

\* SANDVIK, O., AND STREIFFERT, J. G.: "A Continuous Optical Reduction Sound Printer," *J. Soc. Mot. Pict. Eng.*, **XXV** (Aug., 1935), No. 2, p. 117.

\* VICTOR, A. F.: "Continuous Optical Reduction Printing," *J. Soc. Mot. Pict. Eng.*, **XXIII** (Aug., 1934), No. 2, p. 96.

\* COLLINS, M. E.: "Optical Reduction Sound Printer." *J. Soc. Mot. Pict. Eng.*, **XXVII** (July, 1936), No. 1, p. 105.

### A NEW 16-MM. PROJECTOR\*

H. C. WELLMAN\*\*

The mechanism of the Model G Kodascope is completely housed in aluminum die castings, and is held to close tolerances both in parts and in assemblies (Figs. 1 and 2). All shafts are ground to insure straightness, finish, and size. Diameter size is held within tolerances of  $\pm 0.0002$  inch. All bearings are of the oilless type, vacuum impregnated with oil shortly before assembly to give minimum wear over long periods of time. The teeth of the pull-down gears are cut after assembly to the shaft. Every assembly is checked for eccentricity, tooth spacing, and finish; the allowable accumulative error in these assemblies is 0.0005 inch, and further refinement is gained by the use of an adjustable sleeve for the bearings of the pull-down shaft. The out side of the sleeve is eccentric with the bearing, so that each shaft may be adjusted for minimum backlash and correct tooth mesh of the mating gears and then locked in position. The intermittent movement consists of a tandem claw selectively hardened at points of wear, actuated by a Lumiere-type cam for the pull-down stroke, with a second cam governing the in-and-out movement. The Lumiere cam and the pull-down claw are fitted together and kept in pairs during assembly. The periphery of the Lumiere cam is ground on a special grinder used only for this purpose, the overall distance across its face being held within a tolerance of 0.0003 inch measured at any point. With this refinement and care in assembly, the operation of the mechanism is exceptionally smooth and quiet.

Threading is conventional and extremely easy. Sprocket frames open for easy access to the sprockets, and the film slides into the gate. To facilitate this operation, the *out* position of the pull-down claw is designated by a milled side on the threading knob so that its position can be noted by touch as well as by sight (Fig. 3).

Stills are shown by merely declutching the mechanism from the motor, at which time an automatic safety shutter swings into position to protect the film while the motor and fan continue to run for adequate lamp protection. By throwing a switch, the motor is reversed and pictures may be projected backwards. Framing is accomplished by shifting the pull-down claw in relation to the aperture so that there is no movement of the picture on the screen. Sprockets, sprocket

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guards, film-gate, aperture plate, and pull-down claw are all designed to operate sound-film without injury.

Two features of the Model G deserve special mention. The first is the rewind. For rewinding, the movement of a single lever engages the rewind drive and releases the take-up reel. This lever is not only conveniently located for operation, but is so designed that it effectively obstructs the passage of film through the gate if left in the "rewind" position.

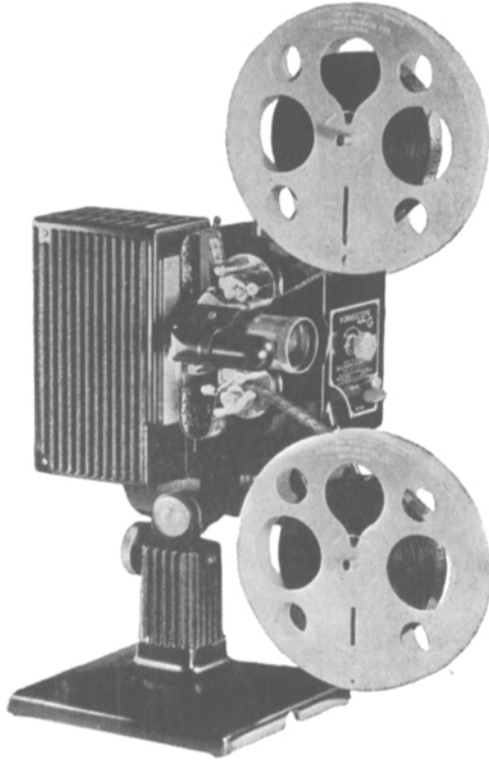


FIG. 1. The Kodascope model G.

Second, a single switch controls motor, threadlight, and projection lamp (Fig. 4). This switch has four positions: in the first position, motor, threadlight, and lamp are turned off; in the second position, the threadlight is turned on; in the third position, the motor is started and the threadlight remains on so that the operator can momentarily check his threading; and in the fourth position, the motor continues to run while the projection lamp is turned on and the thread-

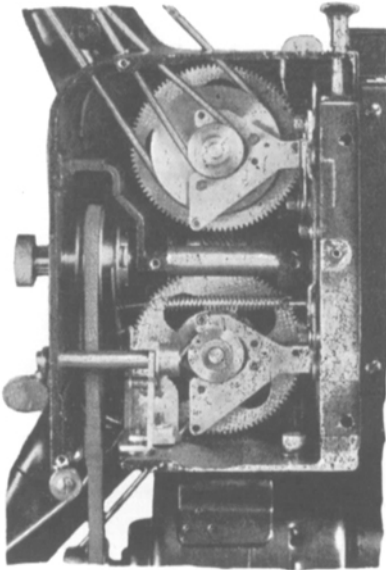


FIG. 2. The mechanism of the Kodascope Model G.

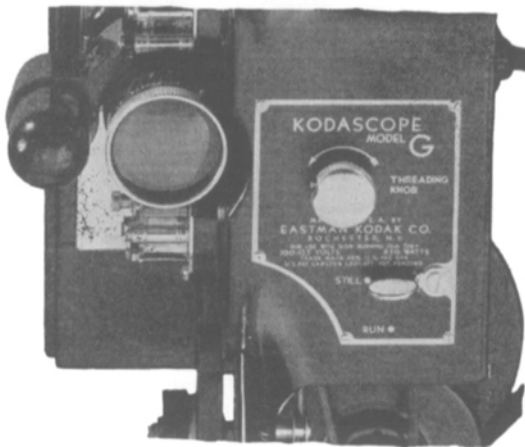


FIG. 3. Front view, showing threading knob and still picture control.

light is turned off. A single knob adjacent to this switch controls the motor speed. The threadlight is located at the side of the objective lens, and illuminates the upper and lower sprocket and the gate so that no other light is needed for changing reels in a darkened room.

The lamp house and the fan are designed to give adequate cooling for high-wattage lamps, insuring ample lamp life. The optical system was specially designed, and is remarkably efficient both as to picture quality and screen brilliance.

Elevating or tilting either upward or downward to center the picture upon the screen is accomplished by pivoting the mechanism on the pedestal base. This is controlled by an elevating knob which actuates a new elevating mechanism; it operates easily and affords a fine adjustment. Similar to the Model *EE* Kodascope, the base of the Model *G* fits over the handle of the carrying case, which may be used as a projection stand.

A new 2-inch,  $f/1.6$  lens, especially designed for flatness of field, is standard equipment. Other lenses include a 1-inch  $f/2.5$  for short throws, and either a 3-inch  $f/2.0$  or a 4-inch  $f/2.5$  for longer throws. These lenses, with the 400-, 500-, and 750-watt lamps permit selection from twelve possible combinations. The standard model is fitted with arms for 400-ft. reels; however, a model for 1600-ft. reels will be available. The machine is finished in hand-rubbed glossy black lacquer, with all fittings in buffed chrome plate.



FIG. 4. Unit control for thread-light, motor, and lamp.

## A NOVEL SURGICAL FILMING STAND\*

A. LENARD\*\*

Up to now surgical filming has always been accompanied by sundry difficulties, which have often resulted in the decision not to film certain types of operations that may not have been of paramount interest or the outcome of which could not be predicted. This is easy to understand when one stops to consider all the complications and preparations necessary before undertaking to film an operation, the

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