

(No Model.)

2 Sheets—Sheet 1.

J. WALP.
GRATE.

No. 560,827.

Patented May 26, 1896.

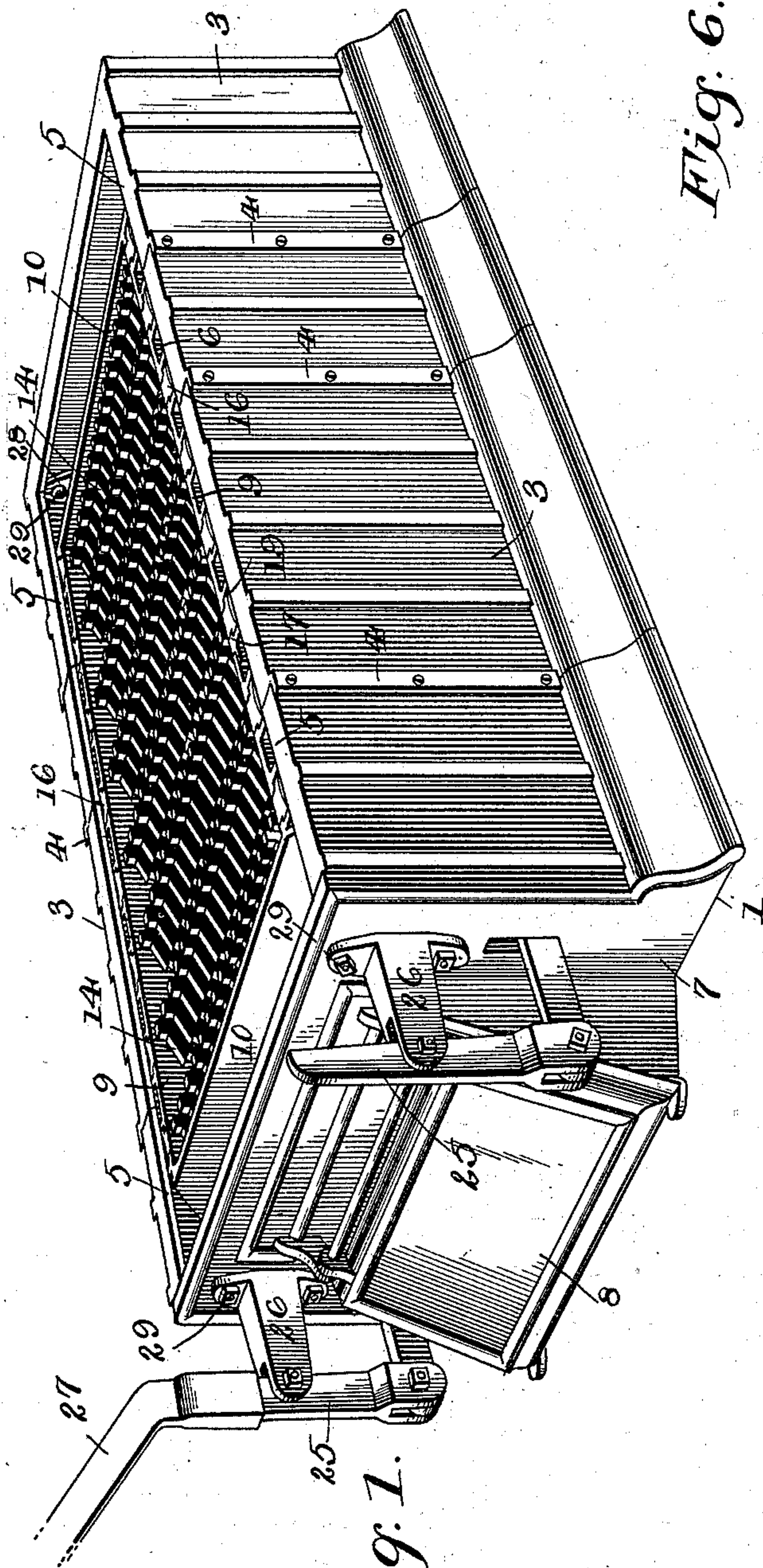


Fig. 1.

Witnesses
Chas. A. Ford.
V. B. Hillyard.

By his Attorneys,

C. A. Snow & Co.

Fig. 6.

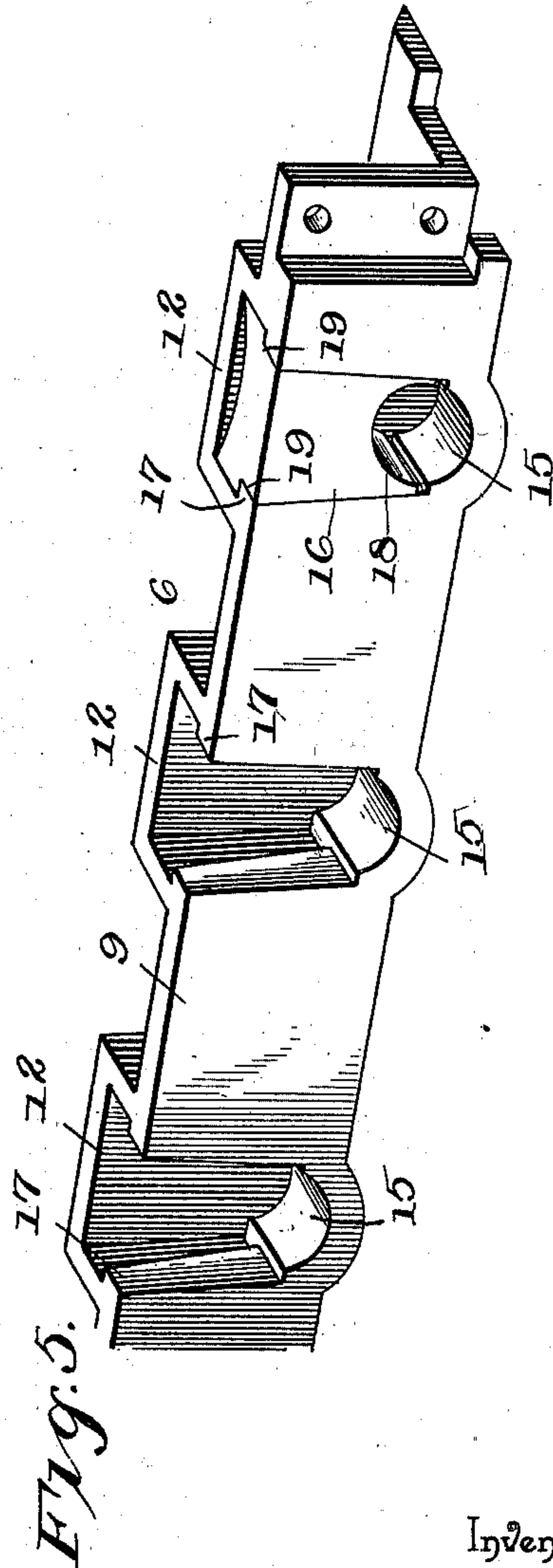
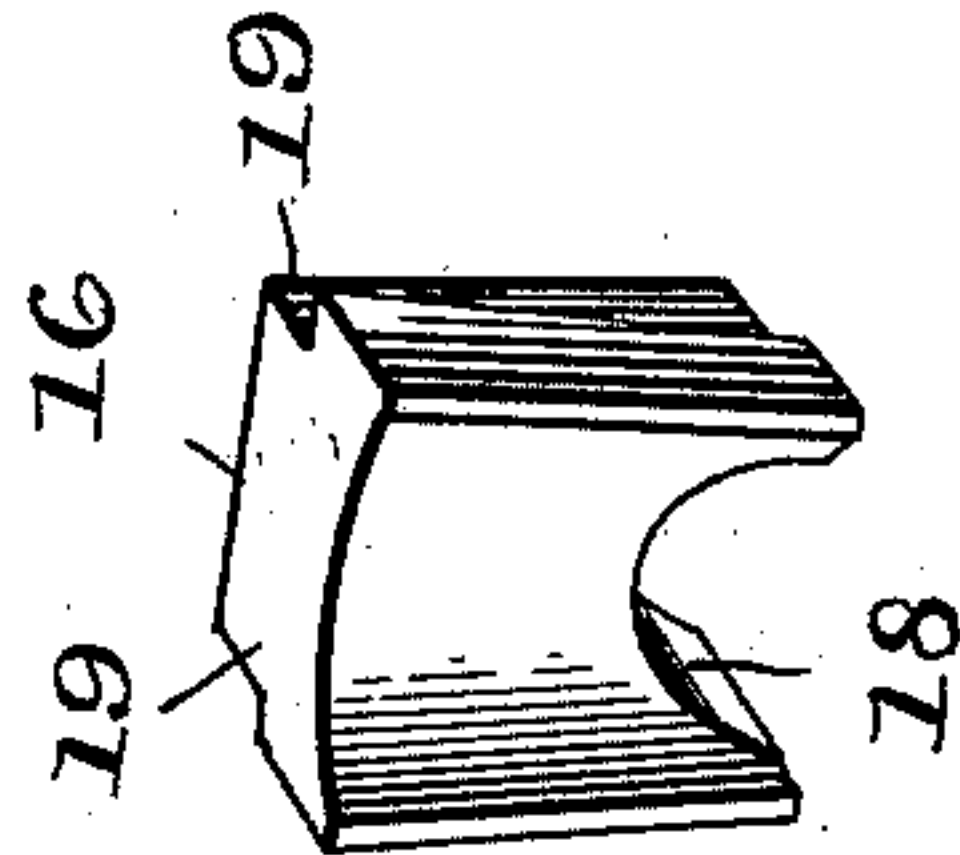


Fig. 5.

Inventor
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(No Model.)

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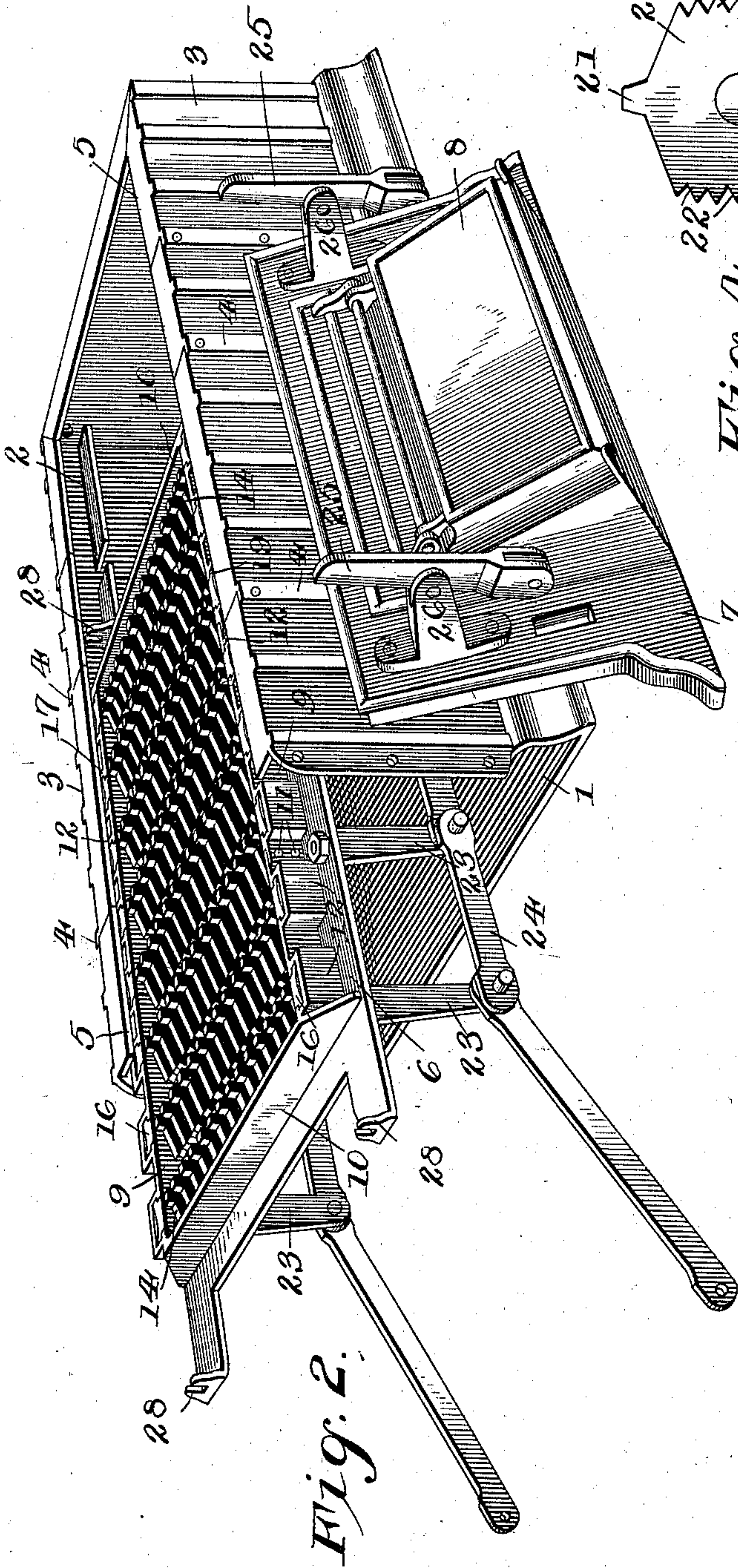


Fig. 2.

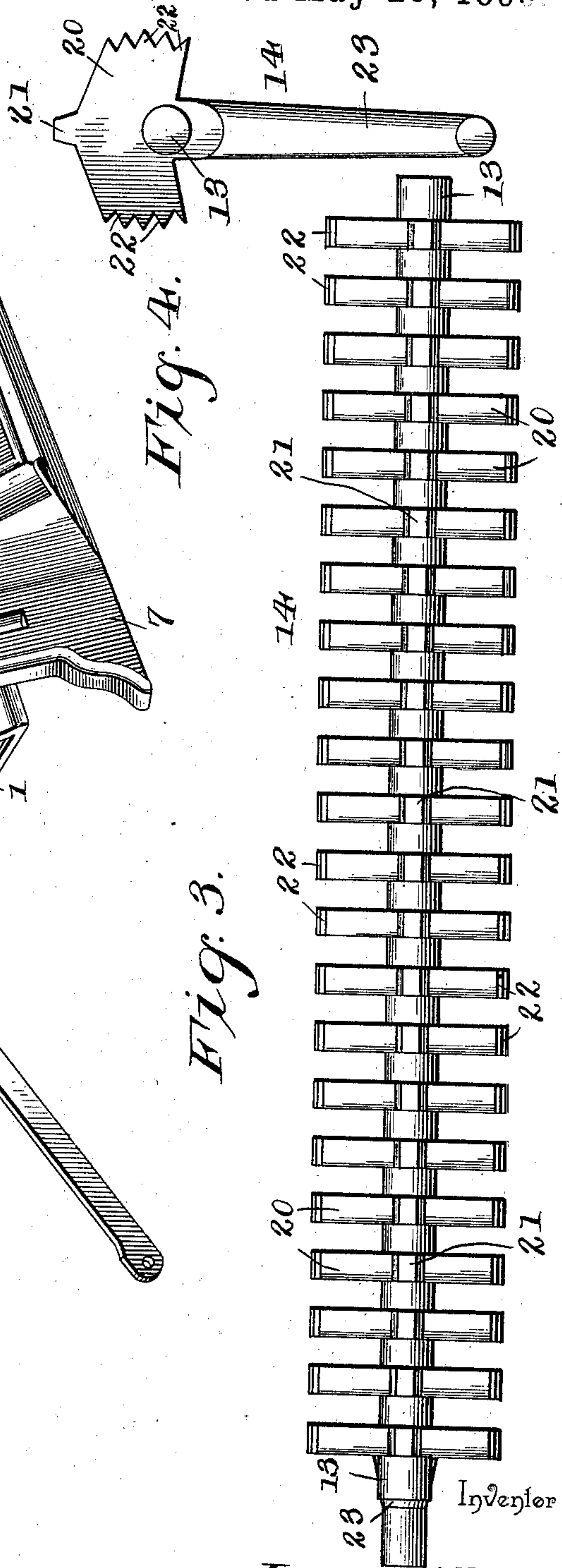
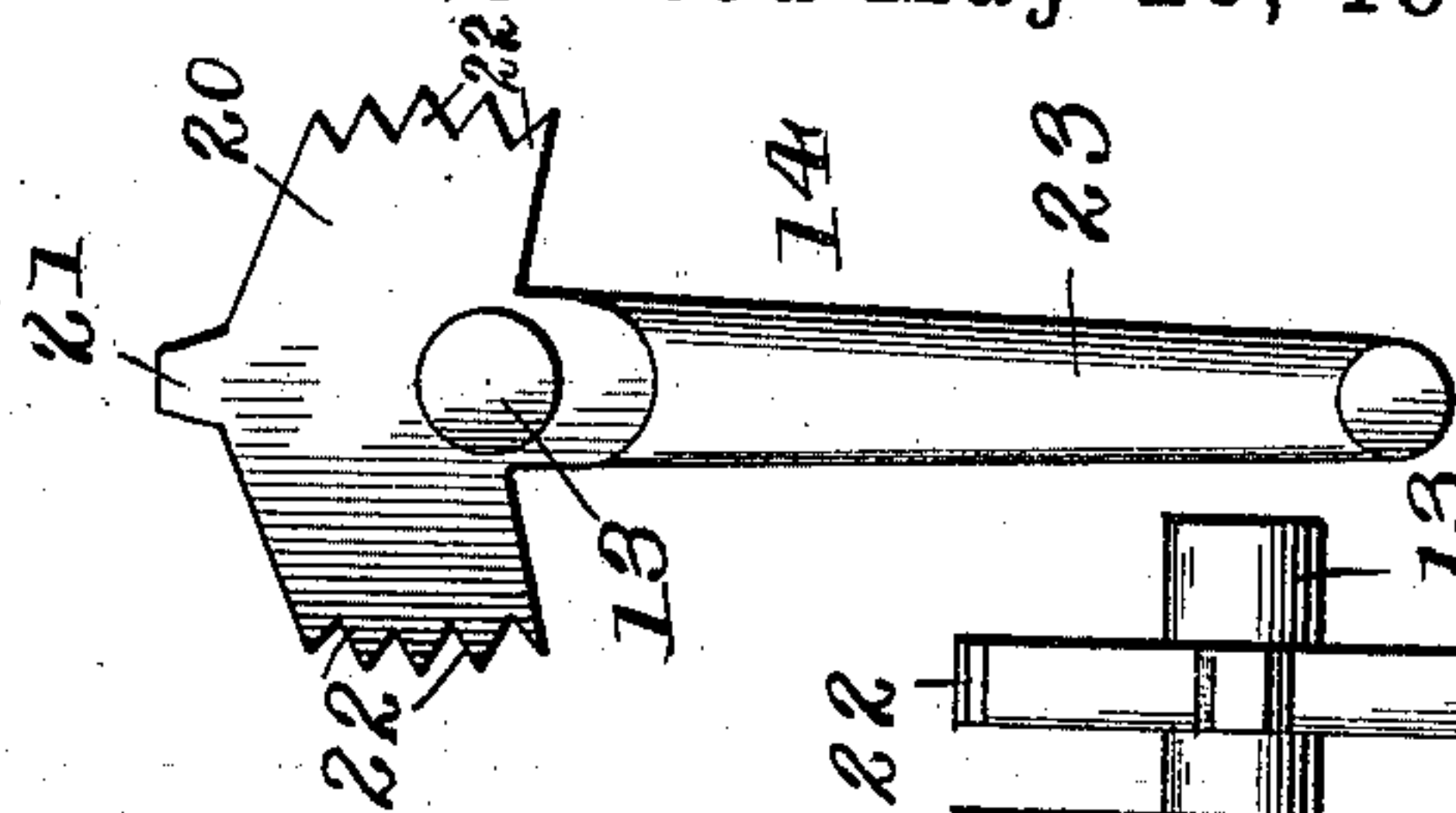


Fig. 3.

Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES WALP, OF EASTON, PENNSYLVANIA.

GRATE.

SPECIFICATION forming part of Letters Patent No. 560,827, dated May 26, 1896.

Application filed July 29, 1895. Serial No. 557,524. (No model.)

To all whom it may concern:

Be it known that I, JAMES WALP, a citizen of the United States, residing at Easton, in the county of Northampton and State of Pennsylvania, have invented a new and useful Grate, of which the following is a specification.

This invention relates to grates and aims to facilitate access to the grate-bars for purposes of repair, to provide for the lengthening and shortening of the grate as required without wasting material, and to secure the grate-bars in place against vertical movement.

Other objects are contemplated and will be disclosed in the following description and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a grate of this invention. Fig. 2 is a view similar to Fig. 1, showing the grate partially drawn out and the front of the base removed and set there-against. Fig. 3 is a top plan view of a grate-bar. Fig. 4 is an end view of the same. Fig. 5 is a detail view of a portion of the grate-bed. Fig. 6 is a detail view of one of the blocks provided for holding the journals of the grate-bars in their bearings.

The base 1 is provided near its upper end with inwardly-extending ledges 2, which form supports for the grate-bed, and in order to adapt the base for fire-boxes of different lengths it is composed of a series of sections 3, which are adapted to be secured together by bolts or machine-screws, the edge portion of one section having a flange 4 to overlap the contiguous or adjacent edge portion of the next section, so as to form a closed joint, said flange being apertured at proper intervals in its length to receive the fastenings by means of which the several sections are held together. The sections 3 will be provided in different lengths, so that one or more sections may be placed together to provide a base of the required length. A flange 5 extends inwardly from the top edge of the base and acts jointly with the ledge 2 to retain the bed 6 in proper position. The front 7 is removably attached to the main portion of the base and is supplied with a door 8, which admits of access being had to the ash-pit. The bed com-

prises similar side bars 9 and connecting end bars 10, which are preferably L-shaped in cross-section. The side bars 9 are formed of sections, which are secured together by bolts 11, which pass through overlapping portions at the adjacent ends of the sections. By providing the side bars in sections the bed can be lengthened or shortened to suit the size of the fire-box to which the grate is to be fitted. The sections of the bed may be of uniform length; but it is preferred to make them of varying lengths, so that a bed of the required length may be readily obtained. The horizontal portions of the side bars secure a purchase upon the inwardly-extending ledges 2, and the vertical portions have pockets 12 at regular intervals in their length to receive the journals 13 of the grate-bars 14. Semicircular or curved depressions 15 are formed in the bottoms or lower walls of the pockets and provide bearings for the said journals 13. The end walls of the pockets diverge or flare slightly from the lower to the upper ends of the pockets, so as to facilitate the entrance into the pockets of the blocks 16, which rest upon the journals 13 and prevent vertical displacement thereof. Vertical flanges 17 are disposed at the ends of the pockets 12 and at the open sides thereof, and these flanges gradually thicken from the upper to their lower ends.

The blocks 16 have a semicircular notch 18 in their lower ends to receive the upper portion of the journals 13, and they flare slightly to correspond with the inclination of the end walls of the pockets, and the front corners thereof are rabbeted, as shown at 19, to receive the vertical flanges 17, said rabbets 19 widening in their length to correspond to the gradual increase in the width of the said flanges 17. These blocks are retained in the pockets by the flanges 17 entering the rabbets 19, and the inner sides of the blocks come flush with the inner sides of the bars 9, thereby preventing any projecting portions which would impede the free movements of the grate-bars 14. The upper ends of the blocks come about flush with the top edge of the bars 9, so as to be engaged by the inner flange 5, by means of which they are held in place within the pockets. The rear sides of the

blocks are concaved between their edges for the sake of lightness, and also to prevent overheating of the outer or rear wall of the pockets.

5 The grate-bars 14 are formed at regular intervals in their length with wings 20, and these wings project laterally from the sides of the bars an equal distance and from the top thereof. These wings 20 have vertical extensions 21 directly above the bars and the upper edges slope in opposite directions from the vertical extensions, and the outer edges are formed with a series of teeth 22, which in the rocking movements of the grate-bars 15 crush and break up clinkers and prevent choking of the grate. The vertical extensions 21 are in alinement and are designed for a purpose similar to the teeth 22, and also prevent a too-rapid burning out of the grate-bars by supporting the live coals at a distance from the grate-bars. An arm 23 is pendent from one end of each of the grate-bars and terminates in a lateral extension which is fitted into an opening in a coupling-link or connecting-bar 24, by means of which the grate-bars are connected in series, so that they may be rocked or oscillated on their journals at one and the same time. The end links extend through openings in the front 7 and are 30 pivotally connected with vertically-disposed levers 25, which are fulcrumed to brackets 26, attached to the said front. A shaker 27 is adapted to be fitted to the upper ends of the levers 25 when it is required to operate the 35 grate-bars.

The extremities of the side bars 9 extend at right angles to the length of the said bars, as shown at 28, and are notched so as to receive fastening-bolts 29, by means of which the bed 40 is held in place after the parts are properly assembled.

In arranging the parts the grate-bars are placed in position with their journals resting in the recesses or bearings 15 in the pockets, 45 and the blocks 16 are placed in position over the said journals to hold them in place, the said blocks being retained in the pockets by the overhanging portion or top flange 5. The bed is adapted to slide upon the ledges 50 or rests 2 and move in the space formed between the said ledges and the top flanges 5. Thus it will be seen that in the event of a grate-bar warping, breaking, or burning out it can be readily removed and replaced by a 55 new one without much annoyance or difficulty. It will be understood that the grate can be applied to any style of furnace or heater and that it is adapted for any style of fire-pot, and in adapting the same to a fire-box of special construction all that is necessary is to provide the same with inwardly-extending ledges 2 to support the bed and with a portion corresponding to the inner top flange 5, so as to project over the top edge of 60 the side bars so as to retain the blocks 16 within their pockets. This adaptation will be obvious to any one skilled in the art and

need not be referred to in detail, as the disposition of the parts will vary with the different makes of furnaces and heaters. 70

From what has been said it will be understood that the invention is susceptible of general application and that various changes in the form, proportion, and the minor details of construction may be resorted to without 75 departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new is—

1. The combination with a base having a 80 rest and an overhanging portion extending parallel with the rest, of a bed adapted to slide upon the rest and beneath the said overhanging portion, and having pockets at intervals in its length, said pockets opening upward through the top edge of the said bed, grate-bars having their end portions fitted in the pockets, and blocks supported upon the end portions of the grate-bars and held in the pockets from vertical displacement by the 90 said overhanging portion, substantially as and for the purpose set forth.

2. In a grate, the combination of a base formed of a series of sections which are constructed to be secured together to admit of 95 its lengthening and shortening, each section having an overhanging portion and a rest extending in parallel relation and alining with corresponding parts of the other section, a bed adapted to slide upon the rests and beneath 100 the overhanging portions of the sections of the base and composed of a number of sections which are adapted to be secured together, the side bars of the said bed having pockets at regular intervals in their length, 105 and grate-bars having their end portions fitted in the said pockets and held therein from vertical displacement by the said overhanging portions of the base sections, substantially as specified. 110

3. In a grate, the combination of a bed comprising a bar having pockets at intervals in its length open on their inner and top sides and having vertical flanges at their ends adjacent to the open sides, said flanges flaring 115 at their upper ends and having their rear edges inclining downwardly and outwardly, grate-bars having their ends fitted in the said pockets and touching the outer closed sides thereof, and blocks inserted within the pockets from their top sides and having their 120 edges rabbeted to receive the said flanges to have their outer sides come flush with the inner side of the said bed-bar, substantially as set forth. 125

4. In combination, a bed having pockets formed at intervals in the length of a side bar, said pockets being closed at their outer side and opening upwardly and laterally through the said bar, and having their end walls flaring 130 upwardly, and provided with inwardly-extending vertical flanges at the open sides of the pockets gradually widening from the top to the lower ends, grate-bars having their

ends fitted in the said pockets, and tapering blocks concaved in their rear or outer side and having their front corners rabbeted to receive the aforesaid vertical flanges, the top and inner sides of the blocks being substantially flush with the upper edge and inner side of the said bar, substantially as described for the purpose set forth.

5. In a grate, the combination of a base having inwardly-extending ledges and flanges, a bed adapted to slide upon the ledges and beneath the flanges and having end portions extending at right angles to the plane of the bed and notched to receive fastenings, the side bars of the bed having pockets which open

upward through their top edges, grate-bars having their end journals fitted in the said pockets, blocks placed in the pockets and held therein from vertical displacement by the said top flanges, and actuating mechanism for oscillating or rocking the grate-bars upon their journals, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES WALP.

Witnesses:

W. H. NEIMEYER,
JOHN S. NOBLE.