

(No Model.)

W. GUTHRIE.
FURNACE.

No. 508,013

Patented Nov. 7, 1893.

Fig. 1.

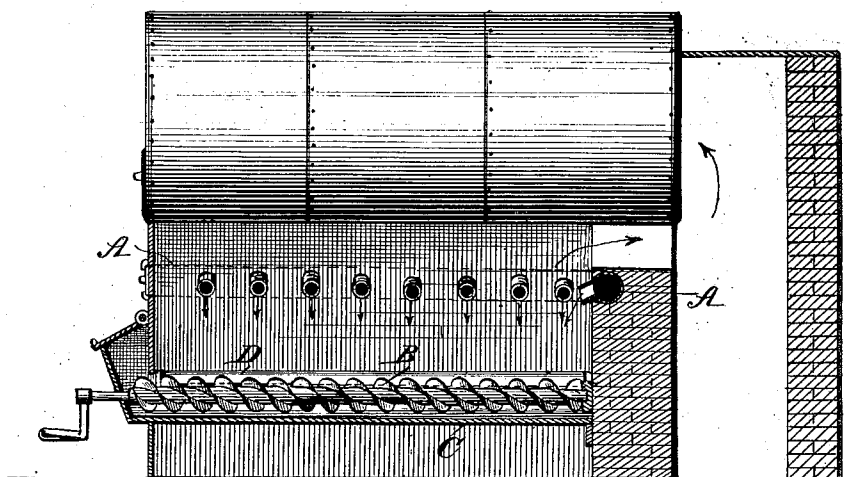
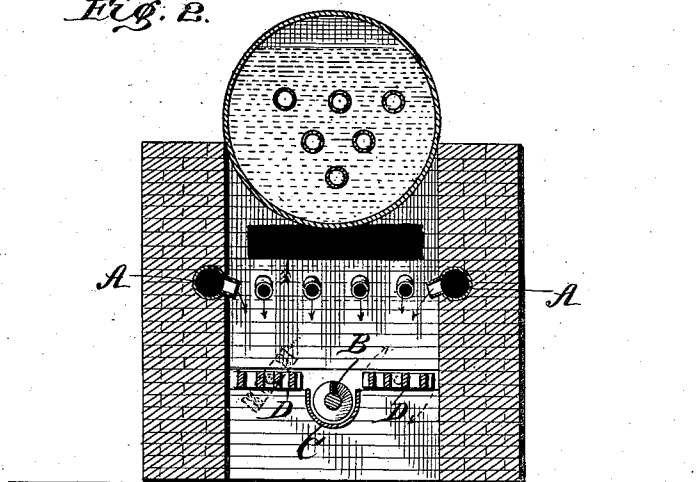


Fig. 2.



WITNESSES:
Fred G. Dietrich
P. B. Jerpine.

INVENTOR
Wardell Guthrie
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WARDELL GUTHRIE, OF CHICAGO, ILLINOIS.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 508,013, dated November 7, 1893.

Application filed January 3, 1893. Serial No. 457,065. (No model.)

To all whom it may concern:

Be it known that I, WARDELL GUTHRIE, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Furnaces, of which the following is a specification.

My invention is an improvement in furnaces and has for objects, among others, to so feed the fuel and the air for supporting the combustion, that the air delivered into the furnace will be fed by force directly to that portion of the fire which is most active, that is at the top of the coals and the fuel will be fed up from the bottom, and the invention consists in the novel constructions and combinations of parts as will be hereinafter described and pointed out in the claims.

In the drawings—Figure 1 is a vertical longitudinal section and Fig. 2 is a cross section of my improved furnace.

In carrying out my invention I provide an air feeder above and in position to discharge air upon the burning fuel and an upwardly discharging fuel feeder by which the fuel is fed upward from below the burning fuel. The said air feeder and fuel feeder co-operate in effecting a practically perfect combustion, the air fed from above causing combustion from the surface down the air first uniting with and causing the combustion of the gases, thus preventing their escape in smoke, whereas with the air fed from below it is absorbed by the coke or other fuel and so prevented from reaching the newly distilled gas or smoke. This result it will be seen is accomplished by the conjoint action of the blast of air at the top of the burning fuel and the upward feeding of the fuel so that the air is, at all times fed directly to the fuel at the hottest and most actively burning part such part being at no time smothered by the feeding of the fuel thereon the fire being caused to burn from the surface down.

In specifically describing the preferred construction for carrying out my invention reference may be had to the accompanying drawings in which the air feeders comprise one or

more air flues A arranged in the side walls of the furnace above the grate and having along their inner sides outlets or discharges opening into the furnace. These air flues have inlets at the front of the furnace or other convenient place and are provided with the opening or discharge pipes at desired distances through their lengths. It is preferred to incline the air tubes or openings toward the rear end of the furnace to prevent forcing any of the gases out through the feed box or chamber.

The fuel feeder comprises, a screw conveyer B or other suitable device operating in a trough C extended longitudinally of the furnace and adapted to feed the fuel back and upward as it is turned, the conveyer being turned by hand by any suitable wrench or handle or by machinery suitably arranged.

In order to rid the furnace of the accumulated cinders and ashes I place at one or both sides a dump or grate D which may also be used in starting the fires.

In practice the draft of the furnace is up through the grate and backward as indicated by the arrows in Fig. 1.

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

1. The combination of the furnace the air pipe or pipes arranged alongside of and having side outlets opening into the furnace above the fire surface and a fuel feeder arranged below the fire surface and adapted to feed the fuel upward thereto all substantially as and for the purpose set forth.

2. The improvement in furnaces herein described consisting of the air flues arranged alongside of and adapted to discharge into and above the fire surface of the furnace, the screw conveyer and its trough or other suitable mechanism and the dump or dumps alongside of said conveyer substantially as set forth.

WARDELL GUTHRIE.

Witnesses:

OSSIAN GUTHRIE,
HENRY MCGREGOR.