

(No Model.)

A. C. FLETCHER.
GRATE.

No. 432,394.

Patented July 15, 1890.

Fig. 1.

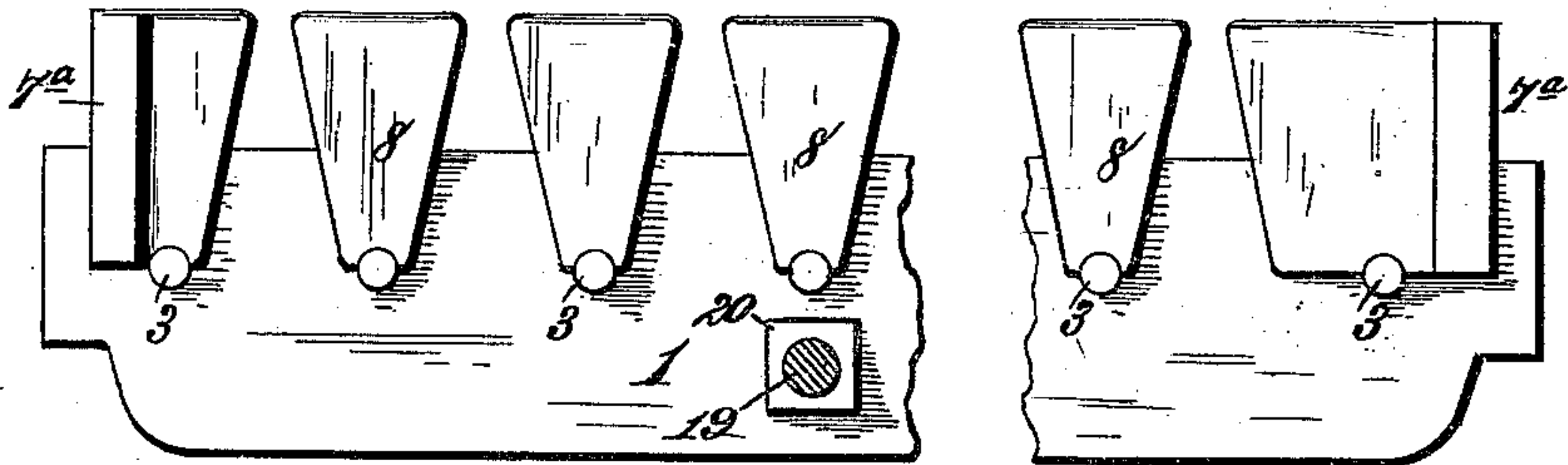


Fig. 2.

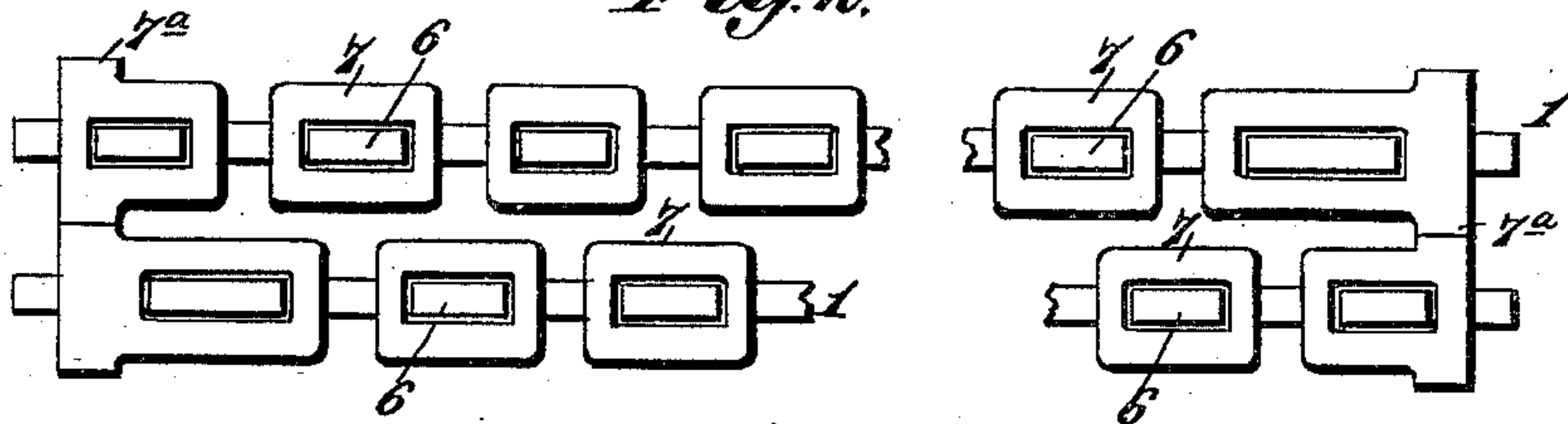


Fig. 3.

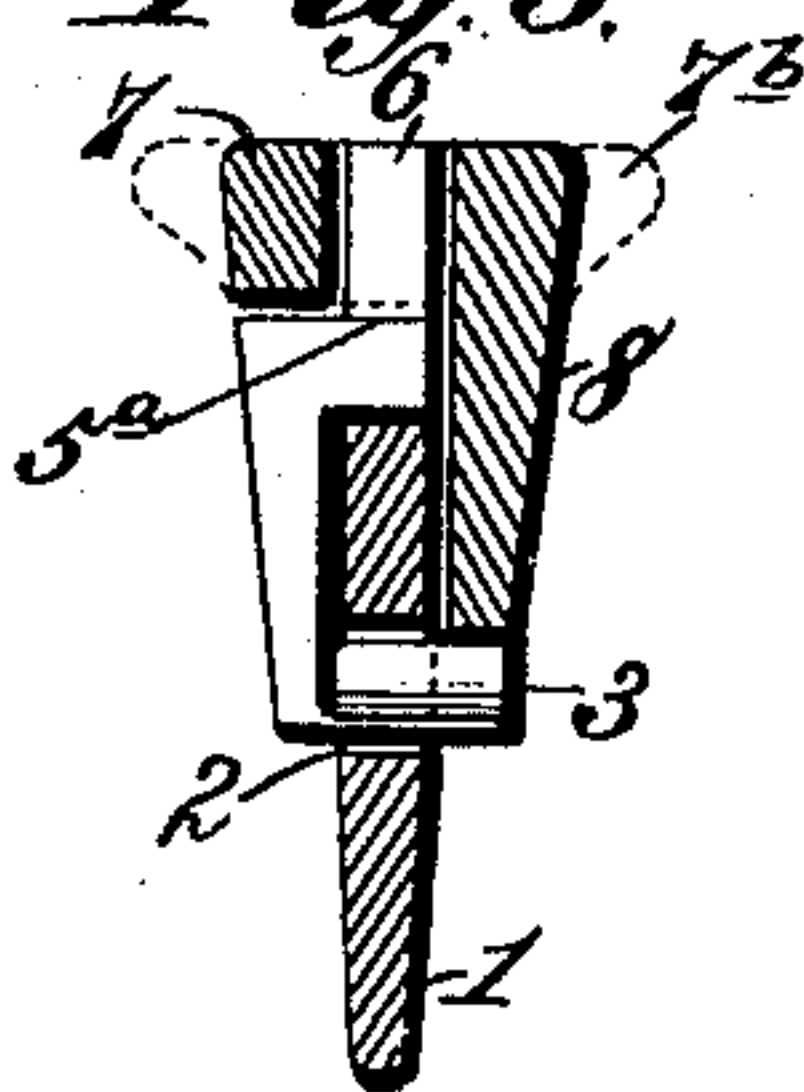


Fig. 4.

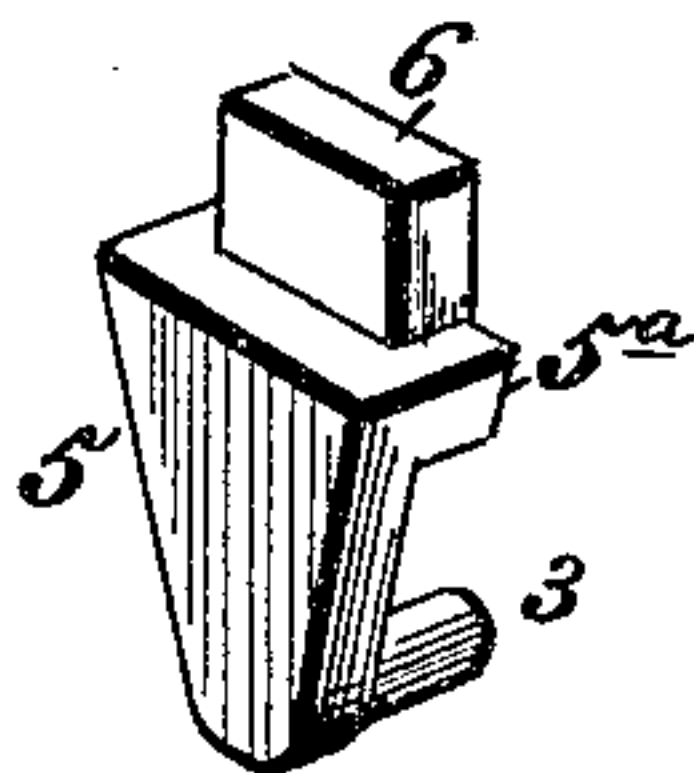


Fig. 5.

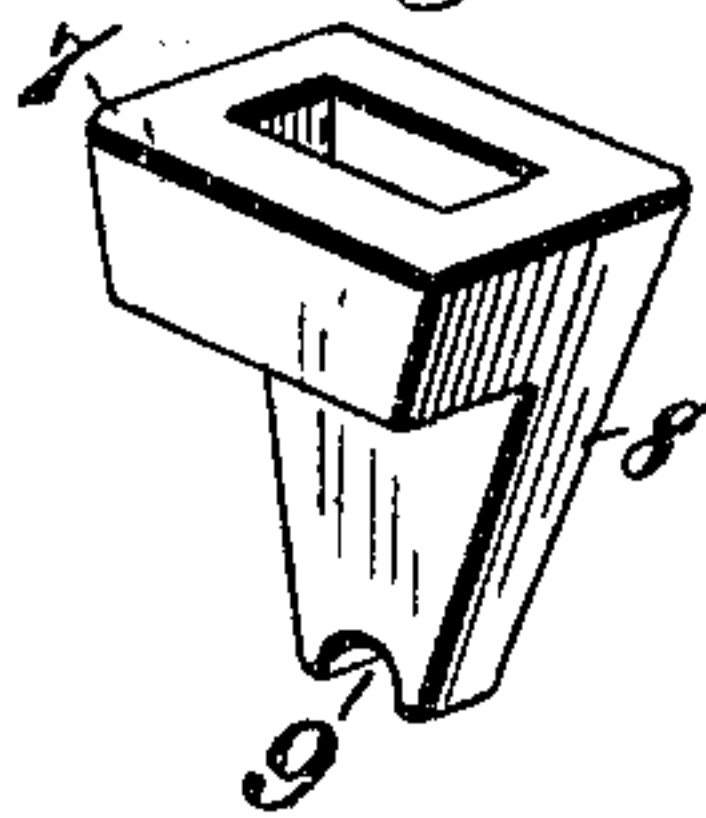


Fig. 6.

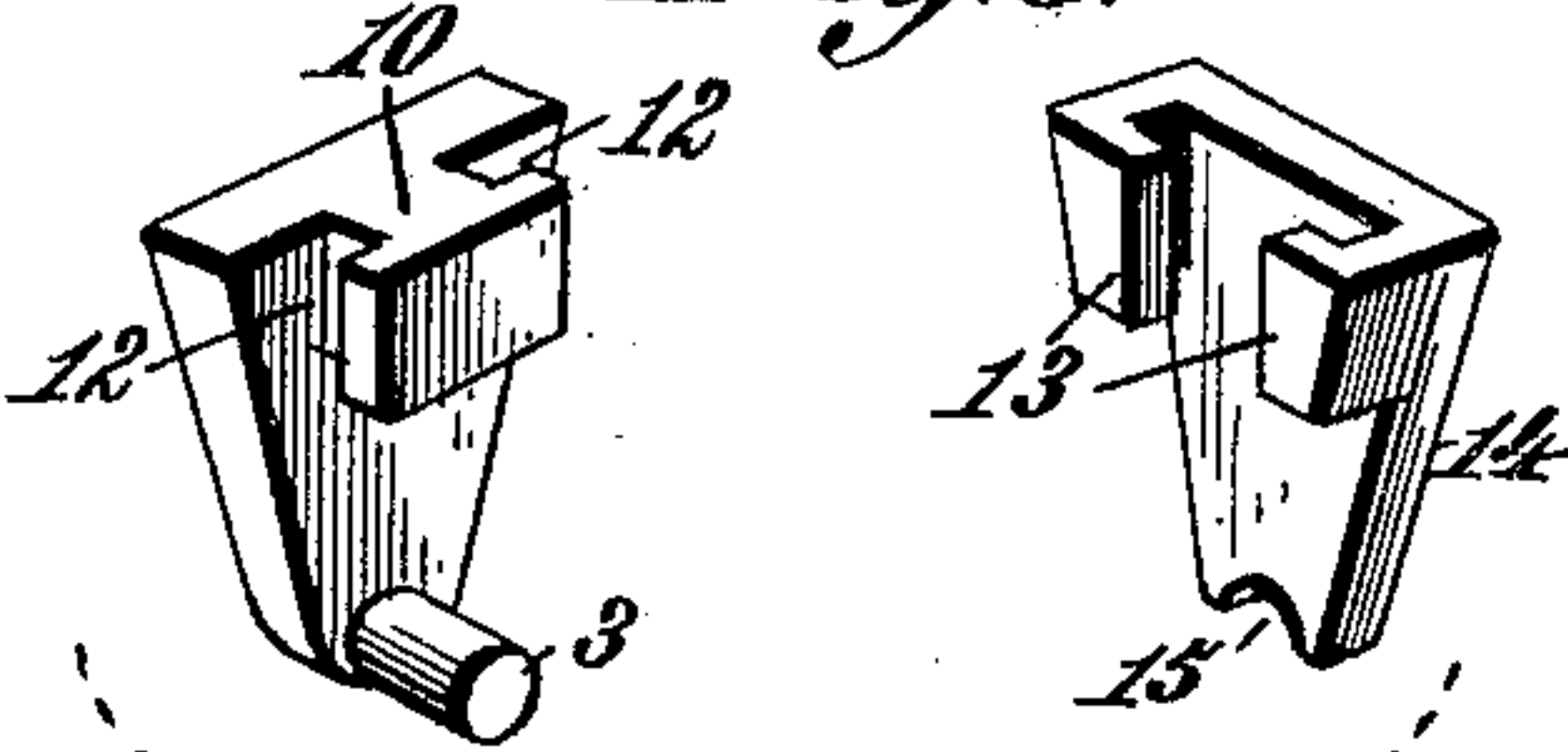
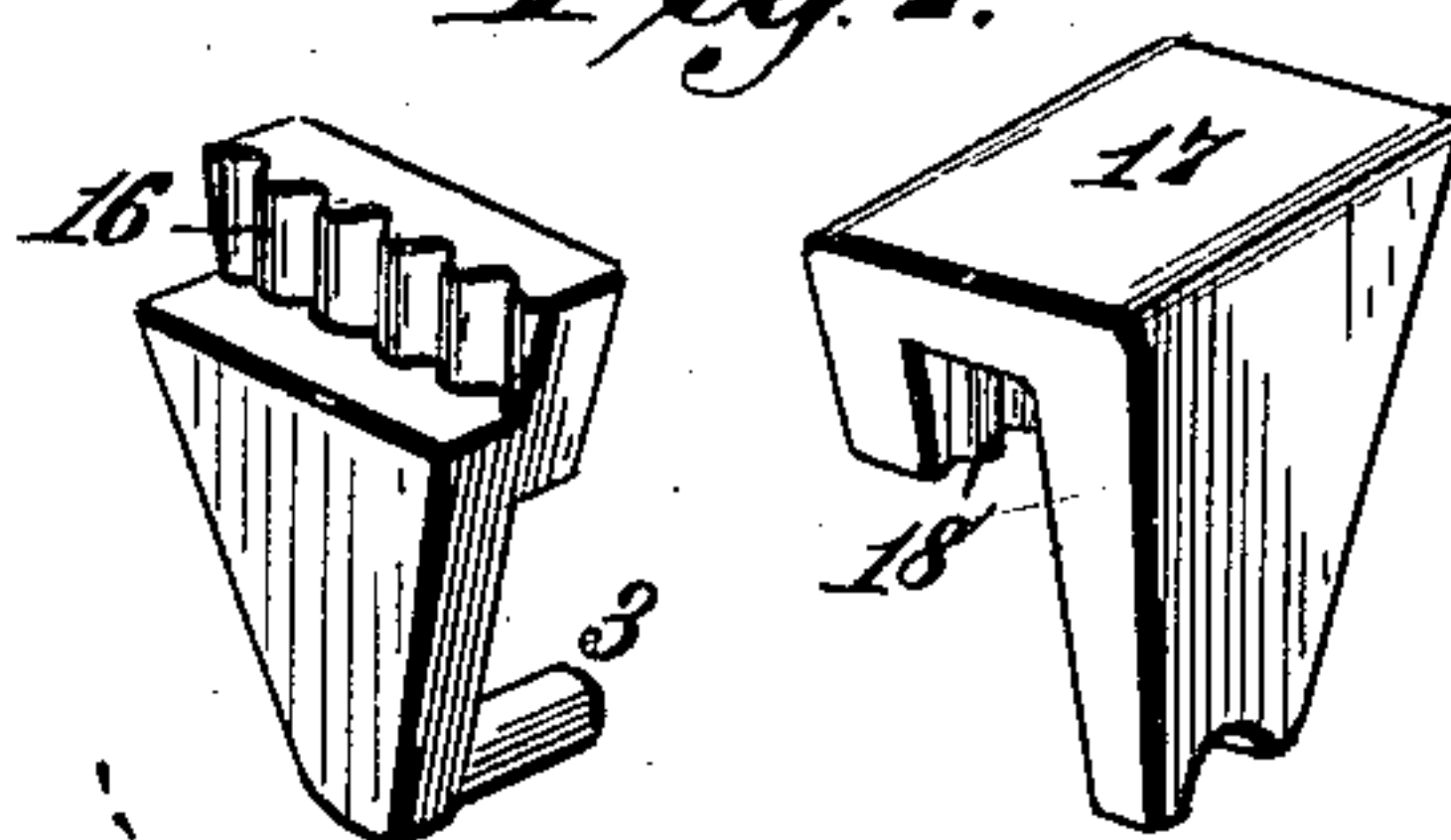


Fig. 7.



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UNITED STATES PATENT OFFICE.

ADDISON C. FLETCHER, OF NEW YORK, N. Y.

GRATE.

SPECIFICATION forming part of Letters Patent No. 432,394, dated July 15, 1890.

Application filed April 2, 1890. Serial No. 346,287. (No model.)

To all whom it may concern:

Be it known that I, ADDISON C. FLETCHER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Grates, of which the following is a specification.

My invention relates to certain improvements in furnace grate-bars, whereby I provide a simple, novel, and economical construction by which the user shall be enabled to replace any one or more of said bars, should the same become injured or burned out, by new bars, without material loss of time and without the necessity of sacrificing any of those portions of the grate which are still capable of service.

It is my purpose, also, to provide a grate for furnaces of all sorts, in which a removable or detachable fuel-bearing point composed of two connected sections is combined with the grate-bar in such manner as to not only provide a broad base of support for the coal furnished to said furnace, but shall also afford an increased draft of air, a more complete combustion, a more rapid generation of steam or heat, and a more perfect control of the temperature produced.

It is my purpose, also, to provide a grate-bar having a simple and economical construction, wherein the sectional fuel-bearing points shall be capable at any time of ready attachment to and detachment from said bars, and whereby said points shall be positively interlocked with the grate-bars and rendered readily separable therefrom in the event of injury or burning, to enable the user to substitute other points in their place, any one of the latter being capable of removal, and its place being readily filled by a point of duplicate formation, which may, if desired, be provided with extensions having an interlocking engagement with the blocks which engage the grate-bars, and having such construction of the two interlocking portions of said blocks that they shall be prevented from shifting one upon the other, and the cap or upper portion of each point shall be integral throughout the surface upon which the coal rests and burns.

It is a further purpose of my invention to

provide simple means whereby the several grate-bars may be separated one from the other by equal intervals and to the several purposes specified the invention consists in the several novel features of construction and new combinations of parts, hereinafter fully set forth, and then definitely pointed out in the claims following this specification.

To enable others skilled in the art to make, construct, and use my said invention, I will proceed to describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of a grate-bar having a series of fuel-supporting points mounted thereon. Fig. 2 is a broken plan-view showing the same, and showing the lateral extensions of the fuel-surfaces of the points. Fig. 3 is a transverse section of a single grate-bar, showing the connection of the fuel-burning and supporting points and the manner of mounting the same upon the grate-bars. Fig. 4 is a detail perspective showing the form of point seen in Fig. 3. Fig. 5 is a detail perspective showing the locking-block. Fig. 6 is a figure showing in two opposite perspectives modified forms of the parts illustrated in Figs. 4 and 5. Fig. 7 is a similar detail perspective view showing a further modification of the same parts.

In the said drawings, the reference-numeral 1 designates the several grate-bars, which are all substantially parallel one with another. These bars are of any suitable thickness and of such width as to accommodate the construction hereinafter to be described.

In each grate-bar I form a series of openings 2, drilled through the same, preferably upon a line slightly above the central longitudinal line of the bar, so as to enable said bars to receive studs 3, the openings in the bars being of such size as to enable them to receive the said studs 3 and allow the latter to pass entirely through and project from or beyond the opposite face of the bars, as shown in Fig. 3. These studs 3 are formed upon the lower portions of each one of the sectional members composing the interchangeable series of fuel-supporting points. The body-supporting sectional portion 5 is of substantially triangular form, though it may be of any other

preferred shape, and projecting from its face is a ledge or plate 5^a, (shown in Fig. 4,) which lies substantially parallel with the stud 3 and rests upon the top of the grate-bar 1. Rising from the top of said plate or ledge is a lug 6, (shown in Figs. 3 and 4,) and with this lug engages a loop 7, (shown in Fig. 5,) said loop being formed upon a substantially triangular section or plate 8, having at its lower end a half-round notch 9, which seats upon the end of the stud 3, which projects through the bar 2 of the grate. I may substitute for the lug 6, which rises vertically from the top of the section 5, a horizontally-projecting lug 10, (shown in Fig. 6,) and having two dovetailed or mortising ends 12, which engage with counterpointing portions 13 upon a section or plate 14, (shown in Fig. 6,) and having, like the plate shown in Fig. 5, a half-round recess 15, similar to the recess 15 shown in Figs. 1 and 4.) I may, however, substitute for the form referred to that shown in Fig. 7, wherein the section 5 is provided with an offset having corrugations or teeth 16, as shown in Fig. 7. Over this section 5 I hook the hood 17, having a depending flange provided with corrugations or teeth 18, and provided, like the parts already described, with the half-round opening or seat 15, which seats upon the end of the stud 3. In all these several constructions it will be readily understood that the grate-bars by which the fuel-supporting points are supported may be formed of either cast or wrought iron, as choice or circumstances may require, but the fuel-supporting points are preferably formed of cast-iron.

While I may effect a separation of the grate-bar 1 by forming upon the points 7 the lateral extension 7^a, as shown in Figs. 2 and 3, I may also pass one or more bolts 19 through the whole series of grate-bars, as shown in Fig. 1, and upon these bolts turn a series of nuts 20, two or more of said nuts being interposed between adjacent bars. I may also employ both these means of spacing or separating the grate-bars, either separately or in conjunction one with the other. In order that the points may break joints, they may be formed of different lengths at the terminals of adjacent bars, as shown in Fig. 2, or such other and familiar construction may be employed as will effect the same result.

It will be understood that the several parts described are all interchangeable, whereby in the event of any one or more becoming burned out or otherwise injured they may be displaced and new parts substituted with perfect ease and in the shortest possible time. Thus the wear or destruction of the points

does not necessitate the removal of the grate-bars, and even in the event of one member of the twofold point becoming useless for any reason this single part may be replaced without involving the removal and substitution of any other portion of the grate, thus adding very greatly to the economy of the device in use. I may broaden the fuel-supporting surfaces of the points by forming lateral extensions 7^b upon each of the parts, as shown in dotted lines in Fig. 3.

What I claim as my invention is—

1. A grate-bar provided with removable fuel-supporting points, each composed of two detachably-connected sections, substantially as described.

2. A grate-bar provided with fuel-supporting points removably attached to the grate-bar below its top edge and each composed of two interlocking sections embracing said bar, substantially as described.

3. The combination, with a grate-bar, of fuel-supporting points, each composed of two sections, one engaging the bar and the other engaging and supported by the bar-engaging section, substantially as described.

4. A grate-bar having fuel-supporting points, each composed of two sections, one having a pin passing through the bar and the other resting on the pin and engaged with the pin-carrying section, substantially as described.

5. A grate-bar having fuel-supporting points, each composed of two sections, one resting on the upper edge of the bar and having a pin extending through the latter and the other resting on the pin and engaged with the pin-carrying section, substantially as described.

6. A grate-bar having detachable fuel-supporting points, each of which is composed of two sections abutting each other above the grate-bar, substantially as described.

7. The combination, with a grate-bar, of fuel-supporting points, each composed of two sections, one carried by the bar and having a lug and the other having a loop engaging the lug, substantially as described.

8. The combination, with a grate-bar, of fuel-supporting points, each composed of two sections, one having a lug and a pin and the other resting on the pin and having a loop engaging the lug, substantially as described.

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

ADDISON C. FLETCHER.

Witnesses:

JAMES A. RUTHERFORD,
J. GRANVILLE MEYERS.