

Nov. 24, 1942.

W. THOMAS

2,303,181

SLATING AND SYNCHRONIZING METHOD AND SYSTEM

Filed Nov. 2, 1940

2 Sheets-Sheet 1

Fig. 1.

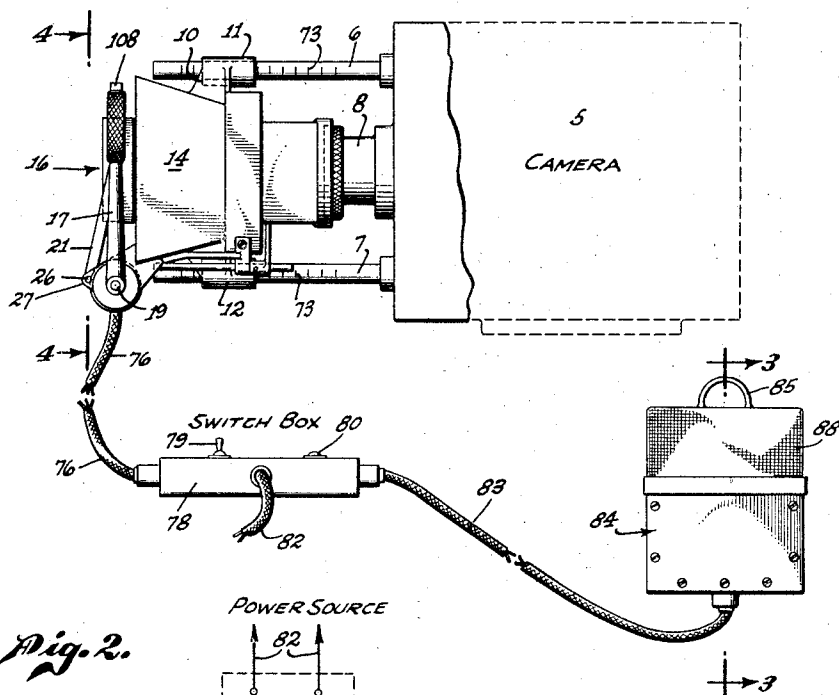


Fig. 2.

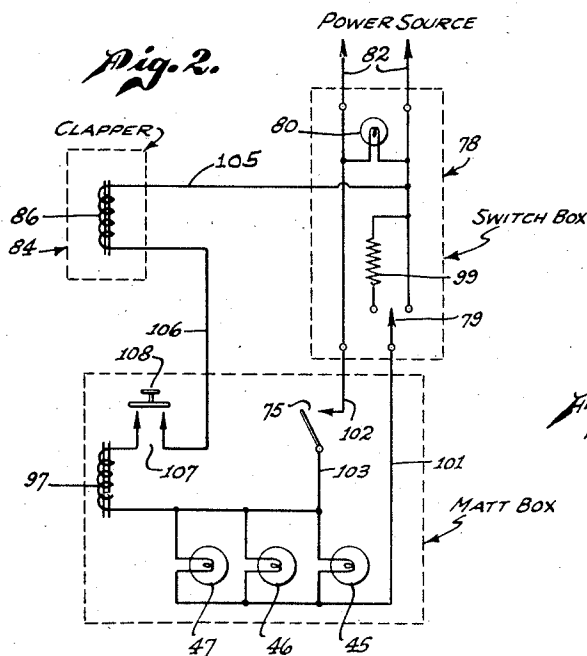
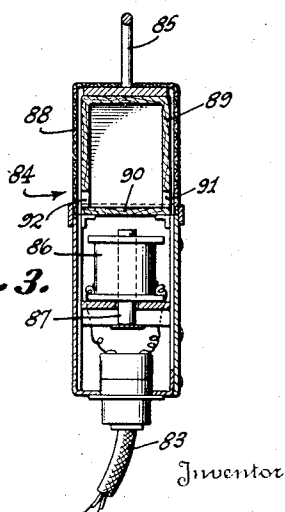


Fig. 3.



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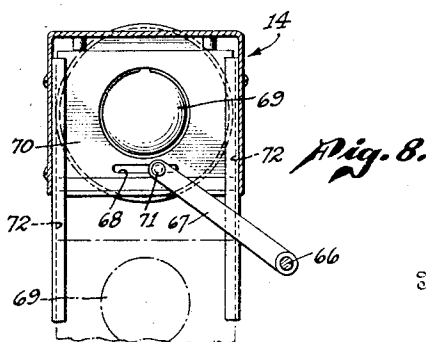
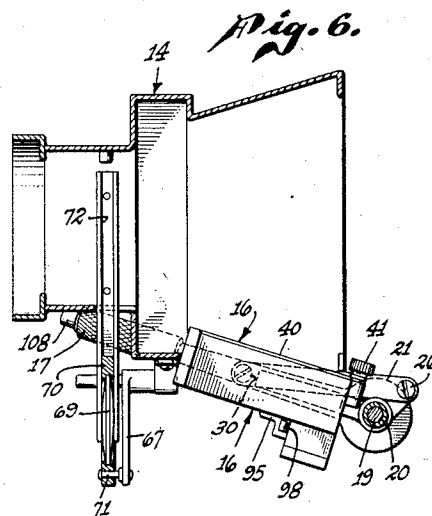
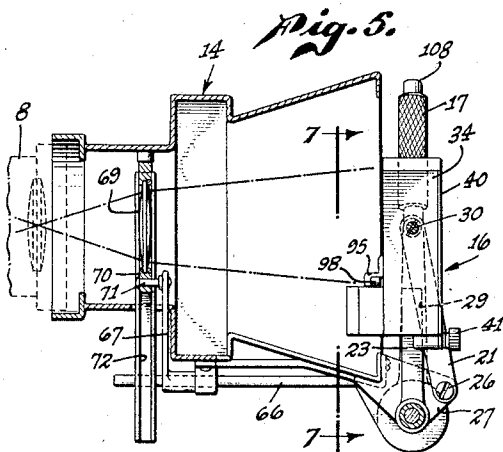
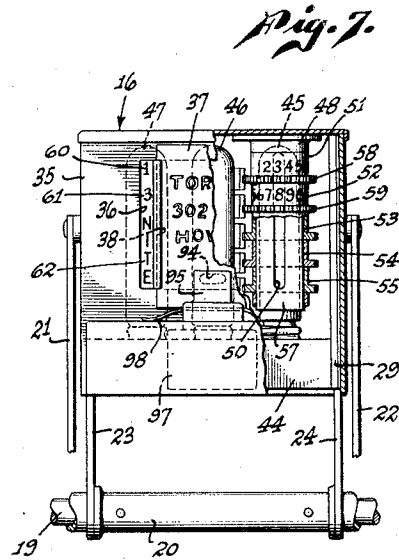
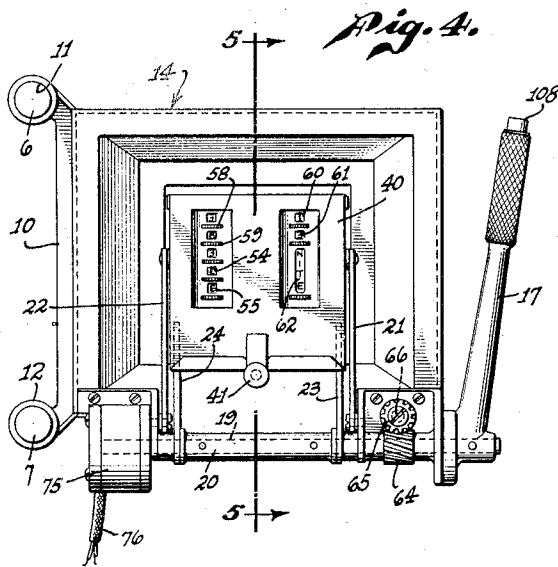
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2 Sheets-Sheet 2



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SLATING AND SYNCHRONIZING METHOD
AND SYSTEM

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Application November 2, 1940, Serial No. 364,087

11 Claims. (Cl. 88—16.2)

This invention relates to motion picture apparatus and particularly to a method of and means for marking or identifying motion picture film and for synchronizing corresponding picture and sound films.

In the art of motion picture studio production it is well known that the picture and sound sequences are originally taken on separate films and that each of these films must be marked so that it may be subsequently and properly combined in the final composite print. It is also well known that certain sequences are repeated several times in view of errors committed by actors or because of changes desired by the director. Thus, each sequence or "take" of the same scene must be identified for subsequent instruction to the editors or cutters.

Furthermore, if a certain scene is to depict a certain condition, such as day, night or dawn, this information is necessary to the laboratory in order to permit them to process the film to give the desired effect. Thus, each take should be readily and quickly marked with the required information, and the synchronization or start marks should be quickly applicable in such a manner as to facilitate the later combining of the films for editing or printing.

In the past, the usual practice for marking a "take" has been by the use of a slate, which is a board upon which appears the title of the picture, the names of the director and cameraman, the production number and other information. This slate generally has a hinged board which is called a clapperstick, the two parts of which are brought together when the slate is held in front of the camera to provide a synchronization mark on the picture film by the image of the stick contacting the slate and a corresponding mark on the sound track film by the noise made by the contacting action. This method has been found undesirable because the slate is not always held in focus, the synchronization marks are not too readable, and the maneuver of placing the slate in front of the camera and the noise made thereby is disturbing to the actors just prior to their going into the action of a scene. Furthermore, the clapperstick method requires that the film be brought up to speed before slating, thus using considerable film before the action begins. It is also rather difficult to get a slate into certain types of scenes, especially where several cameras are photographing a single scene.

The present invention is directed to a system which provides an absolutely positive slate which is always in proper focus at the desired intensity

to produce a readable image, and which provides positive synchronization marks which are much more accurate than those made by the clapperstick method. The impression of the slate and synchronization mark images may be impressed on the respective films substantially without the knowledge of the actors, so there is no disturbing factor involved. The device is applicable to any camera and is simply and quickly operated. It is also unnecessary for any operator to be in the scene for slating purposes, while only the film used in bringing the camera up to speed precedes the action since the slating is accomplished on this normally unused portion of the film.

The principal object of the invention, therefore, is to facilitate the slating of motion picture film.

Another object of the invention is to facilitate the production of synchronization marks on corresponding picture and sound films.

Another object of the invention is to combine the operation of slating and synchronizing of motion picture and sound films without annoyance to the actors in a particular scene being photographed.

A further object of the invention is to produce a silhouette type of slate which is in focus at all times and of the proper illumination to produce a positive mark on the picture film.

A further object of the invention is to electrically control a slating and synchronizing device for motion picture and sound film production.

Although the novel features which are believed to be characteristic of this invention will be pointed out with particularity in the appended claims, the manner of its organization and the mode of its operation will be better understood by referring to the following description read in conjunction with the accompanying drawings forming a part thereof, in which

Fig. 1 is a view of the invention attached to a camera;

Fig. 2 is a schematic view of the electrical circuit employed in the invention;

Fig. 3 is a cross-sectional view of the sound producer taken along the line 3—3 of Fig. 1;

Fig. 4 is a front view of the slating and synchronizing device taken along the line 4—4 of Fig. 1;

Fig. 5 is a cross-sectional view of Fig. 4 taken along the line 5—5 thereof;

Fig. 6 is a view similar to Fig. 5 with the slate out of registering position;

Fig. 7 is a rear elevational view of the slate partly in cross-section as viewed by the camera

lens and taken along the line 7—7 of Fig. 5; and Fig. 8 is a detail view of the lens-positioning mechanism.

Referring now to Fig. 1, a camera 5 may be of any standard type upon the front of which is mounted a pair of shade or matt box supporting rods 6 and 7. Supported on a bracket 10 having ears 11 and 12 with openings therein to accommodate the rods 6 and 7 is the shade or matt box 14. The box 14 is normally employed on cameras without the slating device of the invention to act as a light shade for the camera lenses. The box 14, therefore, is flared outwardly to accommodate the viewing angle of the camera lens.

Mounted on lower brackets of the matt box 14 is a slating and synchronizing device 16 shown positioned in an operative relationship in Figs. 1 and 5, and in a non-operative position in Fig. 6, the slate being moved into these positions by means of a handle 17. The handle 17 rotates a shaft 19 on which is mounted a hollow sleeve 20 adapted to be rotated with shaft 19. The slate box 16 is mounted upon two pairs of flat rods 21, 22, 23 and 24, the members 21 and 22 being pivotally fixed at their lower ends, rod 21 being shown so connected at 26 to a bracket 27 in Fig. 5. The other connecting members 23 and 24 are relatively slidable in grooves 29 in the slate box. As shown in Figs. 5 and 6, the member 23 slides relative to the point 30 as the slate box is lowered. Thus, rotation of the handle 17 will position the box 16 either in the position shown in Fig. 6 or in the position shown in Fig. 5, the linkage elements 21, 22, 23 and 24 controlling the movement of the box. By the particular connection of the linkage elements, the slate box is raised as it is brought to its registering position. In its inoperative position, however, as shown in Fig. 6, it will be accommodated in the bottom flared side of the matt box, thereby leaving the space in the rectangular portion of the matt box for the insertion of filters, etc.

The slate box itself is composed of two end members, one of which is shown at 34 in Fig. 5, a back plate 35 having two narrow openings, one of which is shown at 36 in Fig. 7, and a centrally disposed large opening into which a slide 37 is adapted to be placed along grooves 38. That is, the slide 37 may be interchanged with other similar slides to provide different semi-permanent information, as will be explained hereinafter. The other side of the box comprises a cover member 40 having a plurality of openings therein, as shown in Fig. 4, this cover member being adapted to slide along the end members and be held in position by a finger screw 41. Mounted within the lower section of the box is an electrical contact base 44 (see Fig. 7) into which three elongated lamps 45, 46 and 47 are fastened. The lamp 46 is behind the slide 37 for illuminating the indicia thereon. Lamp 45 is adapted to be inserted within a sleeve or cylinder 57 attached to the upper end 48 of the cover 40, while lamp 47 is positioned within a sleeve similar to 57. The sleeve 57 has two elongated slits diametrically opposed, one of which is shown at 50, the sleeve having mounted thereon a series of rings or collars 51, 52, 53, 54 and 55 as shown in Fig. 7. Rings 51, 52 and 53 bear two pairs of numeral indicia, while rings 54 and 55 bear letter indicia, all of which are cut so as to present light silhouettes of the numerals and letters to the camera lens. Each ring or collar has a knurled flange, as shown at 58 and 59, for turning and securing in position the rings from the front

side of the box as shown in Fig. 4. By the use of two pairs of indicia, respective numerals and letters being diametrically positioned, the operator can easily set up the slate from the side visible to the operator.

A similar plurality of indicia is positioned around lamp 47, this indicia having two rings of numerals, as shown at 60 and 61, and an elongated ring which bears a plurality of words, one of which is shown at 62. These words may be such as "nite," "day," "dawn," and "dusk," etc., to indicate to the processor in the laboratory the type of processing to bring out the effect desired. These rings also have duplicate sets of indicia or words diametrically opposite one another so that the operator, by turning the respective knurled flanges, such as shown at 58 and 59, can properly position the corresponding number or letter in front of the camera lens.

The shaft 19 rotates worm gear 64, which rotates pinion 65 meshing therewith. Rotation of the pinion 65 rotates shaft 66 on which the pinion is mounted, the shaft raising and lowering one end of an arm 67, to which is attached a pin 71 adapted to slide in a groove 68 (see Fig. 8). This action raises and lowers a lens 69 mounted in a support 70. The lens support is guided in grooves 72. Thus, movement of the handle 17 not only positions the slater box 16 in the positions shown in Figs. 5 and 6, but also raises and lowers the lens 69, this lens being a collimating lens adapted to focus the indicia of the slate upon the film. By the proper selection of a gear ratio, the lens 69 could be rigidly mounted to lever 67. It is to be noted that a series of marks 73 are inscribed upon the rods 6 and 7, which marks indicate the position of the matt box 14 in accordance with the focal length of the lens in assembly 8. In this manner the collimating lens 69 will always focus the slate indicia upon a film since the slate will be positioned in accordance with the focal length of the lens being used.

On the end of a shaft 19 is a switch box 75 having a cable 76 leading therefrom. From the switch 75 connections are made to the terminals of the lamps 45, 46 and 47. Thus, the operation of the lever 17 will actuate the switch as the slate box 16 is raised, the lamps being extinguished when the slate box is in the non-registering position shown in Fig. 6.

Referring again to Fig. 1, a cable 76 is shown extending to a switch box 78 having a switch 79 and a telltale light 80 therein. From the switch box 78, a cable 82 extends to a power source, preferably a direct current source, while a cable 83 extends to a clapper box 84 having a handle 85 for suspending it to a microphone boom, for instance.

The box 84, shown in cross-section in Fig. 3, comprises a solenoid 86 with a movable plunger armature 87, the solenoid being connected to the cable 83. In the upper portion of the box 84 and enclosed by a screen 88 is a wooden sounding block formed of a shell 89 having a lower contact surface 90. The section 90 is connected to the portion 89 at the ends, providing openings 91 and 92 along the sides. When the solenoid 86 is energized, the plunger 87 is rapidly raised to strike the section 90 and provide a sharp staccato sound, the nature of this sound being particularly desirable for effecting the sound recording element, as it is a rapidly damped impulse.

Referring again to Fig. 7, it will be noted that an opening 94 is shown in the slide 37, this

opening being normally covered by a plate 95. The plate 95 is pulled downwardly magnetically to expose light from the lamp 46 to the film through opening 94 upon actuation of a solenoid 97, the plate 95 being restored to its normal covering position by a spring 98. Actuation of the solenoid 97 and the solenoid 86 is simultaneous, as will now be explained.

Referring to Fig. 2, in which the circuit of the system is shown, the power source supplies power to the switch box 78 over the pair of conductors 82 across which is positioned the telltale light 30 to indicate that the power is on. In one of the conductors a resistance 99 is connected so that the switch 79 may either be connected directly to the power source or to the power source through the resistance. The purpose of this resistance is to vary the intensity of the lamps 45, 46 and 47 according to whether or not the camera is set up to photograph exteriors or interiors. That is, when the camera is photographing an exterior or an extremely brightly illuminated scene, the camera lens aperture will be diminished. It is thus desirable to increase the illumination of the slating device and this is done by throwing the switch 79 to the right-hand position. Should the camera be photographing an interior scene in which the lens aperture is larger, then the slate illumination may be decreased by connecting the resistance 99 in the lamp circuit.

As shown in Fig. 2, the lamps are energized from the switch 79 over conductors 101, 102 and 103, through the switch 75, this switch being the one mounted on the shaft 20 and actuated by the handle 17. Another circuit exists from the power source over conductor 105, through clapper solenoid 86, conductor 106, through a switch 107, solenoid 97, conductor 103, switch 75 and conductor 102. Switch 107 only completes the circuit after switch 75 has been closed. Switch 107 is mounted in the handle 17 and actuated by the thumb plunger 108.

Thus, to operate the slating and synchronizing device, the switch 79 is thrown to either the right- or left-hand position according to the nature of the scene being photographed. Then the picture camera and sound recorder are started; the handle 17 is actuated to place the slate box 16 in photographing position, as shown in Figs. 1, 4 and 5; and, when the signal is given that the films are running at their correct speed and synchronism, the switch 107 is closed by pressing on plunger 108, which actuates the solenoids 86 and 97 for marking the picture and sound films. The solenoid 86 actuates its plunger element 87 to make a noise which is picked up by the microphone on the boom, thus placing a mark on the sound film. Simultaneously, the solenoid 97 removes the plate 95 from the aperture 94, thus allowing the picture film to have a mark impressed thereon in at least one frame which corresponds, of course, with the sound track mark made by picking up the noise from the clapper 84. The slate indicia are, of course, photographed on several frames at the beginning of each sequence. The slater and/or synchronizer may also be operated at the end of a sequence to identify and/or mark the film.

The slide 37 may be readily changed in case any of the information thereon is not pertinent to the sequence being taken. For instance, the top row of information may be the title of the picture; the second row may include a number which is the production number of the picture,

and a letter identifying the particular sound track, and another number to identify the camera being used. The third line of the slide may give the name of the director; the next line, the name of the chief cameraman; and the last line, the name of the first assistant cameraman. Thus, should any cameraman be changed during the taking of the picture or other conditions vary, a new slide 37 may be punched and inserted in the slate box, although, as a general rule, one slide is sufficient for one picture or a large portion of it.

The upper three rings shown to the right in Fig. 7 provide a three-digit number to indicate the scene number of the script, while the lower two-letter rings designate wild or non-sound shots. The other rings of indicia shown on the left in Fig. 7 also provide desired information, such as the "take" number of one particular scene, while the four words—"day," "dawn," "nite," or "dusk"—indicate to the laboratory what photographic effect is desired. To vary any particular indication, the knurled rings need only be adjusted.

Thus, the above combination slate and synchronizing device may be quickly and simply operated without creating any disturbing effects upon the actors of the scene. Also, the film is exposed to brilliantly lighted silhouettes of letters and numerals which will give a sharp positive image upon the film, the image always being in proper focus. Since the slate fills the entire frame, it also fills the projection screen, making it easily readable. The device may be attached to any motion picture camera of standard design and will operate therewith with normal sound recording apparatus. The invention saves film since the film passing through the camera during the acceleration period is used for slating, while with the clapperstick slate method, it was necessary to wait until the film reached photographing speed before the slate was held in front of the camera. Thus, this method not only saves film but time, as the action may begin as soon as the film is up to speed.

The present invention is particularly useful where a group of cameras are simultaneously photographing a scene, because it was always a problem and took considerable time to get a slate properly in front of all the cameras. Now each camera has its own slate and as the synchronizing circuit may be connected between cameras, one cameraman can give the synchronizing signal for all of them.

It is also to be understood that the actuation of switch 107 may be accomplished electrically or that the switch may be located at a remote point, such as at the sound recorder, while the slate itself may be automatically removed when the films are up to speed. For instance, the slate may be placed in registering position, as shown in Fig. 5, and latched against spring tension; and then the signal from the sound recorder operator that the films are up to speed could release the latch, removing the slate and simultaneously operating the solenoids 86 and 97 to provide the start marks. Thus, the cameraman need place the slate in registering position before and/or at the end of each "take."

I claim as my invention:

1. A slating and synchronizing system for a camera and a sound recorder comprising a light source, indicia adjacent said light source, means for positioning said indicia and light source for registering light silhouettes of said indicia on the

film in said camera, means for energizing said light source when said indicia are in registering position on said camera film, a sound producer, means for simultaneously exposing a certain one of said light silhouettes to said camera film and actuating said sound producer for simultaneously marking said camera film and the film in said sound recorder, means for simultaneously positioning a lens between said indicia and said film for focusing said indicia on said film, and means for controlling the energization of said light source during the positioning of said indicia in registering position.

2. A slating and synchronizing system for a motion picture camera and sound recorder comprising a slate for said picture camera having indicia and a light source, means for positioning said indicia intermediate said picture camera film and said light source for producing light silhouettes of said indicia, means for controlling the energization of said light source, means for generating sound waves, means for exposing film in said picture camera to light, and means included in said positioning means for simultaneously controlling the actuation of said sound wave generating means and the exposing of said film in said picture camera film to light whereby the films in said picture camera and said sound recorder are simultaneously marked.

3. A slatting system for a motion picture camera focused on a scene to be photographed comprising a shade box attached to said camera, a slating device adapted to be inoperatively positioned along one side of said shade box, said slating device including a light source and a plurality of indicia, means for positioning said slate in registering position with respect to said camera, a sound producer, means actuated by said slate positioning means for focusing said slate on said camera film during the positioning of said slate on said camera film during the positioning of said slate in a registering position, and means in said slate positioning means for simultaneously controlling the energizing of said light source and said sound producer.

4. A slating system in accordance with claim 3 in which said slate positioning means comprises a manually operated lever adapted to move said slate from one side of said shade box into a registering position normal to the optical axis of said camera lens and adapted to move said focusing means into operative position, said means including a switch adapted to be closed for energizing said light source during the movement of said slate into registering position.

5. A slating device for a motion picture camera comprising a box having fixed end sections, a side section having narrow elongated side openings and a centrally disposed larger opening, a cover section having a plurality of sleeves therein having diametrically opposed elongated openings, a plurality of manually rotatable rings mounted on said sleeves bearing indicia, and a plurality of lamps adapted to be accommodated within said sleeves for passing light through said indicia.

6. A slating device for a motion picture camera comprising a rectangular box having fixed end sections, a removable cover having a side section, said side section having openings therein, a fixed side section having elongated side openings and a larger centrally disposed opening, a slide having indicia punched therein adapted to be inserted in said centrally disposed opening, a plurality of adjustable means having identical indicia diametrically opposed corresponding indicia simultaneously appearing in said elongated openings in said fixed section and in the openings in said side section of said cover, and a plurality of lamps within said adjustable means for simultaneously passing light through said diametrically opposed indicia.

7. A slating device in accordance with claim 6 in which said adjustable means includes rotatable rings in which said indicia is punched.

8. Motion picture apparatus comprising means for producing light silhouettes of indicia, means for positioning said indicia in position for registration on a motion picture film, means for focusing said indicia on said film, means for varying said indicia, a light source, a source of sound, means for controlling the energization of said light source during the positioning of said indicia in registering position, and means for simultaneously controlling the exposure of one of said silhouettes on said film and actuating said source of sound.

9. A motion picture slater and synchronizing system comprising means for producing indicia adapted to be photographed by a motion picture camera, means for illuminating said indicia with a light intensity dependent on the scene being photographed, means for producing a light impulse adapted to be photographed by said motion picture camera, means for affecting a film in a second camera, and means for electrically controlling the simultaneous actuation of said light impulse producing means and said means for affecting said film in said second camera for simultaneously marking said films.

10. A motion picture slater in accordance with claim 9 in which said means for affecting said film in said second camera comprises a sound wave generator having a predetermined frequency characteristic.

11. A slating and synchronizing device for a motion picture film and a sound film comprising a shade box for a camera, a slate box adapted to be interiorly illuminated, said slate box normally occupying a position along one side of said shade box, means for moving said slate box to a position normal to the optical axis of said camera, said means including means for controlling the illumination of said slate box, means for focusing said slate box on the film of said camera, a sound producer, and means for momentarily light impressing said film from said slate box and simultaneously actuating said sound producer for marking said picture and sound films.

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