

are taken through the back of the box, two holes being drilled in it instead of three. A hole is drilled and tapped in the cable post, and a reducing bushing is let in; and this and an ordinary pipe elbow, two short pieces of pipe of the proper size to carry the wires, and a star bushing, to be placed inside of the box as shown, comprise the material that is needed. The reducing bushing can be dispensed with if a perfectly tight joint at "C" is not considered necessary. This scheme uses only commercial material, and eliminates special parts.

GRAPHITE INSTEAD OF OIL.

BY J. D. N.

Some signal departments are using graphite in the pipe which encases pipe and wire-lines passing under highways. The problem of forcing graphite into this pipe has been solved by one signalman in the following way: A short section of two-inch pipe, threaded on one end, is screwed into the tee at one stuffing box and adjusted to stand vertically, as shown in the sketch. A small hole is drilled near the lower end of this pipe, and the tube

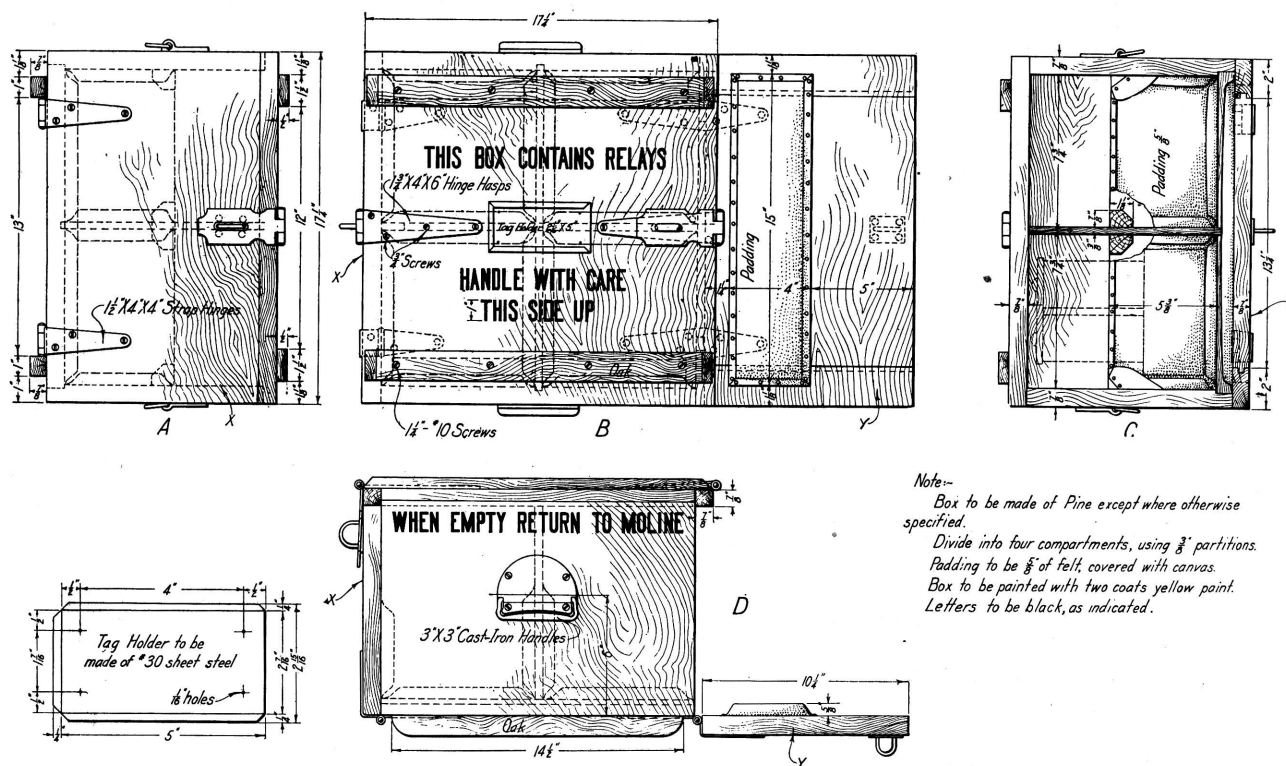
tacked in place as shown. The padding tends to keep the instrument from being jarred or injured in case the box is roughly handled. After the box is given two coats of yellow paint, a distinctive signal department color, the warnings, "Handle with care" and "Keep right side up," are printed in black letters on the top of the box.

Ultimately each maintainer's section will be equipped with one of these boxes so numbered or marked as to indicate the section to which it belongs. When a maintainer has a defective relay he puts it into this box, and ships it to the signal shop for repairs, and when the repairs are made the relay is returned to him in the same box in which it was received. The boxes now in use have more than paid for themselves by reducing the damage done to relays from rough or improper handling.

TO AVOID BAD CONTACTS.

BY C. A. GILLESPIE.

I have found the scheme shown in the figure very good for avoiding loose or bad contacts in the wiring of switches, signals, relays and other electrical signaling apparatus. The wire should



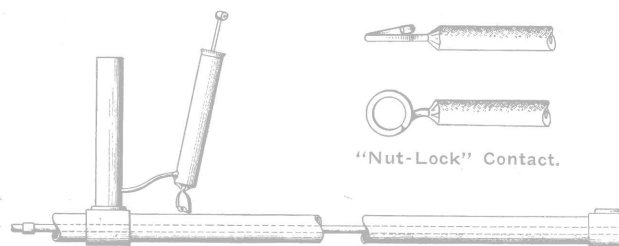
Details of Packing Case for Shipping Relays.

of a common foot bicycle pump is inserted. The plug in the tee at the other stuffing box is removed, and the vertical pipe filled with graphite. The action of the pump will then force the graphite down into the horizontal pipe, the air escaping through the other tee.

RELAY SHIPPING CASE.

For shipping relays to and from the repair shop, and in order to minimize any damage that might be done by rough handling, the Chicago, Rock Island & Pacific uses the packing case shown in Fig. 1. It is made of strong lumber, and is divided into four compartments by $\frac{3}{8}$ in. partitions. Each compartment will contain one relay, the position of the relay in the compartment being indicated by the dotted lines in C of the figure. B is a plan of the box with one of the end doors open. The end doors are made to open in this way so that two relays can be slipped in at each end. The top of the box does not open. The end doors, when closed and padlocked, hold the relays in place. Each compartment is designed to fit the base of the relay and is lined with felt padding $\frac{5}{8}$ in. thick and covered with canvas, this being

be cut smooth with the pliers and bent at the end in the shape of a lock-nut. This should be placed on the binding post and the nut screwed down on it, when it will hold like a lock-nut and



Showing How to Force Graphite Into a Pipe.

make a perfect contact. I have a switch machine on which all of the contacts are made in this way, and no trouble has been caused by bad contacts since these connections were installed. On the contrary the scheme has proved so effective that I believe it can be applied successfully to contacts in general.