No. 687,656. Patented Nov. 26, 1901.

G. SCHNEIDER.

SMOKE CONSUMING FURNACE.

(Application filed Sept. 8, 1900.)

(No Model.)

Fig. 1.

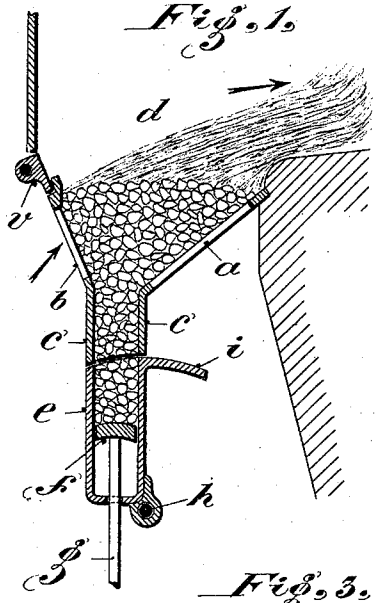


Fig. 2.

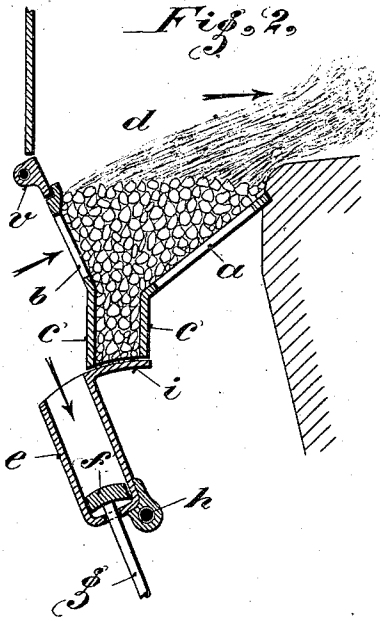
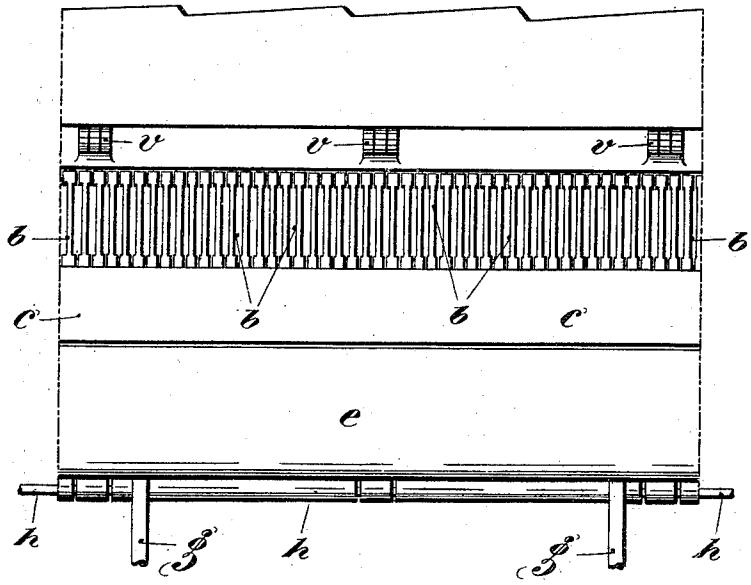


Fig. 3.



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UNITED STATES PATENT OFFICE.

GUSTAV SCHNEIDER, OF BERLIN-SCHÖNEBERG, GERMANY.

SMOKE-CONSUMING FURNACE.

SPECIFICATION forming part of Letters Patent No. 687,656, dated November 26, 1901.

Application filed September 8, 1900. Serial No. 29,448. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV SCHNEIDER, merchant, a subject of the King of Prussia, Emperor of Germany, residing at Berlin-Schöneberg, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Smoke-Consuming Furnaces, of which the following is a specification.

My invention relates to an improved smoke-consuming furnace which is intended to be used for any desired technical purposes. In the furnace of my invention a perfect combustion of smoke is obtained by feeding the grate with coal from below, so that the fresh supply of coal introduced is caused to be volatilized and burned by the superincumbent incandescent coal, and the ascending gases are made to undergo complete combustion by the superincumbent layer of incandescent coal. The smoke-consuming furnaces hitherto in use are characterized by the circumstance that the fresh coal is fed on the incandescent layer. These furnaces therefore necessitate special means for causing the combustion of the incompletely-burned gases developed from the fresh coal. By way of such special means among other arrangements, secondary furnaces or reintroduction of the smoke-gases into the furnace, have been employed.

The smoke-consuming furnace forming the subject-matter of my invention differs from those above referred to by the circumstance that in it the combustion of smoke is caused by stoking from below, the fresh coal being introduced from below and gradually forced upward between a pair of grates, one of which is inclined as regards the perpendicular, and the other is but slightly inclined toward the perpendicular and serves as an air-passage with a view of forcing the sulfur-gases generated in the fuel material through the incandescent portion of the fuel lying on a higher level. Furthermore, the feeding of the fuel in this manner prevents the spreading thereof and forms an unbroken body even when raised to the level of the grate-bars.

The annexed drawings illustrate some forms of execution of the present furnace arrangement and the means for obtaining the introduction of fresh fuel from below.

Figure 1 is a vertical section when stoking. Fig. 2 is a like view when supplying the stoking arrangement with a supply of fuel. Fig. 3 is a front view.

The furnace consists of the back grate *a*, the front grate *b*, and the chamber *c*. The ashes of the burned fuel are supposed to drop through the grate *a*, which is situated in the direction toward which the fire-gases are to be conducted and is placed in an oblique position in order to facilitate the fall of the ashes. Grate *b* is intended for the admission of air to the fuel and has a slight inclination toward the perpendicular.

d is the uppermost layer of fuel, which is always kept in an incandescent state.

Underneath this furnace a box *e* is provided, which serves for the reception and feeding forward of fresh coal for the purpose of stoking from below. This box is provided with a bottom *f*, which can be raised by bars *g* by any desired lever arrangement. Moreover, this box can revolve in any desired place on pivots or hinges *h*, so that it can be tilted forward, so as to be brought into a suitable position for being supplied with coal, which is then introduced into the furnace from below by raising the bottom *f*, Figs. 1 and 2.

The box *e* is open above. In order to prevent the fuel from dropping out of the furnace when the box *e* is tilted, it is provided behind with an arched plate *i*, which when the box is tilted forward shuts off the furnace toward the front underneath the chamber *c*, and thus forming, so to speak, while in this position the bottom of the furnace, Fig. 2.

The introduction of coal from below is effected as follows: Assuming that by raising the bottom plate *f* up to the level of the lower edge of the furnace-chamber *c* the fuel contained in the box has been transferred into the furnace, the box *e* is tilted forward, so that its back plate *i* shuts off the chamber *c*. The upper orifice of the box will then be exposed toward the front, so that fresh fuel can be thrown into the box. The box is then tilted back into the position shown in Fig. 1, so that its mouth is situated underneath the furnace-chamber, and the bottom *f* is then raised in proportion as the coal is consumed, thus introducing the fuel into the furnace from below. This stoking from below can

also be effected in another way by forcing up the material from below by suitable means, after the manner of a mole-hill, the heap of coal thus introduced thereupon spreading sidewise.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a furnace, the combination with means for feeding the same from below, of an oblique rear grate extending upwardly from the feed and adapted to permit of the removal of the slag, and an upwardly-extending perforated front grate, substantially as and for the purposes set forth.

2. In combination, in a furnace-feed from below, in which the complete combustion of the gases generated in the lower part of the feed-body is effected by inclosing the fuel, a chamber, a rear grate extending upwardly at an inclination from said chamber and adapted to permit of the removal of the slag, a front grate extending upwardly at an inclination from said chamber and in an opposite direction to that of the rear grate and adapted to serve as an air-passage to cause the gases generated in the fuel contained in the chamber to pass through the incandescent portion of the fuel lying on a higher level, said grates adapted to prevent the fuel from spreading as it leaves said chamber, and means for feeding the fuel to the said chamber, substantially as herein shown and described and for the purposes set forth.

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

GUSTAV SCHNEIDER.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.