. 7.

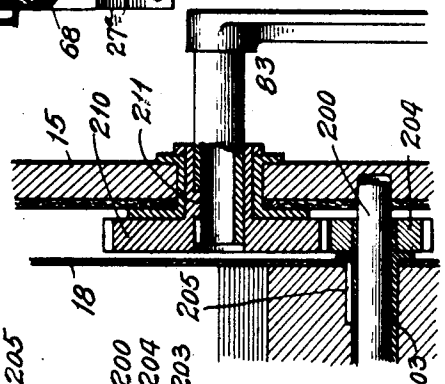
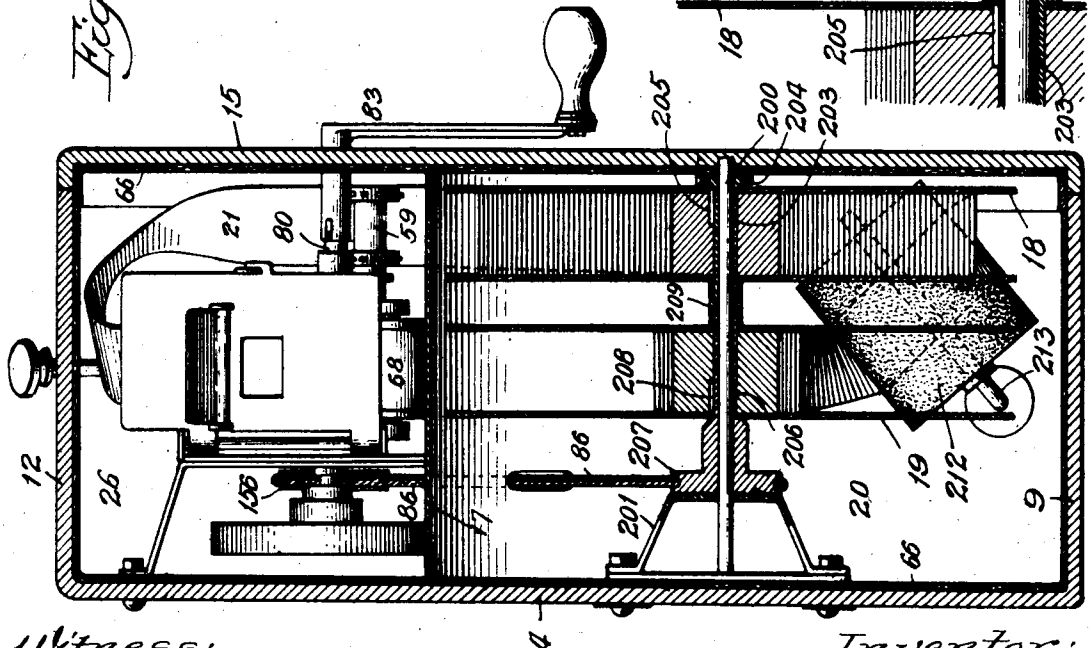


Fig. 5.



Witness:
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UNITED STATES PATENT OFFICE.

HERMAN A. DE VRY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE DE VRY CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MOTION-PICTURE MACHINE.

1,303,542. Specification of Letters Patent. Patented May 13, 1919.

Application filed August 16, 1915. Serial No. 45,632.

To all whom it may concern:

Be it known that I, HERMAN A. DE VRY, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Motion-Picture Machines, of which the following is a full, clear, and exact description.

The invention relates to motion picture machines.

In projecting apparatus for motion pictures, a desideratum has been to provide a portable machine in which the apparatus for projecting light through the film is inclosed in a case with the remainder of the apparatus, in places where there are no facilities for a fire-proof booth for containing the operator and the projecting apparatus. It has heretofore been deemed unsafe to inclose the light with the film and feeding mechanism, because of the increase in temperature resulting from such arrangement.

One object of the invention is to provide an improved portable motion picture machine in which the illuminating means is inclosed in a case with the film-spool and feed mechanism, and in which the conduction of heat to the film is guarded against. By providing such a construction, the apparatus as an entity may be readily transported in the case and the necessity of providing separate lighting apparatus and separate fire safeguards, such as a fireproof booth, around it, are avoided.

The invention further designs to provide an improved portable projecting apparatus.

The invention consists in the several novel features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings: Figure 1 is a side elevation of an apparatus embodying the invention, the cover of the case being swung away. Fig. 2 is a central longitudinal section through the lighting apparatus. Fig. 3 is a transverse section taken on line 3—3 of Fig. 2. Fig. 4 is a perspective of the case containing the apparatus. Fig. 5 is a section taken on line 5—5 of Fig. 1. Fig. 6 is a vertical longitudinal section through the film feeding mechanism. Fig. 7 is a detail section of the rewinding device.

The apparatus is inclosed within a rectangular case comprising a bottom 9, a front 10, a back 11, a top 12, a fixed side wall 14 and a cover 15 hinged to the back, as at 16, so that it may be swung open for access to all of the apparatus in the case when desired. The cover 15 forms one side of the case. A transverse partition 17 extends across the case between the front and back walls 10 and 11, to form a compartment 20 for containing and inclosing the film-spools 18 and 19. This partition is curved conformably to the spools for compactness. Spool 18 is the film-supply and spool 19 is the take-up for the exposed film. In passing to the feed mechanism from spool 18, film 21 passes through partition 17 and between a pair of rollers 22 and in passing to the take-up spool 19, from the feed mechanism, the film passes through said partition and a similar pair of rollers 23. These spools are disposed laterally of each other, or side by side, to economize space and to provide a compact arrangement of parts to reduce the size of the case required to contain the entire apparatus.

Above partition 17, the case is divided by a vertical wall or partition 24 to form a front compartment 25 and a rear compartment 26. The rear compartment contains the illuminating means for projecting light through the film, and the front compartment contains the film-feed mechanism.

Said film-feed mechanism is mounted in a frame which is secured by brackets 27^a to the fixed side 14 of the case and comprises a main drive-shaft 80 adapted to be driven by a removable crank 83 inserted through an opening in the cover of the case; a shaft 88 suitably geared to and driven from shaft 80 and carrying a continuous feed-sprocket 59 and a continuous take-up sprocket 61; a shutter-shaft 76, driven by suitable gearing from shaft 88 and carrying a shutter 75 adapted to move across the front end of the projecting lenses 73 in a tube 74; an intermittent feed-sprocket 60 suitably driven from shaft 76; a framing-slide 69 carrying a roller 68 at its lower end; a frame-plate 65 having an exposure opening 67 therein; spring retainer strips 66 on a gate 134; a guide-roller 63 mounted at the upper end of plate 65; and a pulley 156 on the main drive shaft 80 for driving a spring wire belt 86 to drive a pulley 207 to operate the take-up spool 19. Rollers 100, 101 are movably mounted to hold the film on sprocket 59, and a roller 106 is provided to hold the film on the intermittent feed-sprocket 60. Movable

rollers 114 and 115 serve to hold the film on sprocket 61.

The construction of this feed-mechanism forms the subject-matter of an application filed by me Aug. 16, 1915, Ser. No. 45,633 to which reference may be had for fuller illustration and description thereof and, therefore, it has not been deemed necessary to further illustrate and describe in detail this feed-mechanism and its operation.

This feed-mechanism exemplifies one which is adapted to operate upon a loop of film formed between the supply spool and the take-up spool, which are disposed laterally of one another or in sidewise relation, and one which is disposed in one of the compartments of the case in front of the illuminating mechanism.

Supply spool 18 and continuous feed sprocket 59 are alined or in the same vertical plane and the take-up spool, intermittent feed sprocket 60, take-up sprocket 61, and the devices for guiding the film across the exposure are also alined or disposed in another vertical plane at one side of the plane of the supply spool. The sidewise passage of the film occurs wholly at a loose loop between the continuous feed sprocket 59 and a guide roller 63, and the axes of all of the rotatable devices for guiding and feeding the film are parallel with the axes of the coaxial supply and take-up spools. The film passes from the supply-spool through partition 17 at the rollers 22, thence around sprocket 59 to the guiding devices for the film in transit across the exposure opening, thence under roller 68, over intermittent feed sprocket 60 under take-up sprocket 61 and thence between rollers 23 to the take-up spool. The feed-mechanism, as more fully forth in the application filed of even date herewith, is adapted for edgewise insertion of a loop of the film between the supply and take-up spools, so that the film may be placed in or removed from the feed-mechanism without threading one end of the film therethrough and so that if, in the course of exposing the film, it should be desired to re-expose a portion thereof or to discontinue the projection of the pictures thereon before all of the pictures have been exposed, this loop can be removed edgewise from the feed-mechanism. This arrangement avoids the necessity of angularly disposed guide-rollers for the film between the spools, because all of the lateral movement occurs between the continuous feed sprocket 59 and the guide-roller 63.

Spools 18 and 19 are coaxially mounted upon a spindle 200 which is secured by bracket 201 to the fixed side of the inclosing case. A sleeve 206 fixed to a pulley 207, which is driven by belt 86, extends through the hub of the take-up spool 19 and is provided with a feather or pin 208 for rotating said spool during the exposure of the film. A sleeve 203 is fixed to a rewinding pinion 204 and provided with a pin or feather 205 for rotating the supply-spool. A spacer sleeve 209 fits loosely between the spools. A gear wheel 210 having a hollow hub is journaled in the cover 15 of the case, is adapted to mesh with pinion 204 when the cover is closed and is provided with a pin 211 adapted to receive the slotted end of the operating crank 83. A drum 212 is mounted upon an angularly extending spindle 213 and is disposed to guide the film loop when it has been removed from the feed mechanism, so that by rotating the supply-spool, the film may be rewound thereon from the take-up spool, independently of the feed-mechanism. The slot in partition 17 between rollers 22 and 23 extends to the open side of the case, so that the film-loop can be inserted between and removed from said rollers edgewise when the film is to be rewound, or placed edgewise between said rollers in inserting the film in the feed mechanism. Spools 18 and 19 can be removed from spindle 200 when the cover is open, the take-up spool being separable from sleeve 206.

The lighting apparatus comprises an electric lamp 40 held in a lamp-socket 41 mounted on a bracket 42 which is fixed to the back wall of the case. A tube 43 for the condensing lenses 44, is mounted in partition 24 adjacent the lamp 40. An electric switch 60 is secured to the back 11 of the case and is electrically connected to the lamp socket 41 in manner well understood in the art. The handle 61 of the switch is disposed on the outside of the case, so that it can be conveniently manipulated without opening the cover 15. To minimize the conduction of heat between the several parts of the case and to prevent the case from burning, it is lined, as at 66, with asbestos, or other suitable heat insulating material. For this purpose the cover is similarly lined. If desired, the entire case may be formed of such material. To prevent conduction from the chamber 26 to compartment 25, wall 24 is formed of heat insulating material. A portion of wall 17 may be lined as at 17^a to prevent heat induction between compartments 26 and 20. In lighting apparatus of this character, it has been found necessary to provide for effective circulation of air around the lamp, and through the compartment in the case in which the lamp is located, to prevent overheating of, and the conduction of excessive heat to, the film in the other compartments of the case. For this purpose an air inlet 45, below the lamp, is formed in the back wall 11 of the case, and an outlet 46, above the lamp, is formed in the top wall of the case. A screen or guard 47 is placed over inlet 45

and a cover 48 is pivoted, as at 49, to the top 12 to serve as a closure for the outlet 46 when the apparatus is not in use, or is being transported. To prevent radiation of the light from lamp 40, it is inclosed in a box 50 in compartment 26. The inside of this box 50 is usually painted white, so the efficiency of the lamp will not be lessened by the box. This boxing comprises fixed bottom, front, top and back walls supported by bracket 42. The side of the box adjacent back 14 of the casing is also fixed and the opposite side 51 adjacent the cover 15 is hinged, as at 52, and normally held closed by a spring strip 53 to provide access to lamp in box 50, when desired. Air openings 54 are formed in the bottom of box 50, and an opening 55 is formed in the top of said box. A shield 56 is fixed to the top of the box in separated relation therefrom, to exclude light from opening 55. The walls of box 50 are spaced away from the walls of the case and partition 24 to form an air-jacket between the box and the case and so that air will pass around all sides of the box 50 to insulate it from the case. Air entering compartment 26 through inlet 45, will circulate around the bottom, front, back and sides of the box and pass out of the case through the outlet 46. Air will also pass through openings 54 and circulate upwardly through the chamber in box 50 and around the lamp and escape therefrom around the sides of shield 56 and through opening 55 and outlet 46. This construction exemplifies a lighting apparatus which is adapted to be used in a compartment of a case containing the remainder of the projecting apparatus, so that the lighting apparatus will be coöperatively organized as a part of the projecting apparatus, instead of being used and transported as a separate unit. By providing for the circulation of air through the light chamber and around the box containing the lamp, overheating is guarded against and the use of a lighting apparatus within the case is made possible. This construction causes the compartments for the film-spools and the feed mechanism to remain at substantially normal temperature despite the presence of the lamp in the case and renders safe the use of the machine. The ventilation of the lamp by the flow of air through box 50 prolongs the life of the lamp. The lighting apparatus is placed in the case so that the apparatus as a whole will be compactly disposed within a comparatively small case.

The machine set forth exemplifies a portable machine in which the necessity for providing a fireproof booth for the operator is dispensed with; which can be transported in condition which permits it to be rendered operative by connecting a supply of potential to the switch for the illuminating means, which is usually done by a flexible conductor cord and plug and adapted to enter an ordinary electric light socket; and in which the illuminating means, film-feeding mechanism, the supply and take-up spools, and rewinding mechanism are all compactly disposed in a single case for convenience in transportation.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims without departing 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. The combination of a film supply spool, a take-up spool, film feeding mechanism, a lamp for projecting light through the film, a portable substantially rectangular carrying case inclosing said spools, lamp and feed mechanism, the spools being located side by side in the lower portion of the case, the lamp and feed mechanism being disposed in the upper portion of the case, means for conducting air to the upper rear portion of the case containing the lamp to prevent heat transference to and through the film and film-feed mechanism, and an outlet for air in the top of the case.

2. The combination of a rectangular portable carrying case, a lamp-house arranged in the upper rear portion of the casing having a less width than said casing to provide spaces between the respective side walls of said case and the lamp-house, the wall of the case having an opening therein communicating with said spaces, and a film-feeding mechanism, the lamp-house having upper and lower ventilating openings.

3. The combination of a rectangular portable carrying case, a lamp-house arranged in the upper rear portion of the casing having a less width than said casing to provide spaces between the respective side walls of said case and the lamp-house, the wall of the case having an opening therein communicating with said spaces, and a film-feeding mechanism, the lamp-house having upper and lower ventilating openings, the top of the case having an air outlet therein.

4. In a portable motion picture machine, the combination of a coil of film, devices for feeding the film across an exposure opening, gearing for driving said feeding devices, illuminating means for projecting light through the portion of the film moving across the exposure opening, a carrying case completely inclosing the film, feed-devices, gearing and illuminating means, and a box disposed within the case and containing the illuminating means, said box having walls spaced from the walls of the case, and ventilating means to carry heat from the space between the box and the case and from the box to the outside of the case.

5. In a portable motion picture machine, the combination of a coil of film, devices for feeding the film across an exposure opening, gearing for driving said feeding devices, illuminating means for projecting light through the portion of film moving across the exposure opening, a carrying case completely inclosing the film, feed-devices, gearing and illuminating-means, and a box disposed within the case and containing the illuminating means, said box having walls spaced from the walls of the case, the case having an air passage leading to and from the space between the box and the case, the box having openings for the passage of air from said space through the box.

6. In a motion picture machine, the combination of supply and take-up spools for a film mechanism for feeding the film across an exposure opening, illuminating means for projecting light through the film, a portable carrying case containing the spools, lamp and said mechanism, a house for said lamp adjacent the upper rear corner of the case, means to guide the film across an exposure opening, a partition between the lamp-house and said guide means, and means to carry heat from the lamp-house to the outside of the case.

7. In a motion picture machine, the combination of supply and take-up spools, film-feeding means, means to guide the film across an exposure opening, a lamp for projecting light through the film, and a portable carrying case, the lamp being disposed in the upper rear portion of the case, the film-guiding mechanism being disposed in the upper front portion of the case and between the film guide means and the front of the case, the spools being disposed in the lower portion of the case, and means to carry away the heat from the rear upper portion of the case to prevent heat transference to that portion of the case containing the film-feed mechanism and said guide-mechanism.

8. In a motion picture machine, the combination of supply and take-up spools, film-feeding means, means to guide the film across an exposure opening, a lamp for projecting light through the film, and a portable carrying case, the lamp being disposed in the upper rear portion of the case, the film-guiding mechanism being disposed in the upper front portion of the case and between the film-guide means and the front of the case, the spools being disposed side by side in the lower portion of the case, and means to carry away the heat from the rear upper portion of the case to prevent heat transference to that portion of the case containing the film-feed mechanism and said guide-mechanism.

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Witnesses:
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FRED GERLACH.