

No. 770,787.

PATENTED SEPT. 27, 1904.

G. THOMSON.  
HEAT CATCHER.

APPLICATION FILED NOV. 16, 1903.

NO MODEL.

FIG. 1.

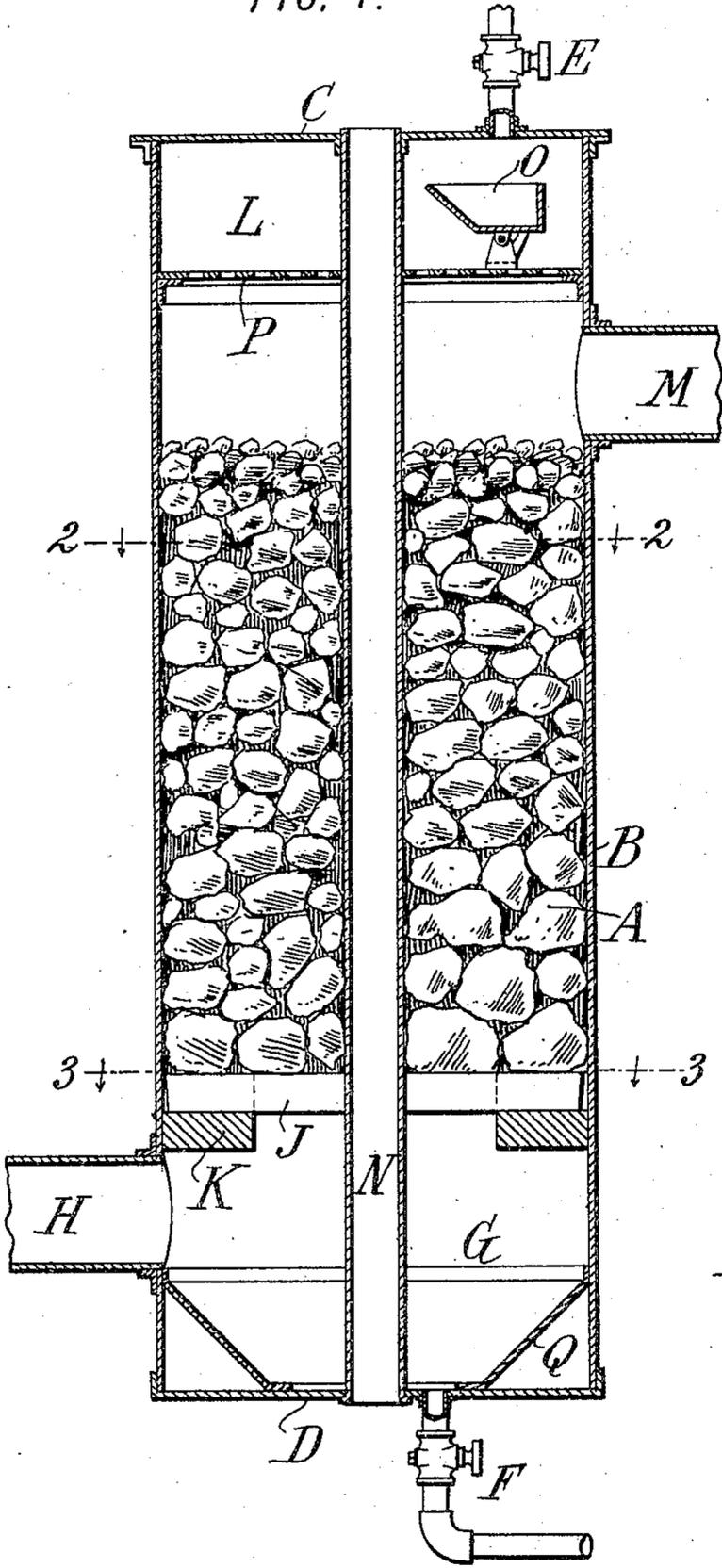


FIG. 2.

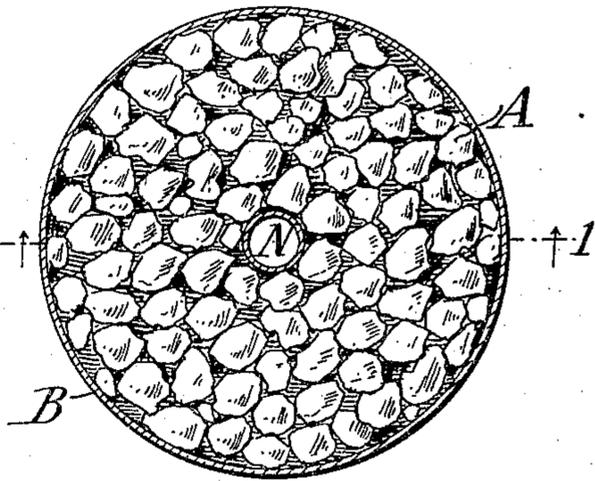
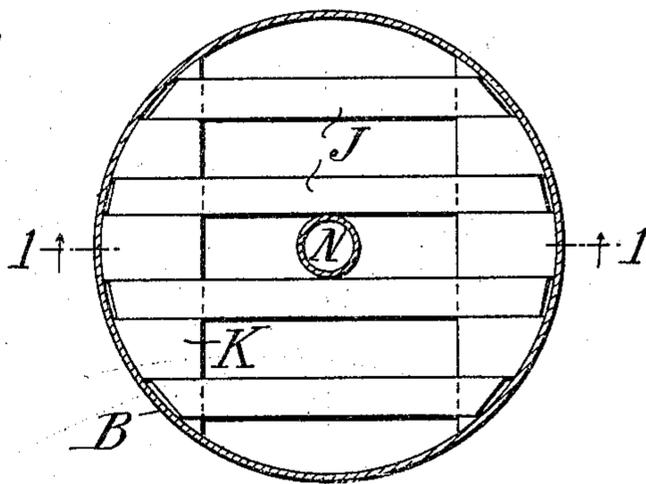


FIG. 3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

GEORGE THOMSON, OF ELIZABETH, NEW JERSEY.

## HEAT-CATCHER.

SPECIFICATION forming part of Letters Patent No. 770,787, dated September 27, 1904.

Application filed November 16, 1903. Serial No. 181,329. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE THOMSON, a citizen of the United States, residing at Elizabeth, in the county of Union, State of New Jersey, have invented certain new and useful Improvements in Heat-Catchers, of which the following is a specification.

This invention relates to heat catchers or drums adapted to be introduced at any desired point between the outlet from a stove, furnace, or the like and the stack which carries away the products of combustion. It will ordinarily be attached to a stove and will catch the heat or a great portion of the heat which passes away from the stove and will throw off such heat, thus affording an auxiliary stove and securing an extra quantity of heat from the fuel consumed.

The device is very simple and inexpensive and can be easily and conveniently cleansed of all dirt, soot, and ashes, so as to leave a free passage for the heat and a free draft at all times.

A feature of the invention also provides for the passage of cold air through the heat-catcher, so as to take up and distribute the heat caught by the device.

Various other improvements are referred to in detail hereinafter.

The accompanying drawings illustrate an embodiment of the invention.

Figure 1 is a longitudinal section taken on the lines 1 1 of Figs. 2 and 3. Fig. 2 is a transverse section taken on the line 2 2 of Fig. 1. Fig. 3 is a transverse section taken on the line 3 3 of Fig. 1.

The heat is caught by a mass of refractory material, through which the heated products of combustion pass—such, for example, as the broken brick, fire-brick, or other heat-retaining material A. This refractory material will be heated by the passage of the hot air through it and will thus throw off heat. The refractory material is preferably in the broken form shown and contained in a receptacle, such as the cylinder B, which is closed at its ends by a top C and bottom D. Pipes E pass through the top C, and similar pipes F

pass through the bottom D, suitable valves being provided in these pipes. Through these pipes water may be passed through the receptacle from the top to the bottom, thus passing through the refractory material in a direction opposite to that of the combustion products and washing the soot and dirt down to and through the bottom of the drum. This can be done very expeditiously and cleanly, and the drum can thus at all times be kept clear, so that there can be no choking of the draft nor any reduction of the efficiency of the apparatus by reason of an accumulation of soot or dirt. The lumps of refractory material are preferably made finer at the top, as shown, so as to be effective in extracting as much of the heat as possible. Preferably a free chamber G is provided below the mass of refractory material, and the stovepipe H communicates with this free chamber. This chamber serves to catch the soot and cinders which fail to pass to the refractory material. It also distributes the products of combustion, so that they pass through substantially the whole of the refractory material. It also facilitates the washing out of the dirt in the manner previously explained. In order to maintain this free chamber, the refractory material may be held up by any suitable means, such as the grate-bars J, resting in grooves in the top faces of the side bars K, which are fastened in any suitable way to the sides of the receptacle B. The chamber L above the grate is only partly filled with refractory material, so that a free space is maintained at the top of the drum or receptacle, which facilitates the exit of the products of combustion and the distribution of the latter throughout the entire mass of refractory material and which also facilitates the distribution of the cleansing-water admitted through the pipes E. The outlet-pipe M, leading to the chimney, is preferably connected, as shown, to the free space of the chamber L.

One or more air-passages are provided running through the drum. For example, the pipe N runs longitudinally through the cen-

ter of the drum, and thus provides a passage through which cold air is drawn in at the bottom and discharged at the top, as indicated by the arrows. Thus the heat at the internal portions of the refractory mass is carried out into the room, as well as the heat at the outside faces thereof.

Preferably an automatic flushing-tank O is provided in the upper part of the chamber L, and a perforated distributing-plate P serves to spread the water over the entire cross-section of the receptacle. The tank O tips when it is full and empties itself and then rights itself in the well-known way. The tank may conveniently be mounted directly upon the plate P, as shown. Water may be allowed to flow very slowly through the inlet-pipe E continuously, and the rate of flow will determine the length of time between the successive flushing operations. The position of the tank O is not important, its value being in the supplying of a large volume of water at once, so that it spreads over the plate P and over the refractory material and runs rapidly through the latter. The flushing-tank, for example might be arranged outside of the receptacle and might discharge into one or more of the pipes E. The lower end of the receptacle is preferably provided with an annular substantially conical plate Q, which serves to wash the dirt down toward the center where the water outlet or outlets are located. The flushing-water takes up a certain amount of the heat of the refractory material and may itself be used for heating purposes.

Though I have described with great particularity of detail an apparatus embodying my invention, yet it is to be understood that the invention is not limited to the specific embodiments disclosed.

Various modifications in detail and in the arrangement and combination of the parts may be made by those skilled in the art without departure from the invention.

What I claim is—

1. A heat-catcher adapted to be inserted in a furnace or stove pipe to catch and distribute heat therefrom and including a mass of refractory material through which the heated products of combustion pass, an air-pipe passing through said mass of refractory material for distributing the heat therefrom, and a chamber provided with a space free from said refractory material for receiving said products of combustion, said air-pipe passing through said chamber to the outer air.

2. A heat-catcher adapted to be inserted in a furnace or stove pipe to catch and distribute heat therefrom and including a mass of refractory material through which the heated products of combustion pass, a pipe passing through said mass of refractory material for distributing heat therefrom, and a chamber

having a space free from said refractory material for receiving said products of combustion, said pipe passing through said chamber to the exterior of said device.

3. A heat-catcher having inlet and outlet openings at its lower and upper ends respectively whereby it is adapted to be inserted in a furnace or stove pipe to catch and distribute heat therefrom and including a receptacle having a grate carrying a mass of refractory material through which the heated products of combustion pass, and having chambers at the bottom and the top thereof, which are provided with spaces free from said refractory material, said spaces being connected respectively with the inlet and outlet, and having an air-pipe passing through said receptacle and said chambers to distribute heat from the interior of the apparatus.

4. A heat-catcher adapted to be inserted in a furnace or stove pipe to catch and distribute heat therefrom and including a receptacle carrying a mass of refractory material through which the heated products of combustion pass, and having chambers at the bottom and the top thereof, which are provided with spaces free from said refractory material, said spaces being connected respectively with the inlet and outlet, said receptacle being constructed to permit the passage of water therethrough and through said refractory material to cleanse the latter, and said heat-catcher having means for permitting water to pass therethrough.

5. A heat-catcher adapted to be inserted in a furnace or stove pipe to catch and distribute heat therefrom and including a receptacle containing a mass of refractory material through which the heated products of combustion pass, said receptacle constructed to permit the passage of water therethrough and through said refractory material to cleanse the latter, in combination with an automatic flush-tank arranged to supply a volume of water to the receptacle periodically.

6. A heat-catcher having openings whereby it is adapted to be inserted in a furnace or stove pipe to catch and distribute heat therefrom and including a receptacle containing a mass of refractory material through which the heated products of combustion pass, said receptacle constructed to permit the passage of water therethrough and through said refractory material to cleanse the latter, in combination with a perforated distributing-plate at the inlet end to distribute the water over substantially the entire cross-section of the refractory material, and means for admitting water to said distributing-plate and means for removing it from said heat-catcher.

7. A heat-catcher adapted to be inserted in a furnace or stove pipe to catch and distribute heat therefrom and including a receptacle containing a mass of refractory material through

5 which the heated products of combustion pass, said receptacle having upper and lower openings to permit the passage of water there-through and through said refractory material to cleanse the latter, and said receptacle having a substantially conical bottom Q connected with the lower opening, whereby the soot may be flushed out of said device.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE THOMSON.

Witnesses:

EDGAR B. MOORE,  
BELLA BROWN THOMSON.