these requirements. The relay consists of a style DN-22 d-c. relay, having special features in the design of its contact structure and magnetic circuit to make it especially suitable for this service, and a rectifier to permit its operation from the normal a-c. supply. The DN-22 is a safety relay meeting A.A.R. standards, having standard contact openings with non-fusible front and back contacts. The armature air gap is more liberal than has been provided heretofore on any relay. The silver to silver impregnated carbon contacts are designed to carry a load of 7.5-amp. per contact. This high rating is accomplished without sacrifice in contact drop. The design of the contact structure includes a feature which assures that the two back contacts will remain closed until the actual time of pick-up of the relay.

The new relay transfers the load to the standby source, not only when the power is actually interrupted but when the a-c. voltage has dropped to a value 70 per cent of that on which the relay is designed to operate. Another feature of design prevents the armature from "floating" in the event the voltage is reduced close to the value at which the armature should release.

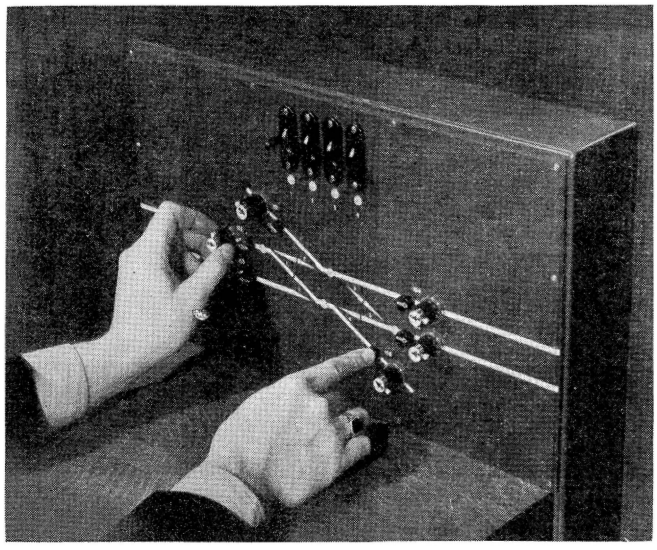
The relay is designed so that one of the two front contacts will open slightly in advance of the other. This is for the purpose of making the relay adaptable to a special stick circuit and eliminating difficulties from such special conditions as high resistance in the a-c. system, in fuse or wire connections or poor regulation of the transformer.

NX Electric Interlocking

LAYING claim to the initiation of a new era in electric interlocking, the General Railway Signal Company has announced the development of the NX-Type electric interlocking. The basic principle of the system hinges on the fact that trains through an interlocking plant travel by routes, which have an entrance and an exit. The operator needs to know only these two details about the train's movement, and he directs it accordingly.

Knowing where the train is entering, the operator turns the "entrance knob." Knowing where the train is going, he pushes the "exit button." The rest is automatic. The switches line up, the signal clears, and indicators on the control board indicate the positions of the switches, the locking of the switches, the clearing of the signal, and the occupancy of the various track sections in the route, as the train proceeds through the plant. The point indicators on the control board clearly define the route set up.

Interlocking is a means to an end, that end being the safe and speedy directing of trains in a terminal or junction area. A system of interlocking that achieves this end in a simple, straight-forward manner without the ramifications that are today associated with an interlocking machine, is fulfilling a long-felt need.



Setting up route by turning the "Entrance Knob" and pushing the "Exit Button" of an "NX" interlocking

Because of the absence of switch and signal levers, the NX-Type electric interlocking allows the operator to concentrate on the directing of trains, and relieves him of the responsibility of operating switches and signals. He directs trains in every sense of the word. He thinks no more in terms of separate functions but of routes. His sole interest is to get the train "in here" and "out there."

Several claims are made for this new type of electric interlocking, among them the following:

1. It is simple to operate because the principle is basic, that of identifying the route "entrance" and "exit." Once this identification is complete in the operator's mind, it need not be broken down into its component parts, such as operating this switch lever and clearing that signal.
2. No manipulation chart is necessary as there are no levers to manipulate and no sequence of lever operations to observe.
3. The operator's attention is focused on the route he is setting up, and he is not distracted by switch and signal levers that are off to one side.
4. There is less chance of error in lining up the route.
5. The operating speed is greatly increased.
6. The operator can actually see the route he has set up. It is so clearly defined on the control panel that even the casual observer can see it.
7. The value of this system in "breaking in" new operators is apparent. They can master the operation of the control machine after being shown only once how to set up a route.
8. All switches, whether in the route or protecting the route are automatically positioned to provide the greatest possible safety to the train traveling over that route.
9. If there are several paths which a train might take from "entrance" to "exit," and another train is blocking the normal path, a second path is automatically chosen.
10. A layout of the most complicated character is condensed to its simplest form on the control board. Only the operating essentials are brought to the attention of the operator. Anything that interferes with this ideal has been discarded.

The indications on the control board are of value to the operator in the following ways:

1. They provide an easy means of visualizing the route.
2. The complete operating picture is in miniature before the operator all the time.
3. One glance tells what route or routes are set up.
4. When one route is set up, it is definitely apparent what other routes are possible.
5. One glance discloses what signals are clear and over what routes.

6. The signals are definitely associated with the tracks over which they govern.
7. An indication is clearly given as to whether a switch is free to operate.
8. An indication is clearly given as to whether a switch is in correspondence with its control.
9. The location of trains is clearly indicated.
10. Briefly stated, all controls and indications are directly associated with the control board.

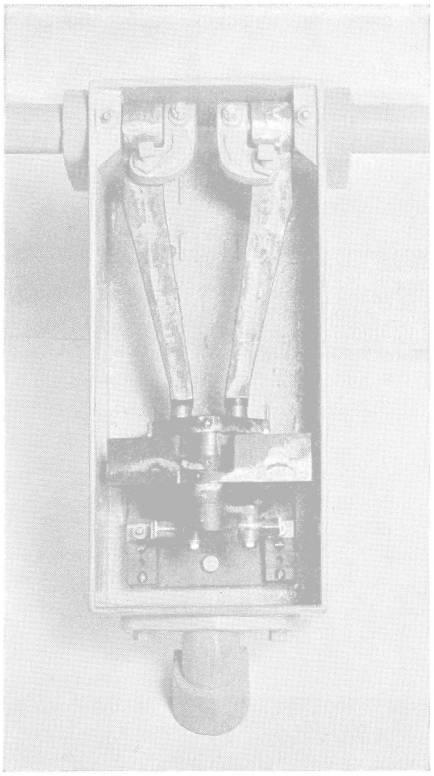
Rail-Contactor for High-Speed Trains

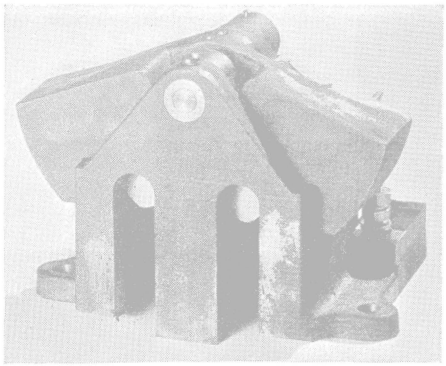
THE Peerless Manufacturing Corporation has developed a new rail contactor which is particularly adapted for use on roads where high-speed gas-electric cars and trains are operated.

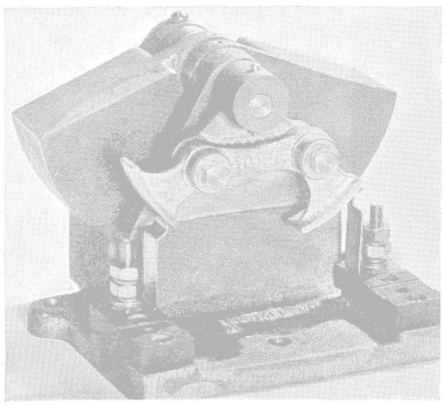
The new contactor, which is called the Model-E, is actuated by the depression of spring plates placed under a rail just as the original Model-C Fusticlo rail contactor is operated. The principal change is in the selector mechanism which operates the contacts. The contacts of the new device operate more quickly, have a larger contact opening, and hold the contact selection for a longer period of time. The bearings for the operating shafts have also been improved by enclosing them to keep out grit and brine, and by providing a reservoir for the lubricant. Other small improvements have also been incorporated in the new contactor to bring it up to a standard to meet modern demands.

All of the new features of the Model-E contactor are the result of research and tests conducted by the Peerless Manufacturing Corporation and suggestions from users of the Model C Fusticlo rail contactor. None of the new features were adopted until they had proved satisfactory by extended field tests.

Like the Model-C contactor, it is made in two types, directional for starting on single track, and non-directional for stopping on single track or for starting and stopping on double track. Contacts for a single circuit are regularly furnished with the Model-E contactor contacts for two or three independent circuits may be applied to it, and will be furnished when so ordered. The contacts are furnished either normally open or normally closed.





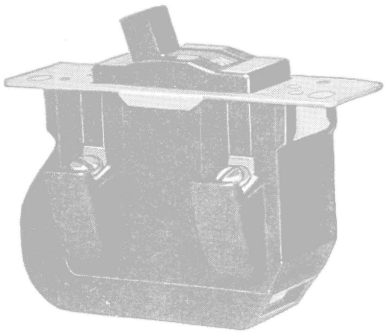


Left: View down into controller. Right lower: Contact end of device

Circuit Breaker

A PRIMARY circuit breaker for outlet-box mounting, which provides short-circuit and overload protection for 125-volt a-c. or d-c. circuits and can also be used as a switch control for branch circuits, has been announced by the General Electric Company's merchandise department, Bridgeport, Conn. The device eliminates the inconvenience of replacing blown fuses and prevents the user from fusing a circuit so that it can be loaded to a capacity beyond its ability to carry the load safely.

The breaker may be installed in a suitable standard square outlet box with a raised cover and brass plate. Thus mounted, its external appearance closely resembles that of a flush tumbler switch and plate. It is also suitable for gang mounting. It has a sealed-in, rust-proof mechanism of the tamper-proof type which cannot be "locked" by the handle while the circuit is overloaded. Positive in action, it is not affected by vibration or shock.



Assembly for box mounting

Improved Position-Light Signal

A NEW position-light signal, showing marked improvement from several standpoints—mechanical, optical, economic—and with many operating advantages, has been introduced by the Union Switch & Signal Company, Swissvale, Pa., and is designated its Style PL-2.

For simplicity of description, the new signal is compared with the company's previous model position-light signal. An optical comparison of the two units discloses that the new signal, with 8-volt, 5-watt lamp, has higher beam candlepower than the previous signal with 12-volt, 9.5-watt lamp. This greater beam candlepower is obtained not only on the axis, but also at all angles below and to each side of the axis.

A mechanical comparison of the two units discloses the following: While the previous style signal had no sighting device and required not less than two men for at least two hours to aline properly in the field, each unit of the new signal is designed to accommodate a sighting tube, which permits one man to properly aline all units of one signal within half an hour.

All fittings for attachment to spider