(No Model.)

R. BIGLEY.

HEATER.

No. 478,557. Patented July 12, 1892.

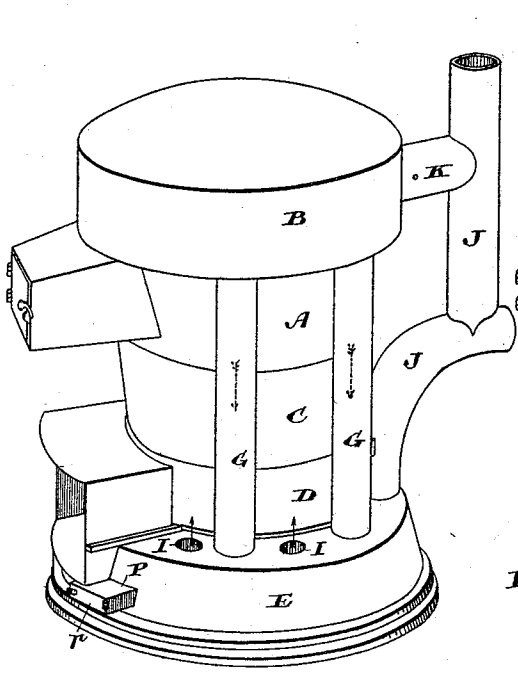


Fig. 1.

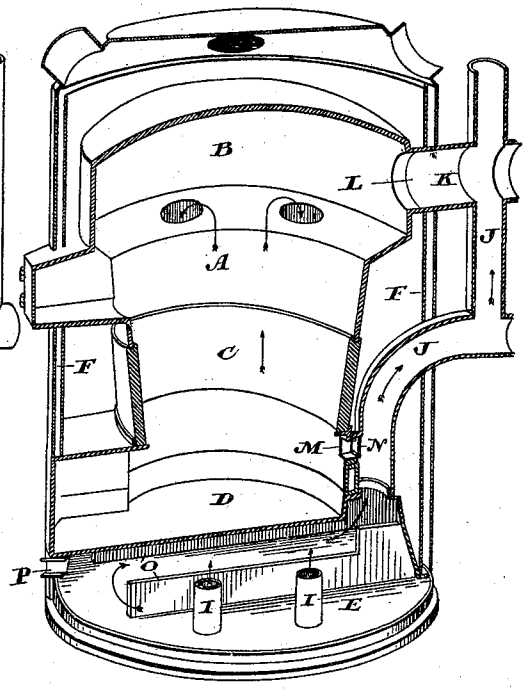


Fig. 2.

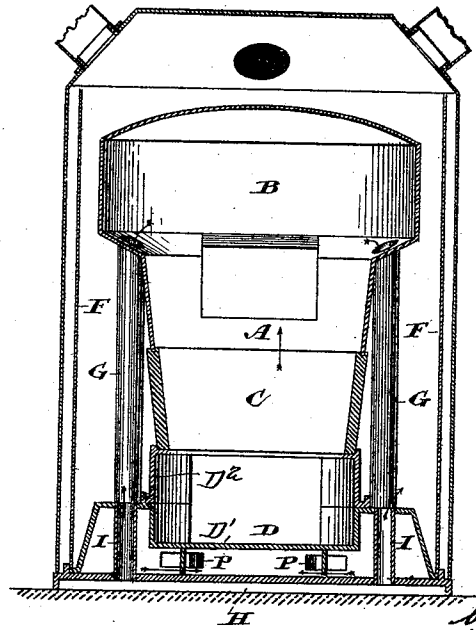


Fig. 3.

Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

RICHARD BIGLEY, OF TORONTO, CANADA.

HEATER.

SPECIFICATION forming part of Letters Patent No. 478,557, dated July 12, 1892.

Application filed May 8, 1891. Serial No. 392,059. (No model.)

To all whom it may concern:

Be it known that I, RICHARD BIGLEY, manufacturer, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Heaters, of which the following is a specification.

The object of the invention is to design a heater or hot-air furnace in which a maximum amount of heat at all times may be derived from the combustion-chamber; secondly, to provide a simple and effective means of preventing the escape of the dust or ashes when shaking the grate; thirdly, to so construct the body of the furnace that it may be readily and effectually cleaned with the least possible amount of labor; and it consists, essentially, first, of forming the upper part of the combustion-chamber of an increased diameter to the lower portion and connecting the upper portion to a base-chamber connected to the smoke-flue by two or more pipes, and also of providing two or more pipes extending from a space beneath the base-chamber into the hot-air chamber; secondly, of connecting the ash-pit with the smoke-flue by an opening provided with a damper, and, thirdly, in so constructing the body of the furnace that all soot and dirt will be deposited in the base-chamber, from which it is removed through two cleaning-holes in the base-chamber, provided for the purpose, the whole of the parts being arranged and constructed in detail as hereinafter more particularly explained.

Figure 1 is a perspective view of the furnace with the outer casing removed. Fig. 2 is a sectional perspective view from front to rear. Fig. 3 is a vertical section looking from rear to the front.

In the drawings like letters indicate corresponding parts in each figure.

A is the combustion-chamber, and B is the enlarged outwardly-projecting portion or dome.

C is the fire-box, D the ash-pit, E the base-chamber, and F the outer casing within which the hot air is contained.

G are the pipes connecting the outwardly-projecting upper portion B with the base-chamber E.

H is a chamber situated beneath the ash-pit D and base-chamber E and connected by the pipes I, which extend through the base-chamber E to the interior of hot-air casing F.

J is the smoke-pipe, which is connected to the outwardly-projecting upper portion B of the combustion-chamber by the supplemental pipe K.

L is a damper located in the pipe K. The lower end of the smoke-pipe J is connected to the base-chamber E, as shown.

M is an opening extending from the ash-pit D to the smoke-pipe J and provided with a damper N.

O are two partitions extending from the back of the base-chamber E, one on each side of the smoke-pipe, to a short distance from the front of the chamber and under the bottom of the ash-pit D. The partitions O extend from top to bottom of the base-chamber E.

P are cleaning-out chutes extending from the base-chamber E, as shown, and provided with doors *p*.

Having described the principal parts involved in my invention, I shall now proceed to describe the advantages gained by the construction devised by me.

As before stated, the dome B flares out beyond the lower portion of the combustion-chamber A. The heat and smoke arising from the fire-box C would when the fire is first started pass out through the supplemental pipe K into the main smoke-pipe, the damper L being then left open. As soon as the fire is thoroughly lighted the damper L is closed, and the heat and smoke from the dome B pass by the pipes G down into the base-chamber E on the outside of the partitions O. The heat and smoke then pass around the open ends of the partitions O into the central portion of the base-chamber E, from which they proceed into the back and up through the smoke-pipe J. In order to clearly illustrate this course of the heat and smoke, I show the same by arrows in the drawings.

It will be seen that a circuitous course is provided for the heat and smoke, and consequently the fuel is much more perfectly consumed and the greatest possible amount of heat derived from it.

In order to further increase the heating capacity of the furnace, I provide, as hereinbefore described, a chamber H, situated beneath the base-chamber E and connected by

the pipes I to the interior of the hot-air casing F. Consequently any heat which would be reflected from the bottom of the ash-pit D and chamber E will be conveyed from the chamber H into the interior of the hot-air casing F.

When shaking the grate in my furnace, I open the damper N in the opening M. Consequently all the ashes and dust arising from so doing will be carried out into the smoke-pipe J by the draft created by opening the damper instead of onto the top of the coal or out through openings in the ash-pit door, as is now common in heaters at present in use, and then fall into the bottom chamber E.

One of the chief advantages possessed by my construction is that as there is always a draft from the fire to and up through the smoke-pipe J and as there is no damper in the smoke-pipe communicating with the outer air the escape of any gas is at all times effectually prevented.

A subsidiary advantage is the ease with which the interior of the furnace may be cleaned. As the soot and dirt will naturally fall into the base-chamber E, it may be readily and quickly removed therefrom through the chutes P.

It will be noticed that the ash-pit is formed by the depression D′ in the top of the base-chamber and the ring D^2 over the said depression. The ash-pit thus depends into the base-chamber and a large surface is exposed for heating the air, making the arrangement compact, and at the same time the air-pipes I will be heated both from the hot air within the base and also by reason of extending alongside of the ash-pit wall.

What I claim as my invention is—

1. In combination, the fire-chamber and ash-pit, the projecting dome and base-chamber, the said ash-pit being formed by a depression in the upper wall of the base-chamber, which thus extends under the same and about its sides, the pipes G, leading from the dome to the base-chamber, the inclosing casing, and the pipes I, leading from the space beneath the heater through the base-chamber alongside the depending ash-pit and into the space inclosed by the outer casing, substantially as described.

2. In combination, the combustion-chamber having the enlarged dome, the base-chamber, pipes connecting said dome and base-chamber, the casing surrounding the whole and forming a hot-air chamber between the dome and base-chamber, pipes connecting the hot-air chamber with the space beneath the base-chamber, and the smoke-flue having a valved connection with the dome and with the ash-pit, the said flue being continued below the ash-pit and valve into the base-chamber, substantially as described.

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