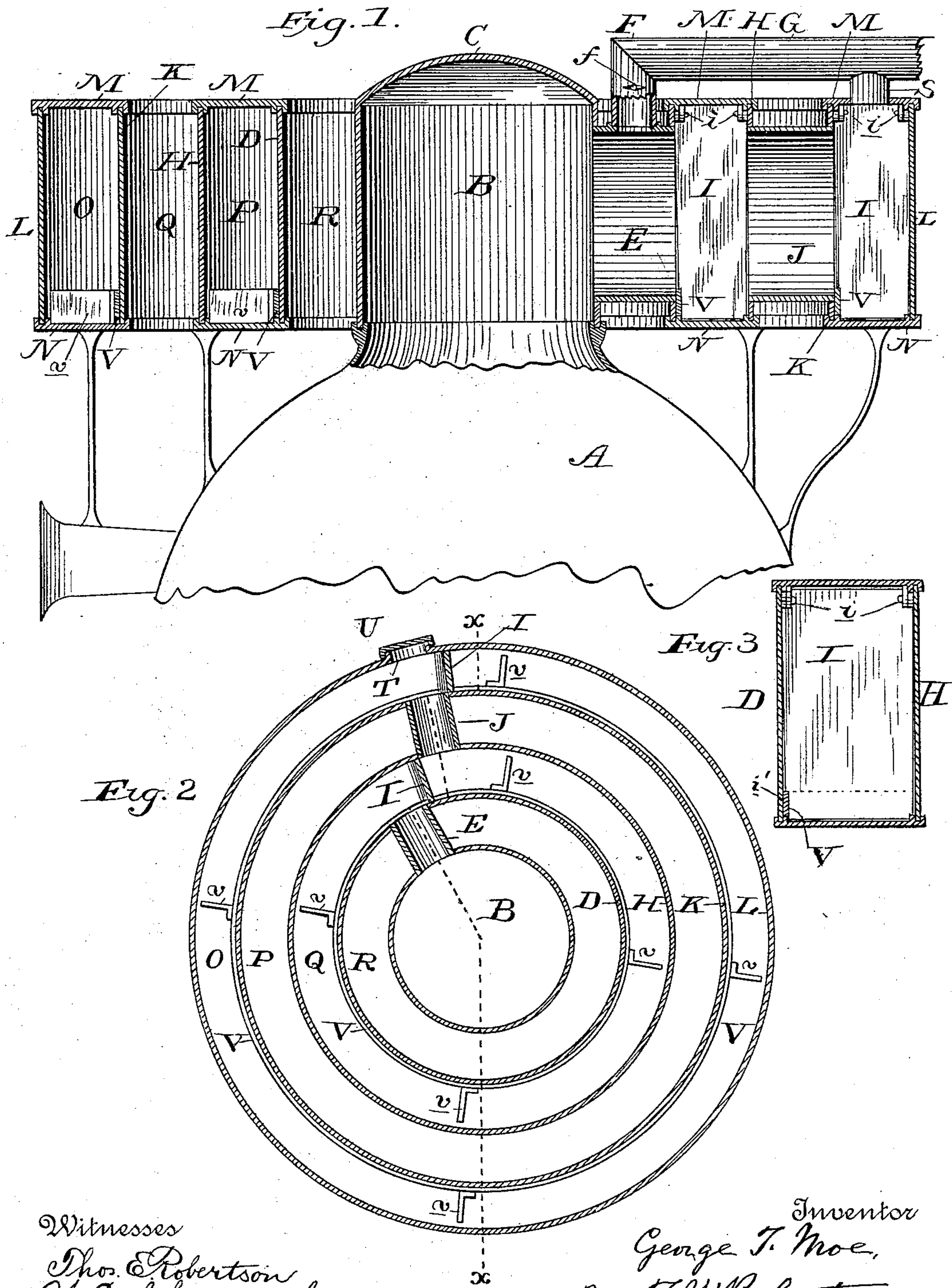


(No Model.)

G. T. MOE.
FURNACE.

No. 489,490.

Patented Jan. 10, 1893.



Witnesses
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Inventor
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UNITED STATES PATENT OFFICE.

GEORGE T. MOE, OF PHILADELPHIA, PENNSYLVANIA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 489,490, dated January 10, 1893.

Application filed February 9, 1892. Serial No. 420,893. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. MOE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This improvement relates to that style of furnace which is provided with a radiator above the furnace through which the gases or products of combustion are compelled to take a circuitous course before entering the smoke-
15 pipe or chimney, and the invention consists in the peculiar construction, arrangement and combinations of parts hereinafter more fully described and then definitely claimed.

20 In the accompanying drawings—Figure 1 is an elevation of part of a furnace, with the radiator therein shown in section on the line *x x*, Fig. 2. Fig. 2 is a horizontal section through the radiator. Fig. 3 is a detail showing an elevation of a deflecting plate and its
25 immediate connections on a larger scale.

Referring now to the details of the drawings by letters—A represents the fire-pot above which is a sheet steel ring B and top plate C forming a central dome. The ring B is connected to another similar ring D by a short
30 pipe or collar E, over which collar is an elbow F having a damper *f*, and connected to the smoke-pipe G leading to the chimney (not shown). H indicates another similar ring and
35 between these rings is an inclined deflecting plate I pivoted at *i* as shown in Fig. 3, which is so loosely fitted as to be capable of swinging slightly for a purpose hereinafter described.

40 At J is shown another short pipe or collar which connects the ring H to another similar ring K, and outside of this ring is still another ring L, between which and the ring K is another inclined deflecting plate I similar
45 to that between the rings D and H. These rings are further connected by top and bottom plates M N, so as to make passages O and P for the products of combustion or smoke, leaving air-heating spaces Q and R between
50 the rings B and D, and between the rings H and K. Rising from the outer top plate M is a collar S connected to the smoke-pipe G.

The outer ring K has a clean out opening T, stopped by a suitable cap U.

Resting upon each of the plates N N is a
55 cleaner consisting of a ring V having a series of scrapers *v* attached, which are so arranged as to be capable of being moved around the smoke passages and carry with them the dust and soot settled on the plates N, to the clean
60 out opening T through which they may be removed. When the cap U is removed, the rings V can be easily manipulated to move the scrapers around the passages O P, and by
65 moving the scrapers in the opposite direction to that in which the hands of a clock travel the scrapers will lift the deflecting plate which will drop to its normal position after each
70 scraper has passed, the deflecting plates being slotted as shown at *i'*, so that the scraper rings will not hinder the deflecting plates from coming in contact with the bottom plates M.

The rings of the radiator are preferably made of thick sheet steel, and the ring B, top plate C and collar E may be made entirely in
75 one piece of cast iron if preferred.

By the construction herein described and illustrated a furnace may be provided with a large amount of radiating surface at a comparatively low cost. By the arrangement
80 shown in the drawings the currents of the gases are compelled to take a circuitous course twice around in the same direction, first passing around in the passage O and then around the passage P always in the same direction.
85 If the currents ran in opposite directions, unless the draft were extraordinarily good, the currents would be sluggish in their movements and would not heat the radiator fast enough.

90 In some cases where the draft is very good I may arrange the collars and deflecting plates in such a way as to cause the products of combustion to travel around the passages O P in opposite directions.

95 In some cases instead of the movable deflecting plate I may cut off the bottom of the vertical plate as indicated in dotted lines in Fig. 3 thus leaving just room enough for the passage of the scrapers, and if one of the
100 scrapers *v* be left under each of the plates I the draft will be stopped in that direction sufficiently for all practical purposes.

By arranging the clean-out U in line with

the pipe or collar J, the scrapers in the inner passage P can be operated and the soot therein removed through the collar J.

By the peculiar arrangement of the dome, rings, collars and deflecting plates, I am enabled to make the vertical portions of the radiator of sheet steel, which has decided advantages over cast-iron.

What I claim as new is:

10 1. The combination in a hot air furnace, of a dome, two annular smoke passages, connections between the dome and smoke passages, and deflecting plates set in said passages arranged to cause the products of combustion
15 to make a complete circuit in the same direction through both passages, substantially as described.

2. The combination in a hot air furnace, of a dome B, the rings D, H, K and L, top and
20 bottom plates above and below said rings, a pipe connecting the dome B to ring D, another pipe connecting the rings H and K, and a deflecting plate between the rings D and H, and another deflecting plate between the rings
25 K and L, all substantially as described and shown.

3. In a hot-air furnace, the combination of two rings having an annular passage for the products of combustion between them, top
30 and bottom plates, a ring and scrapers resting on said bottom plate, and capable of be-

ing turned continuously in one direction, passages into and out of said annular passage between the rings, and a deflecting plate set in said annular passage constructed to direct
35 the products of combustion out of the same and yet allow of the passage of the scrapers beneath the said plate, substantially as described.

4. In a hot-air furnace, the combination of
40 the rings D H K L, having the annular passages O P between them, with a collar J, connecting rings H and K, and a clean-out U on ring L substantially in line with the collar J, whereby both passages may be cleaned out
45 through the same clean-out, substantially as described.

5. In a hot air furnace, the combination of a circular flue a circular scraper adapted to be moved around said circular flue, and a
50 swinging plate constructed and arranged to deflect the products of combustion and yet allow the motion of the scraper, substantially as described.

In testimony whereof I affix my signature, 55
in presence of two witnesses, this 30th day of January, 1892.

GEORGE T. MOE.

Witnesses:

THOS. E. ROBERTSON,
T. J. W. ROBERTSON.