W. W. & F. N. TREVOR.

Junction Service-Boxes for Street Steam-Main.

No. 221,479. Patented Nov. 11, 1879.

Fig. 1.

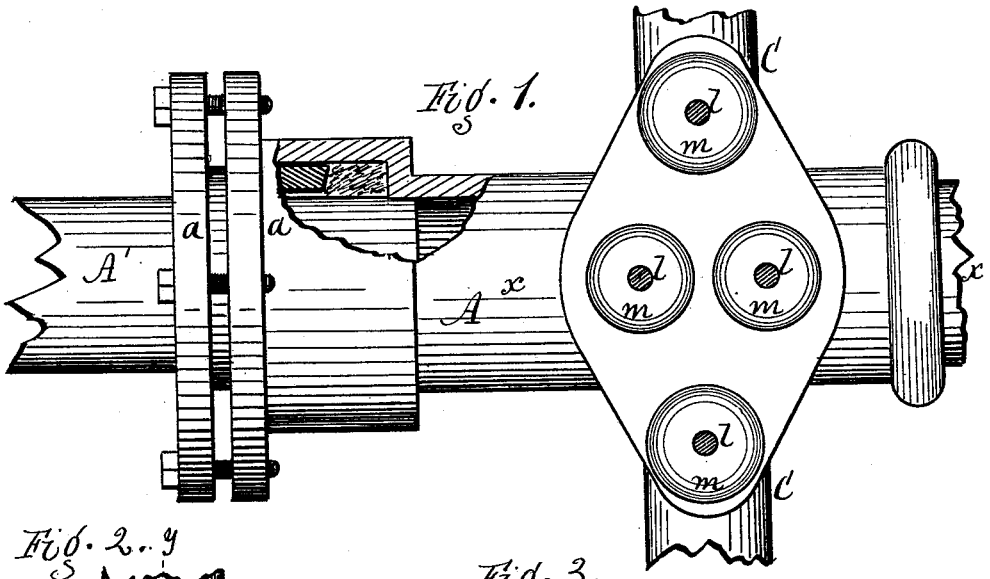


Fig. 2.

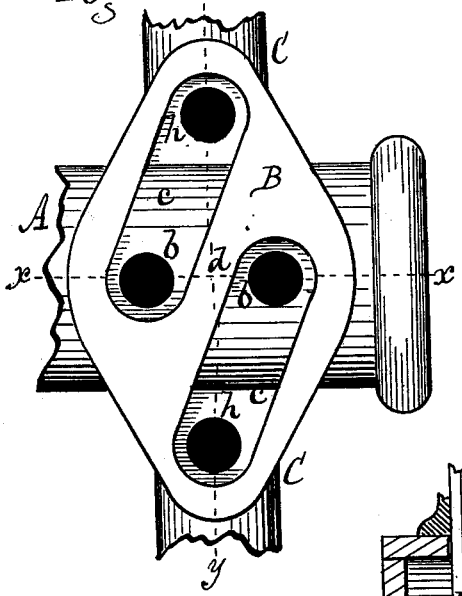


Fig. 3.

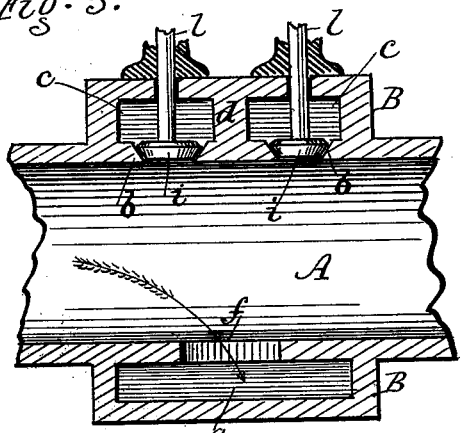
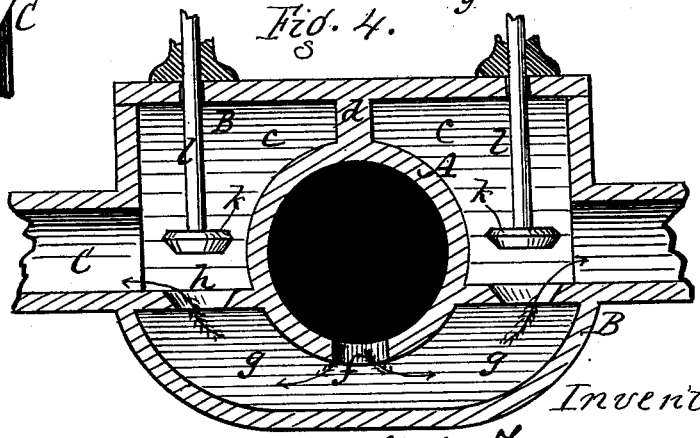


Fig. 4.



Attest.

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WILLIAM W. TREVOR AND FRANCIS N. TREVOR, OF LOCKPORT, NEW YORK.

IMPROVEMENT IN JUNCTION SERVICE-BOXES FOR STREET STEAM-MAINS.

Specification forming part of Letters Patent No. **221,479**, dated November 11, 1879; application filed August 28, 1879.

To all whom it may concern:

Be it known that we, WILLIAM W. TREVOR and FRANCIS N. TREVOR, of Lockport, in the county of Niagara and State of New York, have invented a certain new and useful Improvement in Junction Service-Boxes for Street Steam-Mains; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of our improvement. Fig. 2 is a similar view with the top of the valve-chest removed. Fig. 3 is a section in line *x x*. Fig. 4 is a section in line *y y*.

Our improvement relates to street steam-pipes laid in cities and towns for heating and other purposes; and it consists in an improved construction of the junction-boxes where the steam is taken from the main into service-pipes, as hereinafter more fully described.

In the drawings, A A′ represent two connecting sections of a street steam-main, through which the steam is forced under pressure from a boiler, as usual. These sections are connected by a slip-joint or expansion-joint, as shown at *a*, suitably packed and arranged in such a manner that the pipe can expand and contract under different temperatures.

B is the valve chest or chamber, which consists of a hollow apartment surrounding the pipe A at the point where the service-pipes C C are entered.

Through the top of the steam-main are made two ports, *b b*, opening upward, respectively, into two diagonal chambers, *c c*, separated by a partition, *d;* and through the bottom of the steam-main is made one or more ports, *f*, opening into a chamber, *g*, below the pipe. The chambers *c c g* are connected by ports *h h*, and the two upper chambers, *c c*, communicate on opposite sides with the service-pipes C C.

i i and *k k* are four valves, covering, respectively, the ports *b b* and *h h*, the same having stems *l l* extending up through the top of the valve-chest, and provided with hand-wheels *m m*, or other suitable devices, by which they are operated. These valves are fitted the same as ordinary globe-valves, the valve-stem passing through stuffing-boxes and being operated by screw-threads on the stems. The whole service-box is so arranged as to be readily reached by removing a cover or door at the surface of the ground.

The operation is as follows: When the valves are all open the steam from main A can pass indiscriminately through all the ports and enter the service-pipes C C. By closing the upper valves, *i i*, as shown in Fig. 3, the steam is forced to pass down through port *f*, and thence up through ports *h h* to reach the service-pipes. By closing valves *k k* and opening valves *i i* the steam is shut off from below, and is forced to pass up through the ports *b b* at the top of the pipe, and thence around through chambers *c c* to the service-pipes.

The arrangement above described is of great importance, as it enables either dry or wet steam to be used. When the steam is forced downward to reach the service-pipes, as at first described, it carries with it into the service-pipes the waters of condensation which gather in the lower chamber, *g*, as a trap; also the water in the main, and thereby forces each user to draw his quota of the same, instead of allowing the waters to collect in a low place and give an undue proportion to the users at that point. By this means the steam is equitably distributed and the waters of condensation are drawn off without difficulty.

On the other hand, in the running of engines and for many other uses it is necessary to use the dry steam and not force the waters of condensation into the service-pipes. In such case, by shutting off the lower valves and opening the upper ones this effect is accomplished. The whole work is done from the outside by simply operating the valves, thereby avoiding the necessity of opening the box, which has heretofore been required.

The device is much simpler, cheaper, and is in more compact form than the service-boxes heretofore in use. Being smaller and more compact, less surface is presented for radiation and consequent loss of heat.

The chamber B and a section of the steam-main are preferably cast in one piece and the main pipe connected to one end of said section by being screwed in and to the other by the expansion-joint *a;* or, if desired, the expansion-joint may be located in the pipe at a dis-

tance from the junction with the service-box section.

Having thus described our invention, what we claim as new is—

1. In a system of street steam-pipes, the combination, with the steam-main A, of the hollow chamber B, surrounding said main, with service-pipes C C opening from said chamber, the main communicating with said chamber by ports at the top or bottom, and valves situated within the chamber for controlling the steam, as described.

2. In a system of street steam-pipes, the combination, with the main pipe A, of the chamber B, divided into compartments *c c g*, with ports *b b f* opening from the main pipe into said compartments, and ports *h h* opening from the lower into the upper compartments, said ports *b b* and *h h* being covered by valves *i i* and *k k*, as shown and described, and for the purpose specified.

3. In a system of street steam-pipes, the combination of the main pipe A, provided with ports *b b* and *f* at its top and bottom, the compartments *c c g* surrounding said main pipe, and provided with lateral service-pipes C C, and a system of valves, *i i* and *k k*, arranged in connection with ports *b b* and *h h*, to admit the steam from the main pipe to the service-pipes, either through the upper or lower compartments, as herein described.

4. In combination with a steam-main pipe, A A′, the inclosing-chamber B, provided with lateral service-pipes C C, and arranged with a diaphragm having valves *i k*, as shown and described, and for the purpose specified.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

WILLIAM W. TREVOR.
FRANCIS N. TREVOR.

Witnesses:
JAMES F. FITTS,
ALFRED HOLMES.