(No Model.)

# K. SCHROLL.

## BOILER FURNACE.

No. 266,648. Patented Oct. 31, 1882.

Fig. 2.

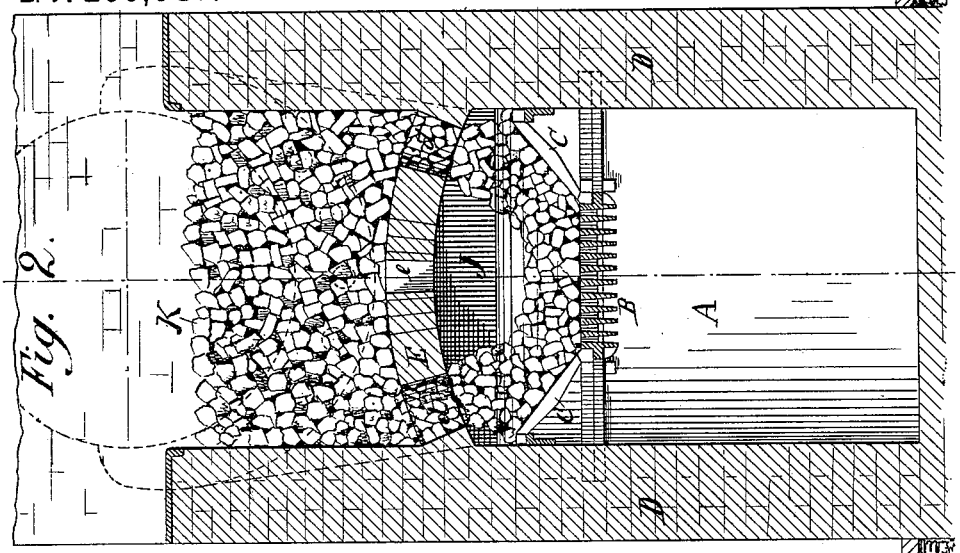
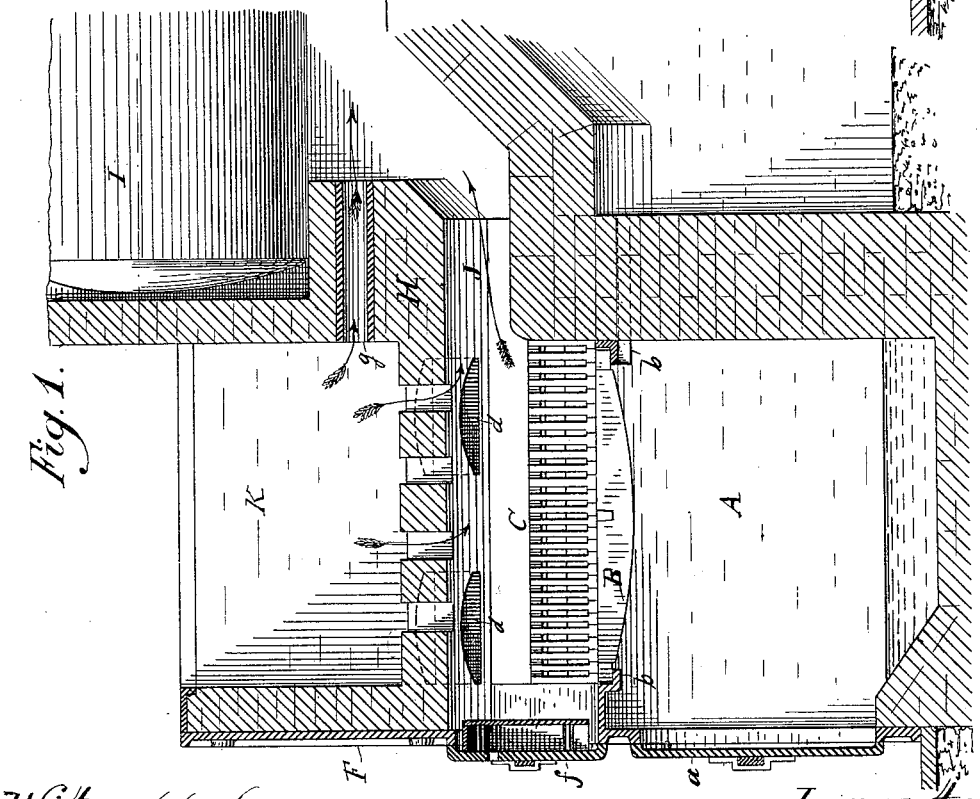



Fig. 1.

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# UNITED STATES PATENT OFFICE.

KARL SCHROLL, OF CHICAGO, ILLINOIS.

## BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 266,648, dated October 31, 1882.

Application filed June 13, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, KARL SCHROLL, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful improvements in Boiler-Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to the construction of boiler-furnaces; and it has for its object to produce a furnace which is self-feeding, and in which will be produced, as near as possible, a perfect combustion of the gases, and that will prevent smoke.

The invention consists in a furnace built in front of the boiler, and having a half-V grate in an arch built over such grate, that has openings in its sides for feeding the fuel, and air-vents in its center; in an open fuel-receptacle above such arch; in a gas-duct leading from between the grate and the arch under the boiler, and in a series of air-vents above the gas-duct leading from the coal-receptacle to under the boilers, all as more fully hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 represents a longitudinal vertical section, and Fig. 2 a vertical cross-section, of my boiler-furnace.

Corresponding letters in the several figures of the drawings designate like parts.

A denotes the ash-pit, provided with door *a*; B, the bottom grate, consisting of longitudinal bars or perforated plates that are supported at both ends upon suitable bars or plates, *b*. This grate is only about one-half the entire width of the furnace, and is placed longitudinally in the center of the same. Grates C, each composed of a series of vertically-inclined bars, cover the spaces at each side between the grate B and the side walls, D, of the furnace.

An arch, E, built of fire-brick, is struck between the side walls, D, a short distance above the grates. This arch E has a series of semi-elliptical openings, *d*, at the sides, through which the fuel will feed downward upon the grates from both sides, and has air-vents *e* in or through its crown.

A door, *f*, in front wall, F, of the furnace is for kindling and poking the fire in the combustion-chamber that is between the grates and the arch.

The bridge-wall H supports the front end of the boiler I, and a channel, J, leads from the combustion-chamber under the boiler for conducting the burning gases to be brought in contact with such boiler.

The side walls, D, front F, and bridge-wall H are sufficiently extended upward above the arch E to form the fuel-chamber K, which is to remain open on top. A series of vents, *g*, are built into the bridge-wall H above arch E and below boiler I for admitting jets or currents of air to admix with the burning gases that issue through duct J.

A fire being started on the grates B and C, and the fuel-chamber K being kept filled sufficiently with fuel, such fuel will slide downward through openings *d* as fast as the fuel upon the grates is being consumed, and will be decomposed or coked in its down passage by the heat from the fire on the grates. The gases thus generated will come in contact with the incandescent coal on the grates by passing over the same on its passage to the channel J. Sufficient air is admitted through vents *e* to intermingle with the gases that enter through openings *d* to facilitate combustion, which air first must pass through the fuel, and will carry with it any vapors or fume that may rise from such fuel. The air passing through vents *g* will take up the destructive heat from the bridge-wall, will thereby become highly heated itself, and will then intermingle with the burning gases under the boiler to furnish additional oxygen for bringing about a perfect combustion of such gases, and thereby to prevent the generation of smoke.

The entire furnace is built in front of the boiler, and only the clear-burning gases are brought in contact with the heating-surface of such boiler.

What I claim is—

In a boiler-furnace, the combination of ash-pit A, grate B, and inclined grates C, arch E, having feed-openings *d* and air-vents *e*, fuel-chamber K, and bridge-wall H, having channel J and air-vents *g*, the whole being constructed and arranged substantially in the manner and for the purpose set forth.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

KARL SCHROLL.

Witnesses:

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