No. 685,099. Patented Oct. 22, 1901.

J. R. CARTER.

GRATE.

(Application filed Jan. 30, 1901.)

(No Model.) 3 Sheets—Sheet 1.

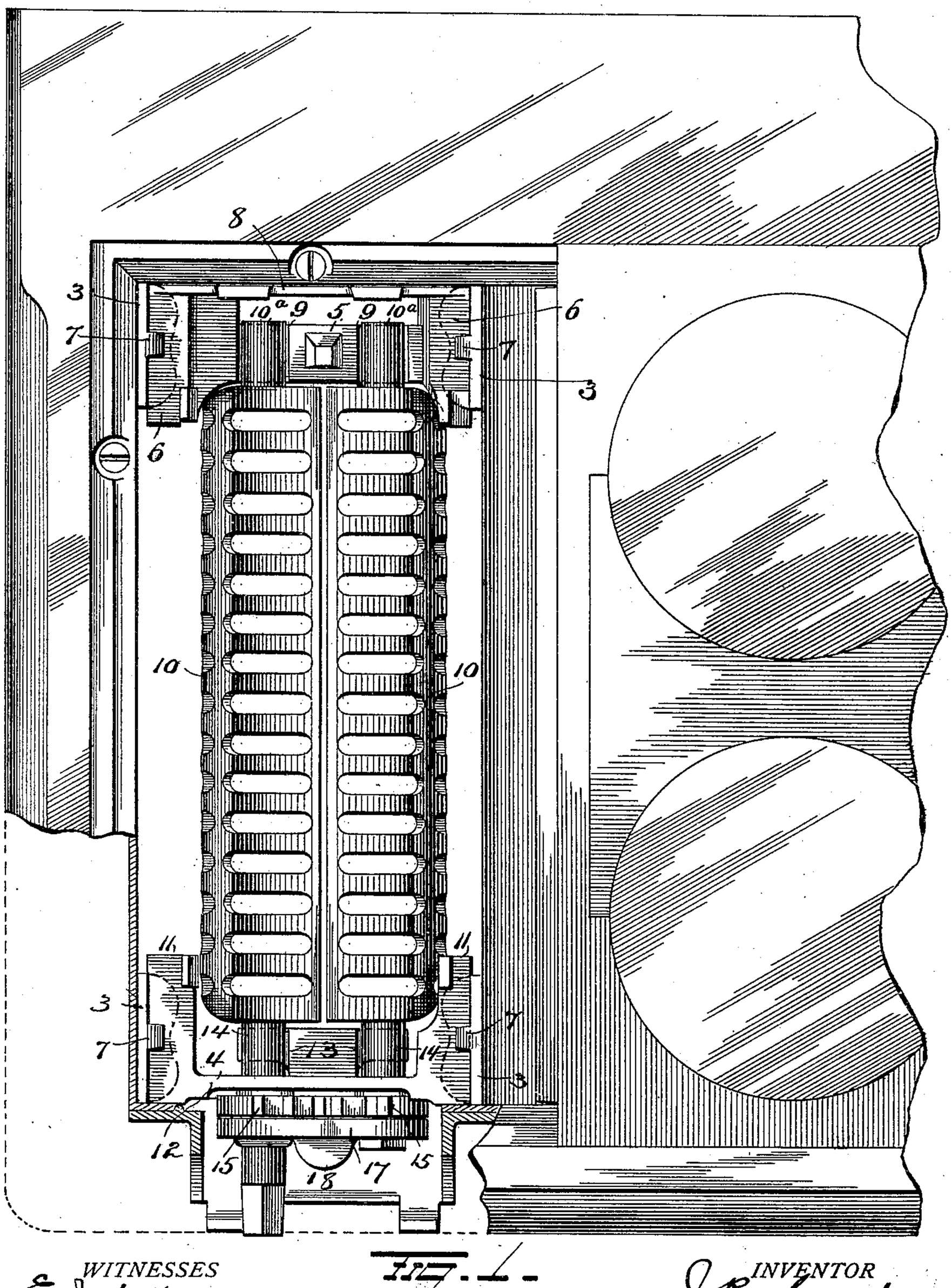

FIG. 1.

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(No Model.) 3 Sheets—Sheet 2.

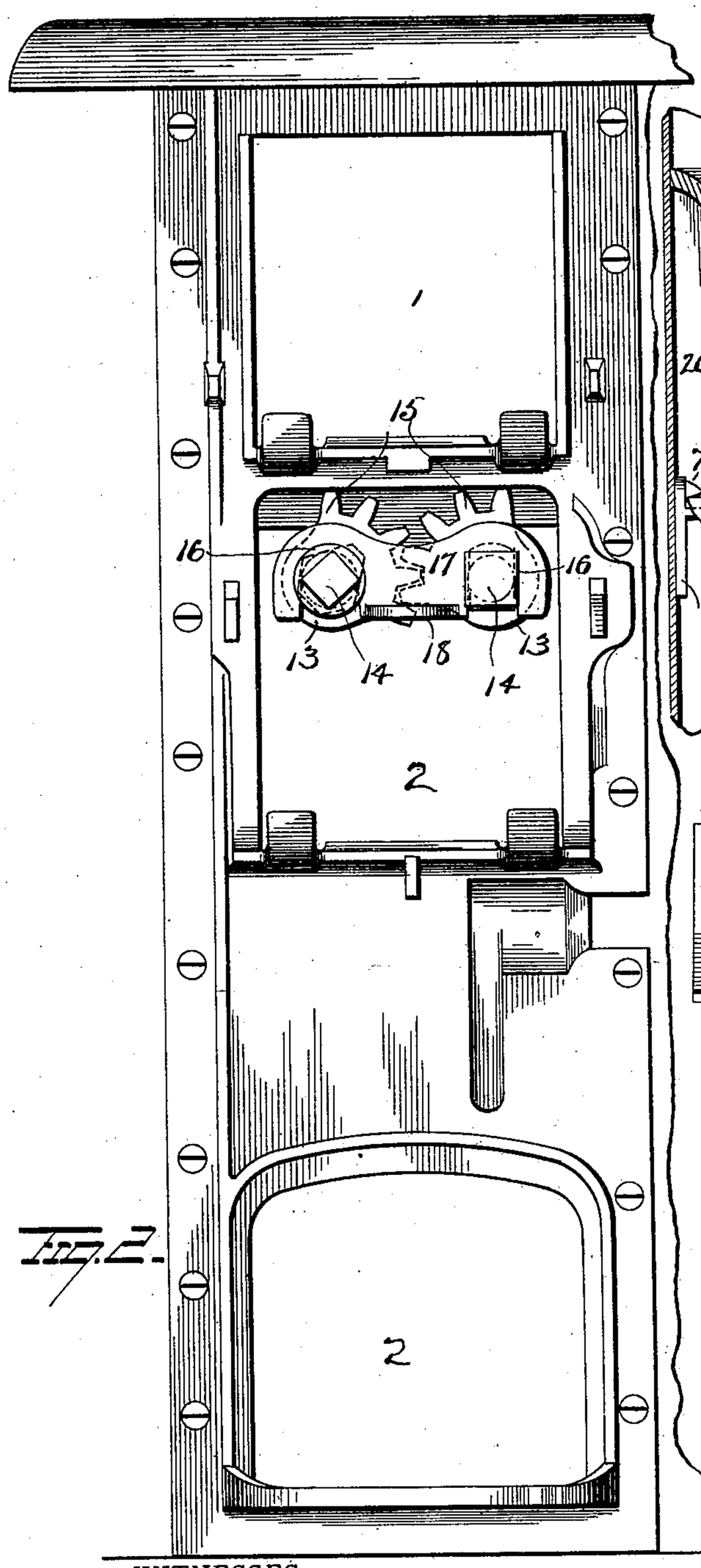

FIG. 2.

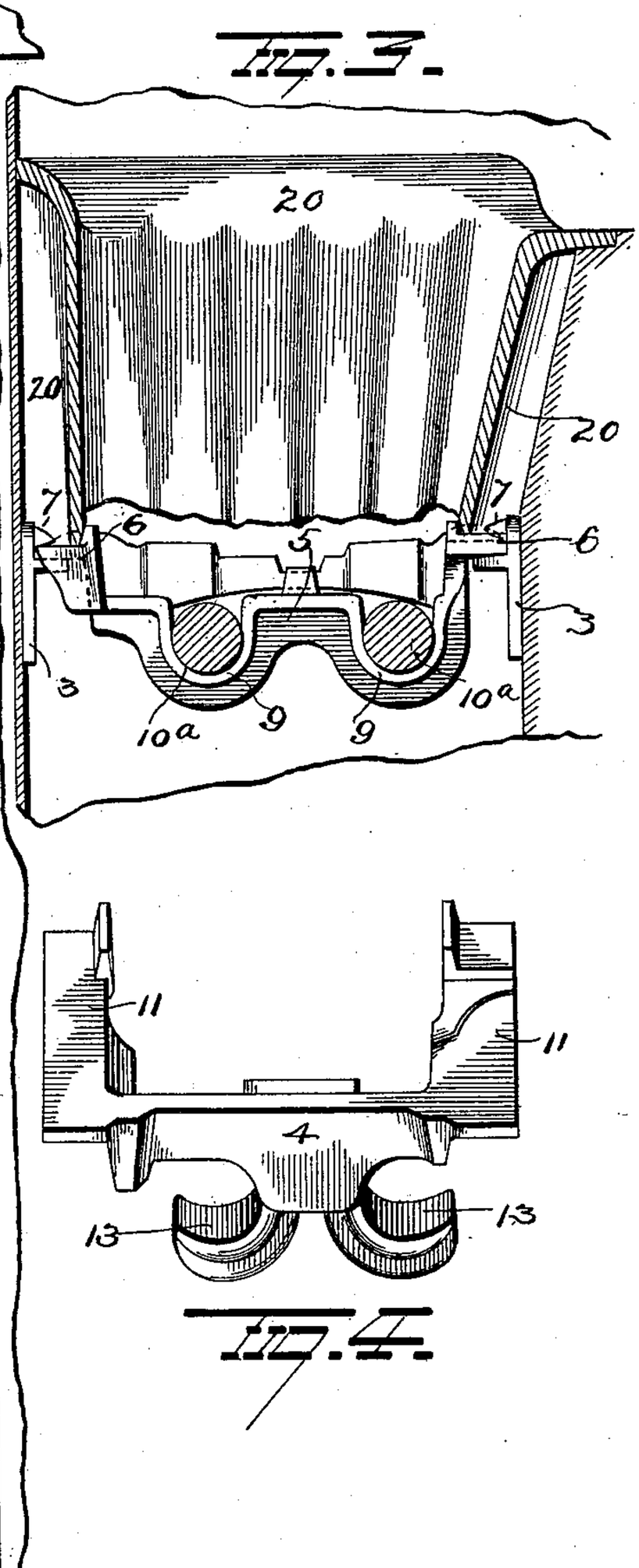

FIG. 3.

FIG. 4.

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(No Model.) 3 Sheets—Sheet 3.

FIG. 5.

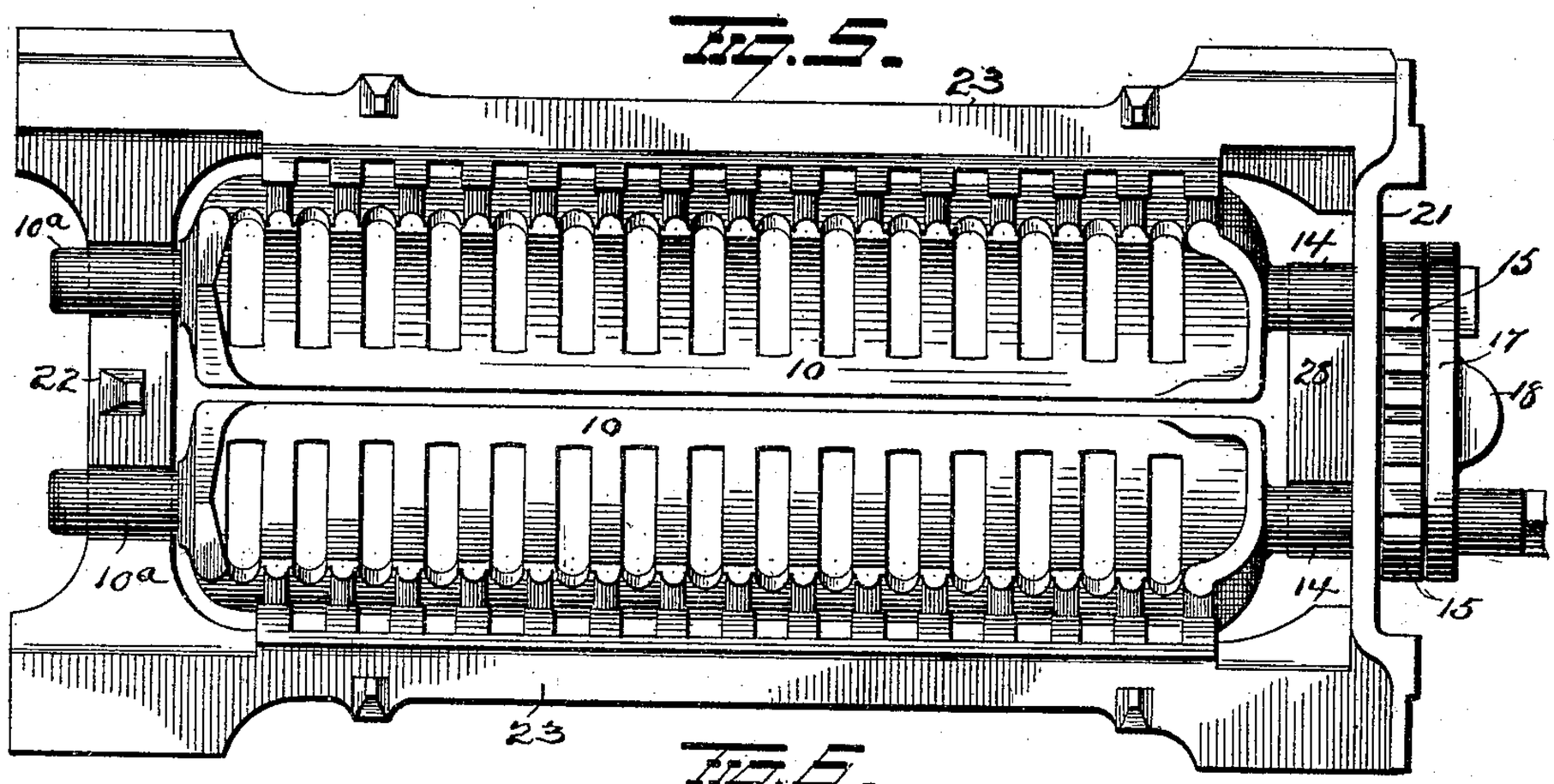


FIG. 6.

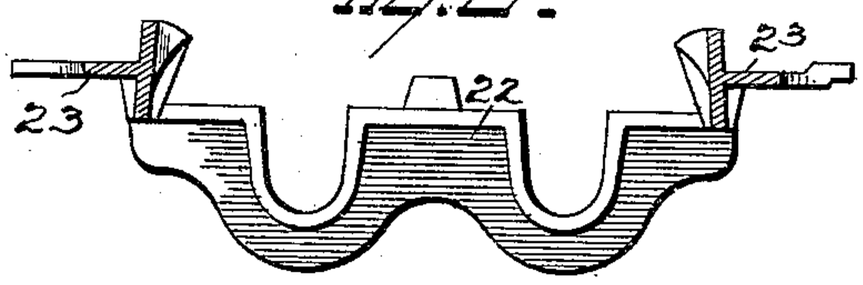


FIG. 7.

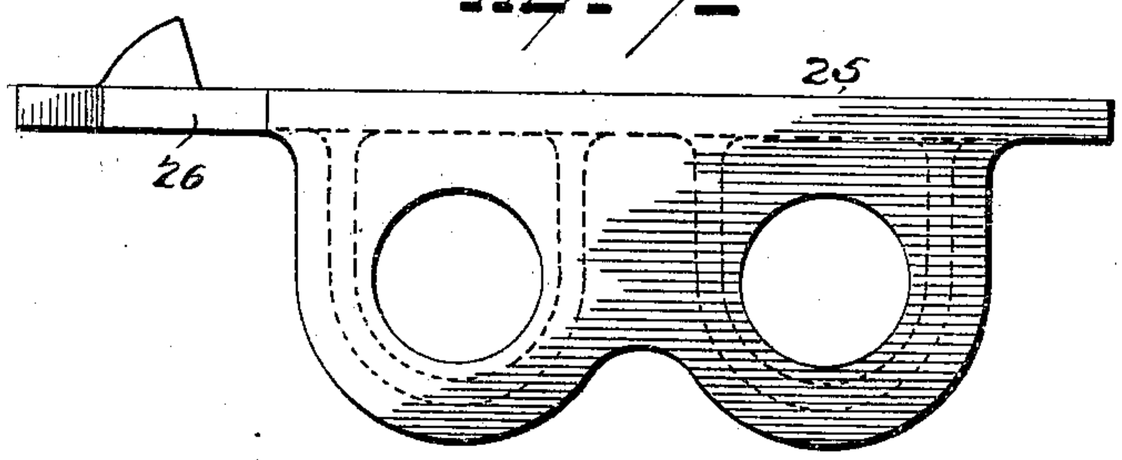
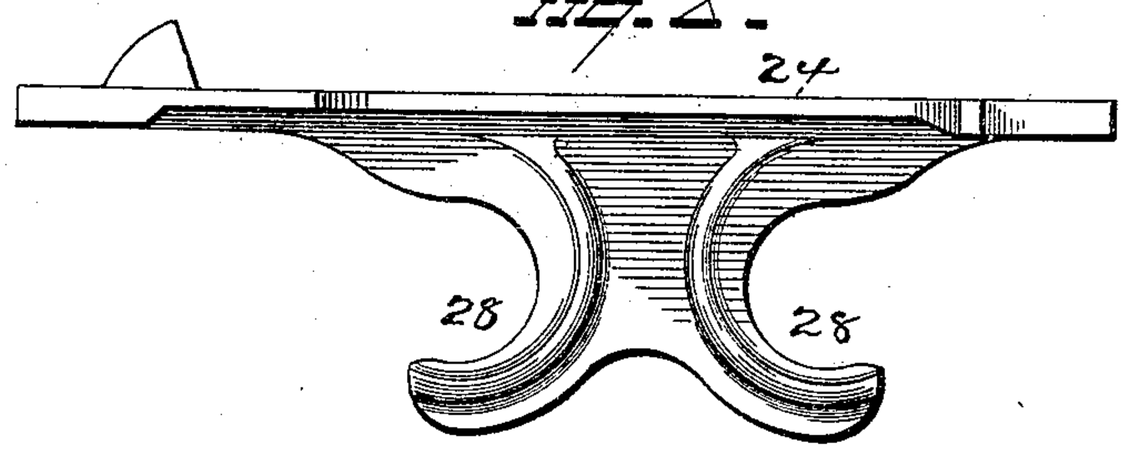


FIG. 8.



WITNESSES
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UNITED STATES PATENT OFFICE.

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GRATE.

SPECIFICATION forming part of Letters Patent No. 685,099, dated October 22, 1901.

Application filed January 30, 1901. Serial No. 45,365. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. CARTER, a resident of Augusta, in the county of Bracken and State of Kentucky, have invented certain new and useful Improvements in Grates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in grates for stoves and ranges, one object of the invention being to provide a grate which can be readily removed and secured in place and in which the grate-bars can be readily removed from their support and replaced without interfering with the other parts of the stove.

A further object is to provide improved means for removably holding the grate-bars on their support and in proper relative position to each other.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view illustrating my improvements with the fire-brick removed. Fig. 2 is a front view. Fig. 3 is a view in section. Fig. 4 is a perspective view of one of the grate-supporting brackets, and Figs. 5, 6, 7, and 8 are views of modified forms of my invention.

1 represents a fire-box, and 2 the ash-pit below the same. On opposite sides of the fire-box, at the front and rear ends thereof, flanged plates 3 are secured and are adapted to removably support the front and rear grate-bar-supporting brackets 4 and 5, respectively. The rear bracket 5 comprises a casting made with side bars 6 to rest on the flanges of the plates 3, which latter are provided with lugs 7, disposed above the side bars 6, so as to prevent accidental raising of the bracket. The bracket 5 is made with a plate or strip 8 to bear against the back of the fire-box and with a bar connecting the side bars 6 and provided with semicircular bearings 9, spaced apart and adapted to support the trunnions 10^a on the rear ends of the grate-bars 10.

The front bracket 4 is provided with side bars 11 to rest on the plates 3 and with a front plate or strip 12 to rest against the front of the fire-box and also with depending hook-shaped bearings 13, projecting in opposite directions or, in other words, away from each other and are adapted to support the trunnions 14 at the forward or outer ends of the grate-bars, which latter are made with angular portions to receive intermeshing gear-segments 15. Both of said trunnions 14 are made with peripheral grooves 16 to receive a guard 17, which latter is made with semicircular notches near each end to form hooks which engage the trunnions of the grate-bars and with an intermediate portion having an outwardly-projecting finger-hold 18 to facilitate the easy removal of the the guard when it is desired to remove the grate-bars. This guard 17 not only serves to hold the grate-bars on the hook-shaped bearings 13, but also serves to hold the gear-segments 15 on the trunnions and the bars properly spaced apart to insure the easy working of the gear-segments. One trunnion 14 is made longer than the other and is angular to receive a shaker to turn the grate-bars or shake them.

When it is desired to remove the grate-bars, the guard 17 is lifted off of the trunnions 14 and the gear-segments 15 removed, when the bar 10, having the elongated trunnion thereon, can be easily raised out of the hook-shaped bearing and passed around and below the same by simply inserting the hand through an opening in the front of the ash-pit below the grate. As soon as the trunnion 14 is free of the hook-shaped bearing 13 the other trunnion 10^a can be readily withdrawn from the bearing 9 and the grate-bar removed. The other grate-bar can then be removed in the same manner.

When it is desired to replace the bars, the last removed is preferably first replaced by inserting its trunnion 10^a in the bearing 9 and lifting the trunnion 14 up and around the hook-shaped bearing 13 and deposited therein. The other grate-bar is then replaced in like manner and the gear-segments 15 inserted on the angular portions of the trunnions 14, when the guard 17 can be dropped in place in the groove 16 and will hold the trunnions 14 on the bearings 13 and the gear-

segments on the trunnions and in proper relative position to each other to insure their proper intermeshing, and hence the easy turning of the grate-bars. It will thus be seen that by employing my improvements the grate-bars can be easily and quickly removed and replaced and that when they are in position there is no danger whatever of accidental displacement thereof.

Suitable firebacks 20 are preferably provided in the fire-box and are removably supported on the brackets 4 and 5, and as the grate-bars are removed from beneath the brackets it is not necessary to disturb these firebacks when the bars are to be removed.

The grate-bars may be made of any desired shape, but I have shown them in the accompanying drawings as adapted for use for burning either wood or coal.

Instead of constructing my improvements as above explained I might make them as shown in Figs. 5 and 6. In this form of my invention the support for the grate-bars is made of one integral casting comprising the front and rear brackets 21 and 22, respectively, and elongated side bars 23, notched on their inner edges to aline with the slots of the grate-bars to permit the passage of the ashes and draft therethrough. The other features of this grate are precisely like the one above described, and hence it is unnecessary to describe them in detail, or I might construct the grate-bar supports as shown in Figs. 7 and 8. In this form of my invention the front and rear brackets 24 and 25, respectively, are made separate, the rear bracket comprising a flat plate 26, having a depending flange 27, provided with holes or bearings for the rear trunnions of the grate-bars, and the front bracket comprising a flat plate having depending oppositely-disposed hook-shaped bearings 28, similar to the bearing 13 of the preferred form of my invention, for supporting the trunnions on the outer ends of the grate-bars.

Various other slight changes might be resorted to in the general form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a fire-box and grate-bars therein, of a bracket having bearings for the inner ends of the grate-bars, another bracket having depending open hooks projecting laterally in opposite directions and constituting bearings for the front ends of the grate-bars, intermeshing gears on said bars adjacent to the open hooks and a guard removably mounted on said bars and having hook-shaped ends to receive said bars to prevent their lateral displacement.

2. The combination with a fire-box and flanged plates secured thereon, of brackets to be supported on said flanged plates, grate-bars, a bracket having bearings for the inner ends of the grate-bars, depending open hooks on the other bracket projecting outwardly in opposite directions and constituting bearings for the front ends of the grate-bars, intermeshing gears on said bars and a removable guard provided with hook-shaped ends to engage the trunnions of the bars adjacent to the open hooks and prevent lateral displacement of said trunnions.

3. The combination with a fire-box and flanged plates secured thereon, of brackets to be supported on said flanged plates, grate-bars, a bracket having bearings for the inner ends of the grate-bars, depending open hooks on the other bracket projecting outwardly in opposite directions and constituting bearings for the front ends of the grate-bars, intermeshing gears on said bars, and a guard removably mounted on the bars adjacent to the open hooks and having recesses to receive the journals of the respective bars and connecting them to prevent their lateral displacement from the hooks.

4. The combination with a support having bearings at one end, of open hooks at the other end of the support, grate-bars having trunnions at both ends, trunnions at one end mounted in said bearings and the trunnions at the other end mounted in said open hooks, the last-mentioned trunnions having annular grooves, intermeshing gear-segments on the grooved trunnions, and a removable guard mounted on said grooved trunnions and entering the grooves therein, said guard serving to retain the gear-segments in place and also to connect the trunnions and prevent their lateral displacement from the open hooks.

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

JOHN R. CARTER.

Witnesses:
CHARLES C. CORMANY,
CHARLES E. PFAU.