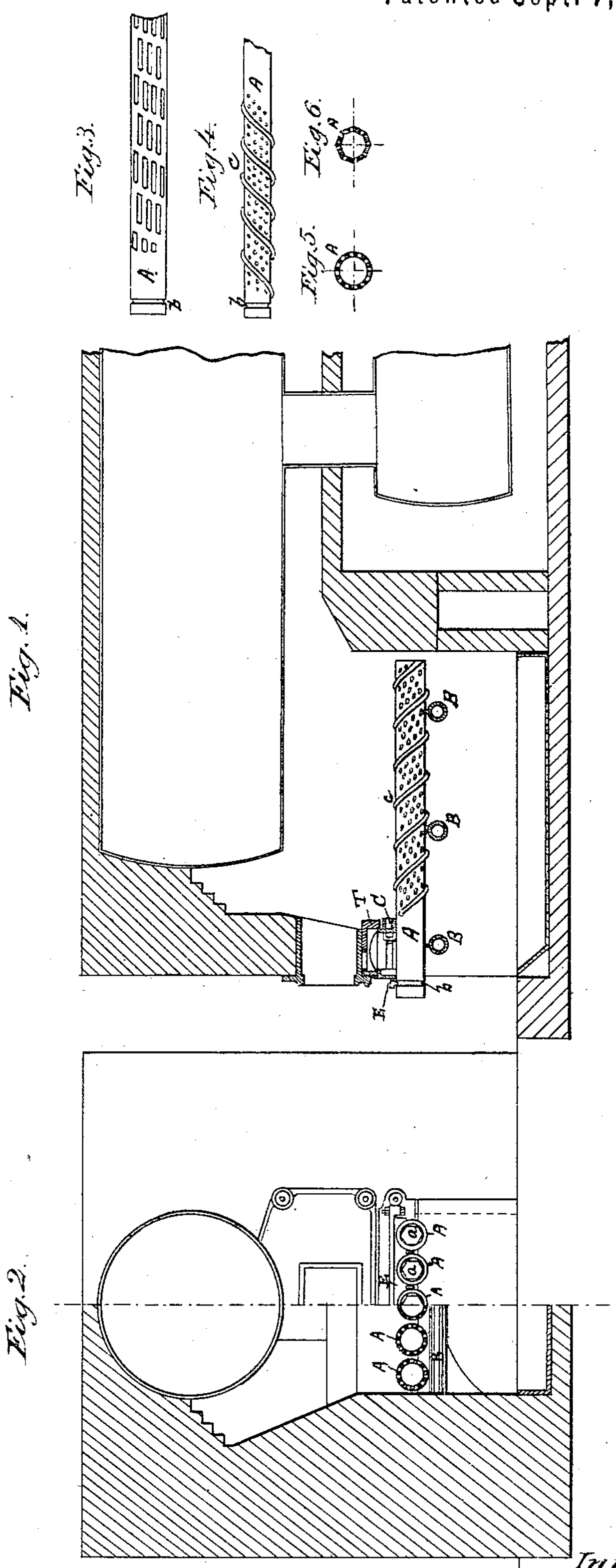
E. N. SCHMITZ.
Grate-Bars.

No. 167,571. Patented Sept. 7, 1875.



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UNITED STATES PATENT OFFICE.

ELOY N. SCHMITZ, OF PARIS, FRANCE.

IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. **167,571**, dated September 7, 1875; application filed August 10, 1875.

To all whom it may concern:

Be it known that I, ELOY NICHOLAS SCHMITZ, of Paris, France, have invented certain new and useful Improvements in Grates for Fire-Boxes of Furnaces, &c., of which the following is a specification:

My invention relates to a grate composed of revolving, hollow, perforated grate-bars, of cylindrical or other suitable form in cross-section, constructed and adapted for operation as hereinafter specified, and as shown in the accompanying drawing, which I shall now proceed to describe.

Figure 1 is a longitudinal vertical central section of a portion of a furnace embodying my improvements. Fig. 2 is a transverse vertical section of the same. Figs. 3, 4, 5, and 6 represent detached parts, hereinafter described.

The grate, in its preferred form, is composed of hollow grate-bars A, having an external diameter of one hundred and seventy-five millimeters, supported at two points in their length by two transverse bearing-bars, *b*, supported by the lateral walls of the furnace. The hollow grate-bars are open from end to end, and are so placed as to leave an open space of about thirty millimeters between their inner ends and the back wall of the furnace. Each grate-bar, throughout that part which lies in the furnace or fire-box, is perforated, as shown in Figs. 1 and 2. The interior of each hollow grate-bar is cylindrical, terminating at the outer or front end in an orifice of polygonal section, as shown at *a*, Fig. 2. This orifice is intended to receive the key, by which the bar may be rotated in either direction or rocked. Between the grate-bars and the furnace-door G is an interval or space, closed by boxes C, which fit and are held between the door-sill T and the grate-bars, and are movable, so that any one of them may be removed to permit the removal of its bar. A covering-plate, E, secured to the front of the furnace by bolts, and with a scalloped lower edge, to fit down around the projecting ends of the grate-bars, and into bearing-grooves *b* formed in those ends, serves still further to close this space, and also to hold and assure the grate-bars in position.

The grate-bars may be made of any suitable shape other than cylindrical, as, for instance, polygonal, as shown in section in Fig. 6.

The perforations, also, are not necessarily circular, but may be rectangular, as in Fig. 3, or of any other suitable shape, the size of the perforations depending upon the conditions of the case, and whether fine or coarse fuel is used.

The bars are also preferably provided with external ribs or projections, as shown at *c*, Figs. 1 and 4, and these projections may be in spiral form, as shown, or otherwise disposed. The ribs are designed, as will be readily understood, to stir the fire and to hasten the precipitation of the ashes and cinders into the ash-pit.

In lieu of bearing-grooves *b*, the bars may be provided with projecting ribs, to engage a groove in the covering-plate.

The bars being open from end to end, their condition at all times may be readily ascertained by looking into their outer open ends. If it be found that any of the perforations are closed or clogged, the bar can be at once rotated to present fresh apertures for admission of air to the fuel.

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

A revolving, hollow, open-ended, perforated grate-bar, provided with an external bearing-groove, or its specified equivalent, and having its outer open end angularly formed, as and for the purposes set forth, with or without external ribs or projections, as described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

E. N. SCHMITZ.

Witnesses:
EMILE BARRAULT,
AUG. VINCK.