

# Substitute Materials in Telephone Booths

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A CASUAL glance at a telephone booth with its wooden panels would not lead one to think it a hopeful source for saving steel and other strategic materials. But each peacetime booth used about 93 pounds of steel and by redesign 85 have been eliminated. With the exhaustion of available stocks of steel these changes will save over 300 tons of this metal per year on the approximately 8,000 telephone booths required by war effort and civilian needs. Other urgent materials conserved are 95 tons of rubber compound and 35 of brass and bronze, in-



Fig. 1—Substitute materials save approximately 85 pounds of steel, 25 of rubber compound, and 10 of brass and bronze in the construction of the wartime telephone booth

cluding that saved in maintenance.

Fifteen different parts of the booths have been redesigned. The major saving in steel was made by substituting plywood or masonite in the base, thereby conserving 43.5 pounds per booth. The plywood base, B, Figure 2, is constructed of  $\frac{1}{2}$ -inch five-ply fir, glued and screwed to birch or maple sleepers, S. These sleepers fit rabbets, R, in the bottoms of the sides and back, E, of the booth and provide inclined surfaces for supporting the base plates, P, which extend up the sides. Filler strips, G, attached to the sides and back continue these supporting surfaces to the required height. Because the base sleepers slope inward, the bottom of the small section of the folding door is tapered slightly to clear it when the door is open. This does not affect the appearance of the door noticeably because the tapered surface is concealed when it is folded back against the side of the booth. Three  $\frac{1}{8}$ -inch x 2-inch hardwood blocks, H, are glued and bradded to the under surface, one in the center of the base and one at each of the rear corners. Along the front edge is fastened to the under surface a hardwood strip, K, 2 inches wide. These keep the plywood base from resting directly on the floor. All the exposed surfaces are coated with a protective finish. The base forms a self-contained unit to which the sides, back and door frame are attached with screws. This type of construction preserves the knock-down feature which is used in some installations.

The new construction is also adaptable to installations at customer's premises, where tile or similar permanent

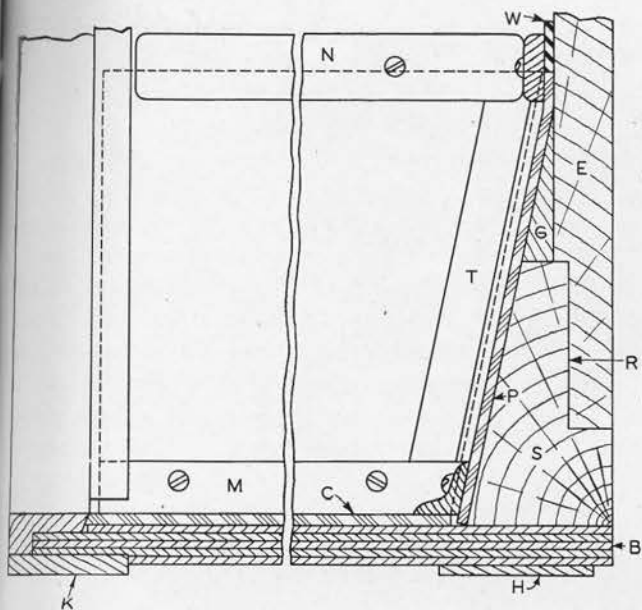
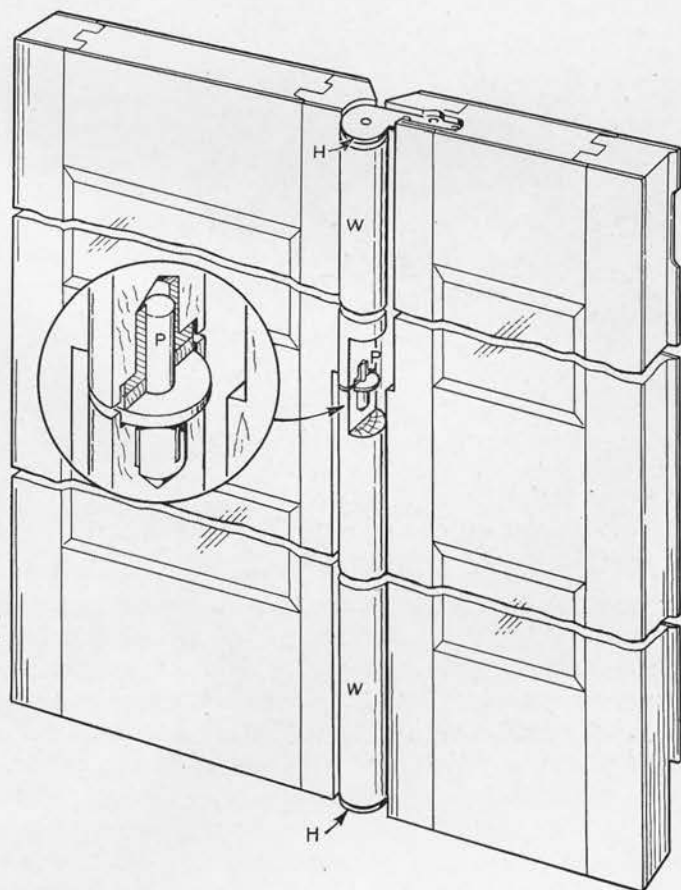


Fig. 2—Base, B, is now plywood instead of steel. Five-ply fir is glued and screwed to wooden sleepers, S, which fit rabbets, R, in the bottoms of the sides and the back, E. Linoleum base plates, P, extend up from the linoleum floor covering, C. Filler strips, G, extend above the sleepers. Hardwood blocks, H, and strip, K, raise the base from the floor. The lining, W, is compressed wood

Fig. 3—A wooden door hinge has been substituted for the bronze piano hinge previously used. It is made of two cylindrical wooden members, one of which is attached to each section of the door. The two parts of the hinge cover the entire height of the door and are joined at the center by metal pivots. There are metal hinge bearings at the top and bottom of the wooden cylinders, shown at H





*Fig. 4—A compressed wood-board lining has been substituted for sheet steel in this booth. The door has a wooden handle and the shelf and seat bracket are also of wood. The card now has a wooden frame*

flooring make a floorless booth desirable. At these locations the plywood part of the base is removed and the sleepers are anchored to the floor.

For the floor covering, *c*, and interior base plates, *p*, linoleum was substituted for rubber, which saves seventeen pounds of rubber compound per booth. This saving amounts to approximately fifteen tons of pure gum rubber per year.

In steel a large saving was obtained by lining the booth with compressed wood pulp board, *w*, instead of sheet steel. This substitute material, whose improved appearance has caused favorable comment, has a hard brown mottled surface. It is not easily scratched or cut and its dark color prevents pencil marks from being easily seen. A wax finish is applied to the material at the factory to facilitate cleaning. This substitution saves 23 pounds of steel per booth.

Black finished wood moulding is now used instead of steel for the base moulding, *m*, the binder strips, *n*, and corner angles, *t*, along the top and at the corners of the linoleum floor.

The steel track in which the door glide-block slides will be omitted and instead a channel will be provided in the hardwood that supports the track. The steel door handle has been replaced by a one-piece wooden one which is fastened by glue and screws. Two-part wooden door hinges are now used instead of a bronze piano hinge to connect the sections of the folding door. The new hinge has two cylindrical wooden pieces, *w*, Figure 3, one of which is fastened to the upper part of the larger section of the door and the other to the lower part of the smaller section. The two sections are joined at the center by metal pivots, *p*, in the ends of the wooden cylinders and at the top and bottom by metal hinge bearings, *h*.

Wood has been substituted for steel for the shelf and also for the seat bracket. Both are made of birch and finished with brown enamel paint like that on the seat. A backboard of birch plywood, reinforced with a hardwood backbone which connects the triangular top and bottom members, is now used instead of a steel board for mounting the coin collect telephone set. Tee nuts are located in the backboard panel and angular mounting holes are provided so that the new board can be fastened in the booth and the coin collector mounted

with machine screws in the same manner as the steel backboard. The new board has a flat black finish.

Kick plates have been omitted from doors and the exterior of the booth. The bronze "Telephone" sign has been dispensed with and wood has been substituted for the steel that was formerly used for the card frame.

For outdoor booths a wooden roof has been provided as a substitute for the galvanized iron peak-roof previously

used. The new roof has a cypress frame and ribs in which  $\frac{1}{4}$ -inch panels of masonite wood are inserted. In appearance it resembles the metal roof.

These substitutions have been made without sacrificing serviceability and they maintain existing over-all dimensions and interchangeability of parts as far as practicable. Further studies are in progress to provide for the use of other materials as required by the changing supply situation.

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THE AUTHOR: E. W. NILES was graduated from the Massachusetts Institute of Technology with the degree of S.B. in 1904. For two years he was an assistant in Physics at that Institute; then he joined the Engineering Department of the American Telephone and Telegraph Company. In 1934 he transferred to the Apparatus Development Department of the Laboratories. Most of Mr. Niles' work since that time has been concerned with station apparatus, including coin col-



lectors and studies to reduce their susceptibility to fraudulent practices. In this connection he represented the Bell System on an American Standards Association Committee and on one representing the operating areas of the New York Telephone Company. Earlier, Mr. Niles represented the A T & T on a National Bureau of Standards Committee on dry batteries. He has recently been working on substitute materials suitable for telephone booths.