

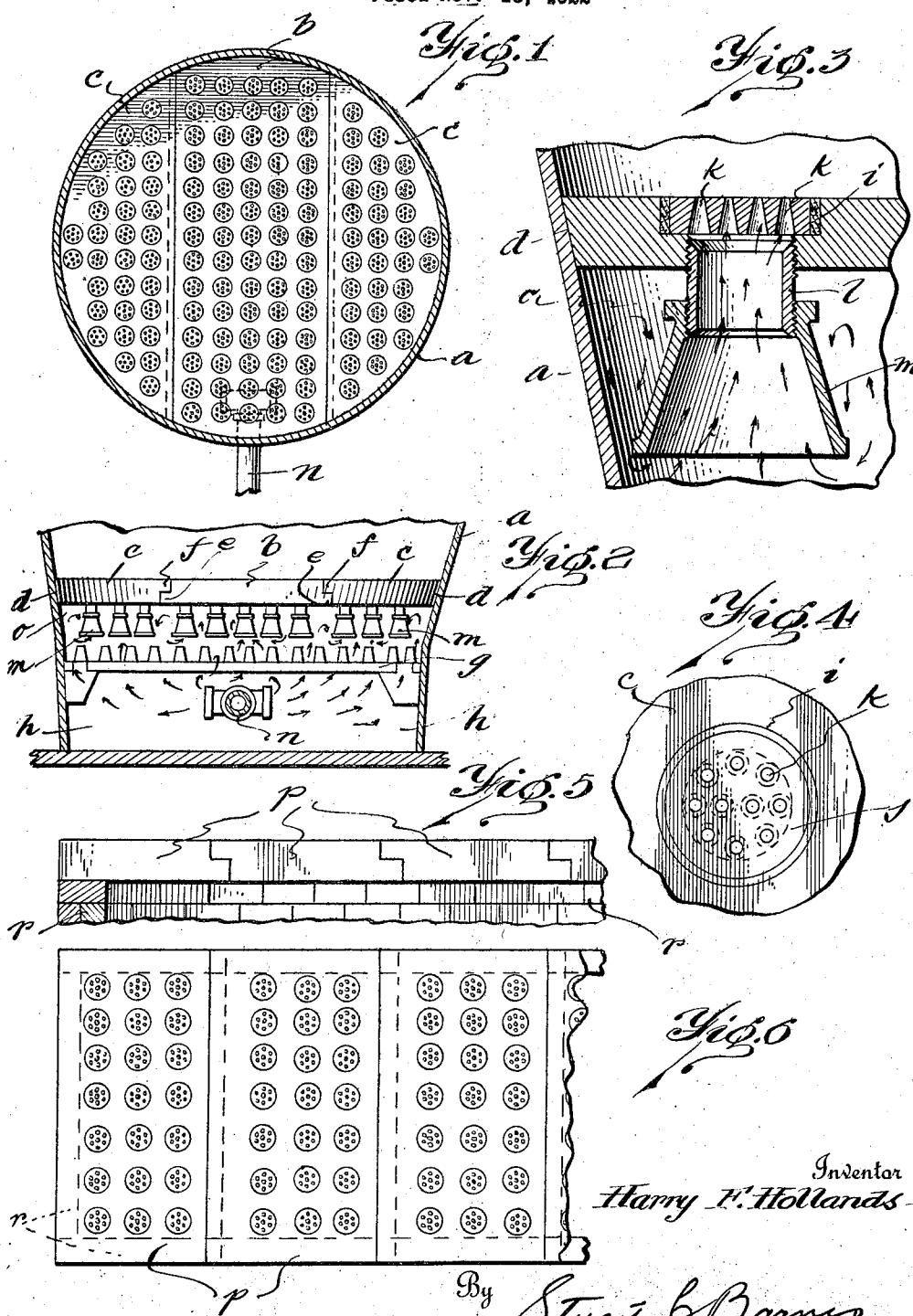
Dec. 23, 1924.

H. F. HOLLANDS

1,520,243

DIVIDED GRATE

Filed Nov. 16, 1922



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UNITED STATES PATENT OFFICE.

HARRY F. HOLLANDS, OF DETROIT, MICHIGAN.

DIVIDED GRATE.

Application filed November 16, 1922. Serial No. 601,214.

To all whom it may concern:

Be it known that HARRY F. HOLLANDS, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, has invented certain new and useful Improvements in Divided Grates, of which the following is a specification.

This invention relates to a furnace grate, and more particularly a solid grate adapted to be used in a single unit house furnace.

The object of my invention is to provide a divided grate that may be quickly inserted into an ordinary furnace through the front furnace door. Another object is to use a solid grate construction with a forced draft, and to air cool the grate. A further object is to provide means for distributing the air under pressure over the entire grate and to prevent the air from blowing through the openings with such a force as to blow holes through the fire.

The fuel is entirely burned resulting in no ashes, a clinker forming on the grate which is removed or broken up from time to time. The grates may be constructed in units for use in large boilers of different lengths.

In the drawings:

Fig. 1 is a plan view of the grate showing the furnace wall in section.

Fig. 2 is an elevation of the grate installed in a furnace above the ordinary open grate.

Fig. 3 is an enlarged vertical section through one of the draft openings.

Fig. 4 is an enlarged plan view of the same.

Fig. 5 is an elevation of the grate for use in boilers showing a plurality of grates fitted together.

Fig. 6 is a plan view of the same.

The fire pot wall *a* of an ordinary single unit furnace is circular in plan and is inclined as shown in Fig. 2. A divided grate, having a central portion *b* and the two side portions *c* has the beveled edges *d* which engage with the inclined walls so that the grate can be supported within the fire pot. The installation of the grate is simple as the central portion *b* is inserted through the furnace door (not shown) and the end portions are then fitted in. The shoulders *e* on the grate portion *b* support the end grate portions *c* by means of the shoulders *f* carried by said end grate portions resting on the

said shoulders *e*. The furnace is provided with the usual open shaker grate *g* and ash pit *h*. My grate is arranged to be supported above the usual grate so it can be installed without disturbing the grate already in the furnace; therefore, no additional alterations need to be made to the furnace.

The grate plates *b* and *c* are provided with a plurality of counterbored openings *i* in which a disc is cemented, the said disc having a plurality of small openings *k* therein. A pipe *l* is threaded into the lower part of the opening *i* and a reducing coupling *m* is threaded onto the other end of the pipe *l*. An air inlet pipe *n* is led in through the ash pit door and is provided on its inner end with a T-coupling which acts as a baffle wall to more evenly distribute the air over the grate. A motor and blower (not shown) is provided for forcing the air through the inlet pipe under pressure.

The suspended pipe and reducing couplings extend below the bottom of the grate, providing an air pocket *o* immediately below the grate. This provides a cushion of cool air below the grate and as a result the said grate is comparatively cool.

The air is introduced to the ash pit under pressure and the reducing couplings increase the velocity of the draft but the force of the draft is not sufficient to blow out through the openings *k* and blow holes through the fire.

This same divided grate construction can also be used in large boilers where a large rectangular grate is necessary. To do this I provide a number of units *p* which have mating and overlapping shoulders. These units may be supported on the upper ledge brick walls *r* or the regular grate hanger, and obviously larger grates can be so constructed by simply adding more units.

What I claim is:

1. In a furnace, the combination of an ash pit, a fire pot portion above the ash pit having inclined walls, a divided solid grate member having a plurality of openings therein and provided with beveled edges adapted to engage with the said inclined walls to support the divided grate, whereby the said grate sections are wedged together to seal the joints, and an air inlet pipe leading into the ash pit for introducing air under pressure to the underside of the grate.

2. The combination in a furnace having inclined walls, of a solid grate member having beveled outer edges supported within the furnace and comprising a plurality of grate
5 sections having stepped and offset abutting edges arranged to be wedged and fitted together, said sections provided with a plurality of small openings and an air inlet pipe below said grate member for introducing cool air under pressure to the under side of the grate. 10

In testimony whereof I affix my signature.

HARRY F. HOLLANDS.