Protective Links
INSTRUCTIONS

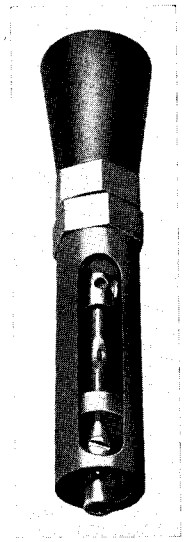

FIG. 1—INTERNAL PROTECTIVE LINK WITH SECTION CUTAWAY TO SHOW WORKING PARTS

GENERAL

The protective links used on "CSP" Power Transformers are oil immersed and are intended to open the line connections only in case of an internal fault in the transformer winding or in case of an overload which is not cleared by other protective equipment. In case the links should operate it will be necessary to remove the bushing with the protective links assembled and renew the fuse element.

CONSTRUCTION

The protective links are mounted directly on the end of the high voltage bushings and are in series with the bushing leads. Fig. 1 and 2 show typical construction. Each complete lead assembly is individually enclosed by a large diameter, thick walled Micarta barrier supported on the transformer assembly, which keeps the moving parts, ejected when the fuse operates, from causing short circuits to other phases and from getting lost in the coils. Numerous small holes in this barrier—too small for the pellet to go through—release the gas pressure which is generated by the fuse opening.

The protective link consists of two electrodes, between which is fastened a piece of special fuse wire, the whole being enclosed in a thick walled fibre tube. The upper electrode is solidly fastened to the supporting structure for stud type bushing or to the bushing lead in tube type bushings. The lower electrode is fastened to the lead which connects to the terminal board.

When excessive current through the fuse wire causes it to melt, the arc which forms, generates gas. This gas being generated in the small space enclosed by the fiber tube quickly builds up a gas pressure. The lower electrode, or pellet, then acts like a piston which the gas pressure drives out of the tube at high velocity. This action very rapidly stretches the arc into the cool oil. As soon as this arc is pulled into this cool oil, it flows past the pellet into the arc stream and extinguishes the arc at the first current zero.

INSTALLATION

It is readily seen that care must be exercised at all times to make sure that the lead which is fastened to the lower electrode is flexible so that the pellet will move rapidly and that clearance is maintained below the link so that the arc can be stretched far enough for the oil to extinguish it. The large Micarta barrier around the link assembly keeps foreign material from getting in the way of the pellet and the use of a stranded cable composed of many small wires provides the necessary flexibility. A small ventilating hole at the upper end of the brass coupling keeps the tube filled with oil at all times.

MAINTENANCE

As there are no moving parts and as the protective links are designed to operate only on faults not cleared by the other protective devices there is no maintenance except to replace the fusible link in case the device operates.

To replace the fuse wire, it is recommended that the entire bushing be removed and the flexible lead between the bottom of the protective link and the terminal board also be taken out.

Remove the protective link assembly from the end of the bushing. In some cases the fiber tubes will have to be removed also.

The fuse wire assembly can then be readily replaced, including the flexible lead and the bushing put back in place. The flexible lead should be threaded through the hole in the large Micarta barrier and connected to the terminal board.

RENEWAL PARTS

If spare fuses for protective links are required, they may be ordered from the nearest Westinghouse Electric and Manufacturing Co.'s office or directly from the Sharon, Pa., Works. Be sure to give serial or stock order number of transformer as stamped on nameplate when ordering spare fuses element.

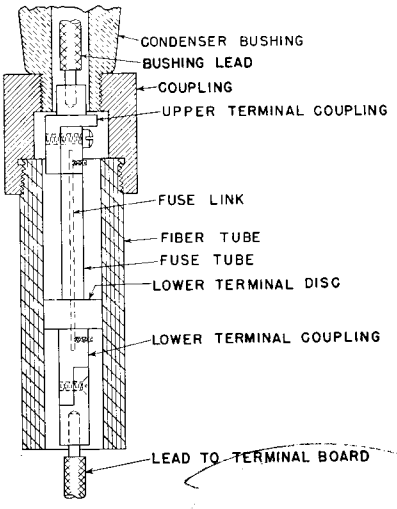

FIG. 2—CROSS SECTION OF TYPICAL PROTECTIVE LINK

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