The recording attenuator is placed in a 500-ohm circuit just ahead of a bridging amplifier or equivalent, which feeds the film recorder equipped with the masking unit. An additional 10 db. of gain is necessary to overcome the 10-db. loss in the attenuator corresponding to normal recording with full-width track. The monitoring attenuator is also placed in a 500-ohm circuit, usually just ahead of the monitoring amplifier. Both potentiometers have no insertion loss on the zero step.

When the system is used for volume reduction, as previously discussed, the recording attenuator is switched out of the circuit and replaced by a 10-db. fixed pad as indicated by the diagram. An additional 10 db. of gain in the circuit balances the 10-db. pad loss to make the equivalent of a standard recording circuit. The monitoring attenuator is placed in the direct monitoring circuit so that it will reflect the relative output from the film and balance with the photoelectric cell monitor at all times.

When the system is used in the second manner to obtain additional noise reduction, the 10-db. fixed pad is replaced by the recording attenuator which decreases attenuation from 10 to 0, as the track width is reduced from 0 to 10 db. The monitoring attenuator is out of the circuit.

The use of the matting device permits a degree of control of output volume as well as a means of extending the signal-to-noise ratio on a release sound-track of the variable-density type, which can not be obtained to the same degree with any other type of sound recording. It can safely be said that this method adds an effective 5 db. to the signal-to-noise ratio of release prints without introducing any deterioration whatever in the sound quality. Its fairly wide application in the industry at the present time is sufficient proof that it is proving its worth in enabling the industry to give improved sound reproduction to the patrons of the theaters.

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AN IMPROVED EDITING MACHINE*

J. L. SPENCE**

Realizing the need for better facilities for the film editor, a new type of editing machine radically different in many respects from devices hitherto used has been designed by J. F. Leventhal and the author. This machine performs all the operations desired by the film editor, such as matching, spotting, dubbing, synchronizing, *etc.*, as well as the ordinary functions of editing.

A new optical compensator makes it possible to construct a machine without intermittent movements or oscillating parts, and one in which the film glides silently

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** Akeley-Leventhal Corp., New York, N. Y.

past the aperture without coming to a stop at each frame, as in the older machines. The machine has many other unusual features in addition to its great flexibility, and its simplicity of operation results in greater speed.

Threading is accomplished easily in a minimum of time; the film is merely laid in a track, a simple operation locks the retaining rollers into place, and the machine is ready to run. The film moves forward or backward with equal facility, and can be brought to a stop by a simple hand-control wheel. Footage and frame counters for both picture and sound afford an accurate check for length and for spotting sound and picture effects.

Since the machine operates very quietly, without distracting noises, it becomes, upon demand, a miniature projection room. The sound quality is exceptionally fine, and the power output of 10 watts is more than enough for normal requirements. Jacks are provided for several head-sets so that the machine may be used

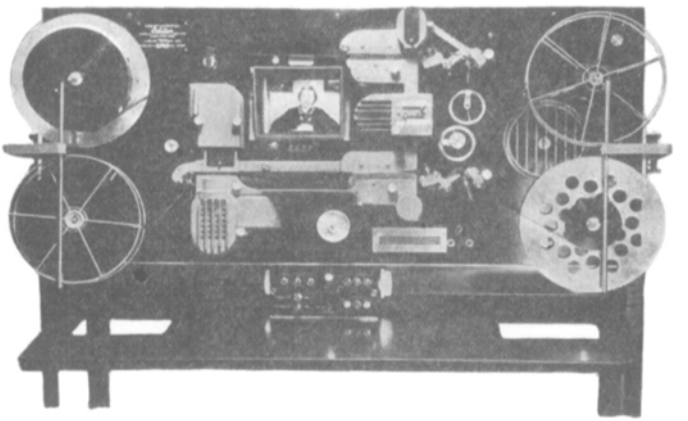

FIG. 1. Editing machine.

without disturbing others in the room. The sound is cut off automatically when the film is run backward.

Since there is no pressure on the film at any point along the picture area, and since no pressure pads or shoes are required as in standard projection apparatus, there is no tendency to develop scratches; and thus negative as well as positive films may be projected with perfect safety.

In an editing machine it is desirable to have a clear sharp picture of a size large enough to permit close inspection. The picture in this machine is projected upon a screen large enough to be viewed by several persons. Single-picture inspection is possible over any length of time without danger of overheating the film.

One of the novel features of the "editor" is a splicing attachment that permits making temporary splices rapidly and without losing frames, thus allowing the operator to make as many preliminary cuts as he desires.

A selector unit permits operating either the picture or the sound alone or together. A synchronizing arrangement is provided for the sound print channel so that the sound may be brought into synchronism with the picture *while running*.

This eliminates the necessity for rethreading and makes it possible for the operator easily to achieve synchronism in cases where "sync" marks are lost.

Unusual facilities are afforded for sound-track manipulation. Combined track and picture prints may be projected simultaneously with separate track prints. It is possible also to project a separate track print with the picture print in the same channel, thus affording an opportunity to hear several tracks at the same time that the picture is being edited.

The machine is provided with a variable-speed drive which can be controlled from 6 to 60 frames per second. This is in addition to a separate standard constant-speed drive of 24 frames per second.

Other features included new trouble-free "lift-off" take-ups, which prevent the film from breaking when taking up slack; reel spindle brake drums, which keep the film from overriding, regardless of reel speed; 2000-ft. capacity take-ups; special film "slip-off" flanges; and unit construction.