

No. 617,533.

Patented Jan. 10, 1899.

W. LUTZ.  
SMOKE CONSUMING FURNACE.

(Application filed Oct. 14, 1897.)

(No Model.)

FIG. 1.

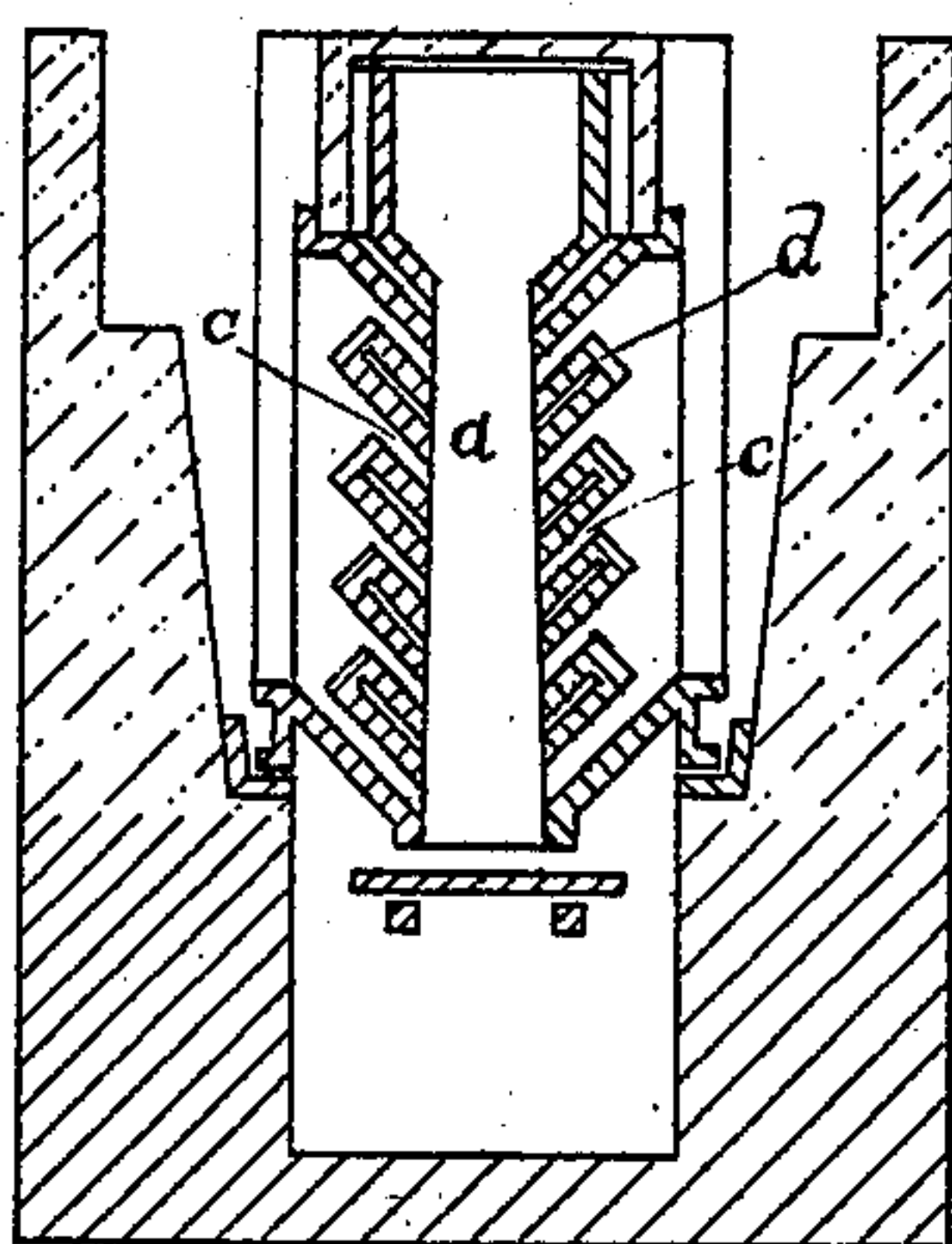


FIG. 2.

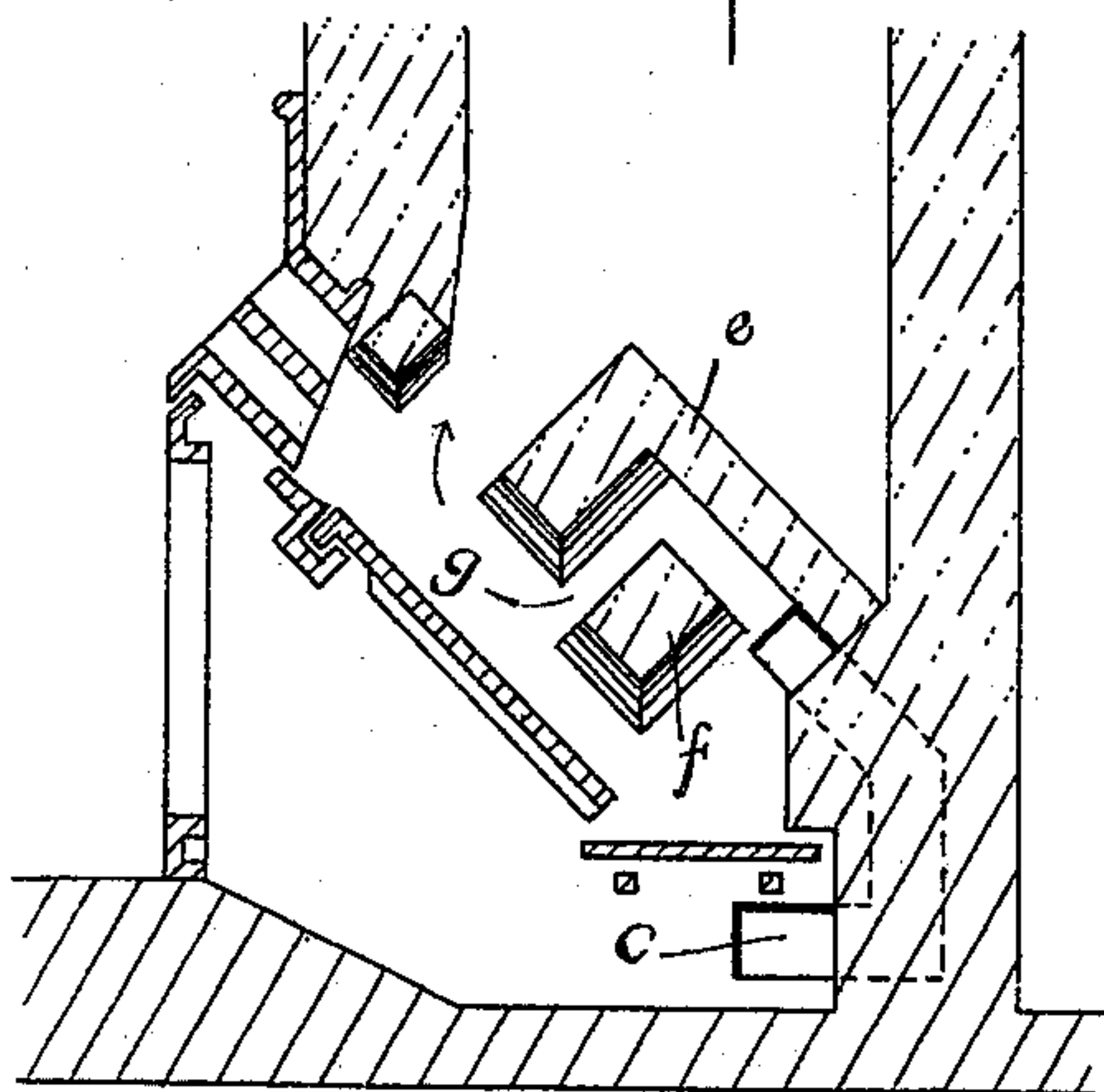
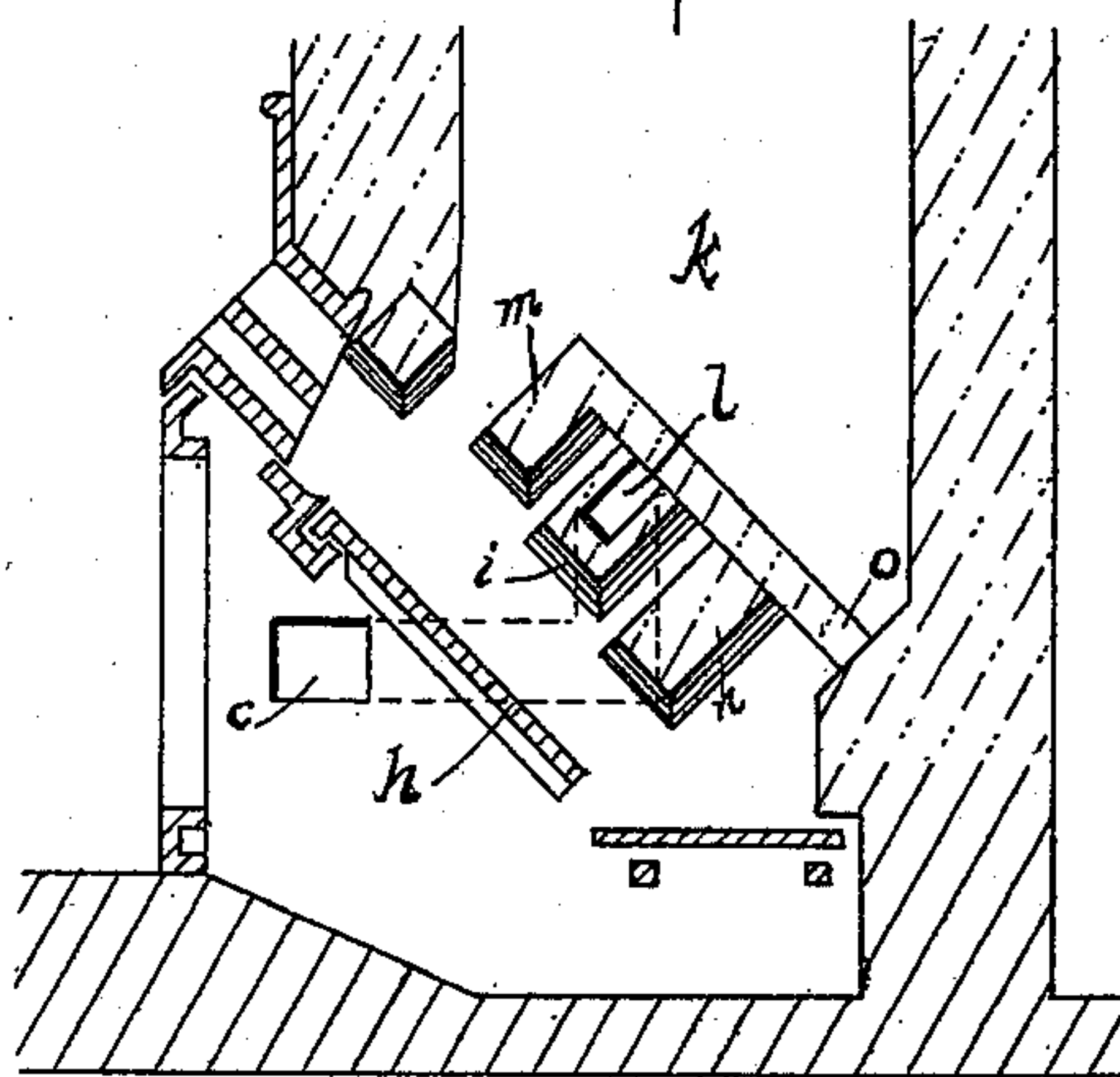


FIG. 3.



WITNESSES:

Henry T. Bright  
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INVENTOR

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his Atty

# UNITED STATES PATENT OFFICE.

WILHELM LUTZ, OF NUREMBERG, GERMANY, ASSIGNOR TO THE ACTIEN-  
GESELLSCHAFT FÜR PATENT VERWERTHUNG, OF SAME PLACE.

## SMOKE-CONSUMING FURNACE.

SPECIFICATION forming part of Letters Patent No. 617,533, dated January 10, 1899.

Application filed October 14, 1897. Serial No. 655,228. (No model.)

*To all whom it may concern:*

Be it known that I, WILHELM LUTZ, engineer, a subject of the German Emperor, residing at Nuremberg, in the Kingdom of Bavaria, Germany, have invented certain new and useful Improvements in Smoke-Consuming Furnaces, of which the following is a full, clear, and exact description.

The smoke-consuming furnace protected by Patent No. 554,070, dated February 4, 1896, is so built that a number of nozzles opposite a full ground-plate for carrying the fuel will convey air upon the upper burning layers.

The object of the present invention is an extended employment of such nozzles in shaft-furnaces. The construction of such a furnace is illustrated by Figure 1 of the inclosed sketch, showing the cross-section. Around the shaft *a* there is an arrangement of vertical or slightly-slanting air-channels *c*, which are open at the bottom and communicate with the ash-box *C*. From them the nozzles *d* receive their air, which is spread over the upper burning layers, and in this way a complete combustion is brought about. With this arrangement the surface of the fire is very considerable in proportion to the fire-box, and consequently to the quantity of the fuel contained in it, so that an intensive combustion must take place. It is an essential advantage of the arrangement of the air-channels and the nozzles that by a strong band they form one piece, which can be easily taken out when it requires mending.

In larger furnaces, where the nozzles *d* stretch across the ground-plate and where channels in the side walls serve for introducing the air, a simpler method may be used, which has the advantage of diminishing repairs. This innovation is shown by the inclosed sketches in two executions. Fig. 2 shows all the nozzles combined into one. This is formed by a hollow vault or a ceiling *e*, with

an inclosed arch *f*, so that a large nozzle is produced with the mouth *g*. The introduction of air is brought about by carrying the air-channels under the vault *e*. Fig. 3 shows the second arrangement. The vault or ceiling over the full ground-plate *h* consists accordingly of one or several arches *i*, which are supplied with air on both sides from channels *c*, resting in the side walls *k*, and spread the heated air on the surface of the fire from openings *l*. The latter are protected by strong arches *m* and *n* in due distance. Over the three arches *i*, *m*, and *n* lies a ceiling *o*. The last arrangement offers the advantages that the air-openings cannot be stopped up by cinders, that the air is equally distributed over the whole fire, and that a way is made both upward and downward for the fire-gases to burst into flames.

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

1. In a smoke-consuming furnace, a ceiling or vault for the fire-box composed of one or more parallel hollow arches having air-passages therethrough one or more solid arches and side drafts communicating with the interior of said hollow arches, substantially as described.

2. In a smoke-consuming furnace, a ceiling or vault for the fire-box, composed of one or more parallel hollow arches having air-passages therethrough and air-passages therebetween and drafts communicating with said air-passages, and one or more solid arches, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILHELM LUTZ.

Witnesses:

ALEX. WIELE,  
MAX SCHCIDIQ.