NEW MOTION PICTURE APPARATUS

During the Conventions of the Society, symposiums on new motion picture apparatus are held, in which various manufacturers of equipment describe and demonstrate their new products and developments. Some of this equipment is described in the following pages; the remainder will be published in subsequent issues of the Journal.

NEW BACKGROUND PROJECTOR FOR PROCESS CINEMATOGRAPHY*

H. GRIFFIN**

A new type of background projector for use in process photography in motion picture production studios has been developed which has already been installed in studios in England, Sweden, Japan, and the United States (Figs. 1 and 2).

In appearance this equipment is quite similar to the well known Super Simplex projector, but the mechanism, magazines, and lamp house are mounted upon a specially built, rigid pedestal assembly in order to eliminate the possibility of vibration during operation (Fig. 3). The complete unit is composed of a specially constructed Super Simplex mechanism, the usual upper and lower magazines, and a Hall & Connolly super-high-intensity lamp and lamp house, all mounted upon the above-mentioned pedestal. The projector mechanism is built especially for the work it must do, and commercial tolerances acceptable for theater projection are eliminated in the construction of the process projector. The film-trap, for instance, is very accurately constructed, and is equipped with edge-guiding means in order that the picture may be absolutely steady laterally, and provision is made in the film-trap design and construction for judging the projected picture to determine what causes any unsteadiness that might be present.

For example, with this equipment it is possible to project a sprocket hole in the film, and if the perforations in the film are accurate—and they usually are—the image of the sprocket hole upon the screen is absolutely steady, both laterally and vertically. If the negative is projected and the camera frame line moves with relation to the perforation, that is a definite indication that the camera movement is not steady. If the positive is projected and the positive frame line moves with relation to the sprocket holes, that is a definite indication that the camera or the printer was unsteady, so that it is possible to observe and analyze satisfactorily any defect that may be present in the master print for process projection and thus eliminate endless discussion as to where the fault resides.

The intermittent movement of this particular equipment is of the Geneva type. It is manufactured to practically zero tolerance, and steadiness of the movement is carefully checked with a special test-film.

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** International Projector Corp., New York, N. Y.

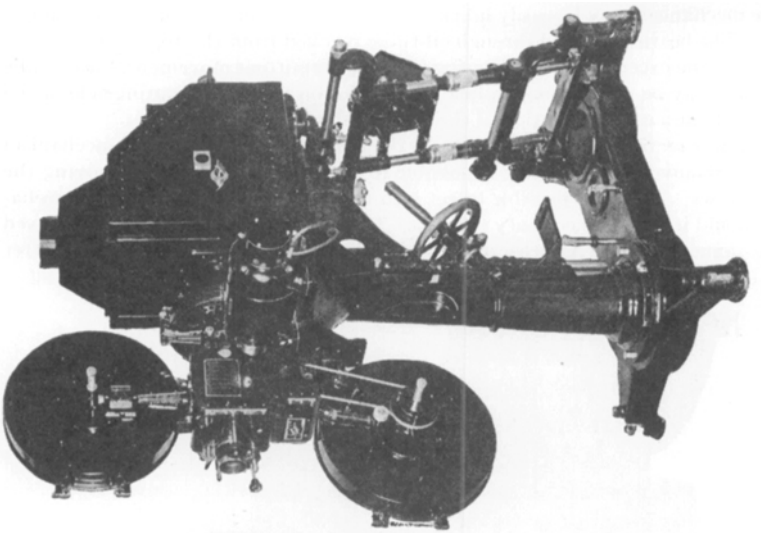

FIG. 2. Background projector; non-operating side.

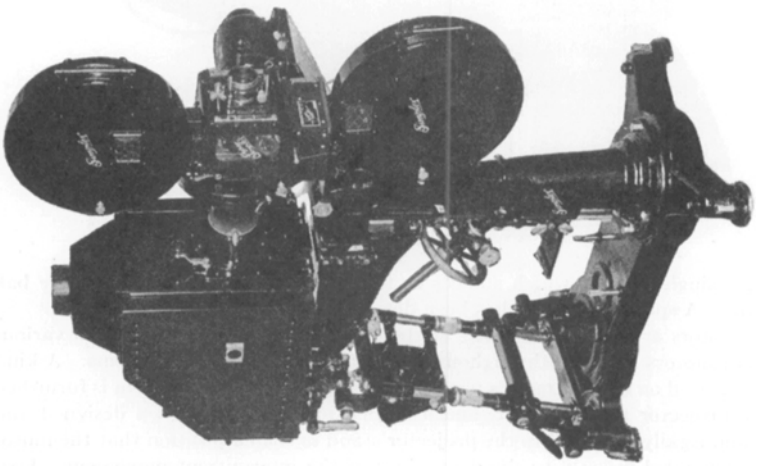

FIG. 1. Background projector; operating side.

The mechanism may be easily lubricated without opening any of the mechanism doors. The bearings are fed through oil-tubes reached from the top of the mechanism with the exception of the bearing for the intermittent movement, the oil-tube for which may be seen through a hole in the door on the non-operating side of the mechanism at a certain position of the framing device.

The lower section of the upper door on the non-operating side of the mechanism has been removed, thus making it possible to remove the door after removing the hinge screws. Thus it is possible to get into the non-operating side of the mechanism should it become necessary to do so. The lower door section may be removed in the same manner. A grease cup is provided for lubricating the rear shutter

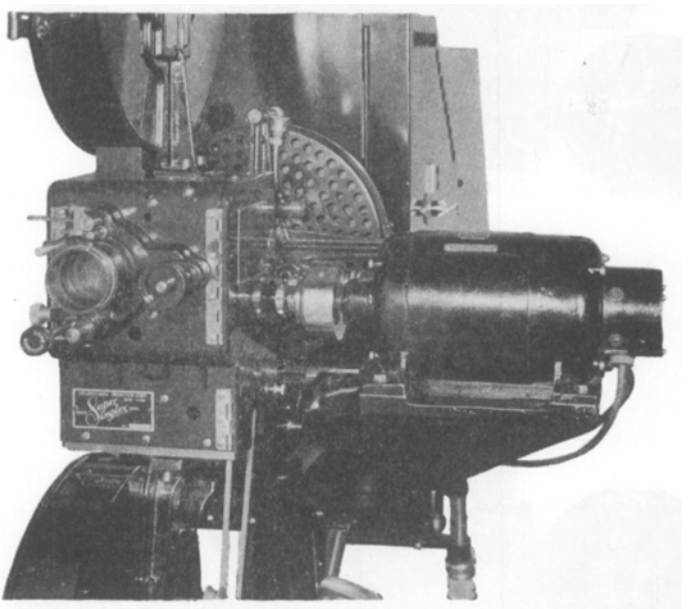

FIG. 3. Background projector; pedestal assembly.

shaft, a single turn of which suffices to force sufficient lubrication into the ball bearing. A special lubricant has been developed for this purpose.

No motors are supplied as part of the equipment, for the reason that various types of motors are used throughout the world for interlocking systems. A kind of motor used on the customer's particular type of interlocking system is furnished to the projector manufacturer, and a special motor table is then designed and built and rigidly attached to the projector stand in such a position that the motor shaft is coupled directly to the drive shaft of the intermittent movement. Lost motion is therefore eliminated between the camera shutter and the projector shutter, since no gear train is involved in this form of design.

The intermittent movement of the projector, as is the case with the camera, when properly interlocked operates at 1440 frames per minute—standard photographing and sound recording speed. Adequate provision is made to adjust the projector and camera movements to the interlocking motor system. The coupling flange on the intermittent movement is so designed that it may be secured to the shaft in any position. It is necessary only to open two clamping screws, rotate either the motor or the intermittent movement shaft while the one or the other is standing, and clamp the flange tightly again after the proper position is attained in synchronism with the camera shutter movement.

As in the case of regular projection room practice, it is necessary to adjust the lamp house to its correct position with relation to the aperture plate of the projector, to see that the special condensing system is in its proper relative position, and that the arc is burning at its proper capacity in order to clear up the entire screen and attain satisfactory and uniformly distributed screen illumination. If a "hot spot" occurs at the center of the screen, it is possible to remove it by mounting a small circular disk cut from fine copper mesh exactly in the center of the light-beam at the proper point in front of the lens. Experiment will definitely determine the distances required with lenses of different focal lengths.

There is, of course, very noticeable flicker upon the screen when using this type of projector, due to the single-bladed shutter that is used, so that it should not be used for normal projection of motion pictures. It is purely for process work, and, naturally, flicker is not noticeable to the synchronized camera under such circumstances. Should it be required to project standard motion pictures with this equipment, the shutter must be removed and the standard two-bladed shutter substituted. The equipment, of course, must be carefully handled, due to its extreme accuracy, and if expert attention is given it, it will give excellent service for an indefinite period of time.

RCA PHOTOPHONE HIGH-FIDELITY SOUND REPRODUCING EQUIPMENT*

J. FRANK, JR.**

In February, 1931, RCA Photophone introduced the first theater sound reproducing equipment operated entirely by alternating current. The rotary stabilizer sound-head attachment was introduced in December, 1932. Consistent development in the past four years in the improvement of reproducing apparatus has made possible the high-fidelity equipment.

Improvements in sound-film recordings during the past year and planned for the near future require reproducer equipments having increased reserve power output for satisfactory results. To meet these requirements a new line of high-fidelity sound reproducing equipment has been introduced. Considerably in-

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* Presented at the Fall, 1935, Meeting at Washington, D. C.

** RCA Manufacturing Co., Camden, N. J.