

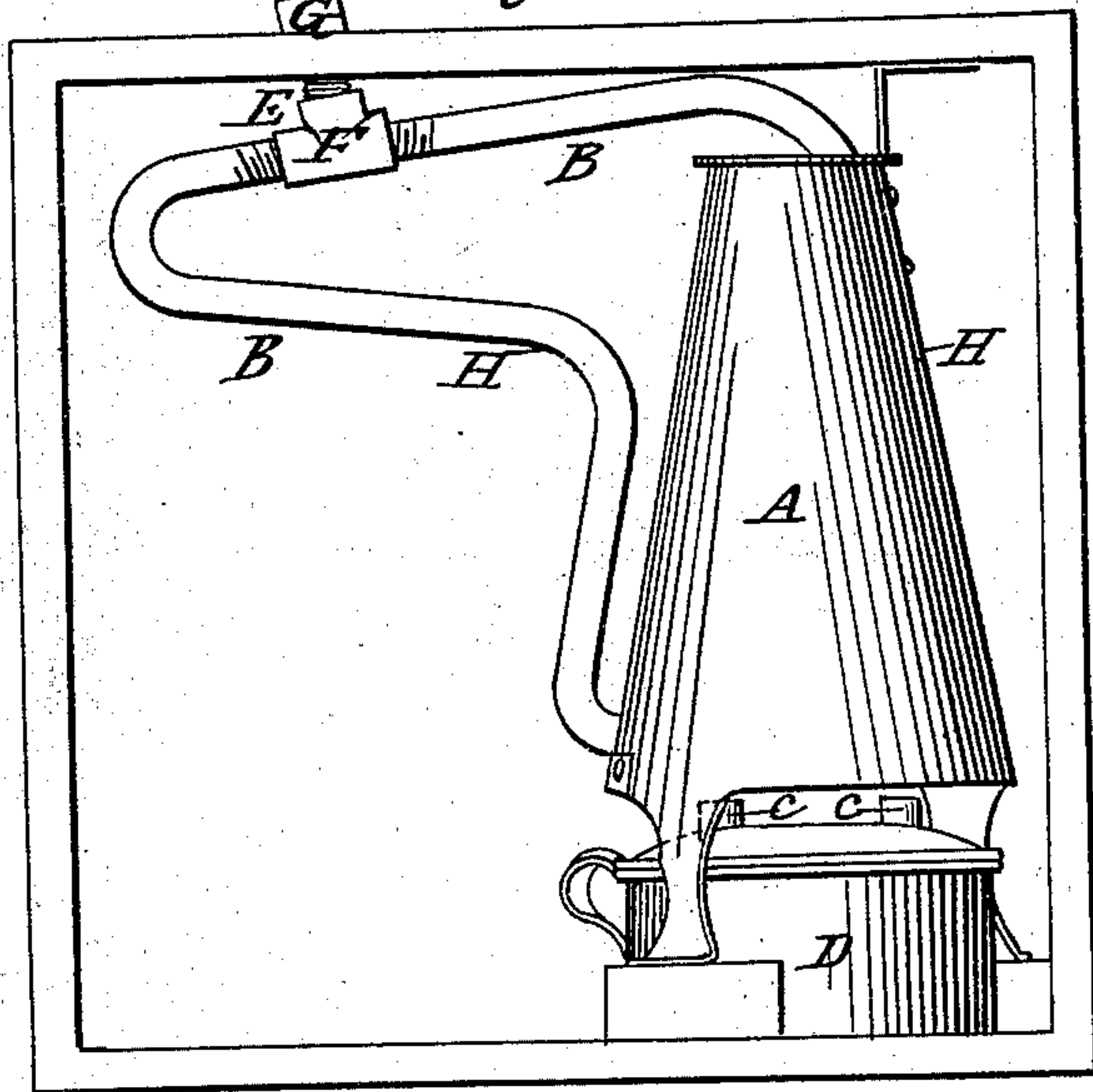
HARGRAVE & KING.

Mercurial Heater.

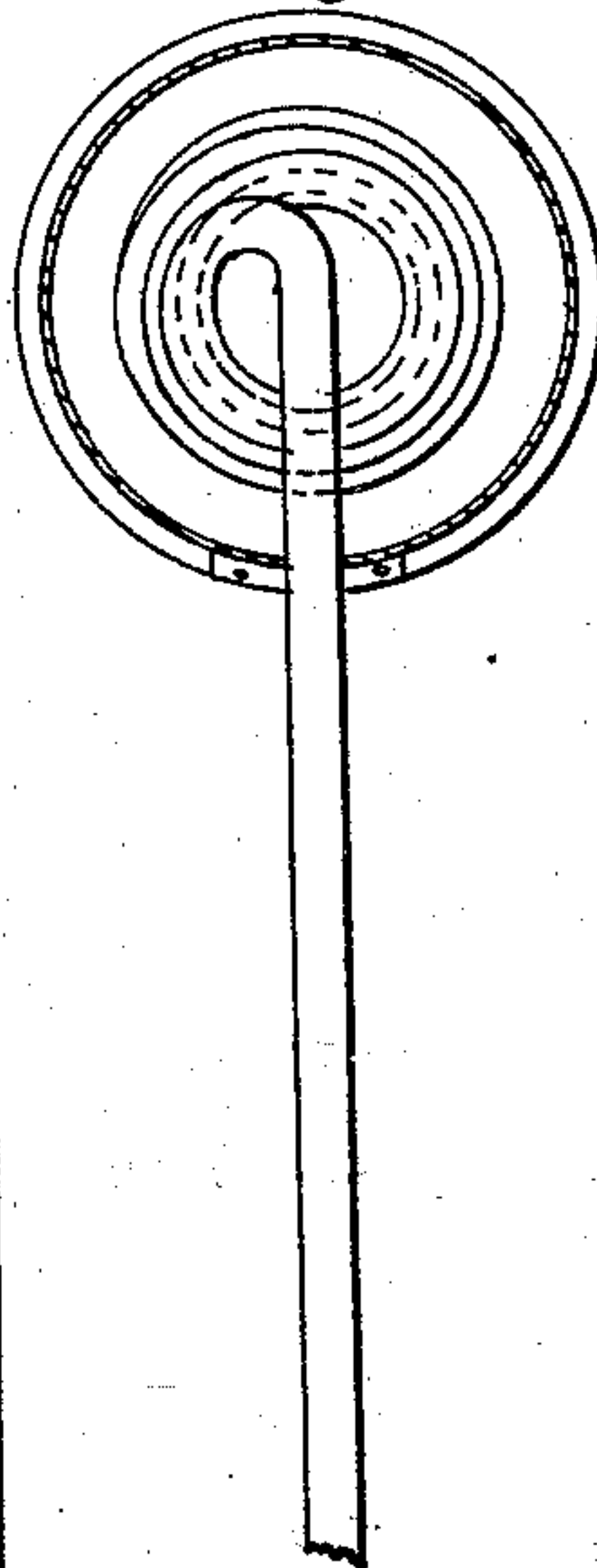
No. 48,276.

Patented June 20, 1865.

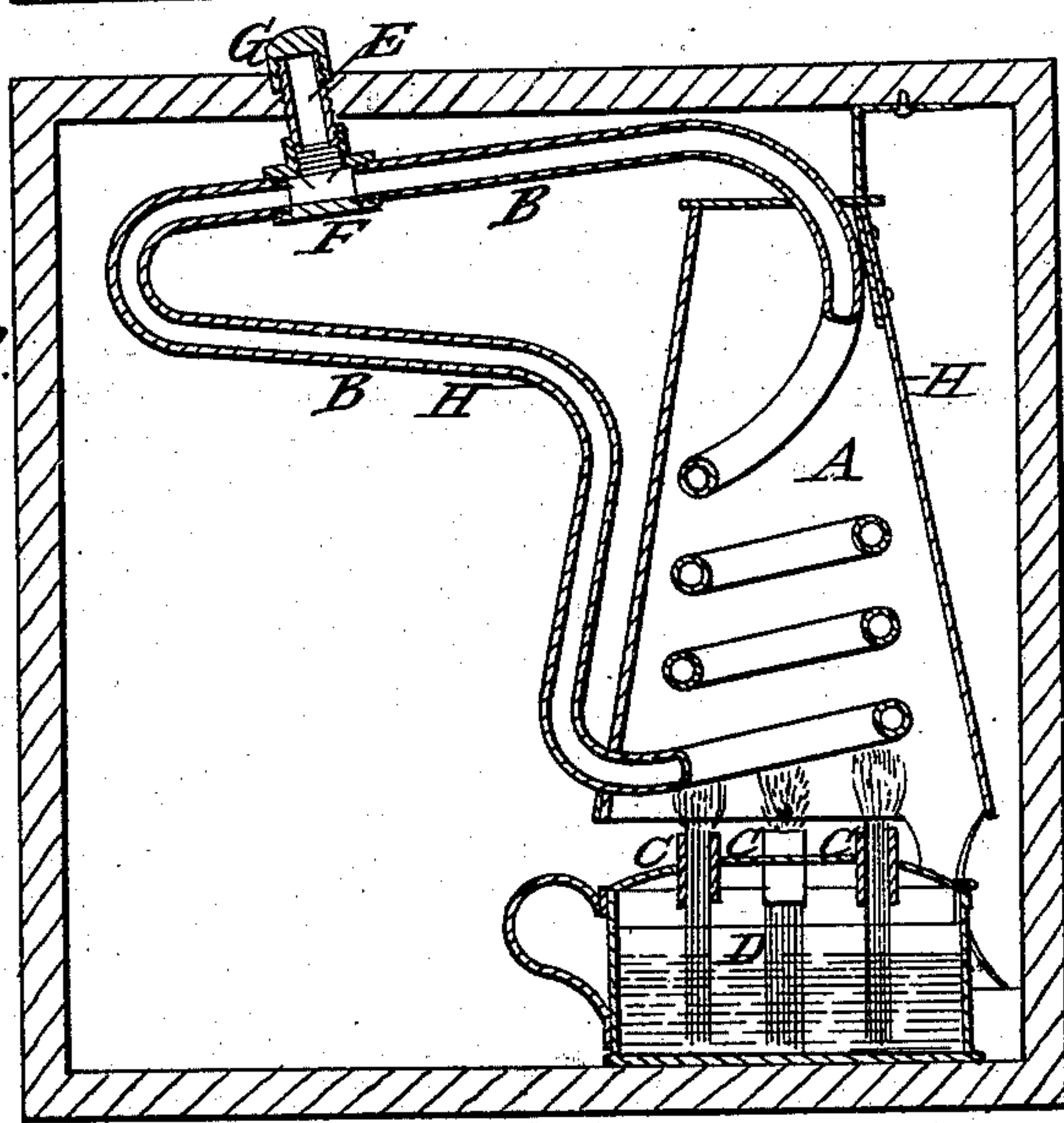
*Fig. 1.*



*Fig. 3.*



*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

THOS. C. HARGRAVE AND KENDAL W. KING, OF BOSTON, MASSACHUSETTS.

## MERCURIAL HEATER.

Specification forming part of Letters Patent No. **48,276**, dated June 20, 1865.

*To all whom it may concern:*

Be it known that we, THOMAS C. HARGRAVE and KENDAL W. KING, both of Boston, in the county of Suffolk, and State of Massachusetts, have invented an Improved Mercurial Heater, of which the following is a specification.

This invention is designed to provide a more ready, safe, and compact means of transmitting heat from a fire to distant parts of a room than those heretofore used, and in the accomplishment of that purpose to make available the well-known and strong conducting power of mercury by causing it to circulate from the fire to impart its heat and return to the fire to be reheated.

The invention consists of a continuous or endless pipe filled, or partially filled, with mercury, and so constructed and arranged that by the application of heat to a portion of the pipe the mercury will be caused to circulate through the pipe, passing from the fire in its heated state to a part to be warmed, and returning after parting with a portion of its heat to the fire to be reheated for further circulation.

In the accompanying drawings, Figure 1 is a side elevation of an apparatus embodying the principles of our invention. Fig. 2 is a vertical central section of the same on a plane parallel to that of Fig. 1. Fig. 3 is a horizontal view, showing the coiling of the pipe.

In the construction of this apparatus we construct a pipe, of iron or other suitable material, bent at one portion thereof into a coil, as indicated in Figs. 2 and 3, and united at the ends by a coupling, F, which latter is provided with a side pipe, E, which may be closed by a cap, G, thus making of the pipe B a continuous or endless pipe.

Ordinary gas-pipe may be used in its construction, and it should be made of sufficient length to carry heat to that portion of the room which is farthest from the fire.

For most purposes the best arrangement of the pipe will be to run the radiating portion of it along near the floor of the room or car to be heated, it being brought down with a bend from where it leaves the furnace where the coil is heated. The pipe being thus laid, is then partially filled with mercury introduced through the pipe E, care being taken to leave sufficient room for expansion, and yet enough being put in to insure circulation.

In the example represented in the drawings the pipe B should be filled to about the line H

H. An air or vacuum chamber of sufficient size to compensate for the expansion of the mercury may, however, be attached in place of the cap G, and in that case the pipe B may be completely filled with mercury, care being taken that such chamber shall be attached to and above the highest part of the pipe B. The pipe B being thus prepared and partially filled, the coiled portion of it is surrounded with a casing or hood, A, and a fire-grate or lamp, D, or other appliance for heating the coil, is placed beneath it, and the fire being lighted, the mercury becomes heated, and, from the natural tendency of the heated portions of the fluids to rise, is forced up through the coil, and passing over the bend in the pipe above the coil runs through the whole length of the pipe, transmitting its heat to the pipe itself, and through it to the atmosphere, thereby diffusing a genial warmth through the room.

When it is desirable to carry the heat of the mercury as far from the point at which it is heated as possible, the portion of the pipe B which extends from the top of the coil may be cased for some distance in some non-conducting material to retain the heat. The portion of the pipe B to which the heat is to be applied may also be so arranged as to be within the body of the fire or surround it, and in the case where a cylindrical coal-stove is used the pipe may be coiled into the space usually occupied by the fire-brick, the rapid transmission of the heat by the circulation of the mercury preventing its becoming overheated.

When very little heat is required a sufficient amount may be obtained from a large kerosene lamp, in which case the burners C C should be arranged in a circle nearly under the first turn of the coil, as shown in the drawings.

We claim as our invention—

1. The continuous or endless pipe B, constructed and filled, or partially filled, with mercury, substantially as described, and to the effect stated.

2. The combination, with the pipe B, containing mercury, of the lamp D or other heating appliance, substantially as and to the effect set forth.

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Witnesses:

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