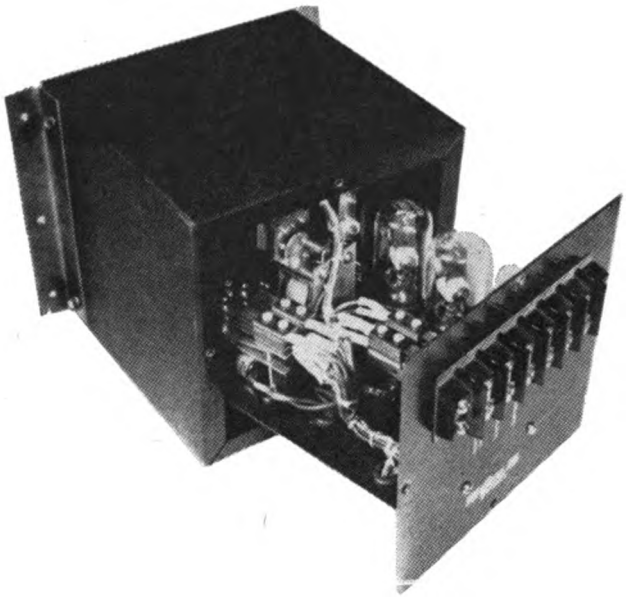
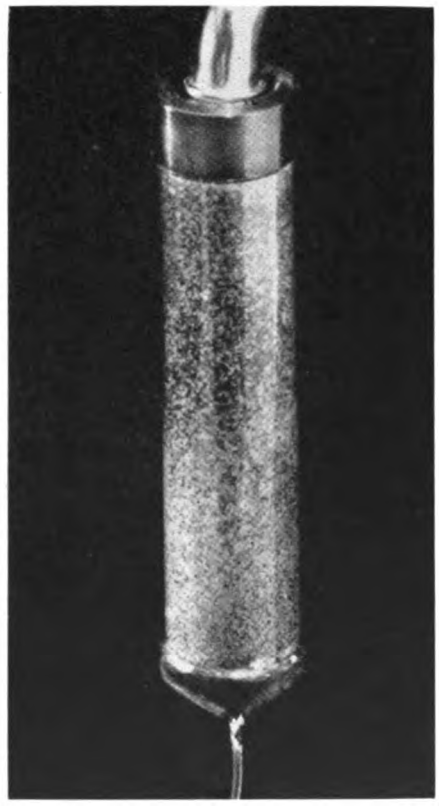
New Developments

LOAD CONTROL SWITCH

THE Gore Company, 522 E & C Building, Denver 1, Colo., has announced a new load-control switch for use on axle generator-battery powered systems on radio-equipped cabooses. It will turn the battery load on when the caboose is entrained, and keep the load on for 4 min. after the train is broken up at terminals. The equipment can be turned on for 12 min. in the absence of train line air, merely by depressing the handset button, and can be recycled as often as desired. Use of the switch is said to eliminate deterioration and damage of battery, due to battery load not being turned off at terminals, and it materially reduces both radio and battery-maintenance costs. The unit is 6 in. by 6 in. by 6 in., and weighs about 4 lb. packed, being designed and built exclusively for railroad use.



Left—The new load-control switch is for use on axle generator - battery powered systems on radio - equipped cabooses. Below — Up to 10 gal. of water may normally be expected from each battery water unit



BATTERY WATER UNIT

A NEW and refillable ion-exchange unit, known as the Filtr-Ion, for delivering water equal in chemical quality to triple-distilled water from an ordinary faucet, has been announced by the La Motte Chemical Products Company, Baltimore 4, Md. Designed for small-quantity uses where more elaborate equipment would be impractical, it provides water of extremely high quality for storage batteries. The tube is 8½ in. long and 1-⅝ in. in diameter, made of transparent plastic material, and is filled with Amberlite ion exchange resins. Small holes in the top cap prevent excessive flow through the bed of resins, and de-ionized water is delivered through a small plastic tube. The unit is not intended to remove bacteria or impurities which are not ionized, the manufacturer asserts. As water passes through the apparatus, however, metallic and other ionic solids are taken out of solution by the mixture of anion and cation exchangers. Fiberglas filters trap physical impurities. The Amberlites change color when they become exhausted. Initially blue-black, the bed of resin turns light yellow in a gradually descending line as exhaustion progresses. When the yellow band reaches the bottom, the unit is refilled. Refill packages contain sufficient resins for two complete refills, and include new filter elements as well.

CAB SIGNAL SYSTEM

THE General Railway Signal Company has developed a new multiple-aspect cab signal system which may be used with d.c., half-wave rectified a.c., and a.c. coded track circuits. Where a.c. coded track circuits are used, standard 60-cycle a.c. may be employed as the energy source; it is not necessary to supply special frequencies, such as 100-cycle, required in previous systems. The same locomotive equipment serves for all applications and requires no switching or adjustment when changing from one type of coded track energy to another.

The new system provides all the benefits of earlier cab signaling systems, plus these extra advantages:

1. Locomotives can operate with full cab-signal protection over routes in which both a.c. and d.c. coded track circuits occur. Since no switching of locomotive equipment is required, it is not necessary for the engineman to know the type of coded track circuit energy employed in different portions of the route.

2. Locomotives equipped with cab signals may be placed in operating pools without having to distinguish among them on the basis of the track energy they are designed to work with.

3. Railroads already using d.c. coded track circuits to control wayside signals can now utilize the same coding to control cab signals.

4. By using coded d.c. track circuits fed by primary battery, cab signaling can be extended to areas where a.c. energy is not readily obtainable.

5. Commercial 60-cycle a.c. sources may be used to supply coded

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track circuit energy. The new locomotive equipment detects and responds to code pulses of 60-cycle energy when foreign 60-cycle current rail heads. When code currents flow in the rails, voltage pulses appear in these receivers as a result of magnetic induction. This is true not only for a.c. codes, but also for d.c. codes, since the on-off nature of the d.c. code currents produces the changing flux conditions necessary to cause induced voltages. The receiver pulses, which are of various magnitudes, frequency, and wave form, depending upon the type of code currents producing them, are then fed to the amplifier. The amplifier is a new electronic device which accepts all these diverse input pulses, and produces from them amplified output pulses of uniform type at a rate determined by the track code. The output pulses from the amplifier are fed to the decoder, which, as its name implies, decodes the incoming pulses—i.e., determines the code-rate which is being received—and actuates the appropriate signal control relays to produce the proper aspect on the cab signal.

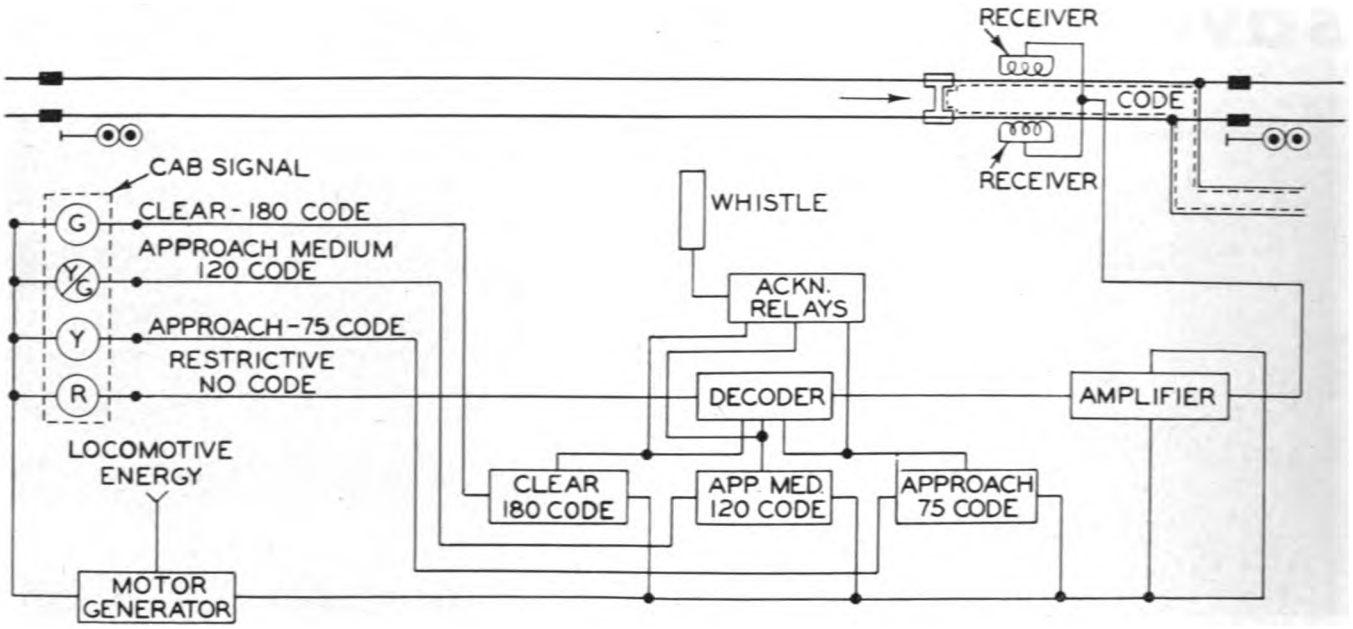

Fig. 1—Organization of locomotive equipment for four-aspect cab signal system

of even greater magnitude than the code current is flowing in the rails. This sensitivity to the desired code, despite the presence of "interference", eliminates the need for special a.c. frequencies, with the attendant necessity for frequency-conversion equipment. It also makes possible dependable operation on long track circuits under low ballast resistance conditions.

The wayside circuits used with the new cab signal system may be varied to meet requirements. In general, they are arranged so that each track circuit is fed with the code associated with a particular block condition. These codes are pulses of track circuit energy, usually repeated (for four-indication signaling) 180, 120, and 75 times a minute, with the 180-rate corresponding to the "clear" (green) aspect, the 120-rate to "approach medium" (yellow/green), and the 75-rate to "approach" (yellow). Absence of code, caused by a train shunt in the same block, or loss of code for any reason, produces the "stop" (red) aspect. Coded track arrangements of this kind are well-established in the signaling art, and have been fully described elsewhere.

The organization of the locomotive equipment for a four-aspect system is shown in Fig. 1. The two receivers in the upper part of the illustration are coils carried on the locomotive, in front of the leading wheels, about six inches above the

Figure 1 also shows that the new system retains the cab whistle and acknowledging arrangements used on older installations. The whistle blows whenever the cab signal aspect becomes more restrictive, and continues to sound until stopped by the engineman's operation of a manual contactor. This feature is a valuable adjunct to the cab signals proper, since it calls the engineman's attention to a more restrictive aspect as soon as it occurs, even though his eyes may be directed elsewhere at the moment.

By adding a governor and appropriate brake application devices to the locomotive equipment, the new cab signal system may also be used to control train speed automatically in accordance with the aspect displayed.

FUSED CUT-OUT

A NEWLY designed enclosed, heavy-duty, fused cut-out, for mounting on crossarms, has recently been placed

Cut-out has 5,000 rms.-amp. interrupting rating at 5,200 volts

on the market by the General Electric Company, Schenectady, N. Y. This cut-out has an interrupting rating of 5,000 rms-amperes at 5,200

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