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American Railway Signaling Principles and Practices

CHAPTER XVII

Mechanical and Electro-Mechanical Interlocking

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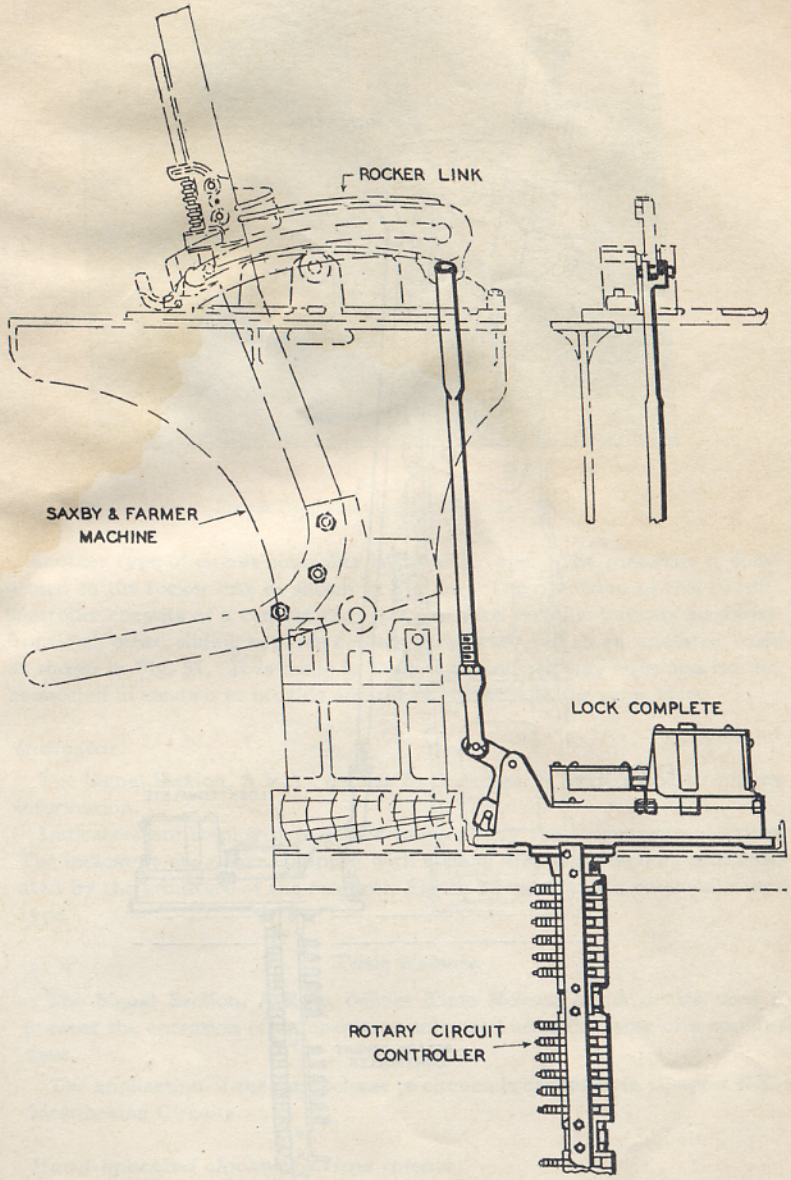

Fig. 23.
Forced Drop Electric Lock on S. & F. Machine.

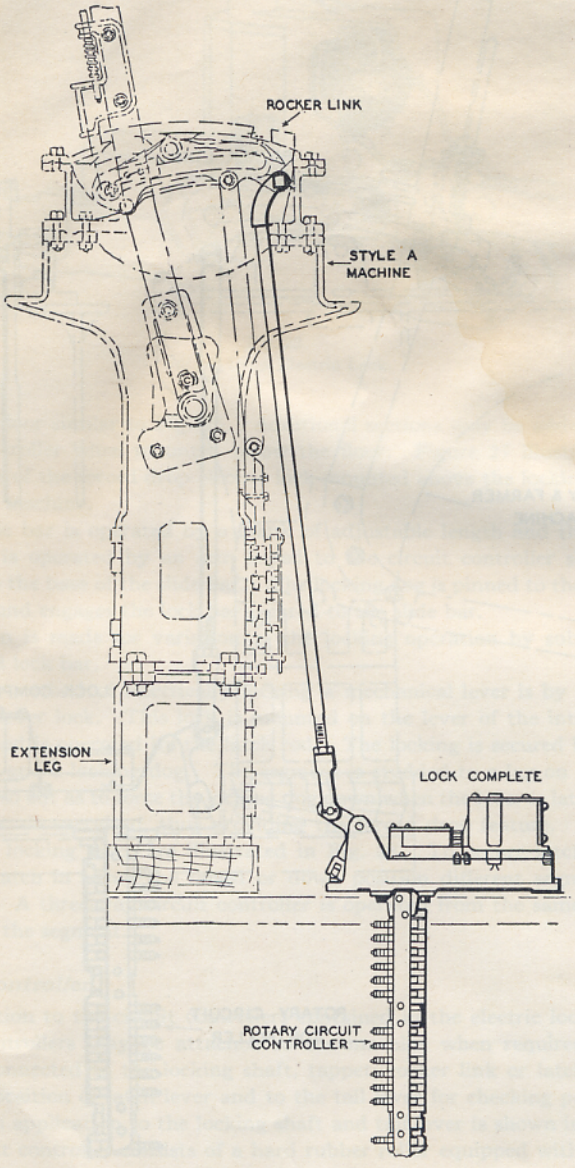

Fig. 24.
Forced Drop Electric Lock on Style "A" Machine.

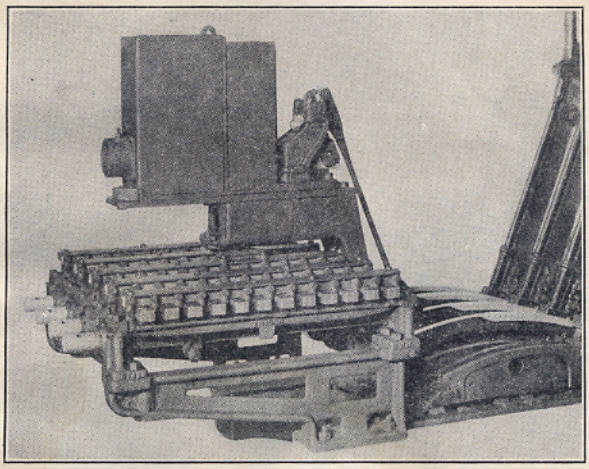

Fig. 25.
Forced Drop Electric Lock, Style ML-10.

Another type of circuit controller is the slide type. The controller is connected to the rocker link as shown in Fig. 30. The operation of this circuit controller consists of a contact rod equipped with metallic buttons insulated from each other, sliding between contact springs secured to an insulated base as shown in Fig. 31. It is made in four, eight and ten-way sizes and can be connected in tandem to provide additional contacts on the same lever.

Indicator.

The Signal Section, A.R.A., defines Indicator as: A device used to convey information.

Indicators are employed to follow more closely the movements of trains. The indicators are relays equipped with a small disc or semaphore arm operated by the armature of the magnet. Figure 32 illustrates a commonly used type.

Time Release

The Signal Section, A.R.A., defines Time Release as: A device used to prevent the operation of an operative unit until after the lapse of a specified time.

The application of the time release to circuits is explained in Chapter XX—Interlocking Circuits.

Hand-operated clockwork time release.

Clockwork time releases are provided with or without latch. A clockwork time release with latch is normally wound by the operation of its knob. To

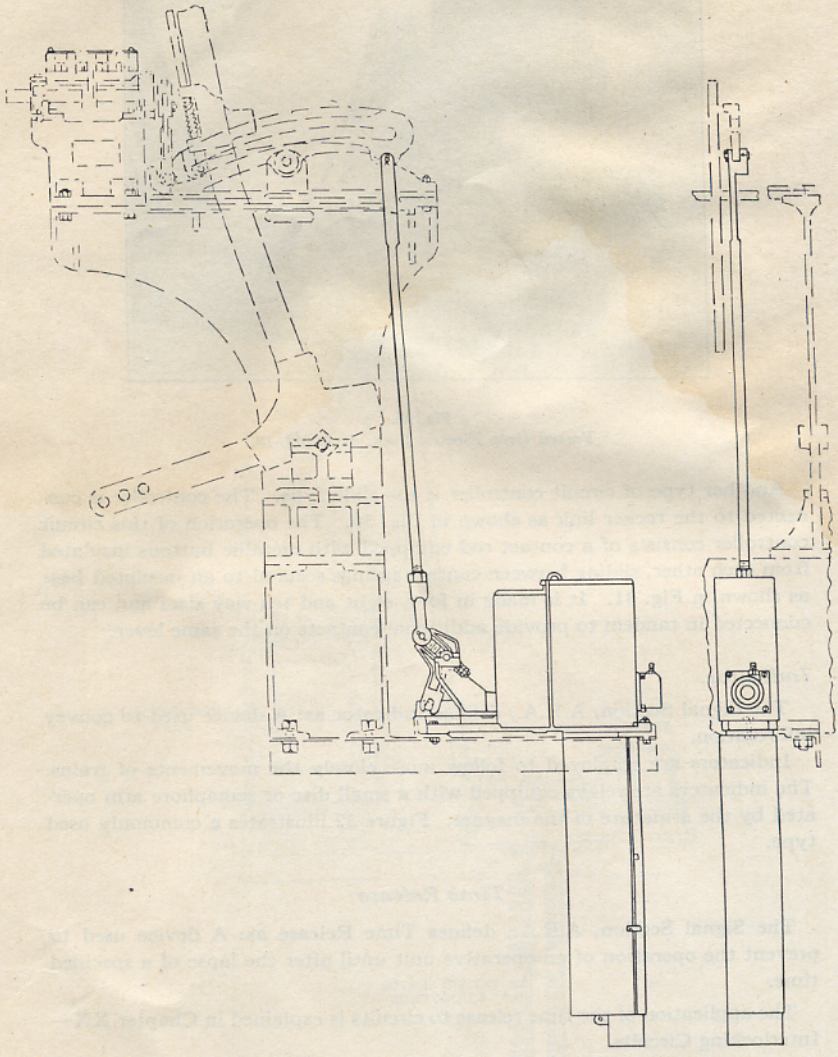

Fig. 26.
Mounting of Style ML-10 Lock below Floor.

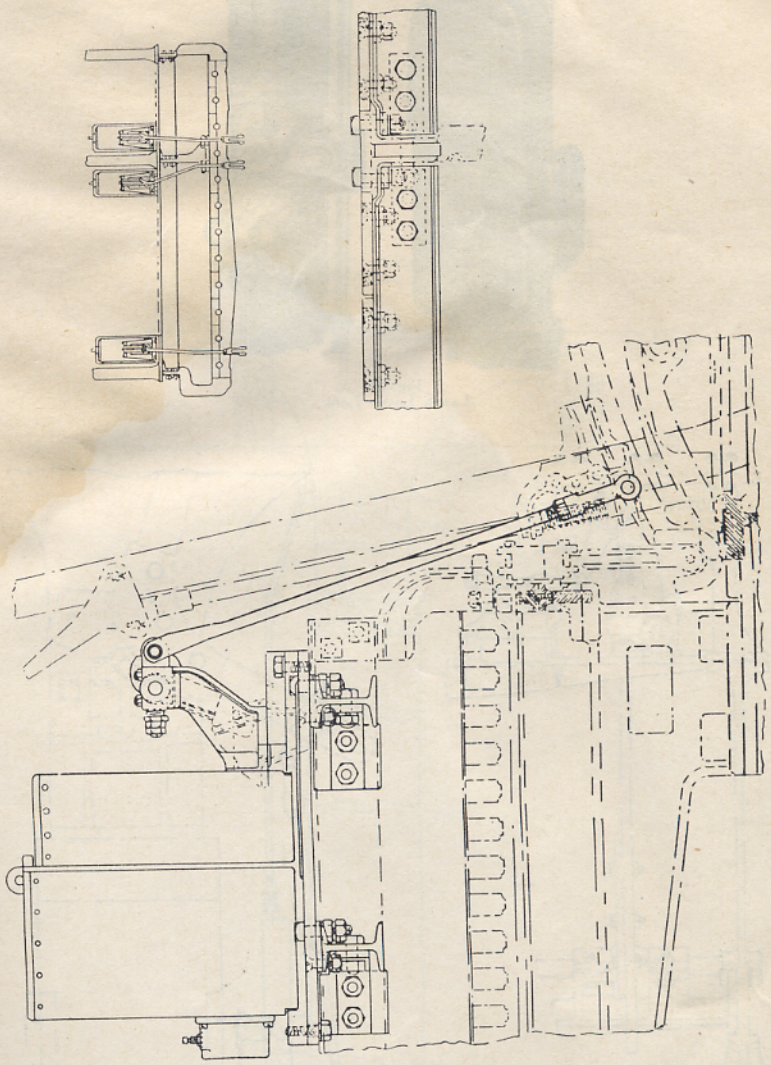

Fig. 27.
Mounting of Style ML-10 Lock above the Locking Bed.

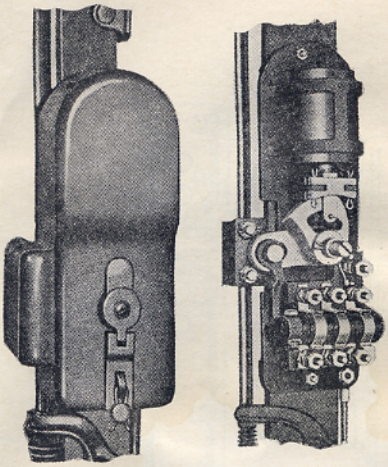

Fig. 28.
Latch Lever Lock.

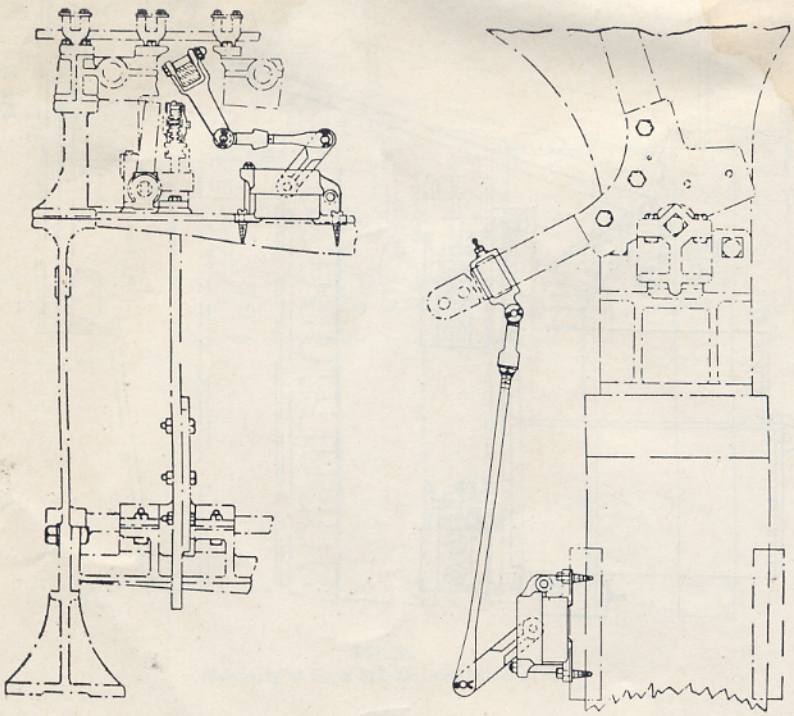

Fig. 29.
Circuit Controllers.

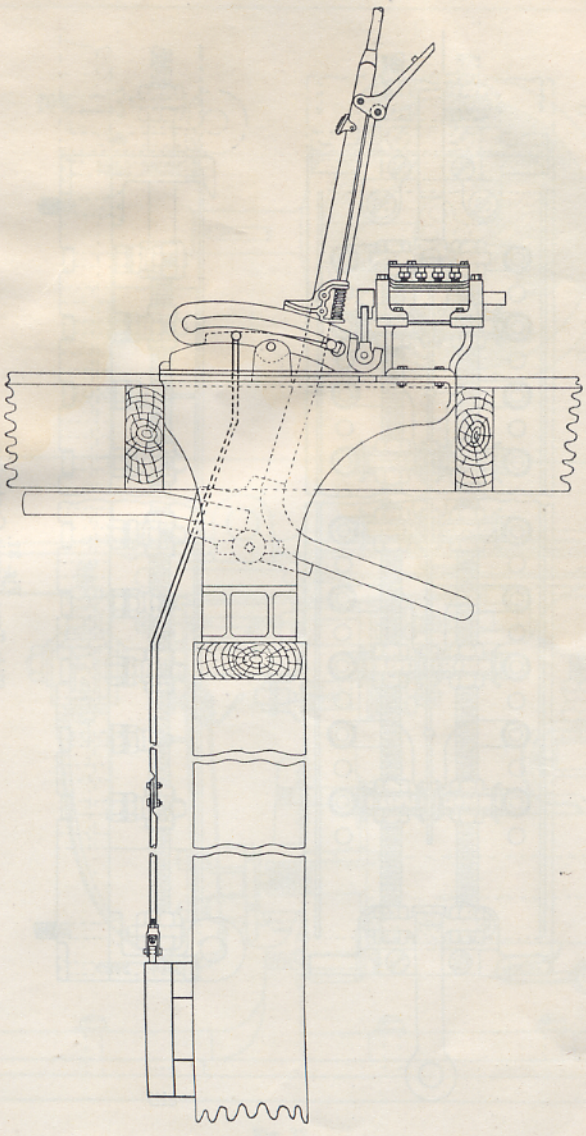

Fig. 30.
Slide Type Circuit Controller Mounting.

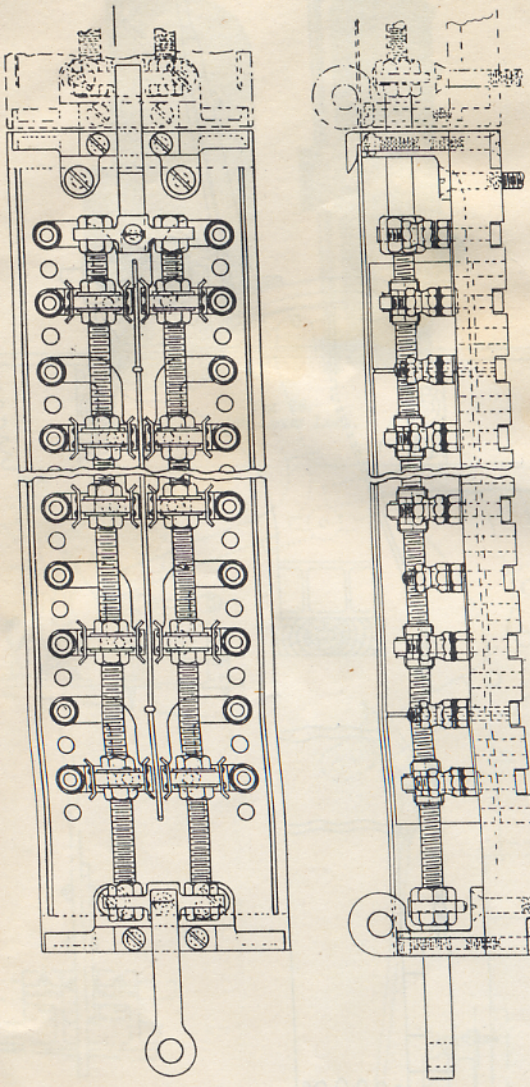

Fig. 31.
Slide Type Circuit Controller.

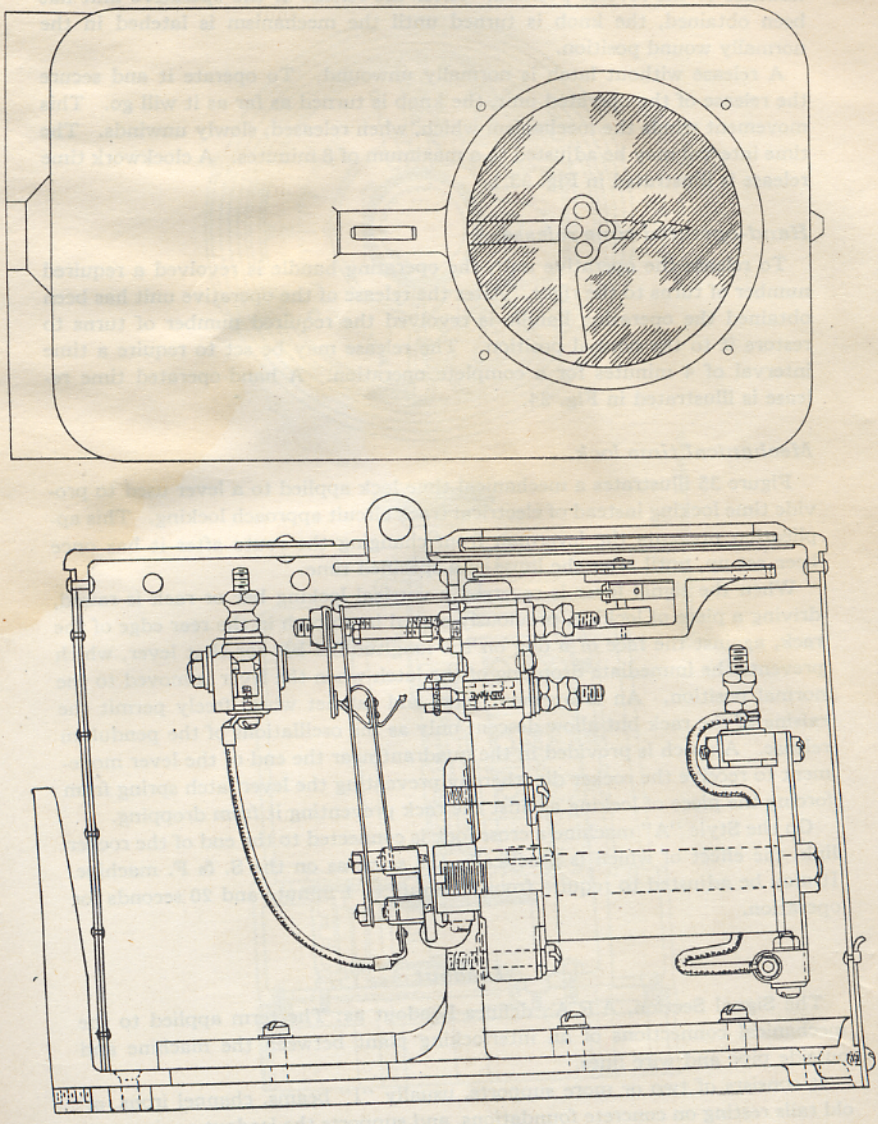

Fig. 32.
Indicator.

operate it, the latch is tripped by turning the knob, the release then slowly unwinds to the reverse position. After the release of the operative unit has been obtained, the knob is turned until the mechanism is latched in the normally wound position.

A release without latch is normally unwound. To operate it and secure the release of the operated unit, the knob is turned as far as it will go. This movement winds the mechanism which, when released, slowly unwinds. The time interval may be adjusted to a maximum of 8 minutes. A clockwork time release is illustrated in Fig. 33.

Hand-operated time release.

To release the operative unit, the operating handle is revolved a required number of turns to the right. After the release of the operative unit has been obtained the operating handle is revolved the required number of turns to restore it to the normal position. The release may be set to require a time interval of 4 minutes for a complete operation. A hand-operated time release is illustrated in Fig. 34.

Mechanical time lock.

Figure 35 illustrates a mechanical time lock applied to a lever used to provide time locking instead of electrical track circuit approach locking. This application prevents the leverman from changing the route after it has once been set up, until after the lapse of a specified time.

When the signal lever is reversed a vertical locking bar or rack is raised, driving a piece of locking, previously seated in a notch in the rear edge of the rack, against the face of a dog on the longitudinal bar for that lever, which prevents the immediate dropping of the latch when the lever is moved to the normal position. An escapement pawl and ratchet wheel freely permit the raising of the rack but allow descent only as the oscillations of the pendulum release. A notch is provided in the quadrant near the end of the lever movement to receive the rocker die, thereby preventing the lever latch spring from forcing the piece of locking against the rack preventing it from dropping.

On the Style "A" machine a cross-lock is connected to the end of the rocker link, the effect of which is practically the same as on the S. & F. machine. It may be adjusted to require from 1 minute to 1 minute and 20 seconds for operation.

Leadout

The Signal Section, A.R.A., defines Leadout as: The term applied to the mechanical connections of an interlocking plant between the machine and outside pipe and wire lines.

It consists of two or more supports, usually "I" beams, channel irons, or old rails resting on concrete foundations, and supports the leadout equipment. There are two general types of leadouts: horizontal and vertical.

With a horizontal leadout the connection between lever of machine and leadout crank extends horizontally; with a vertical leadout this connection

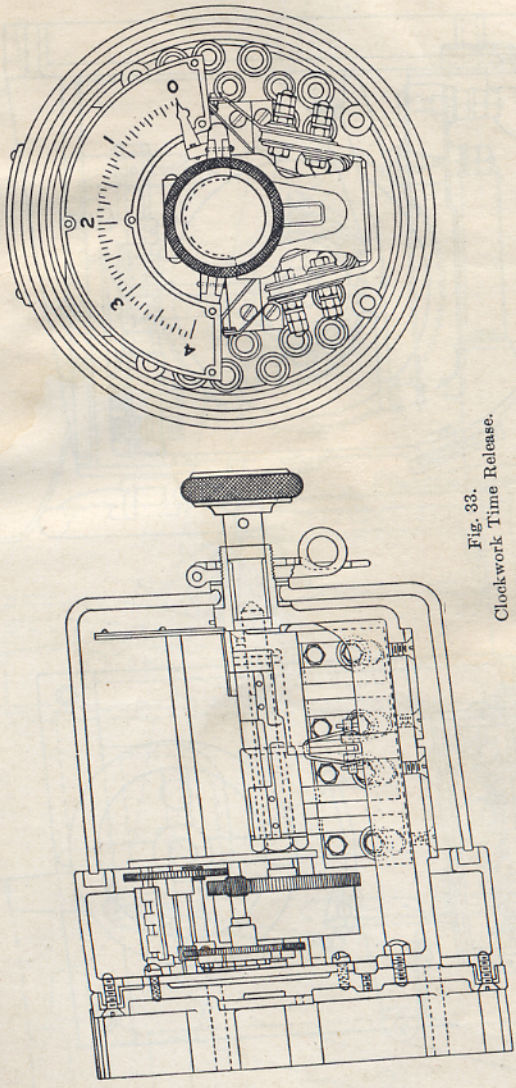

Fig. 33.
Clockwork Time Release.

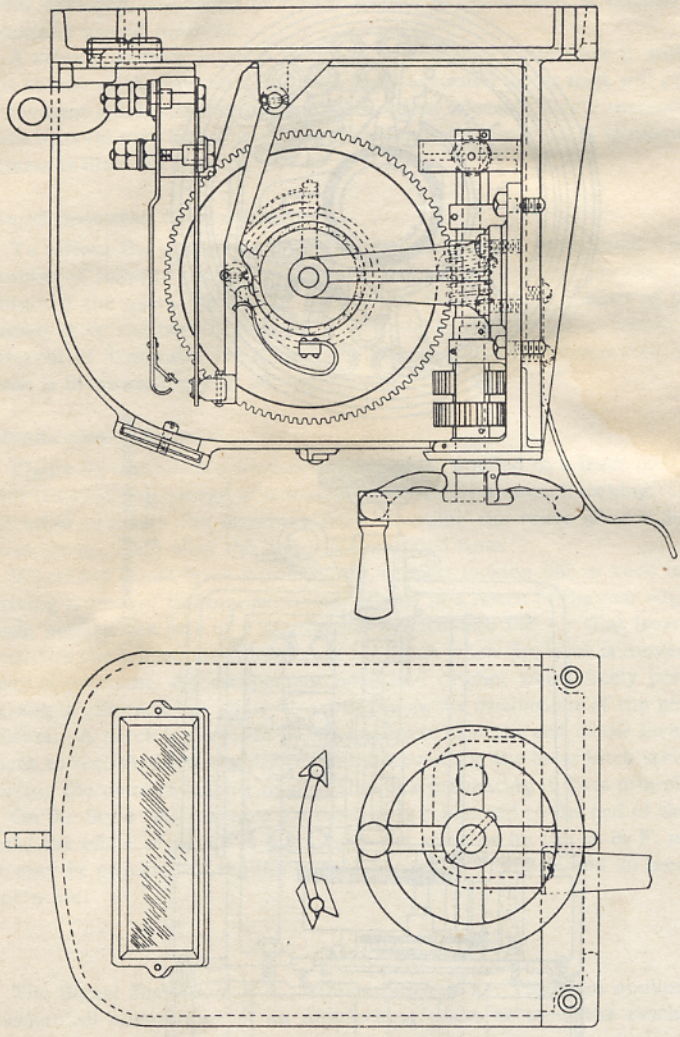

Fig. 34.
Hand-Operated Time Release.

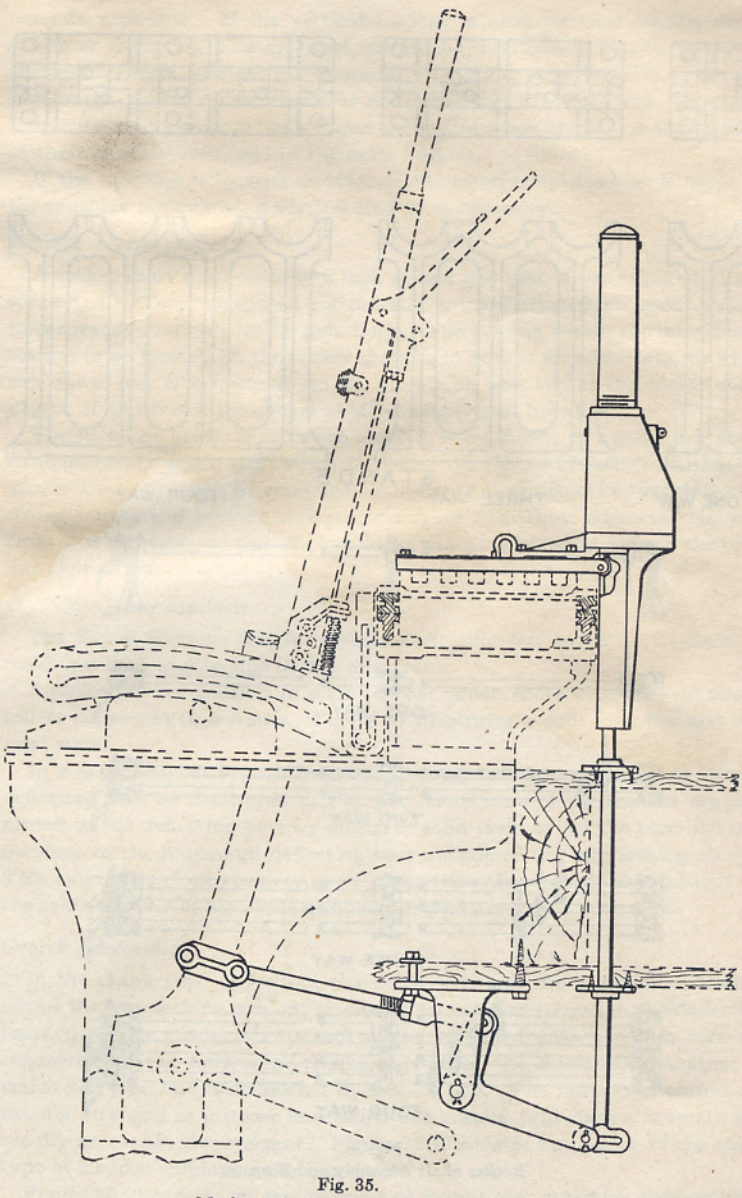

Fig. 35.
Mechanical Time Lock, Pendulum Type.