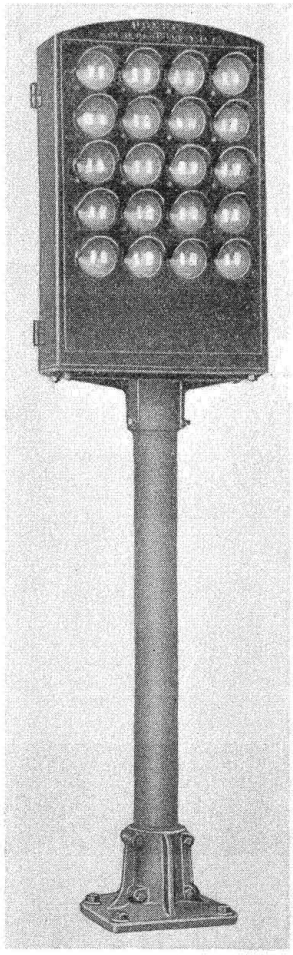
Yard Track Indicator and Control Stand

A NEW development of the Union Switch & Signal Company is the yard entrance track indicator and control. To provide a means by which a person in the yardmaster's office, through the operation of a dial switch, can inform the crew of a train approaching a receiving yard, as to the track it is to enter. The yard track indicator and control contains 20 numbers which are lighted selectively, each number designating a track in the receiving yard. The operation of this indicator and control is as follows: The operator first closes the line circuit, and then operates a dial switch of the type used on telephone switchboards. The operation of this switch delivers a certain number of impulses to the line, depending upon the arc of the circle through which the switch has been moved. These impulses, which are delivered to the line by the operation of the dial switch, close the circuit to the respective yard indicator unit. The lamp will remain lighted as long as the line switch is closed.



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The indicator case is of sheet metal construction, with a cast-iron frame, and is 3-ft., 11-in. high, 2-ft. 4-in. wide, and 10-in. deep. The front face has twenty 5-in. diameter openings spaced on 6-in. centers. Mounted on the outside of the case, over each opening, is a cast-iron hood, and on the inside, back of each opening, is a reflector assembly. The lamps used are 11-volt, 11-watt, and provide a distinctive indication. At the bottom of the case, below the reflector assemblies, is space for the housing of a transformer, rectifier and the necessary relays for selecting and operating the different indications. The case is ventilated and weatherproof, and is provided with a staple for locking. The bottom of the case has a suitable socket for mounting vertically on a five-inch supporting pipe.

An Automatically-Adjusted Track-Feed Resistance Unit

A FEATURE of the exhibit of the Electric Storage Battery Company at the National Railway Appliances Association show at the Coliseum, in Chicago, March 10-13, was an automatically-adjustable resistance unit for limiting the feed for track circuits. Briefly the device consisted of a copper-oxide rectifier unit, connected in series between the coils of a 4-ohm track relay.

The application of this device to a track circuit makes use of the strongly negative current-resistance characteristics of the unit at low current rates as shown in Fig. 1. It will be noted that as the current in the unit decreases, the effective ohmic resistance rapidly increases, and this change takes place instantly in both directions, there being no time lag. This resistance characteristic is shown by many of the metallic oxides and sulphides and also applies to the recently announced Thyrite of the General Electric Company. The copper-copper oxide rectifier shows this change of resistance with current in the current carrying direction and the curves shown in Fig. 1 were obtained from a combination of several such rectifier discs which seemed to best give the desired effect.

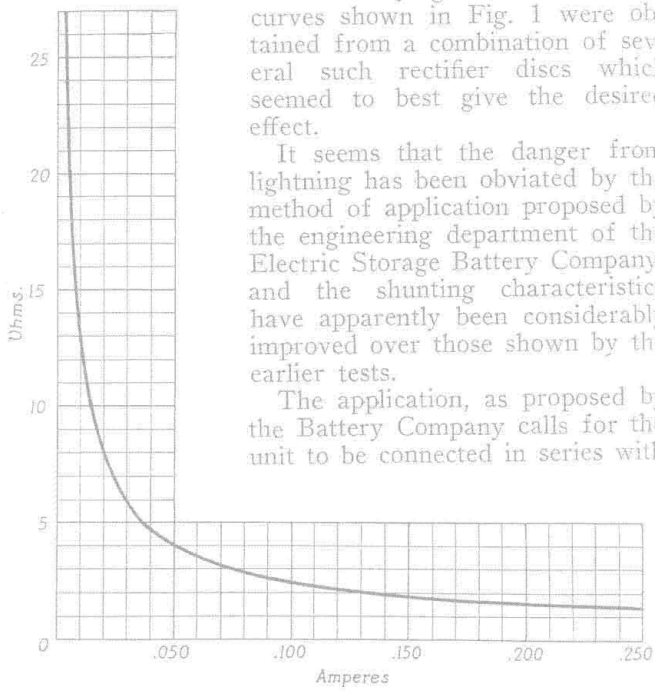

Chart showing resistance characteristic of rectifier unit

It seems that the danger from lightning has been obviated by the method of application proposed by the engineering department of the Electric Storage Battery Company, and the shunting characteristics have apparently been considerably improved over those shown by the earlier tests.

The application, as proposed by the Battery Company calls for the unit to be connected in series with the relay and *between* the two relay coils, the latter practically insuring that lightning cannot get to the unit without first striking the coils. The insertion of a resistance of about 2 ohms (at normal operating current) at the relay end makes it necessary to reduce the limiting resistance by a somewhat greater amount, causing an added ballast leakage and an increased average battery output. The cost of this added energy is, it is claimed, more than offset by the improved shunting sensitivity, practically perfect broken rail protection and quicker release obtained by the use of the unit.

When a shunt is applied to the rails, the relay current is reduced, and as the current drops, the resistance of the unit increases, especially below .075 amp., with the result that the relay current is reduced to a decidedly lower value than it otherwise would be. As a result it is thus seen that a higher train shunt resistance will reduce the relay current to the drop-away value, than would be the case if the unit were not used. This increase in resistance takes place when a rail breaks and thus forces the relay current to well below the release value.

Where a relay is appreciably slow in releasing with the usual arrangement, the instantaneous increase in resistance of the relay circuit, when the special unit is used, causes a correspondingly quicker decrease in the current flow and the relay opens a correspondingly shorter time, this feature being of special advantage where interlocking relays are used.

Units of this type are being tried out in actual service, and if the results check the laboratory tests, it is said that they will not only offer a means of improving the recognized shunting sensitivity of the high voltage cell