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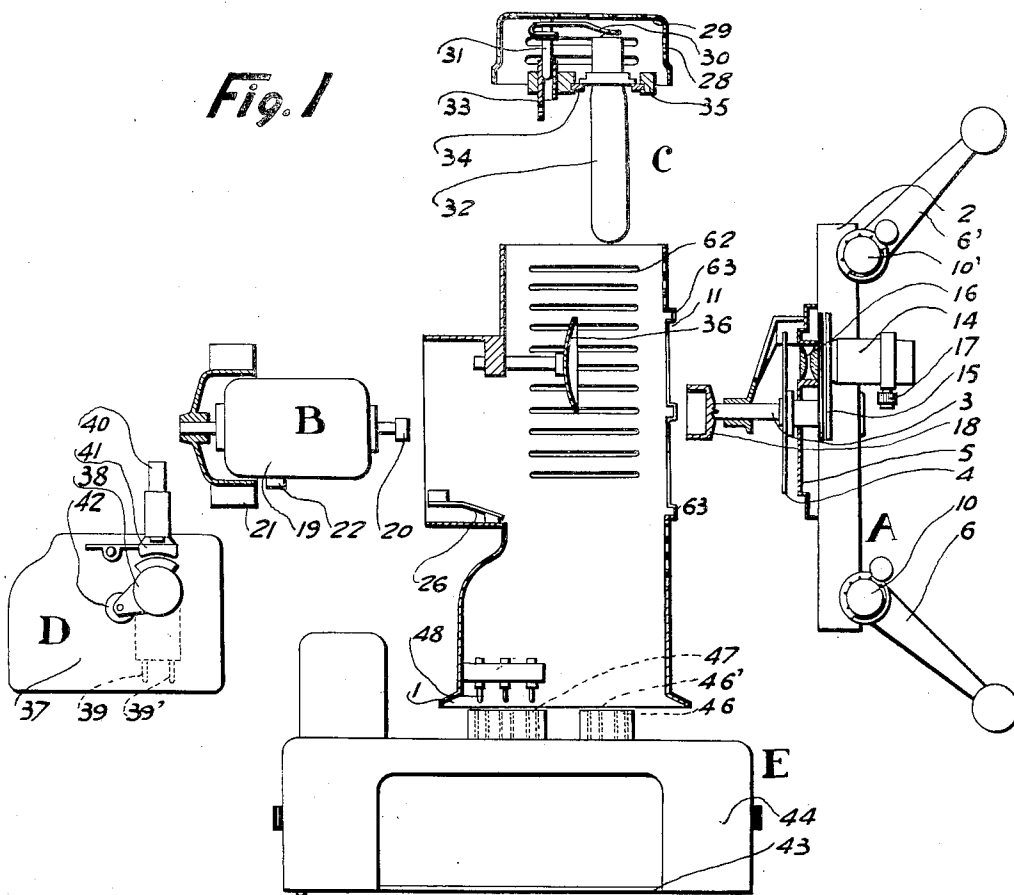
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2,027,680

PROJECTING MACHINE FOR SOUND CINEMATOGRAPHS

Filed Dec. 11, 1934

3 Sheets-Sheet 1



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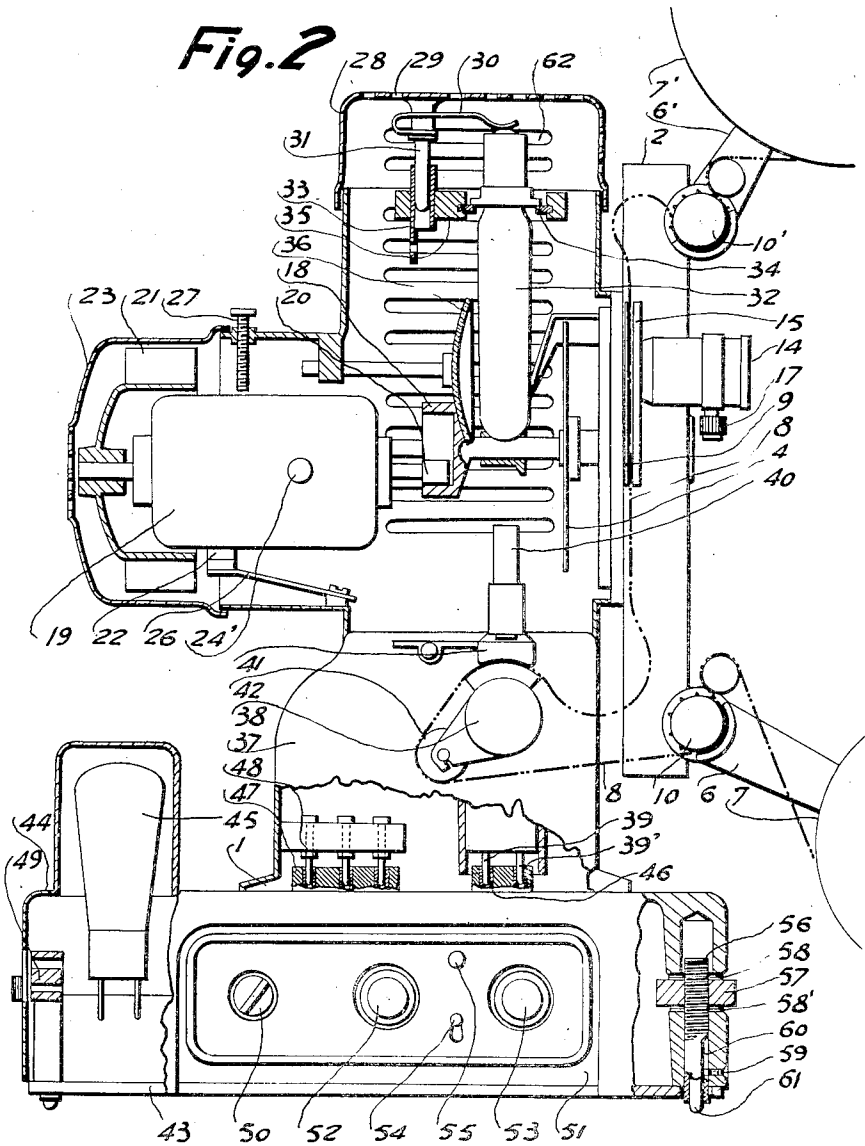
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3 Sheets-Sheet 2



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PROJECTING MACHINE FOR SOUND CINEMATOGRAPHS

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Fig. 3

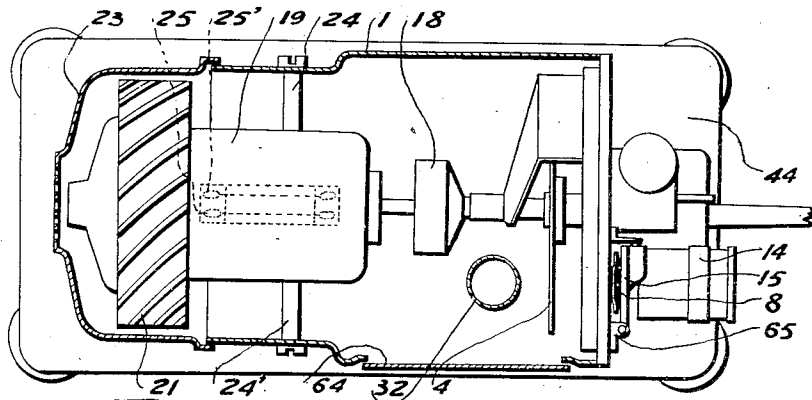


Fig. 4

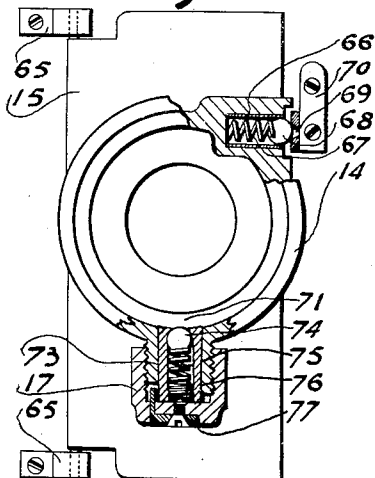


Fig. 5

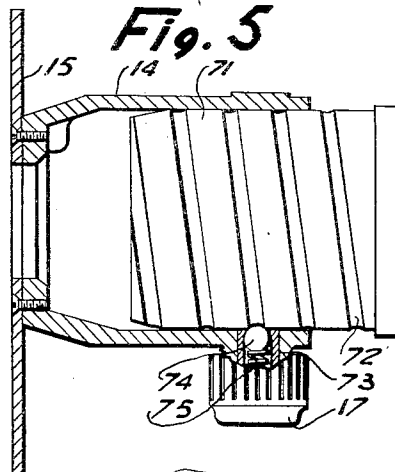
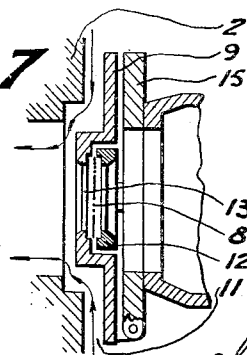


Fig. 6



Fig. 7



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UNITED STATES PATENT OFFICE

2,027,680

PROJECTING MACHINE FOR SOUND
CINEMATOGRAPHS

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Application December 11, 1934, Serial No. 757,060

7 Claims. (Cl. 88—16.2)

My invention has for its object a cinematographic machine adapted to perform easily the projection of sound films. It is characterized by the fact that it comprises a general frame or casing forming a lantern for the projection lamp and containing no mechanism. In or on this casing a plurality of units is adapted to be secured, each of these units serving a particular purpose and forming respectively a film driving and projecting mechanism, a motor with a fan, a sound reader, a projecting lamp with current leads, a sound amplifier. This arrangement allows a speedy and separate mounting and dismantling of the different elements first for assembly as one of the above units, then for fixation on the central casing or for preliminary adjustment. moreover different detail features are provided for ensuring a very simple connection for the parts one with another and with the casing.

In accompanying drawings shown by way of example:

Fig. 1 is a general side view showing the different units ready for mounting on the central casing.

Fig. 2 is a general partly sectional side view of the machine ready for operation with the different units mounted on the casing.

Fig. 3 is a plan view of the machine with the upper covers removed.

Fig. 4 is a front view partly sectional of the object glass mounting.

Fig. 5 is a side view partly sectional of the same mounting.

Fig. 6 shows a detail of said mounting.

Fig. 7 is a detail showing of the film guideway and projection gate.

The projecting machine comprises chiefly a hollow casing 1 of sheet or cast metal on or in which are secured (Fig. 1) a block or unit A comprising the film driving and projecting mechanism, a unit B comprising the motor with its fan, a unit C constituted by the projection lamp, a unit D constituted by the sound reader and a unit E forming a base and including the sound amplifier. The unit A adapted to be secured to the front of the casing 1 comprises a support 2 carrying the shaft 3 of the shutter 4 to the inside of which is secured the intermittent film-driving mechanism shown diagrammatically at 5 and to the outside of which are secured arms 6—6', collapsible in the example shown and carrying the film feed and take up reels 7—7'. The film 8 (Fig. 2) winds off one reel on another through the channelled guideway 9 and over the drums 10, 10'. As apparent in Fig. 7, the guideway 9

does not bear against the support 2 and a wide gap 11 is provided between the support and the guideway A throughout the height of the latter for ensuring the cooling of the film between the mechanism carrying support 2 and the casing 1 under the action of the fresh air flowing in the direction shown in the drawings. In the usual manner, a presser 12 ensures the rigidity of the film in front of the projection gate 13.

The mechanism carrying support carries also the projecting system comprising the object-glass-carrier 14 mounted on the plate 15 and the condenser 16. A knob 17 holds the object-glass in its carrier.

The shaft 3 carries at its inner end a hollow pulley 18 which enters, when the machine is assembled, the inside of the casing 1 together with the shutter 4.

The second unit B secured to the opposite side of the casing 1 enters almost entirely into the latter and is constituted by the motor 19, the shaft of which carries at its front end a friction roller 20 while its rear end carries a suction fan 21 of the type described in my copending application Ser. No. 751,074 filed on Nov. 1, 1934 an electric contact 22 is provided at the lower part of the motor for feeding the latter. A perforated cap 23 closes the aperture through which the motor has been introduced into the casing 1.

The mounting of the motor is effected in the following manner: the motor is carried by the aligned horizontal pivots 24—24', the contacts 22 resting on the cooperating contacts 25—25' (Fig. 3) carried by a spring blade 26. The roller 20 is engaged inside the hollow pulley 18 (Fig. 2) and the spring 26 urging upwardly the rear part of the motor ensures an intimate contact between this roller and the inside of the rim of the pulley, which ensures the driving of the mechanism. The disconnection is obtained by means of a screw 27 adapted to make the motor pivot against the action of the spring 26.

The unit C comprises chiefly a cover 28 provided with elongated apertures 29 for the admission of fresh air. This cover may be secured to the upper part of the casing 1 and carries on one hand the contact blade 30 and on the other hand the pin 31 leading current to the projection lamp 32 the position of which when the machine is mounted lies behind the shutter 4 (Fig. 2). This lamp arranged with its cap upwards is connected with the current leads on one hand through the spring blade 30 and the pin 31 engaging a socket 33 and on the other hand through a contact ring 34 contacting with another socket not shown. 55

The two sockets are carried through an insulating plate 35 on which the lamp also rests. It is thus apparent that the lamp-carrying plate 35 is removable and may be replaced when the lamp is changed. On the other hand when the cover is lifted for instance for removing the lamp, the circuit feeding the latter is broken owing to the fact that the pin 31 integral with the cover 28 is then separated from the socket 33 integral with the lamp-carrier 35.

Lastly the described arrangement of the lamp 32 allows its use not only for projection purposes in cooperation with a mirror 36 carried by the casing behind the projection gate, but also for illuminating the photoelectric cell of the sound reader described hereinafter.

The unit D forming the sound reader is constituted by a plate 37 adapted to bear against an aperture in one of the side walls of the casing 1 for which it forms a cover. This plate carries the casing of the photoelectric cell 38 provided with pins 39, 39' together with the tube 40 enclosing the cooperating optic system, a presser shoe 41 ensuring the rigidity of the film and regulating means arranged coaxially with the pulley 42. This sound reader forms the subject-matter of my copending application Ser. No. 757,059, filed on Dec. 11, 1934. As apparent from Fig. 2 the optic tube 40 is arranged so as to receive in the assembled machine the light rays from the projecting lamp 32.

The last unit E forms a support for the whole apparatus. It is constituted, as described in my copending application Ser. No. 751,075, filed on Nov. 1, 1934, by a preliminary cell amplifier comprising the following elements: a base plate 43, a casing 44 enclosing the electric system, transformer, condenser, etc. . . . a lamp 45, sockets 46, 46' adapted to receive the pins 39, 39' of the photoelectric cell of the sound reader and sockets 47 adapted to receive pins 48 secured to the main casing 1 and feeding the motor 19 and the lamp 32 which avoids all wire connections between the different units.

The general current terminals are shown at 49 and a knob 50 carried by the front panel 51 of the casing 44 controls the general switch (Fig. 2). This same panel carries the knobs 52 and 53 controlling respectively the tone control and the potentiometer, the sound cutout 54 and a signalling lamp 55. The casing 44 may thus be placed on the machine without any connection being required, openings being merely provided for the passage of current terminals, pins, adjustment means and the like.

In order to ensure steadiness for the projector and to direct at will the light beam when required, the base plate 43 is carried by supporting screws 56 mounted at the angles of the cover 44, these screws being adjustable in height by means of an outwardly milled nut 57 held between two rubber washers 58, 58', they are guided each by a screw 59 engaging a slot 60 in the screw 56 and ending with rubber shoes 61 projecting beyond the lower end of the base plate 43 and extending inside the supporting screws so as to damp the vibrations of the latter.

I will now complete the description of the casing 1 by mentioning that it shows at its upper end elongated apertures 62 in its front and lateral walls for ensuring the suction of fresh air and that stops 63 are provided on the front wall so as to form passages 11 for fresh air between the film driving means 2 and the casing 1 as described hereinabove. Lastly on one of the side-

walls an inspection door or plate 64 (Fig. 3) allows an easy access to the inside of the casing.

Figs. 5, 6 and 7 show constructional details of the projecting machine briefly described hereinbefore.

The plate 15 carrying the object-glass-carrier 14 is hingedly secured to the mechanism support 2 through the hinges 65 (Figs. 3 and 4). Its bolting is ensured by the tube 66 secured in the object-glass carrier 14 and containing a spring 67 urging out the ball 68 prevented by a narrowing in of the outer end of the tube from passing out of same. This ball is adapted to engage a notch 69 provided in the projection 70 on the support 2.

For focusing the object-glass, it is necessary to vary the position thereof with reference to the object-glass carrier. To this end, the object-glass is housed in a socket 71 (Fig. 5) in which is provided a helical groove 72. On the other hand, the object-glass-carrier 14 carries at its lower end (Figs. 4 and 5) a bearing 73 enclosing a ball 74 urged by a spring 75 and closed by a screw 76. This ball engages the groove 72 and serves thus as a guiding stud for the object-glass socket 71. For locking said socket after the glass is focussed, there is screwed longitudinally of the bearing 73 a tapped knob 17 which presses the bearing the upper end of which is incurved against the socket 71 which is thus locked. To avoid any useless unscrewing of the knob 17, this knob carries a projection 77 moving in a recess 78 (Fig. 6) at the lower part of the tubular projection 79 of the object-glass carrier 14 whereby the rotation of the knob 17 is limited.

What I claim is:

1. A projecting machine for sound films comprising a casing, an apertured hollow support adapted to be removably fitted to the outside of a lateral wall of the casing, a film-driving and carrying mechanism inside said hollow support, arms pivotally secured to the hollow support and carrying the film feed and take-up reels an electric motor adapted to be removably fitted in the opposite lateral wall of the casing, a shaft for said motor adapted to frictionally engage the film driving mechanism, a picture projecting and sound record illuminating lamp, a support removably carrying said lamp on its underside and adapted to removably close the upper part of the casing, a sound reader including a photoelectric cell adapted to be removably fitted in the casing underneath the motor with the cell lying in vertical alinement with the location of the lamp, a base to which the lower part of the casing is removably secured, a sound current amplifier in the base, means for feeding current to the base and electric leads and contact means for electrically connecting the lamp, cell, amplifier and motor with the current feeding means.

2. A projecting machine for sound films comprising a casing, a hollow support and a film-driving and carrying mechanism carried thereby adapted to be removably fitted in a wall of the casing, said mechanism including a rotary drive shaft and a cylindrically recessed part at the end thereof, an electric motor adapted to be removably carried by the casing and including a shaft adapted when the motor is in place to lie parallel to the mechanism drive shaft, a friction roller carried by the motor shaft and engaging the recess in the cylindrically recessed part for driving same, a picture projecting and sound record il-

illuminating lamp, a support removably carrying said lamp and removably carried by the casing, a sound reader including a photoelectric cell removably carried by the casing, a base for removably carrying the casing, a sound current amplifier in the base, means for feeding current to the base and electric leads and contact means for electrically connecting the lamp, cell, amplifier and motor with the current feeding means.

3. A projecting machine for sound films comprising a casing, a hollow support and a film-driving and carrying mechanism carried thereby adapted to be removably fitted in a wall of the casing, said mechanism including a rotary drive shaft and a cylindrically recessed part at the end thereof, an electric motor adapted to be removably introduced in the casing and including a shaft adapted when the motor is in place to lie parallel to the mechanism drive shaft, a friction roller carried by the motor shaft and engaging the recess in the cylindrically recessed part for driving same, a pivot rigid with the casing for rockably holding the motor, a spring carried by the casing adapted to urge the motor in a direction such that the friction roller bears against the annularly recessed part, a screw carried by the casing for adjustably counteracting the action of the spring, a picture projecting and sound record illuminating lamp, a support removably carrying said lamp and removably carried by the casing, a sound reader including a photoelectric cell removably carried by the casing, a base for removably carrying the casing, a sound current amplifier in the base, means for feeding current to the base and electric leads and contact means for electrically connecting the lamp, cell, amplifier and motor with the current feeding means.

4. A projecting machine for sound films comprising an apertured casing, a hollow support and a film driving and carrying mechanism including a shutter carried thereby, said support being removably fitted in an aperture of the casing, an

electric motor adapted to be removably set in place through an aperture of the casing and to frictionally control the film driving mechanism, a perforated cap adapted to close the casing aperture through which the motor is adapted to pass, a picture projecting and sound record illuminating lamp, a perforated cover adapted to removably close the upper aperture in the casing and removably carrying said lamp behind the shutter, electric leads and contact means on the cover, a lamp carrier plate, contact means on said plate adapted to cooperate with the contact means on the cover, a sound reader including a photoelectric cell removably carried in an aperture of the casing, a base for removably carrying the casing, a sound current amplifier in the base, means for feeding current to the base and electric leads and contact means for electrically connecting the cell, motor, amplifier and contact means in the cover with the electric current feeding means.

5. In a machine as claimed in claim 1, the provision of longitudinally grooved screws carrying the base, nuts controlling same, transverse screws engaging the grooves in the carrying screws, and yielding shoes at the end of the transverse screws engaging the said grooves and projecting beyond the carrying screws.

6. In a machine as claimed in claim 1, a plate hingedly secured to the hollow mechanism-carrying support, a spring-urged ball system adapted to lock said plate against the support, an object glass, and a carrier therefor carried by the plate.

7. In a machine as claimed in claim 1, a plate hingedly secured to the hollow mechanism-carrying support, a spring-urged ball system adapted to lock said plate against the support, an object glass, a helically slotted socket therefor, a socket carrier carried by the plate, a spring-urged ball system on the carrier engaging the helical slot and a knob adapted to move between predetermined limits for holding the socket in place.

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