

Regardless of all else, when a power line leaves its source, it is equipped with fuses or automatic cutouts for each branch. Then out on the line, if it goes from open line to cable or vice versa, a sectionalizing point should be provided for the isolating and testing of cables. On low-voltage open line feeds extending only four or five miles each way from the source, there is hardly a necessity for sectionalizing. If a branch line is involved, such as at a junction point or a crossing, some means of sectionalizing that line from the main feed should be provided.

For ordinary wayside signals, a set of sectionalizing switches at each end of a maintainer's section (and near headquarters if sections are extensive in length) enables each maintainer to test, repair or otherwise work on his power line without having to leave his section. This rule also holds true inasmuch as maintainers' sections often end at important points such as borders of terminals, yard limits or interlocking-plant limits, so that these sectionalizing points are available to two maintainers. If a power line feeds an a-c. territory and extends into a d-c. territory, it should be sectionalized at the border point, and preferably fused, so that any disturbance in the d-c. territory will not put the a-c. signals out of order.

On long lines extending over land of varied contours, experience sometimes indicates that some sections are very susceptible to lightning trouble; a sectionalizing point located on either side is a great aid in locating such trouble. If a line extends to a point where booster transformers are necessary, sectionalizing switches should be located at the transformer.

Another point to be considered, which is much to the advantage of the signalmen, is to locate sectionalizing points at or near a station or highway, because many times, by necessity, train service or automobiles are used in searching for trouble.

The installation of small neon-glow or low-wattage carbon-filament lamps as pilots on the line side of each sectionalizing switch is often worth much on floating-battery territory, especially during lightning or sleet seasons. These lamps may be located so as to be visible to a station operator or even a train crew. After these employees become accustomed to seeing the pilot light normally lighted they will readily notice its absence in case of a power failure, and thus the report will be hastened.

Switches at Five-Mile Intervals

W. J. Eck

Assistant to Vice-President, Southern, Washington, D. C.

It is our practice to install switches so that the signal transmission line can be sectionalized at intervals of approximately five miles, and we have found this interval to be entirely satisfactory.

On single-track territory where A. P. B. signaling is installed, we endeavor to locate the sectionalizing switches between the two absolute signals at passing sidings in order that the absolute signals at the ends of the passing siding will not be affected when the switches are open.

Locate Switches at Each Head Block

W. N. Harris

Signal Maintainer, Southern, Jackson, Ga.

It has been my experience that sectionalizing switches for signal power lines should be located at or just inside each head-block location, so that when the line is opened the outbound signal is not affected. This allows inter-

mediate signals toward the power source to be in operation up to the station siding in case of trouble within the siding.

This arrangement provides for the least interruption to signal operation in case a building in the town should catch fire and destroy the power wires overhead, preventing restoration of the line for several hours. Another advantage of locating the switches as explained is that the power can be cut off during the inspection or testing of the "hot" equipment, which is a decided advantage in congested areas in towns.

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Application of the Retained-Neutral Relay

In what special applications or circuits is the use of the retained-neutral polarized relay of advantage?"

Saves Relay and Circuit Complications

A. W. Whitehorn

Commercial Engineer, General Railway Signal Company, Rochester, N. Y.

It would be quite difficult to enumerate the various circuits in which the retained-neutral feature of the retained-neutral polarized relay could be applied, but when the occasion for its design and the principle of its operation is understood, the circuit designer will recognize many applications for this relay.

Its purpose is to retain the front contacts closed, which are operated from the neutral armature, during the short interval of time the polarity change is made, and avoid opening circuits which, without this retained feature, require an additional relay and consequent circuit complications.

Relay Has Many Uses

H. S. Young

Circuit Engineer, Union Switch & Signal Company, Swissvale, Pa.

The retained-neutral polarized relay is especially applicable to the control of automatic block signals. Both the track type and the line type are being used. The efficiency of the retained-neutral polarized relay is such that it can replace the older types of polarized relays of the same resistance and eliminate the slow-release neutral relays with a saving in battery drain equal to the current required for the operation of the slow-release neutral relay.

When the retained-neutral polarized track relay is used, it eliminates clear flashes of light signals when a rail car or light-engine passes the next signal in advance. This is due to the close relation between the pick-up time and release time. The retained-neutral polarized line relay is also used with equal advantage in double-track or single-track signaling where the slow pick-up feature is of advantage in preventing clear flashes, and in APB signaling it helps to avoid improper pick-up of directional relays.

In double-track signaling the retained-neutral polarized relay may serve as a polarized line relay and at the same time act as a secondary track relay. Quick release is obtained, in this application, by breaking the retaining-

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coil circuit over a front contact on the primary track relay. Three- and four-block signaling systems also provide applications for the retained-neutral polarized relay as a line relay and as a track relay.

One special application of the retained-neutral polarized line relay might be mentioned. This is as an approach relay for the control of approach indications and approach locking at C.T.C., and relay interlocking layouts where it is desired to provide an approach indication before a train enters the approach-locking section.



Sand in Spring Switches

"How do you prevent sand and dirt from working into spring switch mechanisms through the packing gland, thus avoiding scoring or wearing the piston rod and the bushings?"

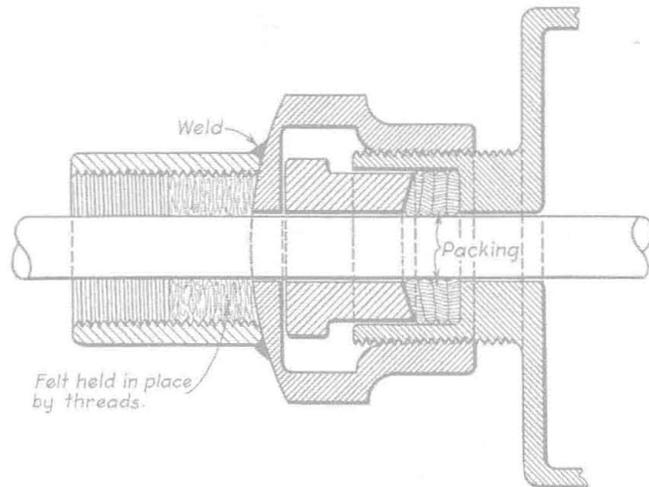
Felt Packing Protects the Operating Rod

E. A. Carlson

Signal Maintainer, Atchison, Topeka & Santa Fe, Galesburg, Ill.

In order to prevent sand and dirt from working into a spring switch mechanism, I have used a felt washer as an additional packing as is illustrated in the drawing. This is accomplished by the addition of a two-inch conduit coupling attached to the packing nut.

The packing nut must be removed from the mechanism so that the conduit coupling can be welded to it. A piece



Sectional view of packing nut showing the application of the conduit coupling

of felt two inches wide and one-half inch thick, which has been saturated with oil, is then fitted into the coupling and the operating rod is pushed through the oily felt and connected to the spring switch mechanism. The threads of the coupling hold the felt in place. This expedient keeps the rod clear of fine sand or dirt, and also keeps the rod well lubricated.

Canvas Sleeve Protects Mechanism

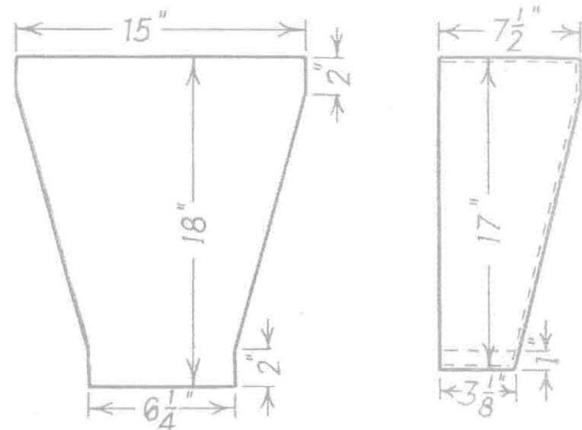
E. E. Peak

Signal Foreman, Atchison, Topeka & Santa Fe, Topeka, Kan.

Spring switch mechanisms are sometimes sent to the signal repair shop of the Santa Fe for overhauling as a result of the damage caused by sand and dirt which

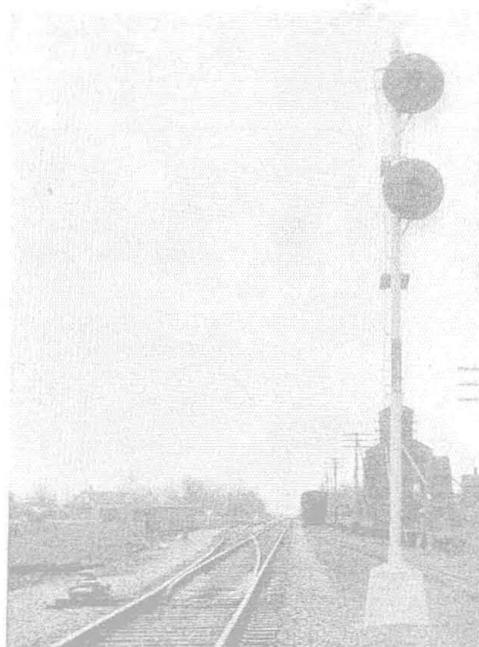
accumulates on the piston rod. This damage usually consists of scored bushings and piston rods and unnecessary wear of these parts. In order to prevent the entrance of sand through the packing gland of the Pettibone-Mullikan mechanism, a canvas sleeve was designed for the protection of the moving parts.

The protector can easily be made out of a piece of No. 6 canvas. With the canvas cut as shown, one inch of the smaller end is folded over and sewed. The piece is then folded lengthwise in the center and a double stitch run along the side. The seams are then turned to the inside and the protector is ready for use. One 4 1/8-in. hose clamp and one 1 1/4-in. clamp are required to hold the sleeve in place.



Details for cutting the canvas sleeve

To install the protector, it is only necessary to remove the eye and the nut of the piston rod; slip the large end of the canvas over the packing nut and the small end over the operating rod. The two hose clamps are then placed in their proper places and securely fastened. This additional protection is especially desirable in sandy localities.



On the Wabash at State Line, Ind. Power switch and signal 93 miles from the centralized traffic control machine by means of which they are operated