

# The Canadian Engineer

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### THE DESIGN OF CENTRAL HEATING SYSTEMS

#### PART III.

#### THE UNDERGROUND TRANSMISSION SYSTEM CONTINUED—FORMS OF CONDUIT IN USE AND THEIR COMPARATIVE COSTS—THERMOSTATIC CONTROL

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The method of installation of the piping system and its protection must be of such a character that settlement of the trench or the pressure of the earth will not cause the pipe to become out of level or alignment. The pipe must be free to expand and there must be no restriction to this movement or some parts shall surely fail. The

The earlier heating systems were usually provided with conduits built up of boards and paper with air spaces between and filled, as a general rule, with oiled shavings, as shown in Fig. 5. These conduits were very cheap in first cost, and gave good service when new. However, in a few years the oil commenced to distill out of the shavings and the wood started to decay, especially when laid in certain soils. A very uncertain factor was

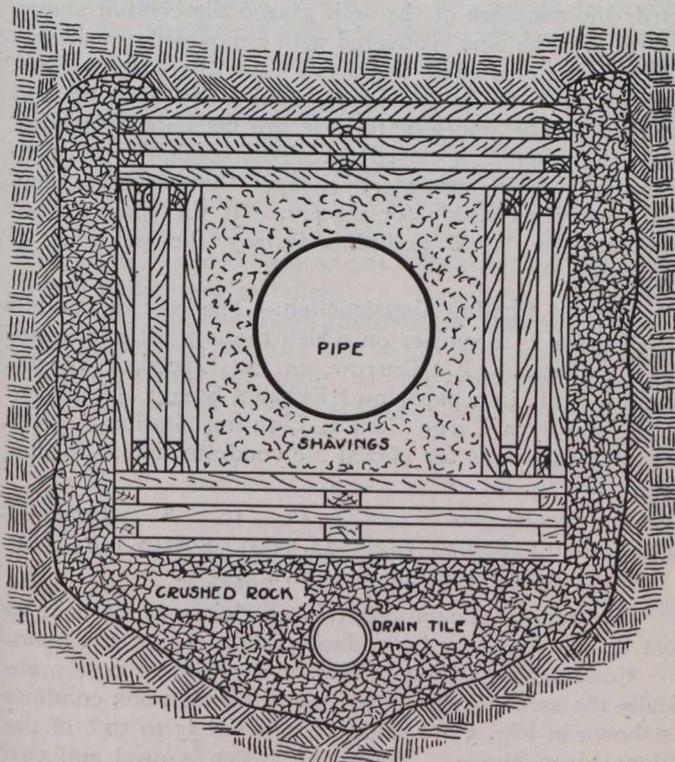


Fig. 5.—Wood Box Conduit.

insulating material and the conduit itself which protects the pipe must be of such a nature that it will not be affected by temperature changes in the pipe or in the earth. Otherwise cracks in the conduit will occur. These cracks allow water to seep in and not only to destroy the insulating material, but also to increase the line losses. All steam pipes should be carefully graded to the low points of the system where automatic steam traps should be placed in the manholes to remove the condensed steam and discharge it into sewers.

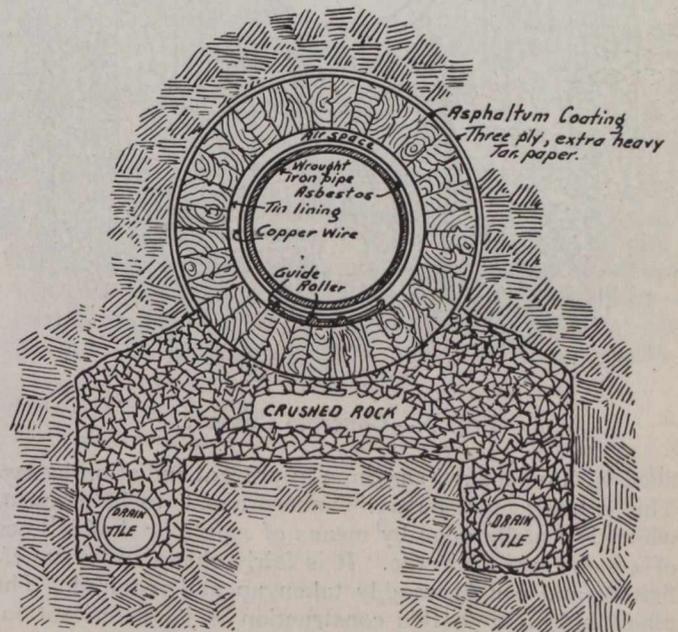


Fig. 6.—Wood Log Conduit.

the variation in decay in the length of an ordinary system due to variation in soils. Thus such systems became more inefficient with age, while the heating load, as a general rule, increased. It was also found hard to keep these conduits watertight. Their life has been stated to be anywhere from 15 to 25 years, depending on the soil surrounding them. After such experiences with this form, engineers have turned to other classes of conduit not so subject to decay or decrease in efficiency with age.

An improved form of construction is shown in Fig. 6, known as the "wood-log" conduit. It consists of white pine staves which have been thoroughly air and