

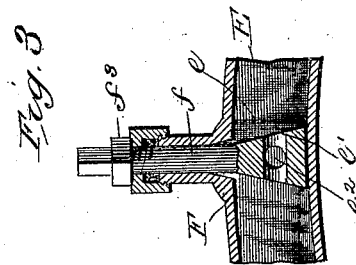
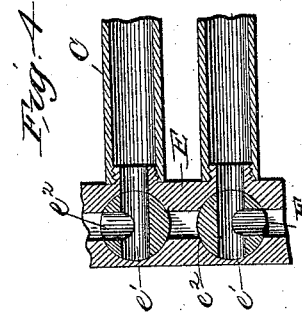
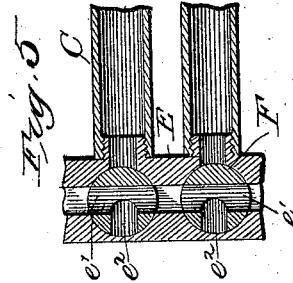
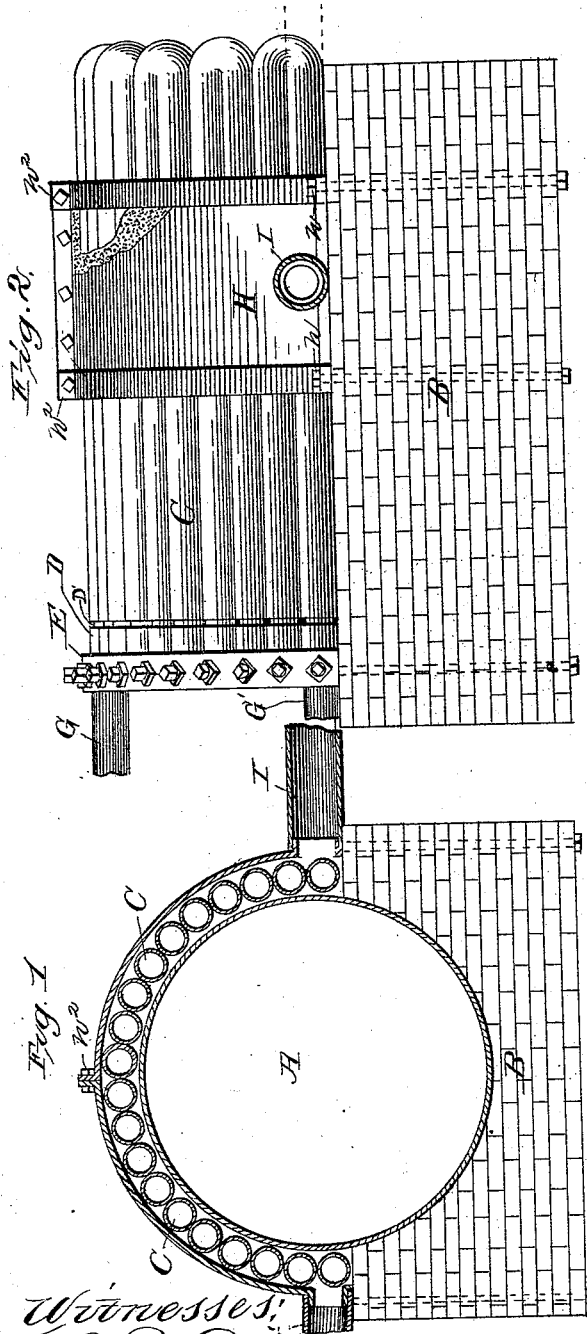
(No Model.)

A. B. WOOD.

REFRIGERATING ATTACHMENT FOR WATER MAINS.

No. 455,456.

Patented July 7, 1891.



Witnesses:  
H. P. Cornwall  
M. E. Perry

Inventor,  
Arthur B. Wood

# UNITED STATES PATENT OFFICE.

ARTHUR B. WOOD, OF TROUP, NEW YORK.

## REFRIGERATING ATTACHMENT FOR WATER-MAINS.

SPECIFICATION forming part of Letters Patent No. 455,456, dated July 7, 1891.

Application filed March 26, 1891. Serial No. 386,507. (No model.)

### *To all whom it may concern:*

Be it known that I, ARTHUR B. WOOD, a citizen of the United States, residing at Troup, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Refrigerating Attachments for Water-Mains; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in refrigerating attachments for water-mains; and it consists in the certain peculiar features of construction and arrangement of parts more fully hereinafter described, and definitely pointed out in the claims.

The object of my invention is to provide a refrigerating attachment for water-mains of cities, towns, or districts, so that the contents of the main may be cooled as it passes there-through and the water made desirable for drinking purposes in warm weather without the necessary addition of ice. This object I attain by the construction illustrated in the accompanying drawings, wherein like letters of reference refer to like parts in the several views, and in which—

Figure 1 is a cross-section of a main with my refrigerating attachment applied thereto. Fig. 2 is a longitudinal elevation showing a part of the casing broken away. Fig. 3 is a detail view of one of the valves. Fig. 4 is a section through the end of two pipes and the controlling-valves therefor, and Fig. 5 is a similar view showing the valves turned to cut off the sections.

In the drawings, A represents a water-main; B, a suitable masonry foundation.

C represents a series of longitudinally-disposed cooling-coils connected in pairs and lying close to the top of the main from a point at or about its center. These coils are connected to suitable nipples D, extending out from a heading E. These cooling-coils are connected by a coupling D' to the nipples. The heading E is constructed to correspond to the contour of the top of the main and is divided into a series of valve-chambers  $e$ , hav-

ing communicating channels  $e'$  with each other and right-angle channels  $e''$  leading from the valve-chamber into the coils.

F represents a three-way valve having a bottom which tightly fits on the base of the heading and an outwardly-extending stem  $f$ , with a rectangular or squared end and a screw-threaded portion below the rectangular end on which a suitable binding-nut  $f^3$  is located. These valves are arranged directly opposite the ends of each pipe and are used to turn on or cut off the refrigerating material from the respective coils. When it is desired to make a complete circulation throughout the coils, the valves are turned with their shorter branches in opposite directions, as shown in Fig. 4, the material passing through the valves into the top coils, around through the lower coil, and out of the valve, and so on until the circulation is complete throughout the series.

G represents an inlet communicating with the heading through which the refrigerating material is forced, and G' represents the discharge. Both the supply and discharge are to be connected to a suitable refrigerating apparatus. (Not herein shown.)

The cooling-coils are surrounded by top wall or casing H, which is suitably anchored by tie-bolts  $h$ , extending into the masonry. This casing serves to retain the coils in their proper position in the arc of a circle and is divided centrally into two parts, the upper edges of the segments being flanged, as at  $h^3$ , and united by suitable bolts, so that the casing may be easily removed by loosening the bolts and removing the nuts on the top of the tie-rods.

The chambers formed by the casing and the water-main may be filled with brine or cold air, the same to be introduced through a pipe I at one end thereof and discharged through an exit-pipe I' at the opposite end. The chamber may be covered with asbestos, sawdust, or other non-heat-conducting material.

I may construct the cooling-coils in section and provide intermediate valves, so that when it is desired to decrease the extent of the circulation when the temperature is low it may be done by turning the valves, and thus shorten the circuit. The coils may be made in two or more sections, as desired.

In making the casing and cooling-coils in sections, as described, I am enabled to remove any coil independently of the others, so that when a coil becomes rusted or stopped up it may be removed with but little trouble and the remaining coils be utilized without interruption. When this is necessary, the valves are turned, as shown in Fig. 5, carrying the stream of refrigerating material past the coils to be removed.

In operation anhydrous ammonia or other suitable refrigerating material is forced into the heading and through the cooling-coils, thereby cooling the water in the main.

It is necessary to surround the top of the main for a short distance only, the cooled water from the top descending to the bottom. The device may be located at any convenient point to cool the water for a certain district or town and will need to be duplicated when the district to be supplied covers an extensive tract.

I am aware that many minor changes in the construction and arrangement of the parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the kind described, the combination, with a water-main, of a divided casing above the same, a heading surrounding the upper portion of the main, a series of longitudinally-disposed cooling-coils on the main below the casing, a series of three-way valves for the respective branches of the coils, and a supply and discharge pipe for the coils, substantially as described.

2. In an apparatus of the kind described, the combination, with a water-main, of a series of longitudinally-disposed pipes on the top of the main connected in pairs, a heading for the pipes, valves in the heading, a casing above the pipes, an inlet and outlet pipe for the casing, and a supply and a discharge pipe for the longitudinal pipes, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR B. WOOD.

Witnesses:

M. E. PERRY,  
S. BRASHEARS.