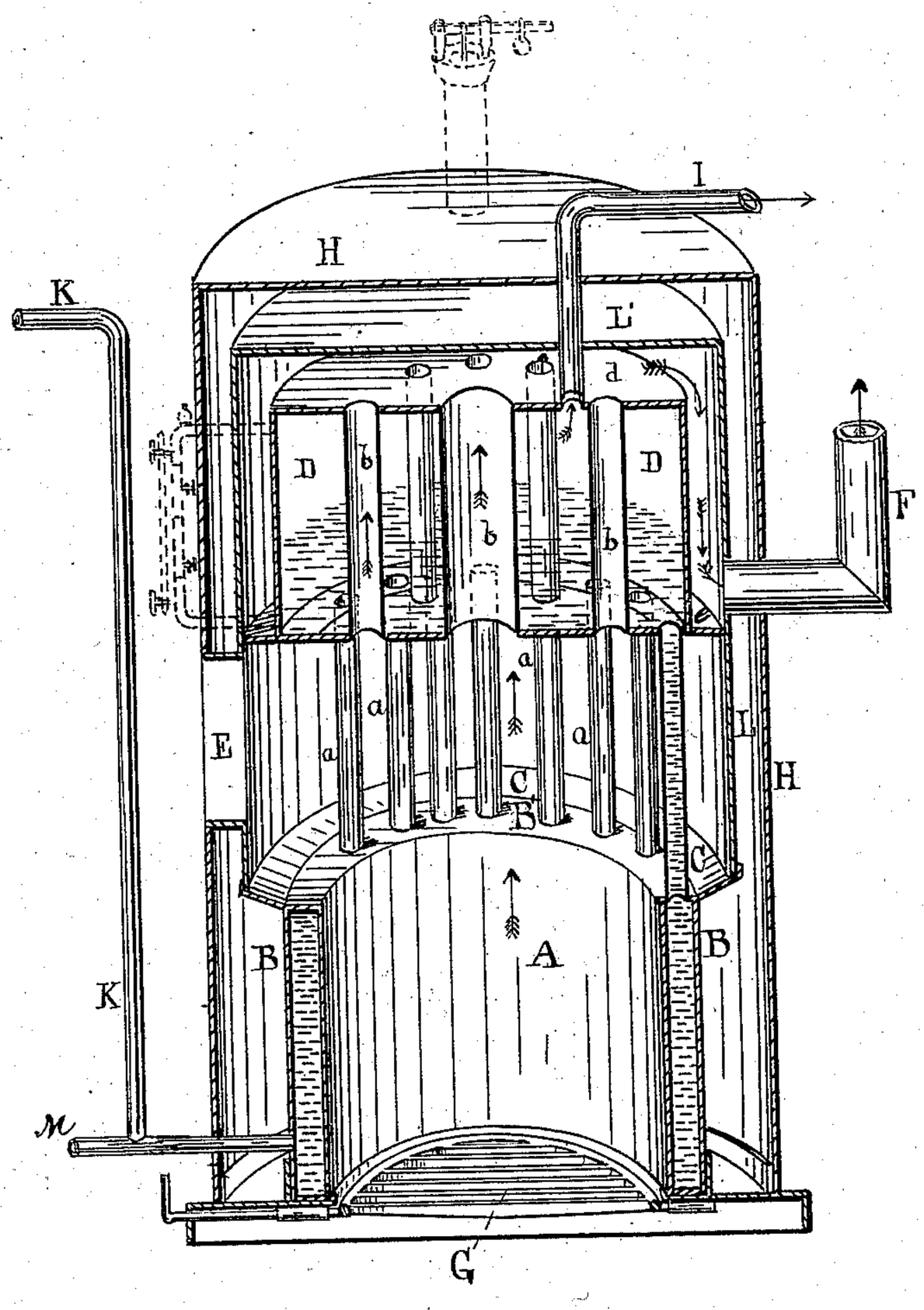
C. & J. Le BOSQUET.

STEAM HEATING APPARATUS.

No. 190,054. Patented April 24, 1877.



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UNITED STATES PATENT OFFICE.

CHARLES LE BOSQUET AND JOSEPH LE BOSQUET, OF HAVERHILL, MASS.

IMPROVEMENT IN STEAM-HEATING APPARATUS.

Specification forming part of Letters Patent No. **190,054**, dated April 24, 1877; application filed March 23, 1876.

To all whom it may concern:

Be it known that we, CHARLES LE BOSQUET and JOSEPH LE BOSQUET, of Haverhill, in the county of Essex and State of Massachusetts, have invented a Steam-Heating Apparatus, of which the following is a specification:

Our invention relates to an improvement in apparatus for supplying steam heat to buildings; and it consists in the combination of a fire-pot, the sides of which are constructed with double walls, so as to form a water-space, and a vessel or reservoir arranged above the fire-pot and the combustion-chamber, and communicating with the water-space surrounding the fire-pot by a series of tubes, through which water is conducted to the said reservoir. Through the reservoir are arranged a series of vertical tubes for the passage of smoke and the products of combustion from the fire-pot, the said products of combustion circulating through the space above the reservoir, and passing downward and out through an exit-pipe leading from the lower portion of the space around the reservoir. Steam is conducted from the upper part of the reservoir by means of pipes to the several radiators in apartments of a building, as required. A casing extends from the upper portion of the fire-pot around and over the reservoir, the inclosed space forming a heating-chamber, in which the products of combustion circulate, and the whole is to be inclosed in a sheet-metal casing, or by brick walls, like an ordinary heating-furnace.

The accompanying drawing represents a vertical section, in perspective, of a steam-heating apparatus embodying our invention.

A represents the fire-pot, provided with a shaking and dumping grate of ordinary construction. The walls of the fire-pot are of metal plate, and made double, the space between the walls composing a water-chamber, B, entirely surrounding the fire-pot. Projecting upward from the plate B′, which closes the upper part of the water-space B, and extending around the same, is a series of tubes, *a a*, communicating with the reservoir D, which is arranged at any suitable distance above the fire-pot, by which means water is supplied to the reservoir D, which latter constitutes the steam-generating chamber. The reservoir D is provided with a series of flues extending through the same, for the passage of the products of combustion from the fire-pot. Projecting outward from the upper portion of the water-space B is a flange, C, which supports a casing, L, that extends upward to a point a short distance above the top of the reservoir D, and, with the cover L′, forms a chamber, surrounding the water-conducting tubes *a a* and the reservoir D, in which chamber the products of combustion circulate, and from whence they pass out through the exit-flue F; a flange, *e*, which projects from the lower portion of the reservoir D, preventing the products of combustion from passing up at the sides of the reservoir. The exit-flue F, by which the products of combustion are carried off, is connected to the lower part of the chamber, which surrounds the steam-generating reservoir D. The said chamber is separated from the combustion-chamber above the fire-pot A by means of the flange *e*. The products of combustion are thus made to come in contact with the connecting water-pipes *a a*, and, after passing through the tubes *b b*, are carried down around the reservoir D, so as to come in contact with its entire outer surface, and then pass out through the exit pipe or flue F.

Steam is conducted to the several radiators in the apartments of a building by means of a tube or pipe, I, in the top plate of the reservoir or steam-generator. Water is supplied to the lower part of the chamber surrounding the fire-pot by means of a pipe, M, from any convenient source. The water of condensation in the radiators and pipes is returned to the water-chamber B by means of the pipe K, suitably connected and arranged for the purpose. The whole apparatus is to be inclosed within a casing, H, of galvanized iron, or by a wall of brick-work, similar to an ordinary heating-furnace. The space between the apparatus and outer casing constitutes a hot-air chamber, from which heated air may be conducted through pipes to one or more apartments, if desirable. The apparatus is provided with an opening, E, for supplying fuel to the fire-pot. The steam-generator is also to be supplied with a water-gage and a steam safety-valve, in the usual manner.

It will be seen that the water in the apparatus will be subjected to a very large amount of heating-surface, first in the chamber surrounding or forming the fire-pot, then in the combustion-chamber, where it passes through the series of pipes *a a*, and, finally, by means of the flues *b b*, in the reservoir D, by which means a large amount of steam is generated.

What we claim as our invention, and desire to secure by Letters Patent, is—

In a steam-heating apparatus, the combination and arrangement of a reservoir, D, surrounded by a chamber, through which the products of combustion are caused to descend and circulate, and which is separated from the combustion-chamber by means of a flange, *e*, the water-chamber B, the pipes *a a*, and tubes *b b*, the flue F, arranged as described, the steam-pipe I, and the casing L and cover L′, all constructed and operating substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES LE BOSQUET.
JOSEPH LE BOSQUET.

Witnesses:
JOHN N. PAGE,
DANIEL C. BARTLETT.