



The Editor of Handy Man's Workshop will be glad to receive any hints for this department and pay for them if available.

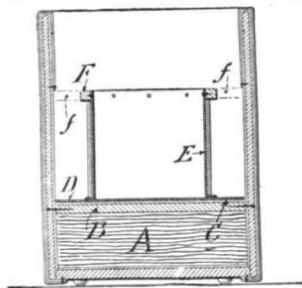
**ANNOUNCEMENT.**

Several letters have recently been received from readers of Handy Man's Workshop asking for articles on special subjects. The editor desires to keep in touch with the requirements of all who are interested in this department of the SCIENTIFIC AMERICAN, and as far as he is able is glad to respond to any suggestions they may offer. The instructions for making a brass furnace, and the two articles on fireless cookers, published below, have been prepared in response to special requests. The editor has been asked to publish directions for making a small flash boiler for use with a 1-horse-power engine. Possibly some of the readers of this department could furnish good practical suggestions on this subject.

**A CHEAPLY-CONSTRUCTED FIRELESS COOKER.**

BY EDWARD THORPE.

A cheap and efficient fireless cooker was made by the writer as follows: A box measuring 34½ inches long, 12 inches wide and 16 inches deep inside measure was bought from the grocer. After lining it well with newspapers lapped at the corners and tacked in place, a bed of newspapers *A* was placed on the bottom to a depth of 4 inches. The false bottom *B* was then nailed above them, and a sheet of asbestos placed upon it.

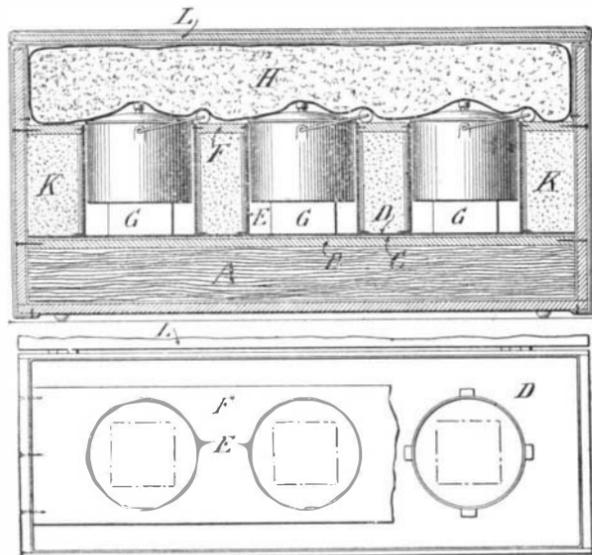


CROSS SECTION THROUGH ONE OF THE ZINC CYLINDERS.

Three pieces of sheet zinc, 7 x 26½ inches, were made into cylinders and soldered at the joint. These cylinders were then soldered to a sheet of zinc, *D*, cut to fit the false bottom, *B*, the cylinders being spaced 10 inches between centers. To facilitate the soldering of the cylinders *E* to the zinc plate *D*, small ears may be left in the cutting and bent outwardly.

Three holes the diameter of the outside of the cylinders, 10 inches between centers, were made in a board *F* 34¼ inches long and 8½ inches wide, and nailed in place around the cylinders, the cylinders being nailed to the board *F*. A strip of asbestos was then wrapped around each cylinder and tied in place with string.

The space around the cylinders was now well packed with sawdust, *K*, and the small strips of wood, *f*, were inserted and nailed to the box to complete the shelf *F*. Three half bricks, *G*, and three enameled-ware pails 5 x 6½ inches covered by an old feather pillow, *H*, which in turn was pressed firmly over the pails by a hinged lid, *L*, held closed by a suitable fastening, completes the cooker. To improve the appearance of the box the outside, with the exception of the bottom, was padded with paper tacked in place and covered with cretonne. Handles placed at the ends were found useful as well as ornamental. The novelty and efficiency of this cooker lies in the use of the half-bricks, *G*, which being placed around the gas burner, or on the stove with the pail resting on them, while bringing the contents of the pail to the boiling point,



A CHEAPLY-CONSTRUCTED FIRELESS COOKER.

absorb considerable heat (the hotter they get the better). They are then used as shown in the illustrations.

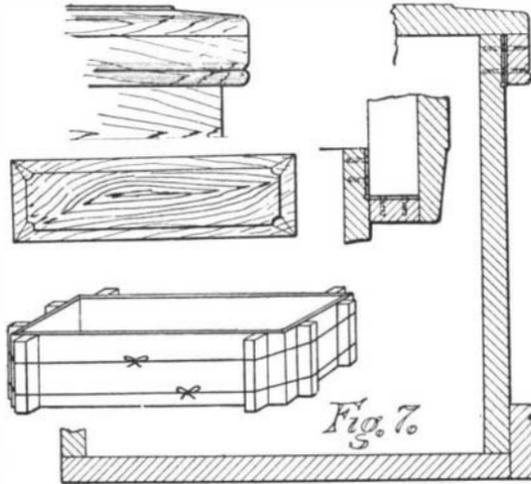
**FURNISHING THE WORKSHOP.—IV.**

BY I. G. BAYLEY.

(Continued from the issue of February 27th.)

**A SHOULDER CHEST.**

When called to do outside jobs, it is very necessary to have some suitable box or chest in which to carry



CONSTRUCTION OF THE CHEST.

a few tools, either in the hand, on the shoulder, or on the back if a bicycle is used. The writer is acquainted with a mechanic who took more interest in making his shoulder chest than any other furnishings of his shop, claiming that it would be an advertisement of what he could do if called upon.

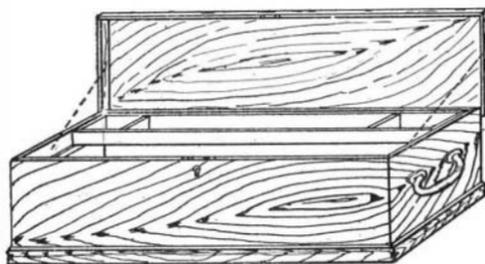
The chest is illustrated in Fig. 8, and detailed in Fig. 7. A trunk strap was put through the handles and thrown over the shoulders, when he mounted a wheel to go to his job, or the strap shortened to make a comfortable handle, if within walking distance of his employment.

The chest should be made from half-inch stuff; chestnut being a good wood, on account of the grain showing off to an advantage when the finished article is given an oil polish.

Select a prettily-grained piece of board, sufficiently large to cut the whole box. The sides are to be



Fig. 8.



THE SHOULDER CHEST.

marked out in such a way that when the chest is put together, the markings of the grain will match all round, as seen in Fig. 8.

The detail view, Fig. 7, gives a general idea of the construction, and needs but little explanation. The board from which the sides and ends are cut is 8 inches wide by 7 feet in length, accurately divided into four parts, 9 inches and 2 feet 9 inches long, and the edges chamfered 45 deg., when they should be nailed together with long fine nails, and glued. The beaded finishing strips, top and bottom, are cut in the same manner. The top strip is 1 inch deep, and the bottom 1½ inches. The strips of wood from which they are cut are 7 feet 4 inches long. Allowance must be made for the saw cuts, both in the sides and the strips. The bottom is made from a plain board, 9 inches wide by 2 feet 9 inches long. The top is ½ inch thick, 10½ inches wide, and 2 feet 10½ inches long with a panel ½ inch deep, gouged at the corners and chamfered down to ⅜ inch all round, 1½ inch from the edge, as shown in the illustrations. When the mitered edges of the sides and the finishing strips are glued, they can be held until perfectly dry, by an arrangement of blocks and cords, as shown in Fig. 7. There should be a clearance space between the lid and the box, all around, of about 1/16 of an inch. The corners throughout should be nicely rounded, so that there will be no sharp edges to annoy one when carrying the chest.

Hinges and a flush lock should be nicely let in the front and back, as shown in detail in several of the

views. The hinges must be attached to the box first, and then to the lid, when open full. A neat brass chain will prevent any accident of the lid opening too far. The handles should be fairly strong, and attached very securely to the ends of the chest. A neat tray, 3 inches wide by 1½ inches deep, of ¼ or 3/16-inch stuff, is made to fit the chest.

(To be continued.)

**AN ELECTRICAL FIRELESS COOKER.**

BY FREDERICK E. WARD.

The so-called "hay-stove" or fireless cooker has now become so popular and its advantages so well known that it is hardly necessary to call attention to them. One serious drawback to its general use, however, is the fact that the food to be cooked must first be heated up to the boiling point on a stove of some kind before it is placed in the cooker. This is not only inconvenient, but in warm weather it goes far to defeat one of the important objects of the fireless cooker, namely, the elimination of heat from the kitchen.

Wherever there is a supply of electric current available it is quite feasible to combine the electric heating and fireless cooker principles in such manner that the food may be placed in the cooker cold and the current be turned on for about fifteen minutes to heat it up, for which time the cost for electric power will be only about three cents.

In its general construction such an electrical fireless cooker may be made as shown in the sectional view, where *A* is an ordinary stone crock with cover, imbedded in a suitable heat-insulating packing, *B*, such as mineral wool, and covered with a mattress, *C*, of the same material, the whole being contained in the wood box, *D*, having a hinged cover, *E*. For an

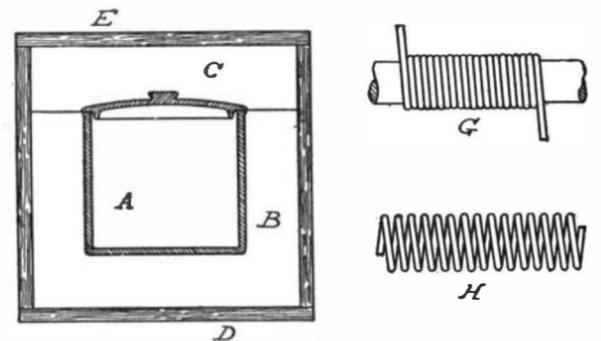


Fig. 1.—SECTION OF THE ELECTRIC COOKER AND METHOD OF MAKING THE HEATING COIL.

average-sized cooker an ordinary four-gallon stone crock, which measures 10½ inches in diameter inside by about the same in height, will be found to be well adapted to the purpose.

To make the electrical heating element suitable for use on a circuit of about 110 volts, procure 70 feet of bare No. 18 "30-per-cent nickel" German-silver wire. Such a piece of wire should have a resistance of about 12 ohms, so that when connected to the mains about 9 amperes will pass, and the heater will thus consume about 1,000 watts. As 70 feet of the wire will weigh only 1/3 of a pound and cost but a few cents, it is advisable to buy a pound of it, so as to have a couple of extra pieces on hand to use when repairs become necessary.

To form the heating coil, first anneal the wire by heating it to a dull red (but not white) heat in a suitable fire or gas flame, and after allowing it to cool form it into a helix by winding it closely on a metallic rod 5/16 inch in diameter and about 36 inches long. See Fig. 1, *G*. It is best to do this winding in a lathe if possible, as hand work is not only tedious, but the coil is likely to be uneven. After winding slip the

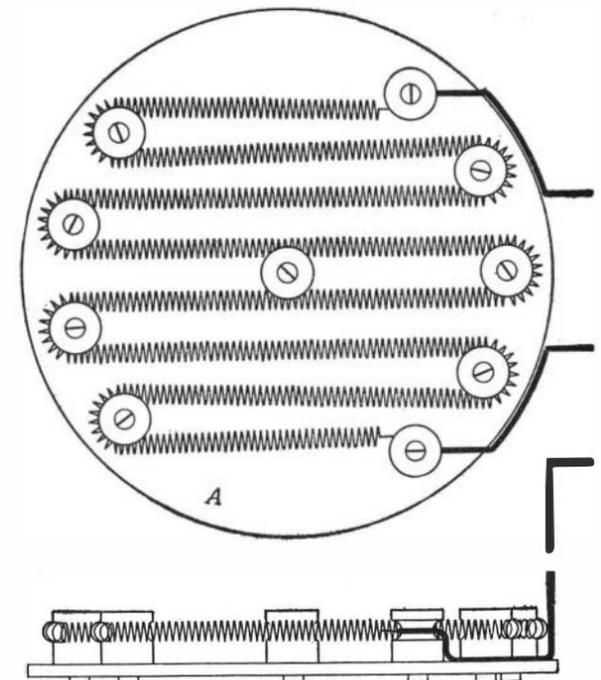


Fig. 2.—ARRANGEMENT OF THE HEATING ELEMENT.