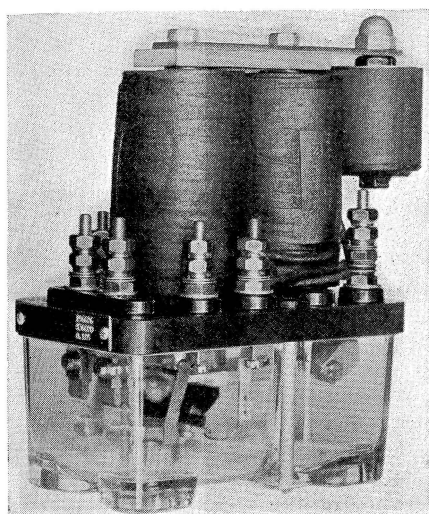


Inherent taper further reduces the rate during the remainder of the charge to a low finishing rate of 1.9 amp. Attention is called to the taper in charge being in close proportion to the rise in battery voltage and gravity. High rates of 5-6 amp. may be maintained during the entire charge by readjustment of the rectifier occasionally to offset the taper. Normal rating is 6 amp. at low winter temperatures and 5 amp. at high summer temperatures, in properly ventilated battery wells or signal cases.

Light-out Relay for A-C. or D-C.

TO PROVIDE for the rapid increase in the use of differential filament lamps, the Union Switch & Signal Company, Swissvale, Pa., has developed and is producing a new and more efficient light-out relay, designated its Style DN-22-L. This re-



Style DN-22L light-out relay

lay will operate on either a-c. or d-c. and is, therefore, suitable for a-c. installations where d-c. standby power is provided.

One advantage of the differential filament lamp is the longer life of the minor filament. The new Style DN-22-L relay will pick-up with only the minor filament burning, thus taking advantage of the longer life of this filament, where a satisfactory indication is obtained with only the minor filament burning.

The new relay consists of a DN-22 relay with a small rectifier mounted on a metal strip held in place by the bolts which fasten the backstrap to the cores. The rectifier is connected to the relay coil terminals. The relay is equipped with two front and two back low-voltage contacts. It may be used with any one of several different lamps.

To illustrate the efficiency of this light-out relay, assume that a 10-volt, 18 plus 3.5-watt lamp is being used. The relay is so designed that normal working energy is supplied to the relay with only the 3.5-watt filament burning. With both filaments burning, the lamp consumes 21.5-watts. Therefore, assuming a constant voltage, the energy supplied to the relay is 21.5 divided by 3.5×100 per cent or 615 per cent of that supplied to the relay when only the minor filament is burning. Yet, under these conditions, with both filaments burning and with 9.5-volts across the lamp, the d-c. voltage drop across the light-out relay is only 0.388-volt. This may be readily calculated when the relay resistance and the lamp current are known. The resistance of the DN-22-L relay, used with any 8-volt or 10-volt differential filament lamp, whose minor filament is rated at 3.5-watts, is 0.185-ohm. The current required for a 10-volt, 18 plus 3.5-watt lamp with 9.5 volts at the lamp, is 2.1 amps. Similarly the d-c. voltage drop across the relay may be calculated for any lamp if the lamp current is known. The a-c. impedance of this relay is approximately 0.7 ohm, and, using this value, the a-c. voltage drop may be calculated for any lamp current.

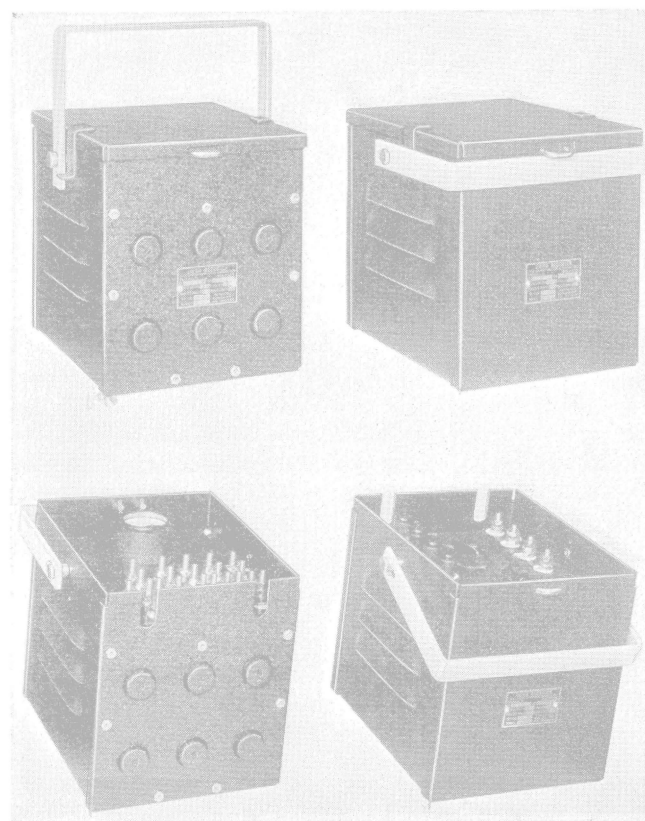
Heavy-Duty Rectifier for Emergency Service

A NEW portable-type transformer and rectifier, designed especially for emergency charging of low-voltage storage batteries used in signaling, has been placed on the market by the Union Switch & Signal Company, designated as the Style-RPP-60 portable copper-oxide rectifier.

This portable rectifier will charge a battery much quicker than a smaller rectifier unit, because of its higher capacity. It is unnecessary to move the battery, this feature insuring longer battery life. For convenience and comfort in carrying and ease of placing in relay housing, the rectifier is built in two sections, one the transformer unit and the other the rectifier unit.

The transformer unit, by moving a plug, operates interchangeably on 110, 220 or 440-volts, on a frequency of 60 to 100 cycles. It weighs but 28 lbs. and has a convenient carrying handle. It contains an adjustable resistor to vary the charging rate.

The rectifier unit is adjustable to deliver a maximum d-c. output of 7.75-volts, 20 amp.—on 1 to 3 lead cells, or 15.50-volts, 10 amp.—on 4 to 7 lead cells. This unit weighs but



Rectifier unit

Transformer unit