(No Model.)

W. E. HAXTUN.

APPARATUS FOR STEAM HEATING.

No. 265,601. Patented Oct. 10, 1882.

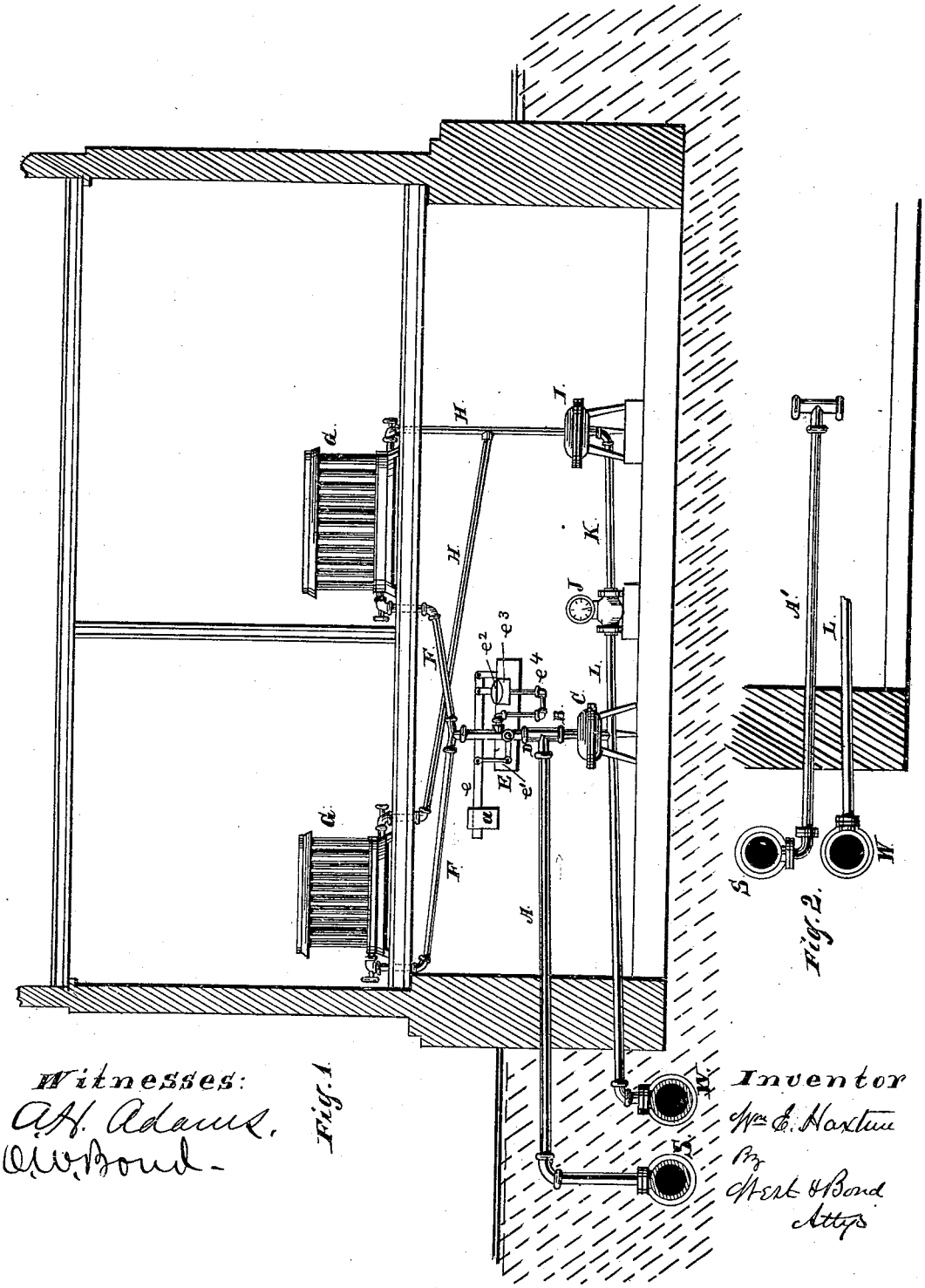

Fig. 1.

Fig. 2.

Witnesses:
A. H. Adams.
C. W. Bond.

Inventor
Wm E. Haxtun
By
Hart & Bond
Attys

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM E. HAXTUN, OF KEWANEE, ILLINOIS.

APPARATUS FOR STEAM-HEATING.

SPECIFICATION forming part of Letters Patent No. 265,601, dated October 10, 1882.

Application filed March 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. HAXTUN, residing at Kewanee, in the county of Henry and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Apparatus for Steam-Heating, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation. Fig. 2 shows the branch supply-pipe passing from the main steam-pipe at the bottom instead of at the top, as in Fig. 1.

The objects of my invention are to provide novel devices by which the water of condensation in the main supply-pipes will not be carried into the radiators; to measure the water of condensation from the radiators in each building, or in any part thereof, so that the quantity of heat actually supplied can be estimated with reasonable accuracy, and to return the water of condensation from the main supply-pipes and from the radiators back to the boiler. These objects I attain by the construction and arrangement of parts illustrated in the accompanying drawings, which I will now proceed to describe in detail, afterward specifically pointing out in the claims my invention.

In the drawings, A represents a branch steam-pipe leading from the main steam-supply pipes S in the street to a building to be heated.

B is a pipe communicating with the branch steam-supply pipe A.

C is a steam-trap into which the lower end of the pipe B opens.

D is a pipe, being, in fact, a continuation of the pipe A which conveys steam into the building.

E indicates a steam-pressure-regulating valve, employed for controlling a suitable cock or valve in the pipe D, so as to regulate the supply of steam to the building. This steam-pressure valve can be constructed in any suitable or well-known manner—as, for example, the cock or valve in the steam-pipe can be controlled by the weighted lever e, connecting by a jointed arm, e', with the cock, the flexible diaphragm e^2 for regulating the pressure being connected with said lever and adapted to seat over a steam-escape port, e^3, at the upper end of a branch pipe, e^4, leading from the pipe D, above the cock in the latter.

F F are distributing-pipes leading to the several radiators G.

H are pipes which convey the water of condensation from the radiators to a steam-trap, I.

J is a water-meter, to which the water is conducted from the trap I through a pipe, K.

L is a pipe leading from the meter J to a main return-pipe, W, to be laid in the street or elsewhere, to convey the water of condensation from the several buildings back to a reservoir in the boiler-house.

In use the water of condensation, which has heretofore been carried from the main supply-pipe into the building with the steam through the branch pipe A, will flow into the steam-trap C. The steam will pass to the radiators under a uniform pressure, the same being regulated by the pressure-valve E. The water which is condensed in the radiators will flow through the pipes H and steam-trap I and pipe K to and through the meter J, and will be conducted through the pipe L to the main return-pipe W, and through it to the reservoir at the boiler-house, from which reservoir it can be pumped into the boiler as required. The water of condensation which passes from the main supply-pipe through the trap C will also be in the same manner returned to the boiler-house. Thus nearly all the water of condensation will be utilized, and a large percentage of heat which has heretofore been wasted will be saved.

By separating the water of condensation which forms in the main supply-pipe, by carrying the steam into the building at a uniform pressure, and by measuring the water condensed in the radiators, I am able to estimate with reasonable accuracy the quantity of heat supplied to each building.

The steam-boilers may be located upon ground lower than the buildings to be heated. I propose to place the main pipes which return the water of condensation to the boiler-house under ground, by the side of the main steam-supply pipes, both of which pipes are to be suitably protected. Suitable branch pipes for conveying steam into the buildings are to be used, as usual; and one such pipe is shown in the drawings, (marked A.)

As the main steam-pipe S and the branch supply-pipe A are arranged in Fig. 1, the water of condensation in the main pipes S will not be forced into the branch pipe A; but if occasionally a branch pipe, A′, be carried from the under side of the main supply-pipe to the building, as shown in Fig. 2, then the water of condensation in such main pipe will be carried into a supply-pipe, A′, and from it to the trap C and return-pipe L.

Heretofore in a steam-heating apparatus the main steam-pipe and return water-pipe have had connection between them, so that pressure in the two will be equal, and in such apparatus provision has been made for a steam-circuit from the steam-main through a reducing-valve by a steam-trap to the radiators and back through the trap to a return-main, as instanced in Patent No. 236,247; but in such case the apparatus lacks both the trap C, which I have hereinbefore described in my apparatus, and the pipe leading from said trap to the return water-pipe. Under my system the water is taken from the steam before it goes to the radiators, and all water of condensation occurring in the radiators comes only from the steam therein, and hence I am enabled to measure the heat used. In the said patent the water of condensation is not separated in the main steam-pipe from that in the radiators, and hence the heat supplied cannot be measured. It will further be observed that my return-pipe is not connected with the main steam-pipe. It is an open-mouthed pipe with no back-pressure. Said patent also shows a meter into which steam is conveyed by pipe-connection, said meter being used in connection with a transmitter; and in said apparatus it is necessary to admit steam to the meter. In my apparatus, however, steam is not admitted to the meter, and no transmitter such as found in said patent is used.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. The combination, with the radiators in a building, of the street steam-supplying main, the steam-pipe connection between said main and the radiator, the pressure-valve located at a point in said pipe-connection between the main and the radiator, the trap C in a branch pipe between the main and the pressure-valve, the pipe for returning the water of condensation back to the boiler-house, and a pipe leading from the trap to the return water-pipe, substantially as described.

2. The combination, with the radiator, of the steam-supply main S, pipe-connection between the two, the pressure-valve between the radiator and steam-supply main, the trap connecting with a branch pipe between the steam-supply main and the pressure-valve, the water-trap I, connecting with the radiator, the water-return pipe W, and pipe-connection between the same and said traps, substantially as described.

3. The combination, with the radiator, of the steam-supply main S, pipe-connection between the two, the pressure-valve between the radiator and steam-supply main, the trap connecting with a branch pipe between the steam-supply main and the pressure-valve, the water-trap I, connecting with the radiator, the water-meter J, pipe K, and return-pipe W, substantially as described.

WILLIAM E. HAXTUN.

Witnesses:
E. A. WEST,
B. A. PRICE.