No. 700,791. Patented May 27, 1902.

C. C. LONGARD.

HEATER.

(Application filed Oct. 24, 1901.)

(No Model.)

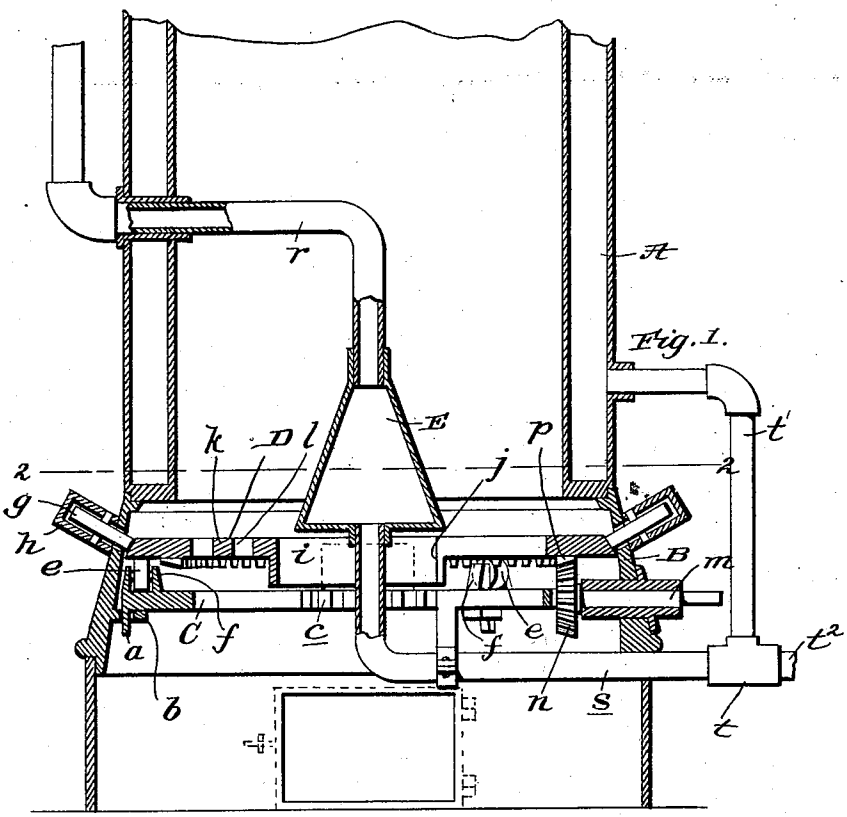


Fig. 1.

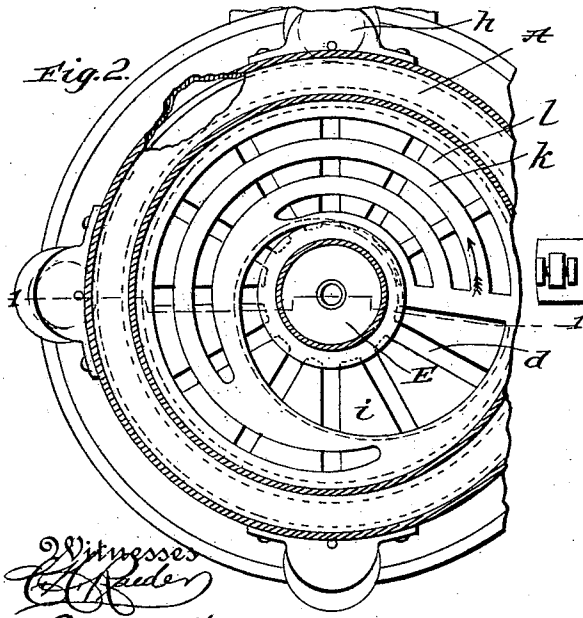


Fig. 2.

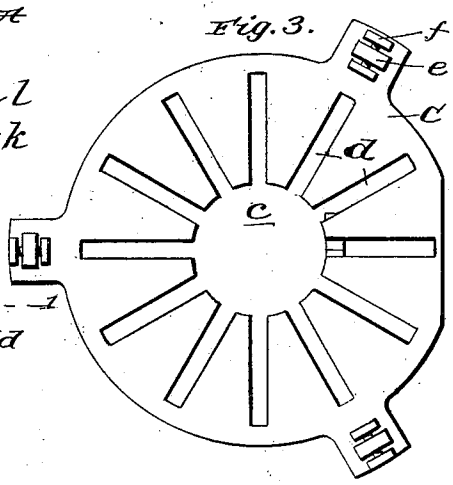


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

CLARENCE C. LONGARD, OF HALIFAX, CANADA.

HEATER.

SPECIFICATION forming part of Letters Patent No. 700,791, dated May 27, 1902.

Application filed October 24, 1901. Serial No. 79,372. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE C. LONGARD, a citizen of Canada, residing at Halifax, in the Province of Nova Scotia and Dominion of Canada, have invented new and useful Improvements in Heaters, of which the following is a specification.

My invention relates to heaters, more particularly water-heaters such as used in hot-water and steam heating systems; and it is designed as an improvement upon the construction forming the subject-matter of my Letters Patent No. 629,797, of August 1, 1899.

The general object of my present invention is to provide in a water-heater a supplemental cone-shaped water-chamber, which in addition to holding the water at a point where it is surrounded by the fire in the fire-pot, with a view of accelerating the heating of the water and increasing the capacity of the heater, is adapted to support the fuel and prevent the escape of same when the grate below it is at rest, as well as when said grate is actuated, and is also adapted to deflect the ashes away from the center, and thereby prevent the collection of clinkers between its base and the grate, at which point they would be liable to interfere with the free movement of the grate.

With the foregoing in mind the invention will be fully understood from the following description and claim when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a diametrical section, on line 1 1 of Fig. 2, of the lower portion of a water-heater constructed in accordance with my present invention; Fig. 2, a section taken in the plane indicated by the line 2 2 of Fig. 1, and Fig. 3 a plan view of the type of fixed grate which I prefer to employ.

Similar letters of reference designate corresponding parts in all of the views of the drawings, referring to which—

A is the water-receiving chamber of my improved heater, which, as usual, surrounds the fire-pot and is disposed on a suitable base B.

C is the fixed grate, and D is a rotary grate arranged above the fixed grate. The fixed grate may be secured in the surrounding base B in any approved manner, although I prefer to provide it with depending pins *a*, which are seated in apertured lugs *b* on the base for the purpose. It may also be of any construction suitable to the purpose of the present invention; but I prefer to construct it after the manner shown in my aforesaid patent—that is, with a central opening *c* and slots *d*, which radiate from said opening and are of even width throughout in order to prevent ashes or clinkers from jamming in them when pushed toward the opening *c* by the operation of the rotary grate. The rotary grate is preferably arranged on antifriction-rollers *e*, mounted in short standards *f*, rising from the fixed grate, and is held against casual lifting or rising by antifriction-rollers *g*, journaled in suitable housings *h*, attached to base B. Said rotary grate is also of the same construction as the rotary grate of my patented construction—*i. e.*, it has an opening *i*, one wall *j* of which traverses the upper surface of the fixed grate in a curve which gradually approaches the opening *c* in said fixed grate, segmental bars *k*, and segmental openings *l* between the bars. The fuel in the fire-pot rests on the said bars *k* of the rotary grate, and hence it follows that when the said grate is rotated in the direction indicated by arrow, through the medium of the shaft *m*, and the pinion *n* intermeshed with the gear *p* at the under side of the grate, the clinkers and ashes which do not pass through the openings *l* in the grate will fall through the opening *i* of the same upon the bars of the fixed grate, over which they will be pushed by the cam action of the wall *j* of the opening *i* in a direction approaching the central opening *c*. Incident to such movement the fine ashes will obviously fall through the slots *d* of the fixed grate, while the clinkers and large ashes will be carried to the opening *c*, through which they will drop into the ash-pit.

E is my improved supplemental water-chamber, which is connected to a conduit *r* and also to a conduit *s*. The conduit *r* may be carried to the chamber A when it is desired to utilize the chamber E to accelerate the heating of water in said chamber A, or off to a point at which it is desired to use heated water. The conduit *s* may be provided with a T-coupling *t* or otherwise connected to a conduit t', leading to chamber A, and another conduit t^2, leading from a source

of supply, as desired. The chamber E is located in the center of the fire-pot, where it will be surrounded by the fire, and consequently it will greatly assist in the heating of water, and thereby materially increase the capacity of the heater. It is also located immediately above the rotary grate and in line with the central opening therein and is of cone shape, with its reduced end uppermost, as illustrated. By virtue of this latter it will be observed that in addition to heating water and increasing the capacity of the heater the supplemental chamber will permit the free escape of ashes through the opening *i*, and yet will serve to support and prevent the escape of fuel when the rotary grate D is actuated as well as when it is at rest, and will also serve, when the grate D is rotated, to deflect the ashes away from the center, and thereby prevent the collection of clinkers adjacent to the base of the chamber, at which point clinkers would be liable to be jammed between the chamber and rotary grate and interfere with the free movement of the latter.

While my improved supplemental water-chamber E is calculated, as stated, to increase the capacity and improve the efficiency and durability of those water-heaters in which it is embodied, it obviously adds but little to the cost of production of the heaters, which is an important advantage.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

A water-heater comprising a fire-pot, a grate at the base of the fire-pot, provided with a large, central opening, the hollow, cone-shaped, combined water-chamber and fuel support and deflector arranged in the center of the fire-box with its reduced end uppermost and its lower end so arranged with respect to the central opening in the grate as to permit the escape of ashes and prevent the escape of fuel through said opening, a water-supply pipe connected to the wall of the heater and the combined water-chamber and fuel support and deflector, and a discharge-pipe also connected to said water-chamber and fuel support and deflector and the wall of the heater.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CLARENCE C. LONGARD.

Witnesses:
JAMES M. SLAYTER,
ADAMS A. MACKAY.