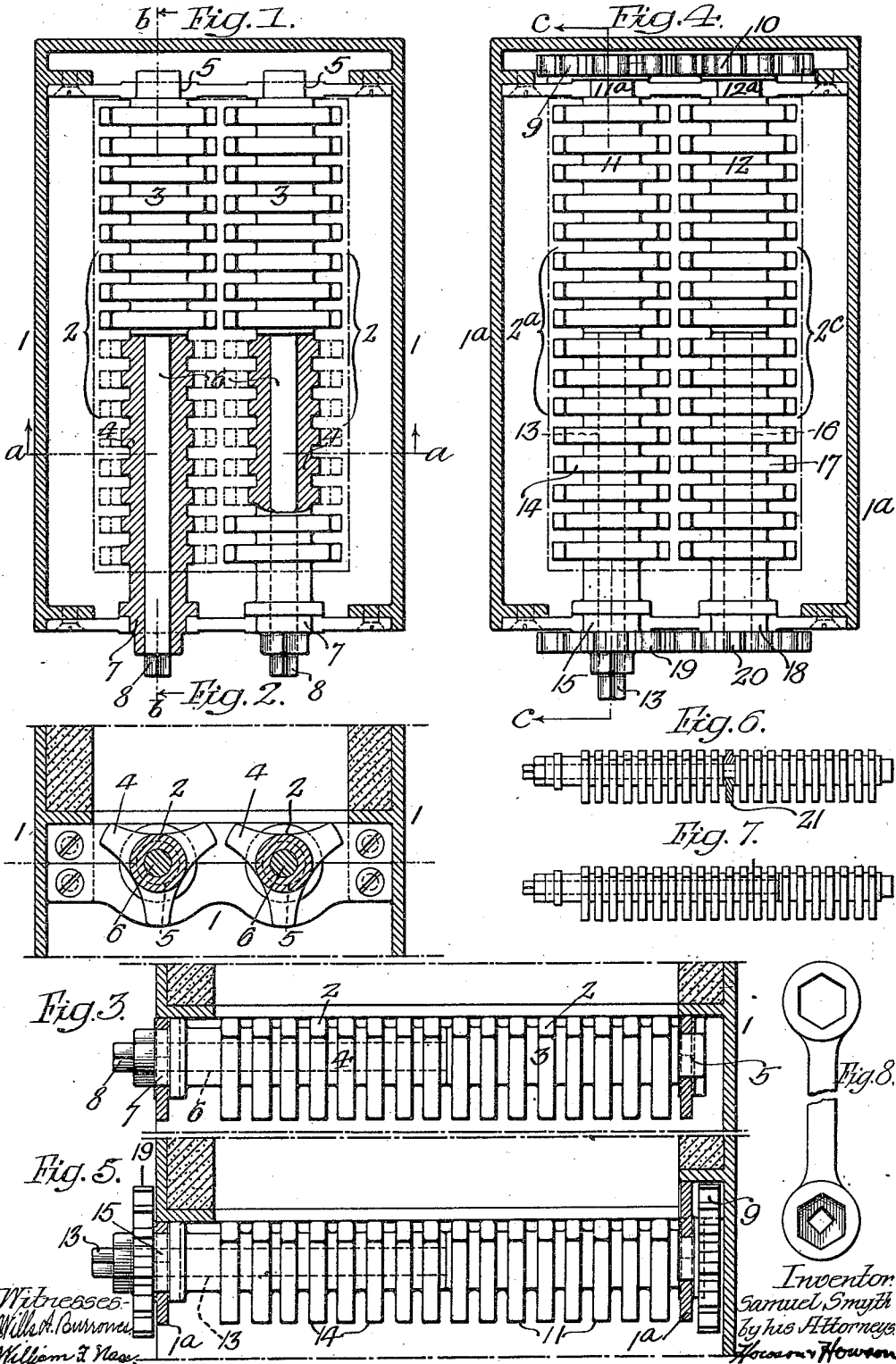


S. SMYTH.
GRATE.

APPLICATION FILED APR. 22, 1912.

1,046,882.

Patented Dec. 10, 1912.



Witnesses:
William A. Burrows
William A. Naeve

Inventor:
Samuel Smyth
by his Attorneys
Howard & Howard

UNITED STATES PATENT OFFICE.

SAMUEL SMYTH, OF PITSTON, PENNSYLVANIA.

GRATE.

1,046,882.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed April 22, 1912. Serial No. 692,304.

To all whom it may concern:

Be it known that I, SAMUEL SMYTH, a citizen of the United States, residing in Pittston, Luzerne county, State of Pennsylvania, have
5 invented certain Improvements in Grates, of which the following is a specification.

My invention relates to fire grates for furnaces, ranges or stoves but more particularly to that class of grates in which the bars
10 comprising the grate may be moved or agitated to discharge the ash.

My invention consists of a grate of the above described type in which each or certain of the grate bars are made in sections,
15 each section being capable of being moved independently of or together with certain of the other sections.

The object of my invention is to permit certain sections of the fire throughout the length of the grate bars to be raked without
20 disturbing the remaining portion of the fire. This object I obtain in the following manner, reference being had to the accompanying drawings in which,

25 Figure 1 is a plan view of a grate constructed in accordance with my invention; Fig. 2 is a transverse sectional elevation taken on the line *a—*a** Fig. 1; Fig. 3 is a longitudinal sectional view taken on the line
30 *b—*b** Fig. 1; the sections of the grate bar being shown entirely in outside view; Fig. 4 is a plan view of the modified form of my invention; Fig. 5 is a longitudinal section
35 taken on the line *c—*c** Fig. 4; Fig. 6 is a sectional view showing means of supporting a grate bar between the two sections; Fig. 7
40 is a view of a grate bar in which the sections are of different lengths; and Fig. 8 is a view of one form of raking lever, which I may employ.

Referring to the drawing 1 is the grate frame forming a pivotal support for the grate bars 2. Each of the said grate bars
45 2 are composed of sections 3 and 4. In Fig. 1 the sections 3 are shown journaled at 5 in the frame 1 and have integral spindles 6 which pass through the length of respective
50 sections 4. Each section 4 has one end 7 also journaled in the frame 1. In order to allow the sections 3 to be turned by a wrench or raking lever, the ends 8 of the
55 spindles 6 are extended beyond the ends 7 of their respective sections 4. The ends 7 of the sections 4 may also be shaped so as to be turned by the wrench or lever above mentioned. Thus it will be seen that with

this construction, if it is desired to rake the portion of the fire which is above the sections 3, the raking lever is applied to the
60 ends 8 of the spindles 6, the said spindles may then be either rotated or reciprocated by the said lever, and as the spindles 6 are integral with the sections 3 the latter will
65 be moved to rake the portion of the fire which is directly above and supported by them.

If it is desired to rake the portion of the fire which is directly above and supported by the sections 4, the raking lever is applied so as to engage the ends 7 of the
70 sections 4, and when moved will also move the sections 4 and thereby rake the portion of the fire which is directly above the latter. If it is desired to simultaneously move the
75 sections 3 and 4 to rake the fire which is supported by the entire length of the bars 2, the lever may be applied so as to engage both the ends 8 and 7.

In the modifications shown in Figs. 4 and 5 I show intermeshing gear wheels 9 and 10
80 which are keyed to respective sections 11 and 12. The section 11 of the grate bar 2^a which has its end 11^a journaled in the frame 1^a is provided with an integral spindle 13 which loosely passes through the section 14
85 of the said bar. The section 14 has its end 15 journaled in the frame 1^a. The section 12 of the grate bar 2^c which has its end 12^a journaled in the frame 1^a, has an integral spindle 16 which passes through the grate
90 bar section 17, the latter having its end 18 journaled in the frame 1^a. Intermeshing wheels 19 and 20 are keyed to the ends 15 and 18 of the sections 14 and 17 respectively. As the spindle 13 extends beyond the end
95 15, it is obvious that if the raking lever be applied to the end of the former and moved that the sections 11 and 12 will be moved in unison, likewise if the raking lever is applied to the end 15 and moved, the sections 14 and
100 17 will move in unison. By allowing the raking lever to engage both the spindle 13 and the end 15 all the sections 11, 12, 14 and 17 can be moved in unison.

The construction shown in Fig. 6 is especially adapted for the use of exceptionally
105 long grate bars and so designed as to prevent any sag at the junction of the sections of the grate bar, the same including an additional support or hanger 21 which is interposed between the sections of the bar, said
110 support extending to the grate frame on

either side or any other supporting structure.

While I have shown in Fig. 7 a bar comprising sections of different lengths, it will be noted that I can make the bar of three or more sections if so desired, and actuate each of the sections separately or two or more in unison.

Prior to my invention in furnaces having mechanical grates, it was customary to keep the fire burning continuously night and day as a matter of convenience and economy. However, during nights and a great portion of the days it would have been sufficient to have kept but one-half of the fire burning, but as this could not be done, a great deal of fuel has been wasted. By making the grate bars in sections, as illustrated, and constructing the sections so that they may be agitated independently or simultaneously and at the will of the operator, the amount of coal which is desired to be ignited at any one time can be controlled.

My invention is especially valuable in cook stoves or ranges as it is exceedingly wasteful to burn the full capacity of the fire box when one-half or other fraction would be sufficient, as for example when one pan of food is being cooked or when the fire is not being used at all such as between the preparations of meals.

While I have shown only two bars geared together in Fig. 4, it will be understood that any number of bars can be geared together in a similar manner and operated from the end 15 of the section 14 and the end of the spindle 13. Also the grate may be made up of all sectional bars as described, or certain of them may be made in one piece. In other words, I can make a grate in which certain of the bars are of the usual construction, and certain of the bars constructed in sections in the manner hereinbefore described.

In Fig. 1, I have shown the sections 4 partly in section in order to more clearly show just how the spindles pass there-through. The sections of the grate bars may be of any shape desired without departing from the spirit of my invention; in Fig. 2 the same are shown as having three faces any one of which may form a support for the fuel.

I claim:—

1. A grate bar comprising a plurality of independently rotatable sections one of said sections having a member passing through another section; and means applicable to the said member and latter section and for ro-

tating the sections independently or simultaneously.

2. A grate bar comprising a plurality of sections in longitudinal alinement, one of said sections having a fixed extension passing through another section and around which the latter may be rotatably moved, the said extension and the latter section having a lever-engaging formation whereby the sections can be moved independently or simultaneously.

3. The combination of a supporting structure and a grate bar journaled therein and comprising a plurality of independently movable sections, one of the said sections having a fixed projection extending beyond the outer surface of the supporting structure, another of said sections having a fixed projection extending through the first mentioned projection and beyond the outer surface of the supporting structure; and a wrench lever having portions applicable to either or both of the said projections whereby the sections can be rotatably moved independently or simultaneously.

4. The combination of a supporting structure; and a grate bar comprising a plurality of independently movable sections, one section having a fixed projection extending to the outside of the supporting structure, another section having a fixed projection extending through the first mentioned projection and to the outside of the supporting structure, said sections being journaled in the supporting structure, said projections forming means whereby the sections may be moved independently or simultaneously.

5. The combination of a supporting structure; a series of grate bars journaled therein, each of said bars comprising a plurality of independently movable sections, one section in each bar having a fixed projection extending to the outer surface of the supporting structure, another section in each bar having a fixed projection extending through the first mentioned projections of respective sections and to the said outer surface of the supporting structure; and means on the ends of the projections whereby certain of the sections can be moved independently of or simultaneously with other sections.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

SAMUEL SMYTH.

Witnesses:

A. T. WALSH,
H. C. SMYTH.