

(No Model.)

2 Sheets—Sheet 1.

H. P. TALLMADGE.

GRATE.

No. 379,740.

Patented Mar. 20, 1888.

FIG. I.

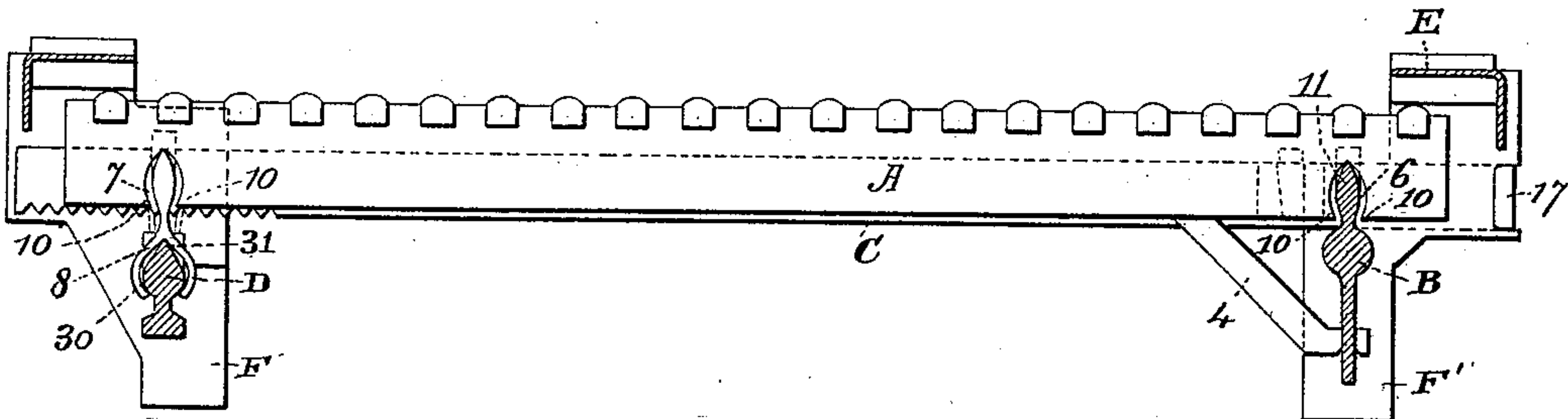


FIG. II.

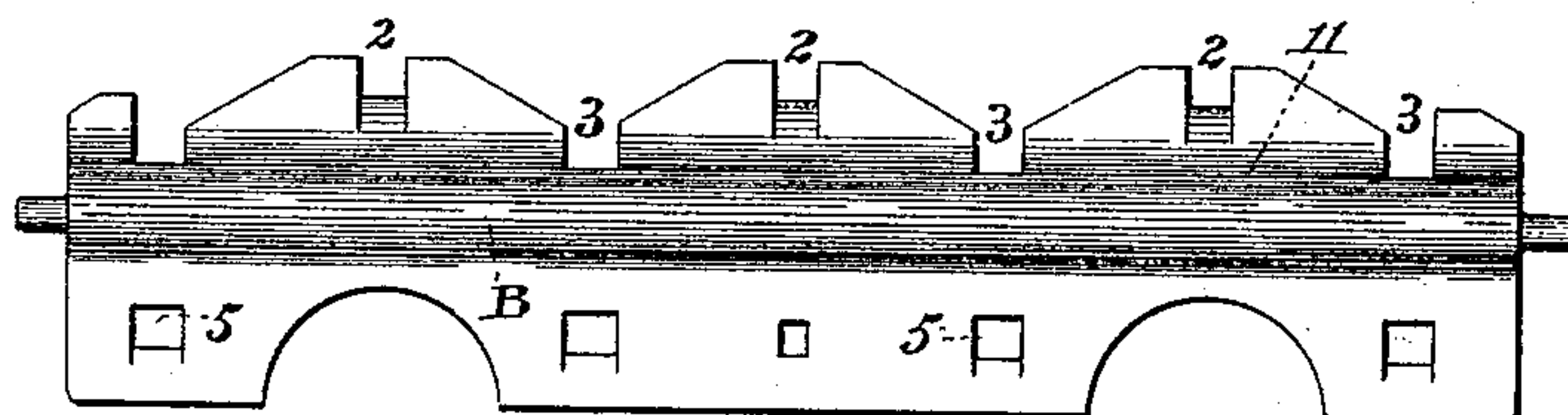


FIG. III.

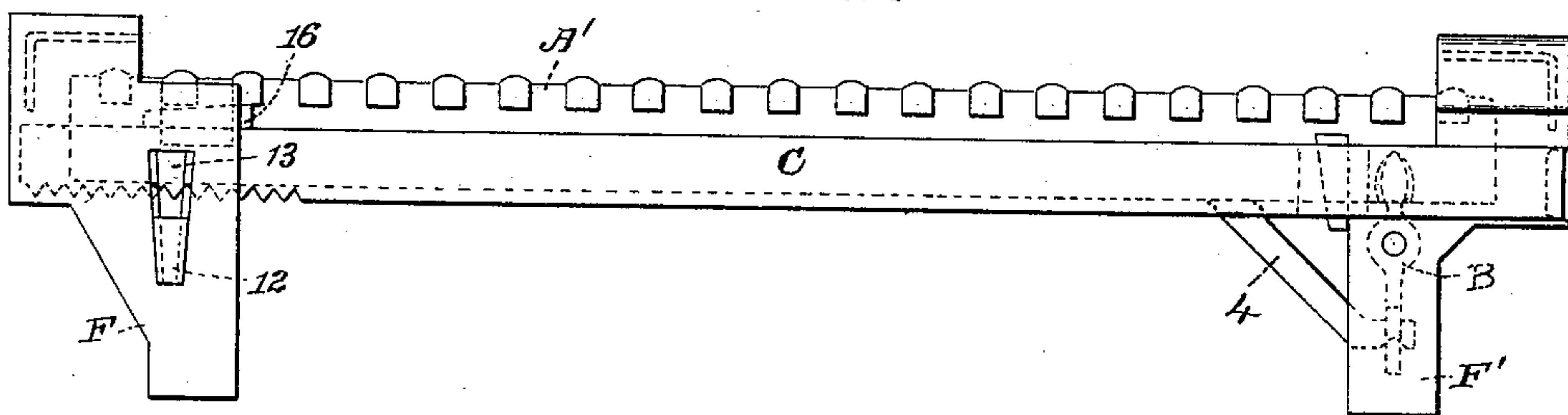
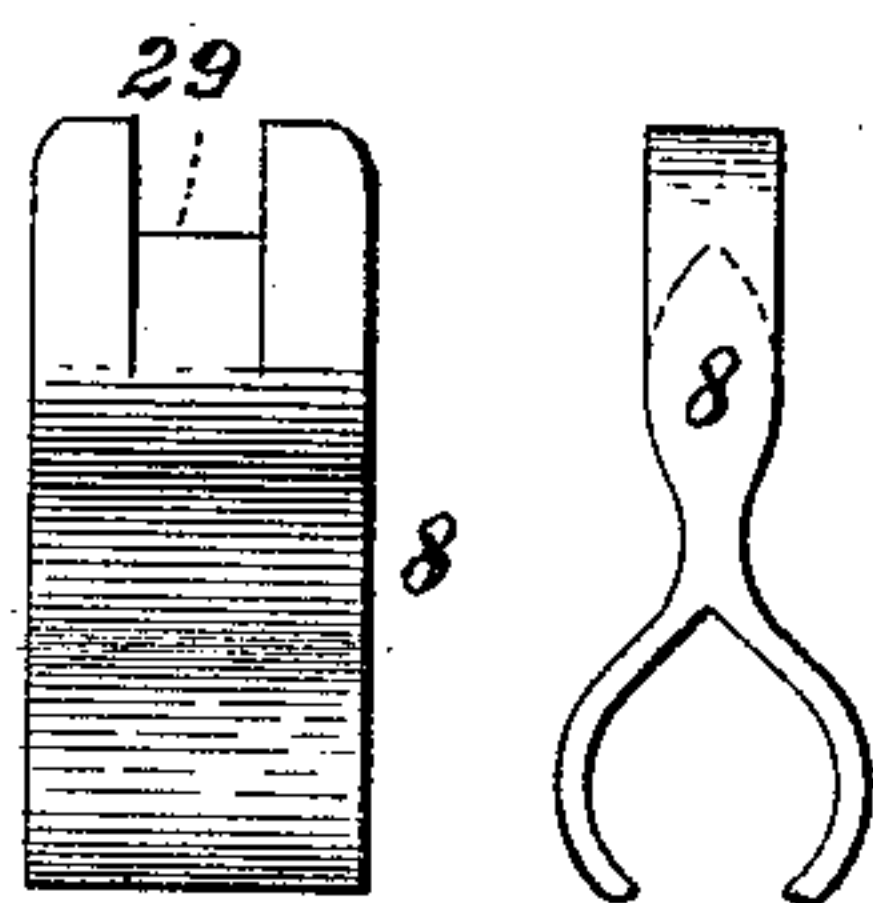


FIG. IV.



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Geo. T. Smallwood.
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Inventor:
Hiram P. Tallmadge.
by *A. J. Block*
his attorney

(No Model.)

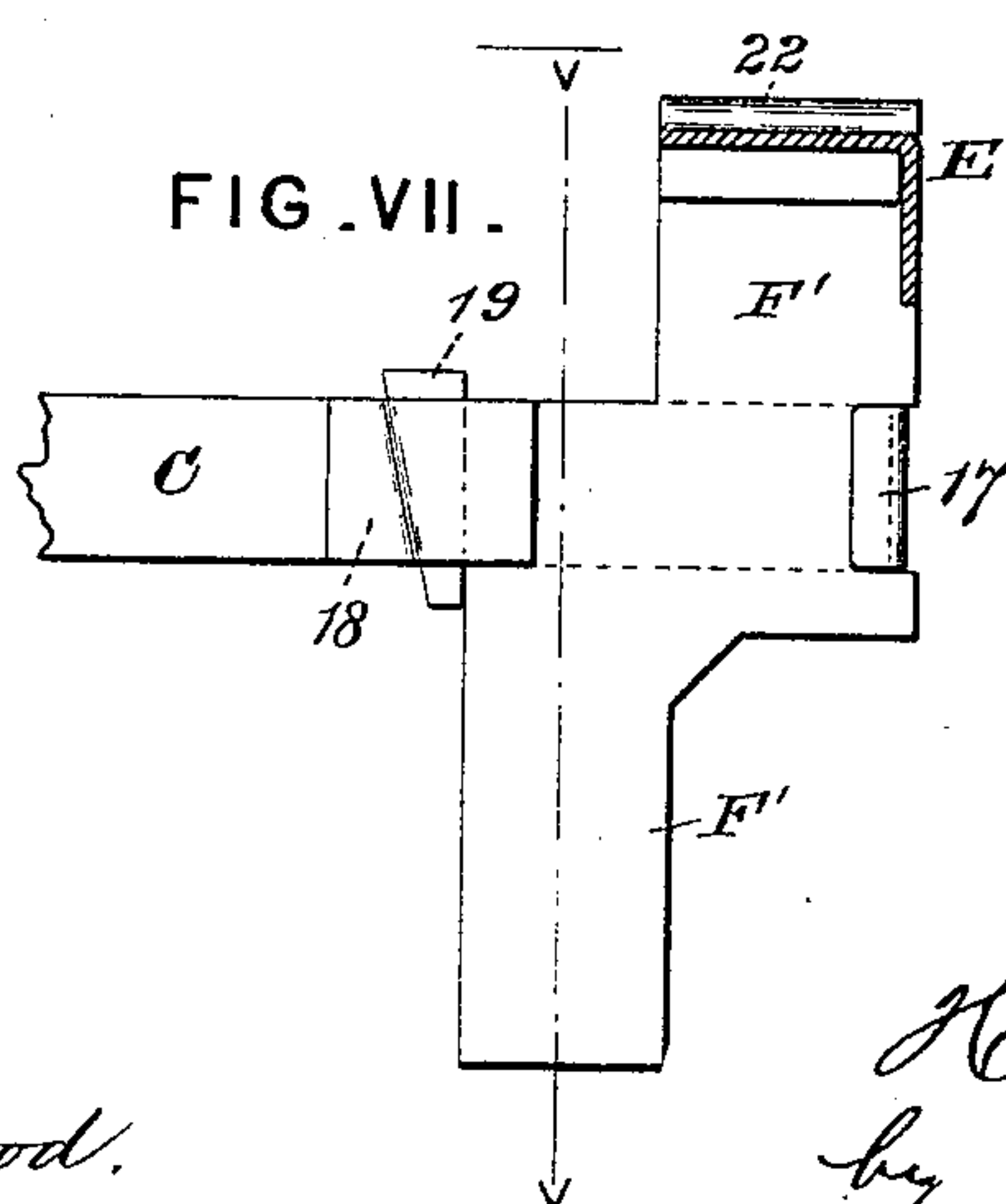
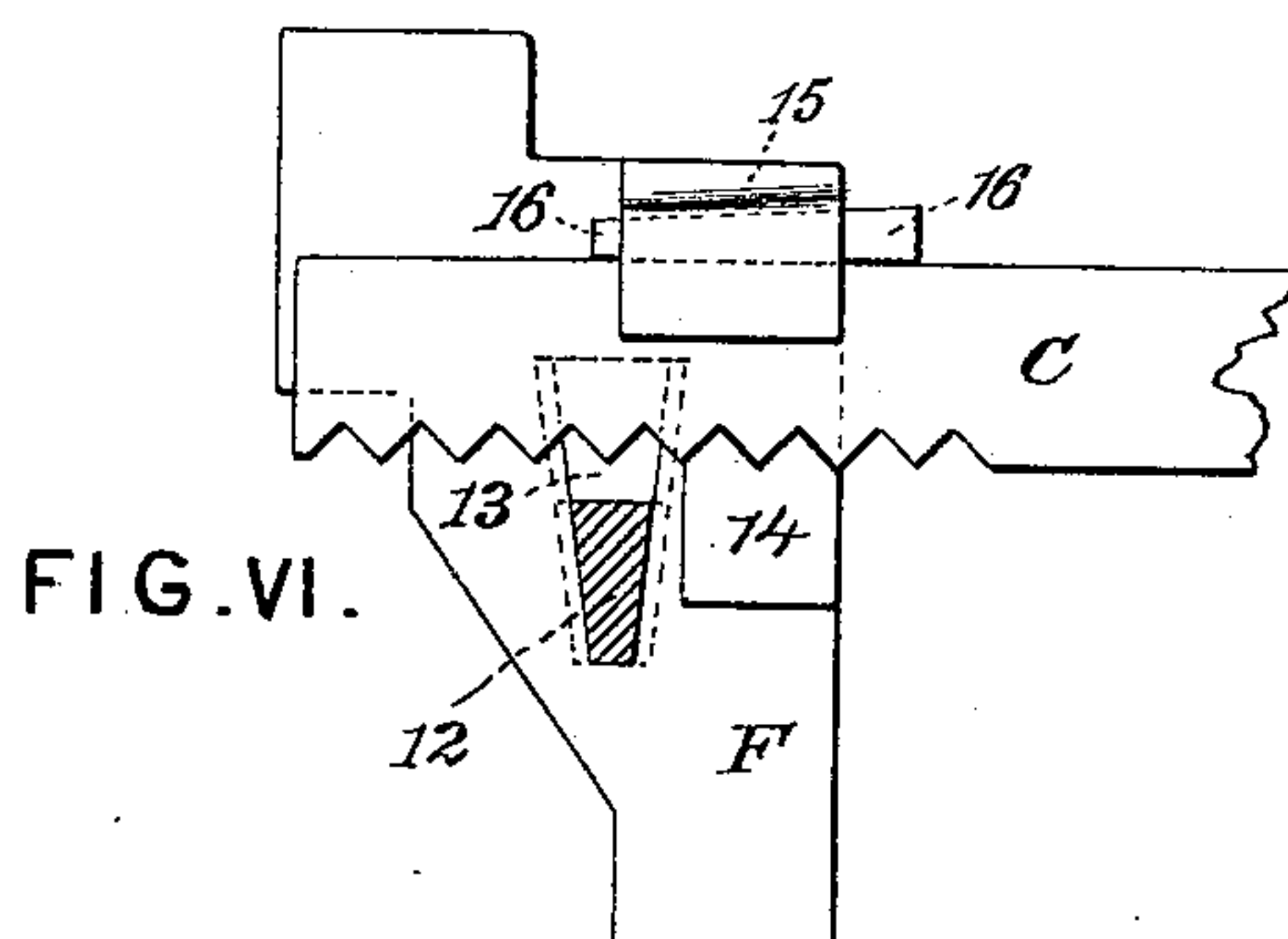
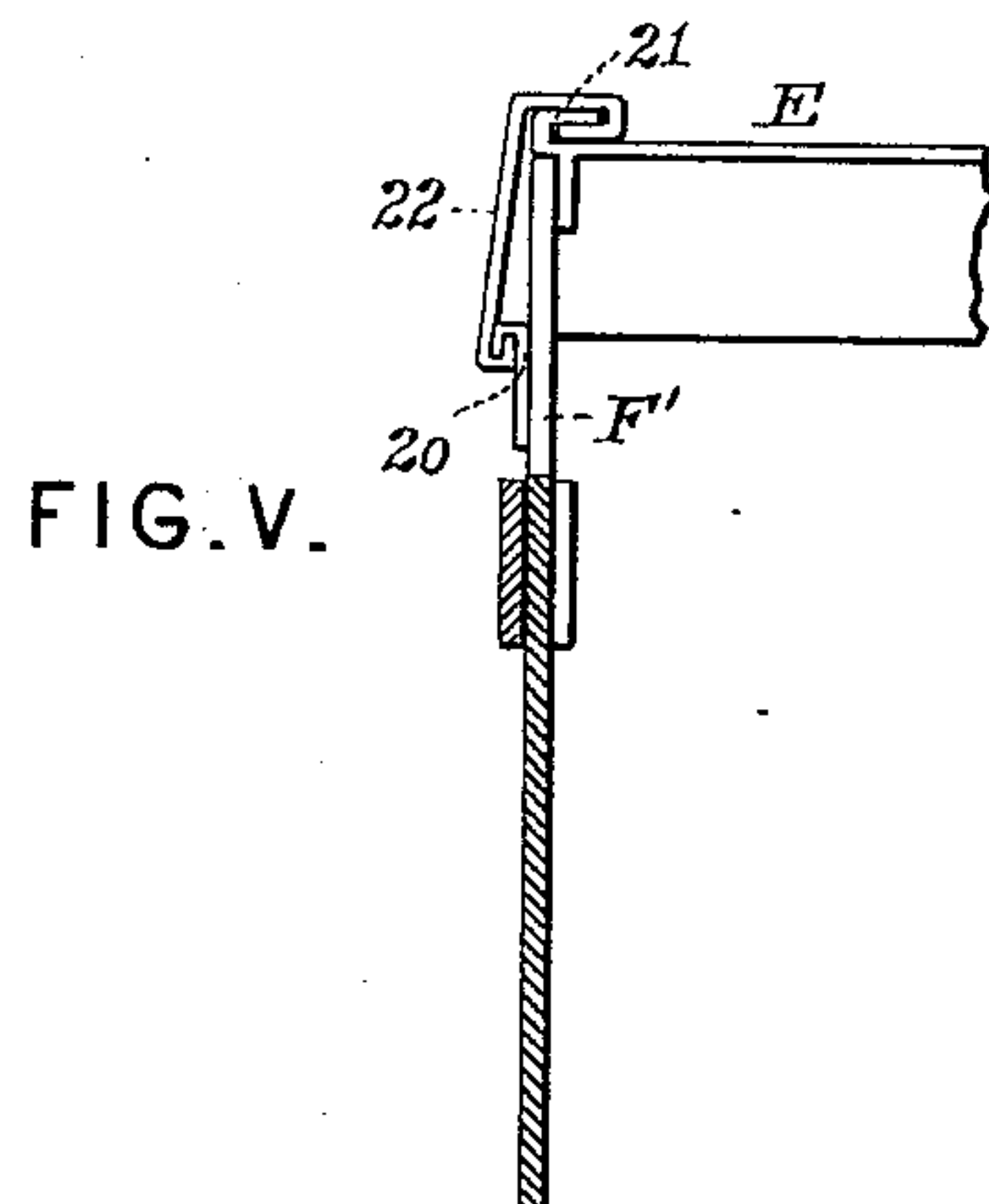
H. P. TALLMADGE.

2 Sheets—Sheet 2.

GRATE.

No. 379,740.

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attest:

Geo. T. Smallwood.
C. W. Beckham.

Inventor:
Horiam O. Tallmadge.
by A. J. P. Llo
his attorney.

UNITED STATES PATENT OFFICE.

HIRAM P. TALLMADGE, OF BOSTON, MASSACHUSETTS.

GRATE.

SPECIFICATION forming part of Letters Patent No. 379,740, dated March 20, 1888.

Application filed August 8, 1887. Serial No. 246,383. (No model.)

To all whom it may concern:

Be it known that I, HIRAM P. TALLMADGE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Grates, which improvement is fully set forth in the following specification.

This invention relates to the construction of grates for stoves and furnaces, and particularly to that class of shaking-grates in which mechanism is employed to move the grate-bars in horizontal planes, each bar moving in the opposite direction to the bars adjacent thereto. Some of the improvements could, however, be used in grates of other types.

The objects sought by this invention are to simplify and cheapen the construction of the several parts, to facilitate the assemblage thereof, and to render the mechanism less liable than heretofore to be clogged by ashes and cinders or otherwise, or to get out of order.

The invention consists in the construction and combinations of parts, hereinafter fully set forth and claimed, the same being illustrated in the accompanying drawings, in which—

Figure I is a longitudinal section of a grate, partly in elevation; Fig. II, an elevation of the rock-bar; Fig. III, a side elevation; Fig. IV, a detail view of one of the tilting pieces or supports; Fig. V, a partial cross section illustrating the connection of the head-bar and leg; Fig. VI, a detail view of the inside of the rear end of side bar, and Fig. VII a similar view of the front end thereof.

The grate-bars A A' are all operated by a single rock-bar, B, which is pivoted at its ends in the legs or in the side bars, C, of the frame. The rock-bar B has knife-edge bearings 2 in its upper edge to receive the notches 6 in alternate grate-bars A. It has intermediate notches, 3, for the intermediate bars, A', which do not touch the upper edge of the rock-bar B. The bearing-edges 2 are at the bottoms of notches cut in the rock-bar, the sides of the notches serving to hold the bars in their proper places, preventing lateral movement.

The intermediate bars, A', are provided with arms 4, having notches at their ends, which en-

gage with the edges of slots 5, formed in the rock-bar B below its axis of oscillation. The devices thus far described give the bars A and A' their motions in opposite directions from a single rock-bar. At their rear ends the bars all rest on tilting pieces or supports 8. (See Fig. 4.) These pieces are notched on their under side and rest on edge-bearings formed on the rear beam, D, of the frame. They have at their upper ends edge-bearings 29 for the notches 7 in the grate-bars, the bearings 29 being like those of the rock bar at the bottom of notches 2 and for the same purpose. These tilting pieces 8 are thus held loosely in place simply by the weight of the bars. The notches 6 of the grate-bars have concave sides forming projections 10 on each side of the notch at the bottom of the bar.

The rock-bar B has a bead or swell, 11, just below the bearing-edges, on which the bars A rest. Consequently, when the rock-bar is tilted to one side or the other one of the projections 10 strikes against the side of the bar under the bead 11, thereby stopping the motion in that direction. Moreover, when the projection 10 passes under the swell the grate-bar cannot be lifted from the rock-bar. The notches in the arms 4 of the grate-bars A' may be of the same construction, and a swell or bead be formed on the rock-bar just below the slots 5. The notches of the tilting piece 8 are similarly formed, and the rear beam, D, has swells 30 below the bearings 31.

The grate-bars A A' are all of the same width throughout, except, of course, where the notches are formed, and are of the same pattern. The arms 4 are cast in one piece with the bars by means of a detachable arm which is secured to the pattern. When the other bars are to be cast, this arm is removed from the pattern. An additional pattern and mold for the bars are thereby saved, which is a matter of some importance in the manufacture of the grate-bars. Furthermore, it is possible, by reason of the mode of mounting and operating the bars above described, to make the same molds answer for grate-bars of different lengths, the bars being simply cut off in the sand at the length desired. To form the notches in the proper places on the bars, I employ cores

of the proper shape, which are placed in the molds. Thus with molds of uniform width throughout I can cast all the bars for grates of different sizes.

5 Another feature of the grate herein described and shown is the avoidance of the use of bolts and pivots in putting the parts together. The stationary parts of the frame, consisting of the side bars, C, the rear bar, D,
10 the headers E, and the legs F, are all fastened detachably without the use of bolts. The rear bar, D, has at each end a wedge-shaped dovetailed tenon, 12. The rear legs, F, have corresponding dovetailed wedge-shaped mortises,
15 13. The upper parts of mortises 13 are large enough for the tenons 12 to pass through. They are then pressed down to the bottom of the mortises and thus locked firmly in place.

The side bars, C, are attached to the rear
20 legs, as shown in Figs. III and VI. On the legs F are cast brackets 14, having indented or serrated upper edges. The side bars, C, are correspondingly indented. Another bracket, 15, overhangs the bar C, made so as to form a
25 wedge-shaped space above the bar. Into this socket or space a wedge-shaped key, 16, is driven, locking the bar and leg. The opposite or front end of the bar C is bent back upon
30 itself at 17 and embraces the front edge of the front leg, F', the leg being notched at this point. A bracket, 18, similar to that on the rear leg, is attached to the side bar, C, and a wedge-shaped key, 19, is driven in and locks the bar and leg. Finally, the headers E are
35 placed on top of the legs F'. (See Fig. V.) The latter are provided with projections or ribs 20, which are hook-shaped in section, and the headers have beads or ribs 21 on their upper sides near the ends. The clamp 22, whose
40 shape is shown in Fig. V, is now driven in place, engaging the ribs 20 and 21, and the parts of the frame are firmly locked together. The parts can be readily taken apart when desired for repairs or cleaning.

45 The shape and manner of fastening the legs and side bars permit these parts to be cut off in the sand at any desired length.

It is obvious that modifications can be made in the details of construction without departing from the spirit of the invention, and some
50 of the improvements described could be used without others.

I claim—

1. The combination of the grate-bars, the

rock-bar on which one end of each grate-bar 55 rests being connected with said rock-bar alternately above and below its center of oscillation, the tilting pieces, one for each grate-bar, supporting the same at the end opposite the
60 rock-bar, and the cross-bar on which said tilting pieces rest, substantially as described.

2. In a shaking grate, the combination, with the supporting and oscillating device having bearing edges on which the grate-bars loosely rest, and beads or swells below the same, of 65 the grate-bars having notches into which said bearing edges enter, said notches having concave sides, substantially as described.

3. The combination, with the rock-bar, tilting pieces having edge-bearings and supports 70 for said tilting pieces, of the grate-bars having notches for engaging the rock-bar and tilting pieces, the sides of said notches being curved outward from the center, forming swells or cam-faces, substantially as and for the pur- 75 poses set forth.

4. The combination, in a shaking grate, of a series of grate-bars all of the same pattern and of uniform width, a rock-bar having bearings on its upper edge for alternate bars and 8c slots near its lower edge, and arms fastened to the intermediate bars and having notches at their lower ends for engaging the edges of the slots in said rock-bar, substantially as described. 85

5. The combination of the frame, the rock-bar pivoted in the side bars of said frame, the grate-bars connected with said rock-bar, and the series of tilting pieces or supports having at their upper ends bearings for said grate- 9c bars and at their lower ends notches which engage edge-bearings on the rear bar of said frame, substantially as described.

6. In a grate, the combination, with the grate-bars, of the frame comprising the side 95 bars, the legs provided with ribs or projections, the headers resting on said legs and having beads or ribs near the ends, and the clamps for locking the headers and legs by means of said projections and beads or ribs, 10c substantially as described.

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

HIRAM P. TALLMADGE.

Witnesses:

H. G. ALLEN,

E. F. McLAUGHLIN.