(No Model.)

C. SCHEEF.

SHAKING GRATE FOR FURNACES.

No. 338,305. Patented Mar. 23, 1886.

Fig. 1.

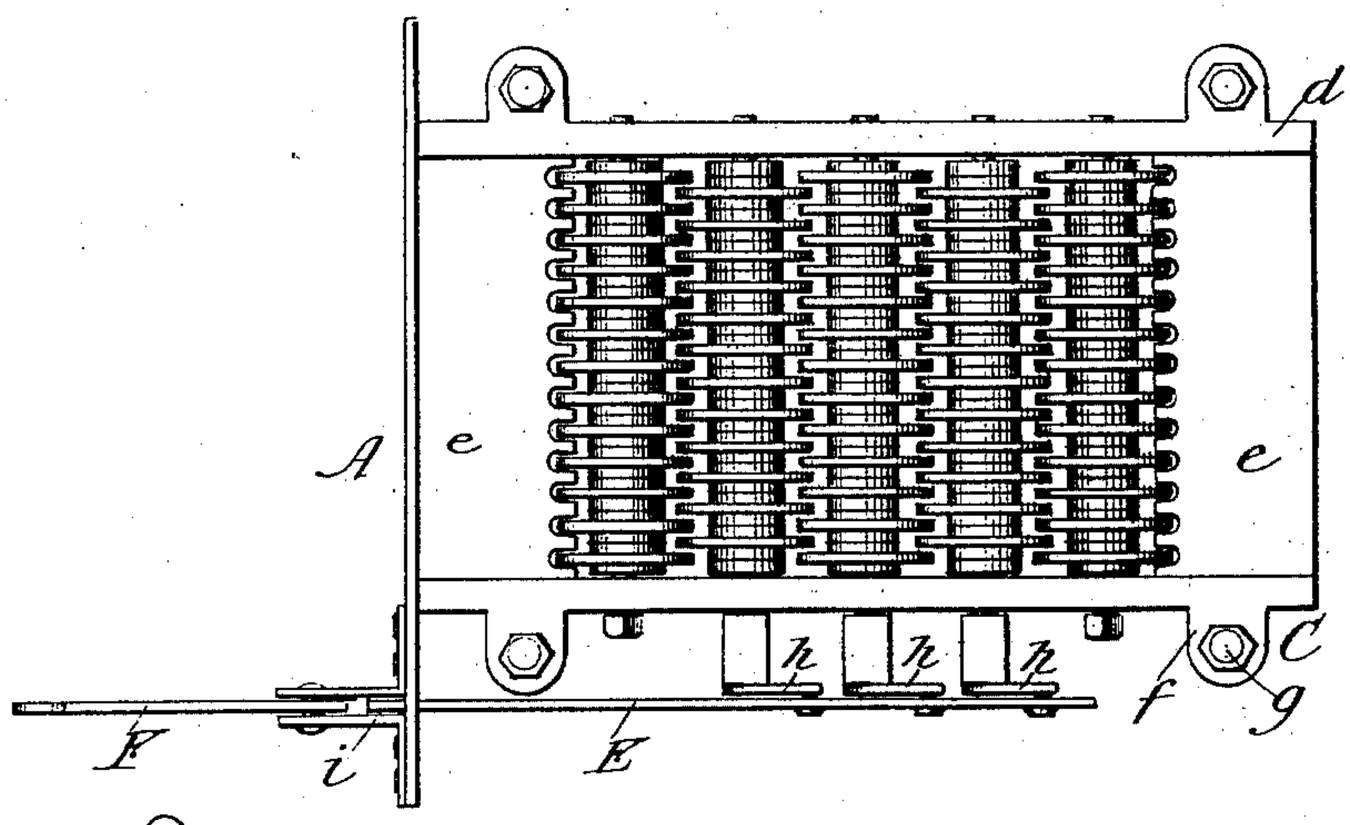


Fig. 2.

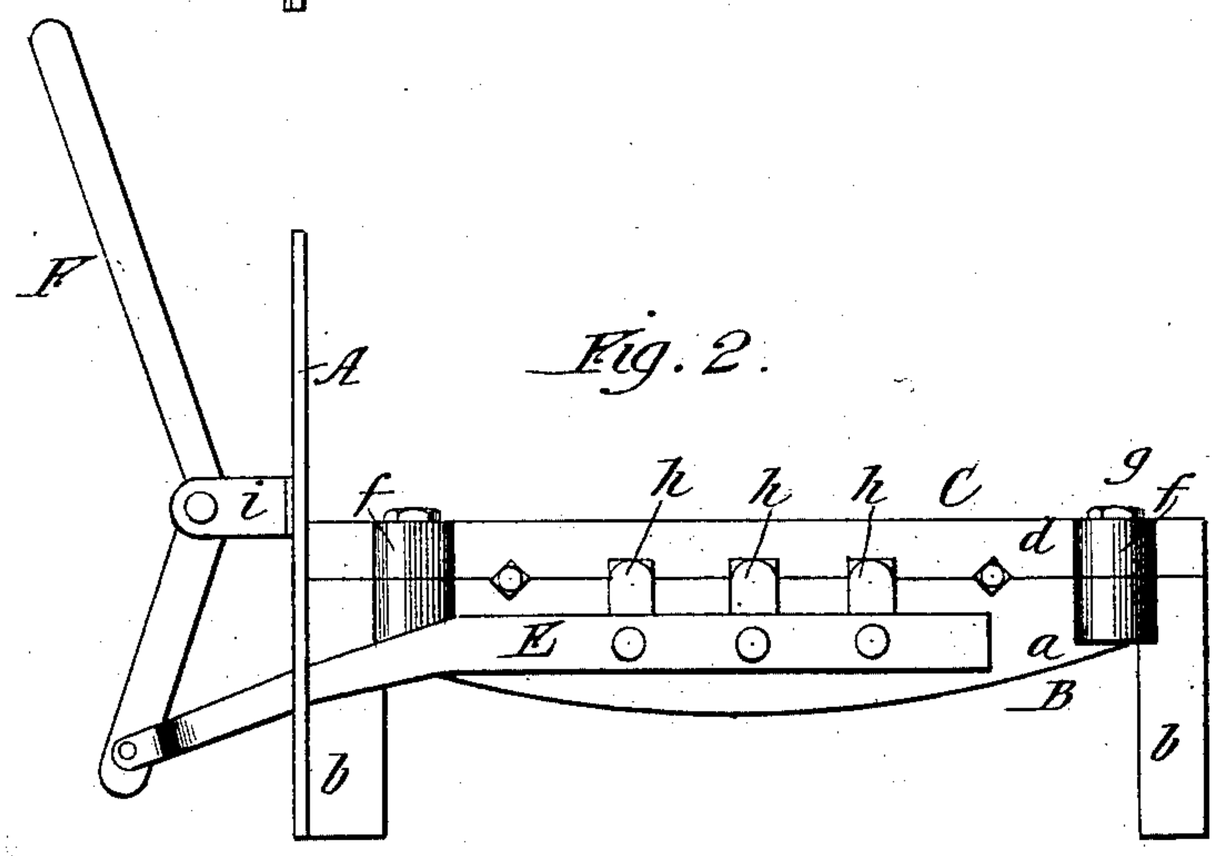


Fig. 4.

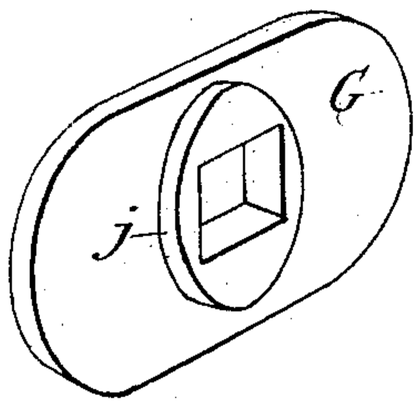
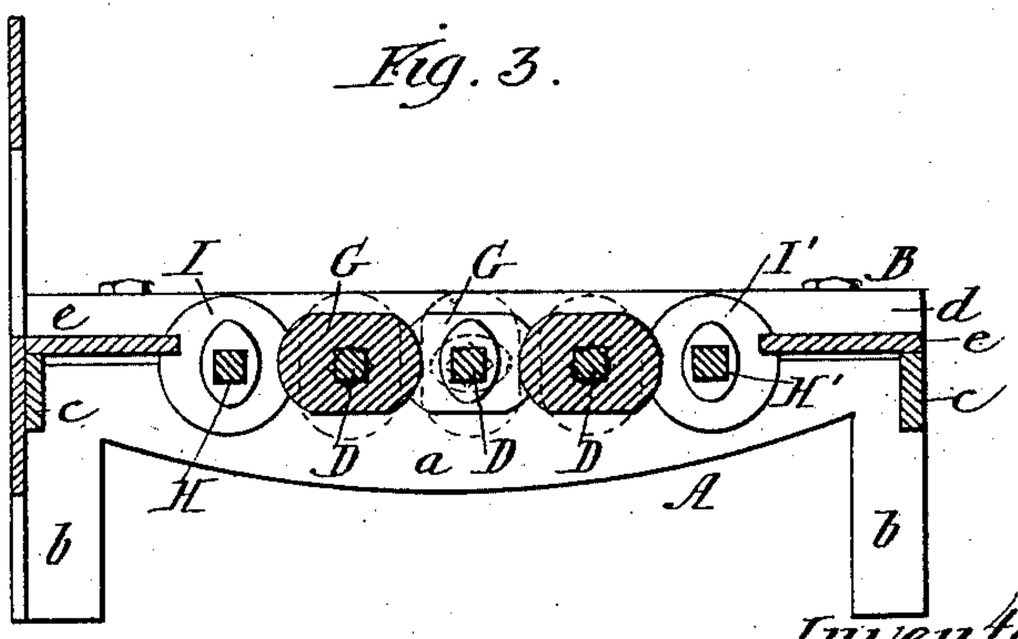


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES SCHEEF, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO THE BRUNSWICK, BALKE, AND COLLENDER COMPANY, OF SAME PLACE.

SHAKING-GRATE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 338,305, dated March 23, 1886.

Application filed August 18, 1885. Serial No. 174,705. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SCHEEF, a subject of the Emperor of Germany, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Shaking-Grates for Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to construct a grate that is simple, strong, and durable, and is adapted to shake up the fire without the necessity of opening the fuel-door and without the use of a poker, and that will prevent the baking together of the coal and the formation of clinkers, thus enabling to a better advantage the burning of screenings and other cheap fuel.

The invention consists of certain novel combination of parts, as will be described and claimed.

In the accompanying drawings, Figure 1 represents a plan view of the grate; Fig. 2, a side elevation, and Fig. 3 a longitudinal vertical section, of the same, and Fig. 4 a perspective view of one of the grate-plates.

Corresponding letters in the several figures designate like parts.

A denotes the boiler-front; B, the main grate-supporting frame consisting of side bars, *a*, with legs *b*, and of cross-bars *c*, with such side bars having formed semicircular bearings for the journals of the grate-bar shafts.

C is the top frame, composed of side bars, *d*, and of cross-plates *e*.

The frames B and C have lugs *f* formed to their sides for securing them together by bolts *g*.

D D are square shafts having round journals resting in the bearings on side bars, *a*, of frame B, and each shaft D has a crank, *h*, formed to one end. All of these cranks *h* are pivoted to a bar, E, one end of which bar is coupled to the end of a lever, F, that is pivoted between two fulcrum-brackets, *i*, secured to the boiler-front, with the upwardly-projecting handle of the lever in proper position for the fireman to swing it.

Upon each shaft D are sleeved a series of oblong plates, G, having rounded ends, and an oval hub, *j'*, with a square hole that fits over the shaft. The hubs *j* of the several plates G will lie close against each other when the plates G are strung on the shaft D, thus separating such plates the proper distance for the ends of the plates G of the next adjoining shaft D to pass between and leave sufficient air-passages. By shaking the lever F to all the plates G will be imparted a rocking motion.

H and H' are two shafts in the ends of the grate, that only differ from the shafts D by having no cranks. The plates I and I', strung upon these shafts, are circular, and otherwise the same construction as plates G. These plates I I' mesh with the next adjoining plates G and with notches in cross-plates *e* of frame C in the same manner as plates G of adjacent shafts D.

Upon the front portion of the grate formed by plates I the fresh coal is piled, which, after having given up a large portion of its gases, is pushed rearward upon the shaking-plates G, where, during its combustion, the coal by frequent shaking is kept in a loose condition, and the clinkers and ashes are separated as soon as they form, and upon the rear portion of the grate nearest to the bridge-wall of the boiler-furnace formed by plates I', the incandescent coal or coke is pushed, which will heat and ignite the escaping gases generated from the fuel and passing over. Thus feeding the furnace in succession from the front toward the rear, by pushing the fuel rearward and filling the fresh coal always upon the front end of the grate, an almost perfect combustion is obtained.

As it would be neither practical to shake the fresh coal nor the incandescent coal, I have applied the shafts H with the circular plates I, that will hold such coal in a stationary condition, and yet with the shifting of the fuel will be rotated sufficiently to expose a new surface to the fire with each charge of coal, and will thus last much longer than an immovable grate.

I am aware that in shaking-grates plates have been used that could be reversed, and also that grates formed entirely of circular plates have also been used; but I am not aware that a grate composed partly of oblong plates mounted on suitable shafts and adapted to be operated by hand through the medium of suitable cranks and levers and partly of sections composed of circular plates operated by the

movement of the coal, have been used; and, therefore,

What I claim is—

In a grate, the combination, with end shafts, H H′, and circular plates I I′ mounted thereon, of intermediate shafts, D, oblong plates G mounted thereon, cranks *h*, arm E, and lever F, as and for the purpose set forth.

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

CHARLES SCHEEF.

Witnesses:
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