P. SWEENEY.

Fire Grate.

No. 230,906. Patented Aug. 10, 1880.

Fig. 1.

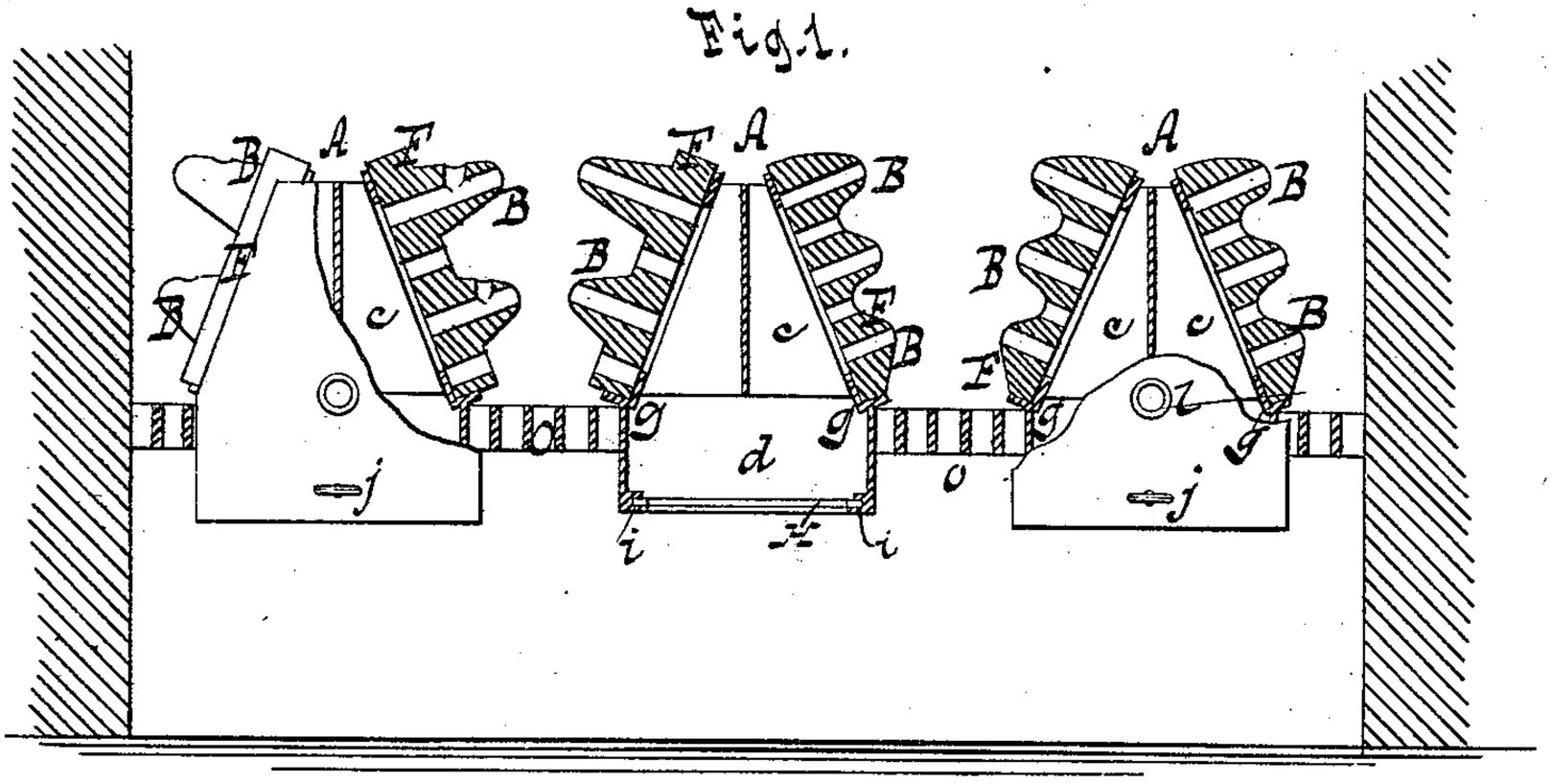


Fig. 2.

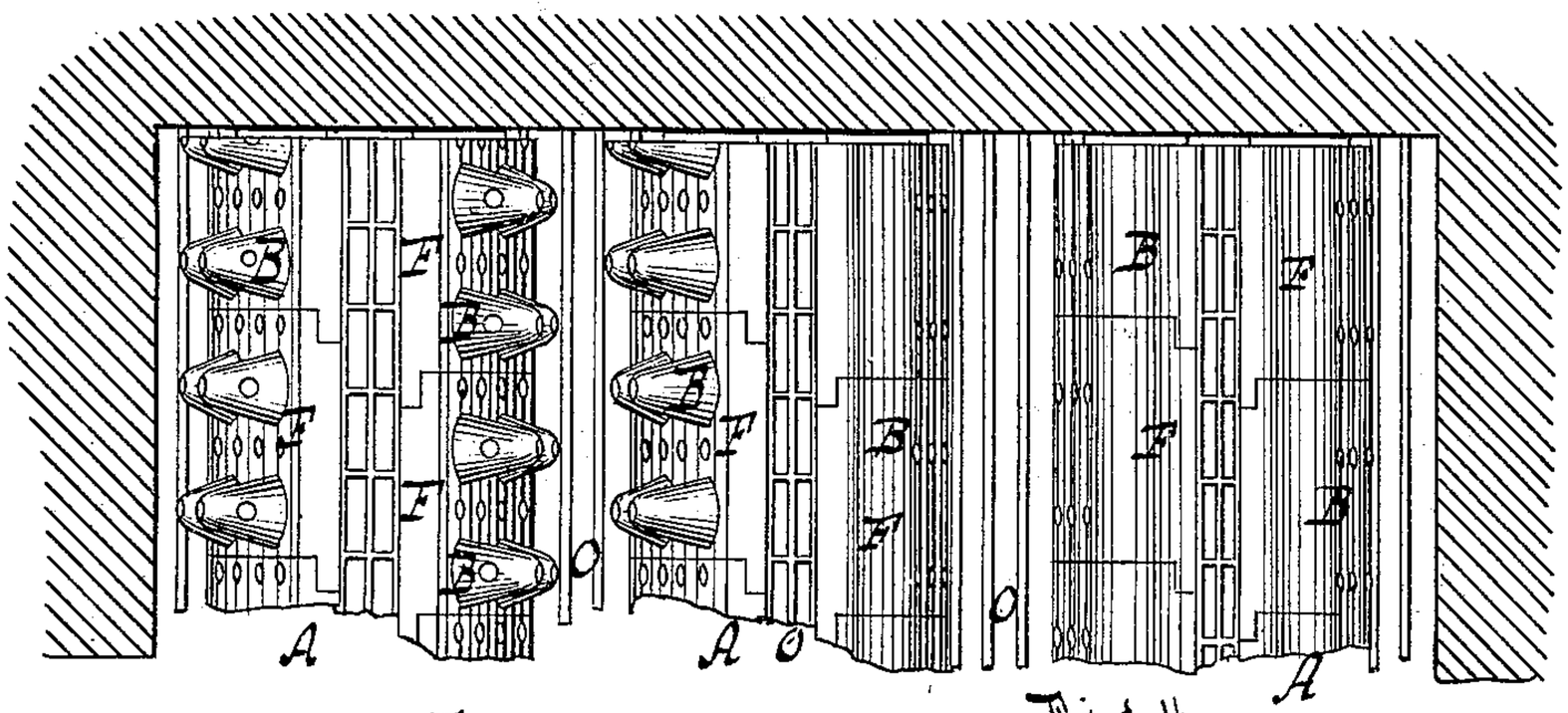


Fig. 3.

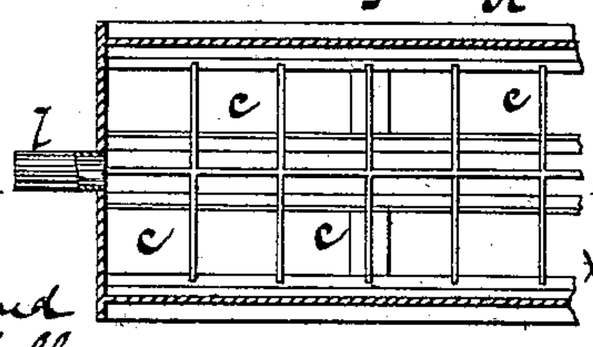
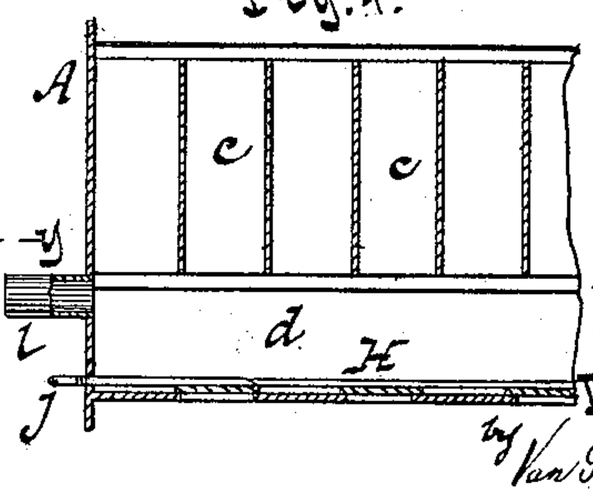


Fig. 4.



Witnesses
Otto Asfeland
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Inventor
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UNITED STATES PATENT OFFICE.

PETER SWEENEY, OF NEW YORK, N. Y.

FIRE-GRATE.

SPECIFICATION forming part of Letters Patent No. 230,906, dated August 10, 1880.

Application filed December 17, 1879.

To all whom it may concern:

Be it known that I, PETER SWEENEY, of the city, county, and State of New York, have invented a new and useful Improvement in Fire-Grates, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a cross-section of a grate embodying my invention. Fig. 2 is a plan or top view thereof. Fig. 3 is a horizontal section of one of the grate-bars, taken in the plane of the line *x x*, Fig. 4. Fig. 4 is a longitudinal vertical section of the same, taken in the plane *y y*, Fig. 3.

Similar letters indicate corresponding parts.

My invention relates especially to that class of fire-grates used for burning fine coal or coal-dust; and it consists in a grate embodying a series of hollow prismatic bars, which are adapted to admit air and are equipped with laterally-projecting nipples or corrugations, whereby the air escapes from the interior of the bars to support combustion, and the fuel resting on the grate is prevented from packing closely together. The interior of the grate-bars is divided into a series of air-chambers for the purpose of insuring a uniform or steady flow of air therefrom to the mass of fuel resting on the grate. The sides of the grate-bars are constructed of detached tiles cast with the nipples or corrugations, so that if a portion of either of the bars burns out it can be renewed without disturbing the remainder of the grate. The respective grate-bars are provided with an air gate or damper and with an air-supply pipe, so that the draft can be regulated, and, if the natural draft is insufficient, air can be injected by a suitable blast apparatus.

In the drawings, the letter A designates the bars of a fire-grate. These bars are hollow and are open on the bottom for the admission of air thereto, while they are respectively provided with a series of perforated nipples or corrugations, which project therefrom in a lateral direction. The air admitted to the grate-bars A issues from the nipples or corrugations B, so as to support combustion of the fuel resting on the grate, while the nipples or corrugations serve to keep the fuel loose on the grate, and thus allow the use of fine coal or coal-dust.

The nipples or corrugations B may be arranged in various ways and made of various shapes, while their perforations may be arranged simply in the ends or also in the sides thereof. The effect of the nipples or corrugations B may be increased by making the same of an incandescent material.

Between the bars are gratings O for the escape of ashes.

Within the bars A are partitions running both in a longitudinal and transverse direction, as shown, whereby the bars are divided into a series of air-chambers, *c*, in which the air admitted to the bars is distributed, so that the flow of air through and from the bars is uniform or steady. The partitions named are preferably arranged in the upper portions of the bars A, leaving a space, *d*, beneath them for the distribution of air.

The opposite sides of the bars A consist of detached tiles F, which are cast with the nipples or corrugations B, and are set in rabbets or grooves *g*, formed in the bars at appropriate points. By this construction of the bars A portions thereof can be renewed when burned out without disturbing the remainder of the grate.

I usually perforate the tiles F between the nipples or corrugations B to increase the draft of air from the bars.

In the bottom of the bars A, where they are open, as before stated, is arranged a gate or damper, H. This gate is arranged to slide in guide-grooves *i* in the bars, and is operated by a rod, *j*, projecting from the bars at one end. By this gate or damper the draft of air through the bars A can be controlled with nicety.

To one end of the bars A is connected a pipe, *l*, which is adapted to connect with a fan-blower or other air-forcing device, so that, if found expedient, a blast of air can be injected into the bars, the damper H being in that case closed.

What I claim as new, and desire to secure by Letters Patent, is—

1. A fire-grate embodying a series of hollow prismatic grate-bars which are adapted to ad-

mit air, and provided with laterally-projecting perforated nipples or corrugations, substantially as and for the purpose described.

2. A fire-grate embodying a series of hollow prismatic grate-bars which are adapted to admit air, and divided into a series of air-chambers, and provided with laterally-projecting perforated nipples or corrugations, substantially as and for the purpose described.

3. A fire-grate embodying a series of hollow prismatic grate-bars which are adapted to admit air, and the sides of which are constructed of detached tiles cast with perforated nipples or corrugations, substantially as and for the purpose described.

4. A fire-grate embodying a series of hollow prismatic grate-bars which are adapted to admit air, and provided with laterally-projecting perforated nipples or corrugations, and, further, with an air gate or damper and an air-supply pipe, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 15th day of December, 1879.

PETER SWEENEY. [L. S.]

Witnesses:
CHAS. WAHLERS,
J. VAN SANTVOORD.