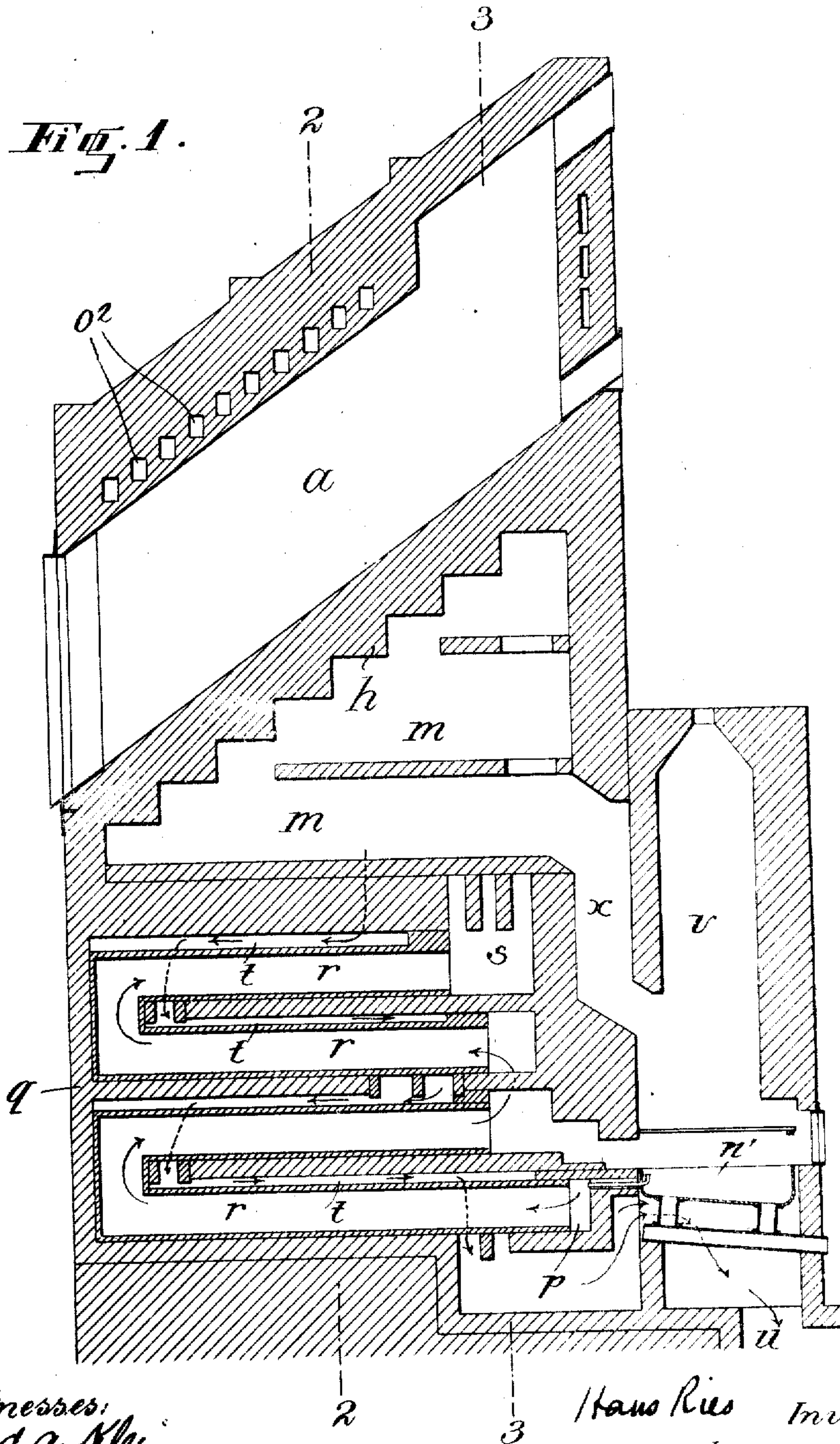


H. RIES.
FURNACE FOR GASIFYING COAL.
APPLICATION FILED JAN. 25, 1908.

Patented May 18, 1909.
2 SHEETS—SHEET 1

922,042.



Witnesses:
Fred A. Klein
Fritz Ziegler.

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Fig. 2.

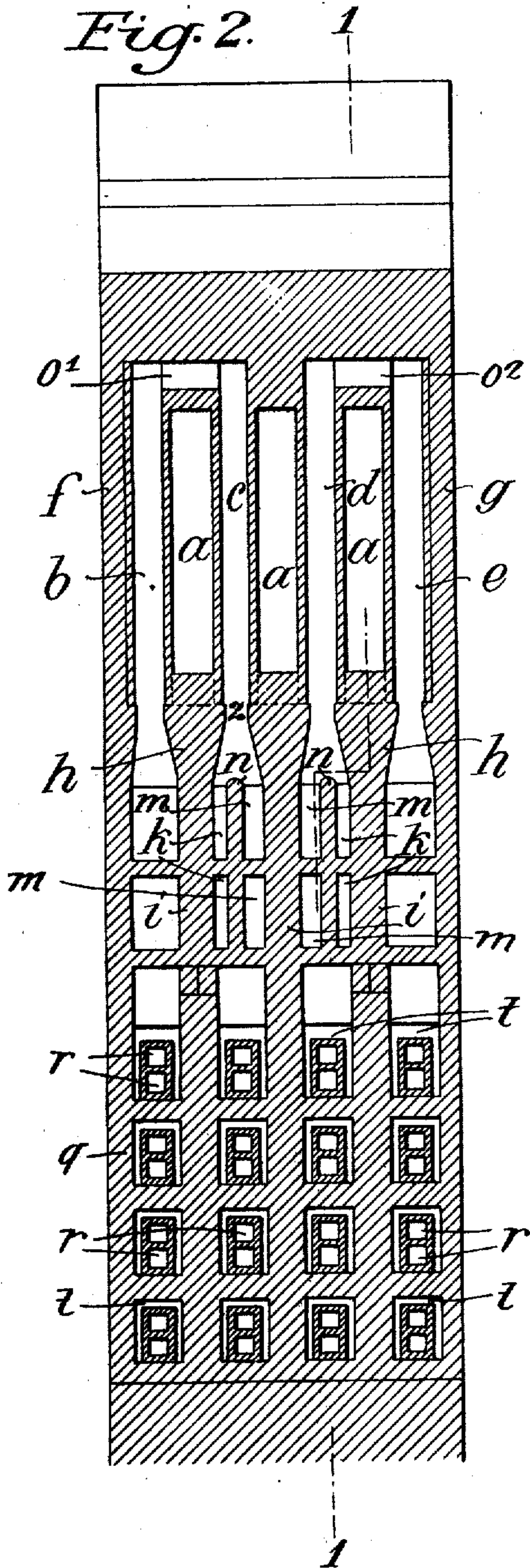
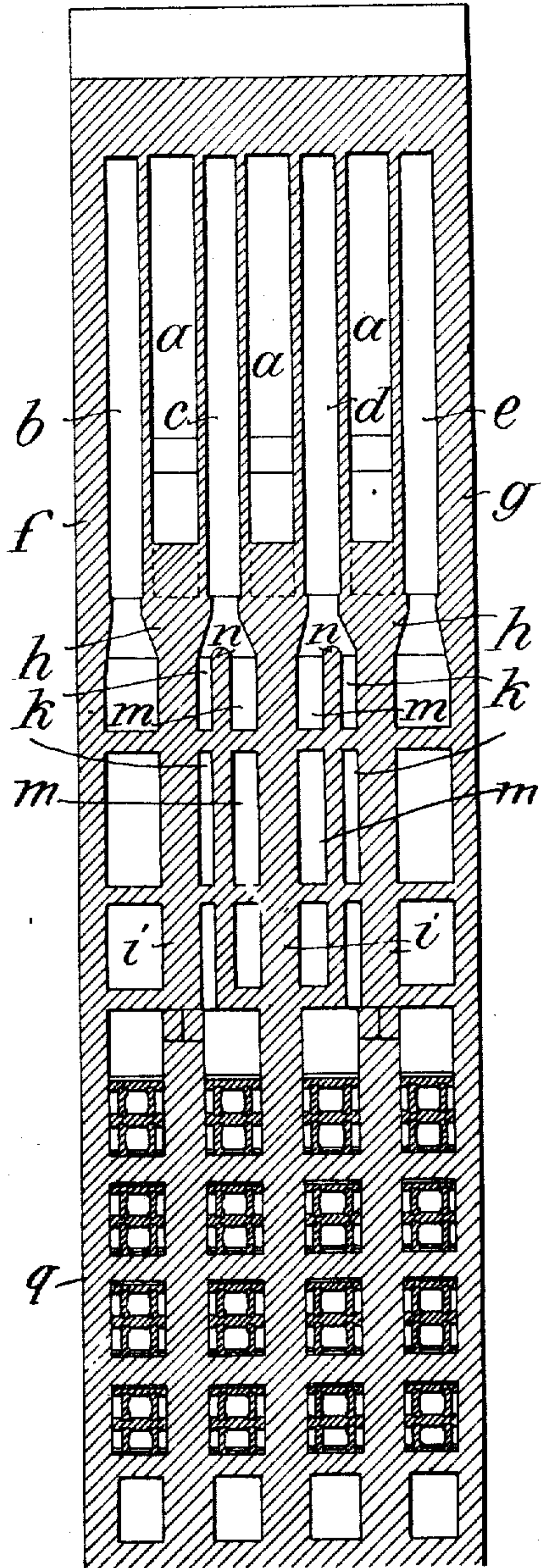


Fig. 3



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UNITED STATES PATENT OFFICE.

HANS RIES, OF MUNICH, GERMANY.

FURNACE FOR GASIFYING COAL.

No. 922,042.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed January 25, 1908. Serial No. 412,650.

To all whom it may concern:

Be it known that I, HANS RIES, a citizen of the Empire of Germany, residing at Munich, Germany, have invented certain new and useful Improvements in Furnaces for Gasifying Coals, Roasting Ores, and the Like, of which the following is a full, clear, and exact description.

This invention relates to furnaces specially suitable for the manufacture of coal gas of the type having horizontally or obliquely arranged retort chambers adapted to contain the material to be treated.

The present furnace is distinguished from similar furnaces hitherto known by the mode of supporting the bottom walls of the retort chambers and by the arrangement of the flues or conduits for the heating gases and the combustion air.

A construction of furnace is illustrated in the accompanying drawings, in which,

Figure 1 is a vertical longitudinal section of the furnace on line 1—1 of Fig. 2, Fig. 2 is a vertical section on line 2—2 of Fig. 1, Fig. 3 is a vertical section on line 3—3 of Fig. 1.

As will be seen from the drawings, the retort chambers *a* which are arranged side by side (three are shown in the example illustrated) are separated from each other by the vertical flues or conduits *c* and *d*, and from the lateral walls *f* and *g* of the furnace, by the vertical flues *b* and *e*. The flues *b* and *c* and *d* and *e* are connected together at the top by transverse roof conduits *o'*, *o''* respectively. The lateral walls of the chambers *a* rest upon laterally projecting bottom walls or stones *h* carried by vertical pillars *i* which preferably extend down to the foundations of the furnace so that the weight of the chambers *a* and of their charge is transmitted direct to the foundations.

Below the bottom walls *h* supporting the chambers *a* on the pillars *i* are arranged conduits *m* for the heating gases separated by a partition *n* from air conduits *k*. The partition *n* terminates immediately below the projecting portion of the bottom walls *h*. Consequently the combustion of the heating gases takes place in the space laterally limited by the bottom wall *h* above the free end of the partition *n*, so that at that point is situated the hottest combustion zone, the heat of which is transmitted by the bottom walls *h* to the bottom of the chambers *a*. In that way the bottoms of the chambers *a* are

heated to a sufficient extent without it being necessary to arrange heating conduits in them which greatly affect the durability of the chambers. Moreover, owing to the combustion of the heating gases taking place in the space between the bottom walls *h*, the lateral walls of the chambers *a* are less damaged, for the bottom series of bricks constituting the lateral walls of the chambers are already outside the hottest combustion zone. The bottom walls *h* themselves are made sufficiently strong and durable to resist the high temperatures to which they are subjected.

Air enters the lower portion of the regenerator *q* through the conduit *p* and after traveling in zig-zag fashion through the horizontal channels *r* it rises through the channel *s* into the channels *k* terminating above partitions *n*. During its passage through the regenerator, the air is preheated by the combustion gases which travel downward, that is, in a direction opposite to that of the air, in channels *t* surrounding the air channels *r*. These combustion gases then pass in contact with the water trough *w* and leave the regenerator at *u*. The combustion gases travel from the generator *v* through an upright channel *x* to the heating channels *m* arranged adjacent to the air channel *k*. The preheated air is admixed to these combustion gases directly above the upper edges of the partitions *n*, that is to say, in the lower portion of the channels *c*, *d* which is bounded by the projecting surfaces *z* of the retort bottoms *h*. Perfect combustion is thus secured, and the hot gases pass upward in the channels *c*, *d*, outward in the transverse channels *o'*, *o''* over the tops of the outer chambers *a*, and finally downward to the regenerator *q* through the channels *b*, *e* which communicate with the channels *t*.

Constructional details of the furnace described can of course be modified according to different circumstances without departing from the spirit of the invention, for instance two or more series of furnace chambers can be arranged above each other, so that the roof of one series of chambers forms the bottom of the one immediately above it. There can also be any desired number of chambers arranged horizontally or obliquely side by side.

What I claim is:—

A furnace for gasifying coal, roasting ores

and the like, comprising a plurality of spaced retorts arranged side by side, walls surrounding said retorts and forming channels about them, supports engaging the bottoms of the retorts, the opposing walls of adjacent supports flaring downwardly, so as to form a chamber which contracts upwardly, a partition located in said chamber, and conduits for supplying air and gas respectively located

on opposite sides of said partition and leading into said chamber.

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

HANS RIES.

Witnesses:

A. EUGEN SCHILLING,
LOUIS MUELLER.