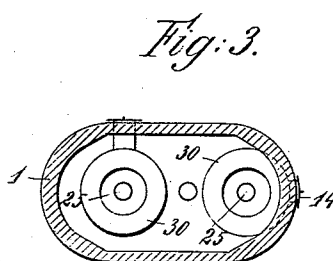
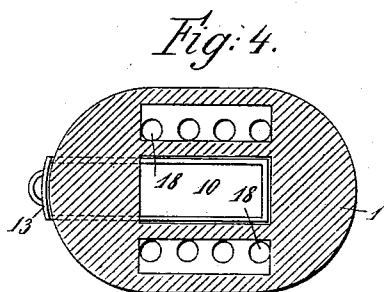
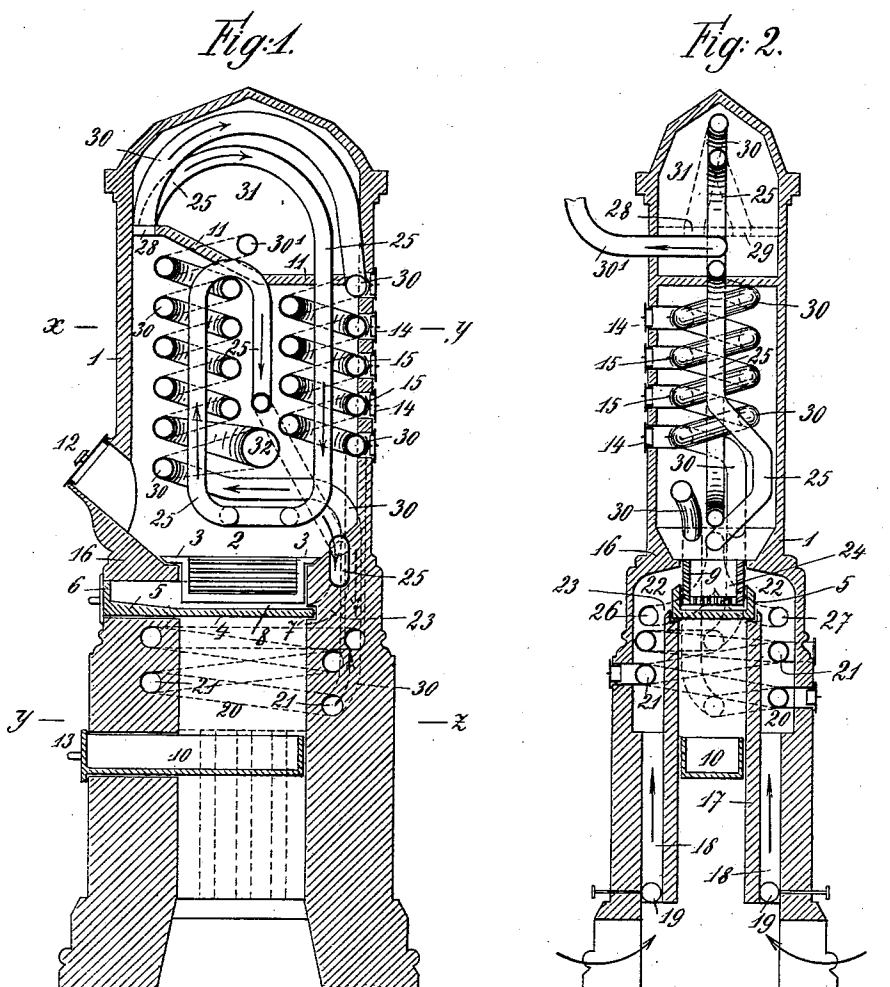


(No Model.)

F. J. REINISCH.
SMOKE CONSUMING FURNACE.

No. 564,649.

Patented July 28, 1896.



Witnesses
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UNITED STATES PATENT OFFICE.

FRANZ JOSEF REINISCH, OF LEMBERG, AUSTRIA-HUNGARY.

SMOKE-CONSUMING FURNACE.

SPECIFICATION forming part of Letters Patent No. 564,649, dated July 28, 1896.

Application filed February 20, 1896. Serial No. 580,070. (No model.)

To all whom it may concern:

Be it known that I, FRANZ JOSEF REINISCH, a subject of the Emperor of Austria-Hungary, residing at Lemberg, in the Province of Galicia, Empire of Austria-Hungary, have invented certain new and useful Improvements in Smoke-Consuming Furnaces for Purposes of Central Heating and Ventilation, of which the following is a specification.

10 This invention relates to a smoke-consuming central-heating furnace; and it consists in the particular construction and arrangement thereof.

15 Figures 1 and 2 show vertical sectional views, and Figs. 3 and 4 cross-sections on the lines xy and yz of Figs. 1 and 2.

1 is the casing of the furnace, built of fire-proof material.

2 is the fireplace.

20 3 are the grate-bars of the basket-shaped grate.

4 is the reserve grate, which has a solid bottom with side walls 5 and a front wall 6. It forms a drawer without a back wall. The bottom ascends toward the front wall 6, so that a bottom surface is formed which is inclined toward the inside. The front wall 6 is tightly closed by a door.

25 The back wall of the furnace has a recess 7, into which the free rear edge of the grate-bottom 4 and the free edges of the side walls 5 penetrate, so that when the reserve grate is inserted the drawer is completely surrounded, and this drawer incloses the lower part of the fire-grate 3 in such a manner that the same is sunk partly in the drawer 4, except for a small space 8, and serves for fluid fuel or as a double grate for effecting a complete combustion of the other fuel, as the side walls 5 of the reserve grate cover only partly the side walls 9 of the fire-grate 3, and the glowing pieces of fuel falling through the grate 3 will be completely consumed upon the reserve grate 4.

30 The ash-box is shown at 10.

11 is a backwardly-tapering cover.

12 is a tightly-closing door for charging the furnace; 13, the ash-pit door.

35 14 are clearing doors or channels for the spiral pipes to be described later, said chan-

nels serving at the same time as supports for the pipes.

16 is a funnel-shaped seat for the grate 3; 17, two interior partitions, which, with the outer casing, form a double casing. 55

18 are air-channels provided with revolving valves 19, which are turned for the purpose of regulating the inlet of air. These channels 18 are arranged on both sides between the casing 1 and the partitions 17 and preferably the same number on each side, and all issue in a preliminary heating-space 20, where the fresh air which has entered through 18 comes in contact with the heating-pipes 21, passing in the direction of the arrows, Fig. 2, and enters the heating-room 22. The branch pipes 23 and 24 of the heating-pipe 25 issue in this room at the points 26 and 27. The heated and burned gases flow in through these orifices, and combine with the fresh air to be conveyed to the fireplace. There the temperature increases the draft and produces a greater ventilation. The side walls 9 of the grate 3 consist of flat rods inclined downwardly from the outside, so that the falling of ashes cannot take place laterally, but only to the bottom of the grate. 75

Two pipes, which connect with the spiral pipes 30 and 25, commence to run from the points 28 and 29 in the inclined cover 11 of the furnace. The combustive gases generated in the fireplace 2 circulate around the spiral pipes 30 and 25 and pass along the cover 11 until they reach the pipe-orifices 28 and 29. Continuing their course through the orifice 28 they ascend in the pipe 30, which breaks through the cover 11, crossing the chamber 31 in the shape of an arch, which chamber, closed by the cover of the furnace and the partition 11, has for its object to maintain the heat produced there. In its downward course the pipe 30 breaks again through the cover 11 and leads downward as a shorter spiral pipe through the heating-chamber of the furnace. It is partially sunk in the casing of the furnace, so that it is not entirely surrounded by the fire. At the extremity of this coil it leads downward along the wall. It is converted into the heating-coil 21 and leads then upward again as pipe 30, where it forms a longer 100

coil entirely surrounded by the fire next to the shorter coil, the extremity of which, after having again broken through the cover 11 and passing again through the chamber 31, leads off as the heat-conducting pipe 30. In the first lower spiral of this longer coil the pipe is widened and given the shape of a re-tort, in order to utilize the fire entirely and to create a quick expansion of the gases.

The smoke-pipe 25 commences at the cover 11 at the point 29. It also passes through the chamber 31 in the shape of an arch, and continuing, breaking through the cover 11, it leads downward, passing in the middle of the smaller coil 30, bending above the fireplace, and thence upward through the middle of the longer coil 30 and downward between the two coils, near the wall of the furnace, until it reaches the place where the pipe 25 is divided into the two branches 23 24 which issue in the heating-chamber 22. As this pipe 25 conveys again the burned smoke and the strongly-heated gases into the grate of the same fireplace an intense heat will be created.

Instead of the cleaning-doors 14, I have arranged doors or clacks 15 in the coils 21 25, in order to be able to clean the same over their entire length.

I claim—

1. In combination, the grate, the superheating-chamber, the partition-cover 11, the heating-coil 21, the pipe 30 connecting with the coil 21 and thence with an escape-pipe 30', and the pipe 25 conveying the smoke and

heated gases from the top of the chamber 35 downward through the chamber beneath the grate, substantially as described.

2. The described furnace consisting of a basket-shaped grate, an ash-pit thereunder, the heating or superheating chamber, a heating-coil 21 for the air, of coils 25 and 30 in the fireplace, said coils commencing at a partition-cover 11 of the furnace, the shorter coil being surrounded partially by the fire and connected with the heating-coil 21, a longer coil connecting with the shorter entirely surrounded by the fire, leading to the heating escape-pipe 30' while the other pipe 25 passes through the middle of the coils 30 and between the same and issue in the superheating-room 22 at the points 26 and 27 divided in branches 23, 24, and create thereby a circulation and heating of the gases, substantially as described.

3. In combination with the basket-grate 2, a reserve grate arranged under the fire-grate consisting of a bottom surface 4 extending upward against the front wall 6 and provided with side walls which inclose the lower part of the basket-grate 3, the rear wall of the reserve grate being formed by the back of the chamber, substantially as described.

In witness whereof I hereunto set my hand in presence of two witnesses.

FRANZ JOSEF REINISCH.

Witnesses:

DEAN MASON,
JOSEF LENCTON.