

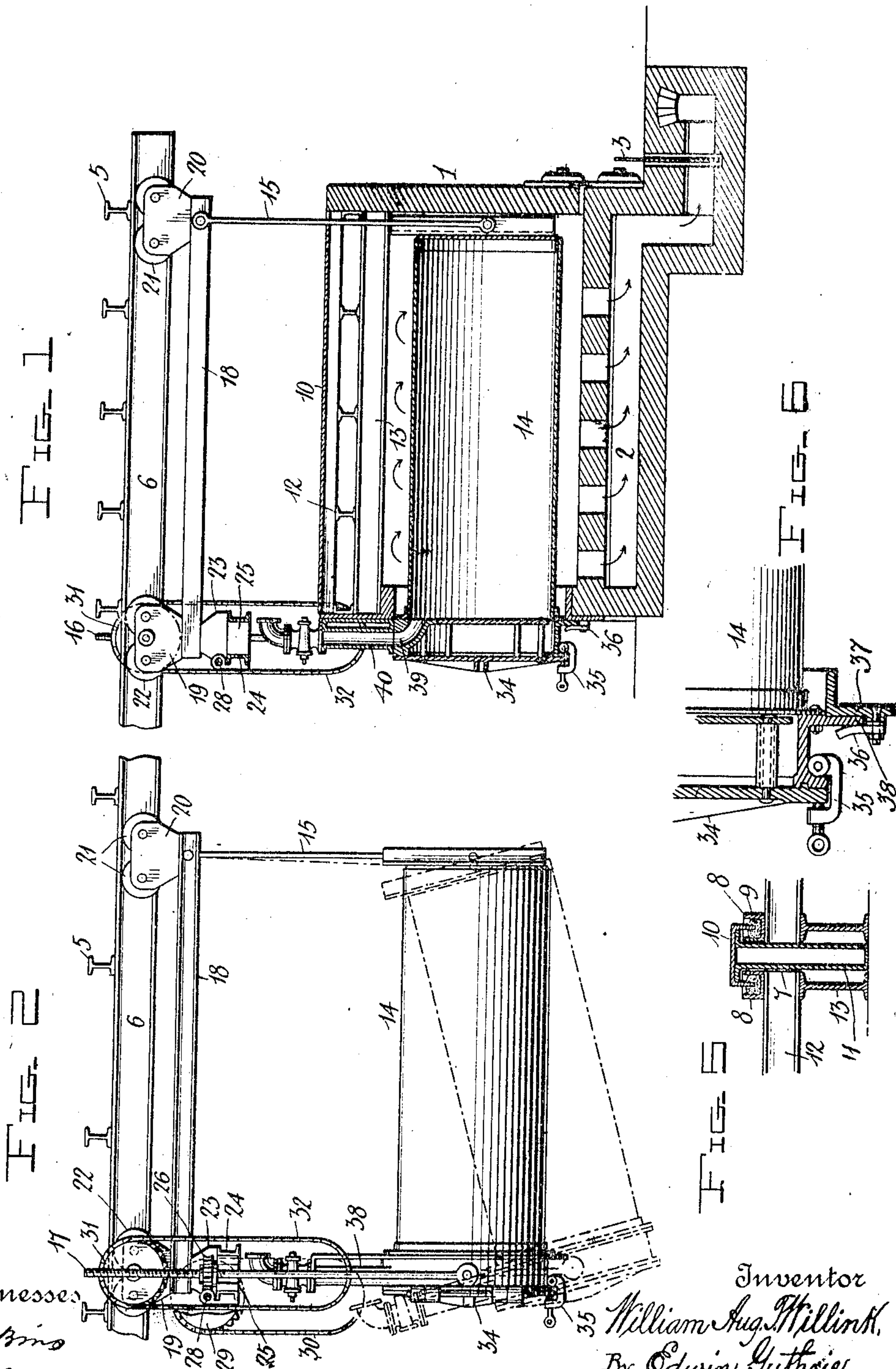
No. 871,313.

PATENTED NOV. 19, 1907.

W. A. T. WILLINK.
CHARCOAL RETORT.

APPLICATION FILED JUNE 7, 1907.

2 SHEETS—SHEET 1.



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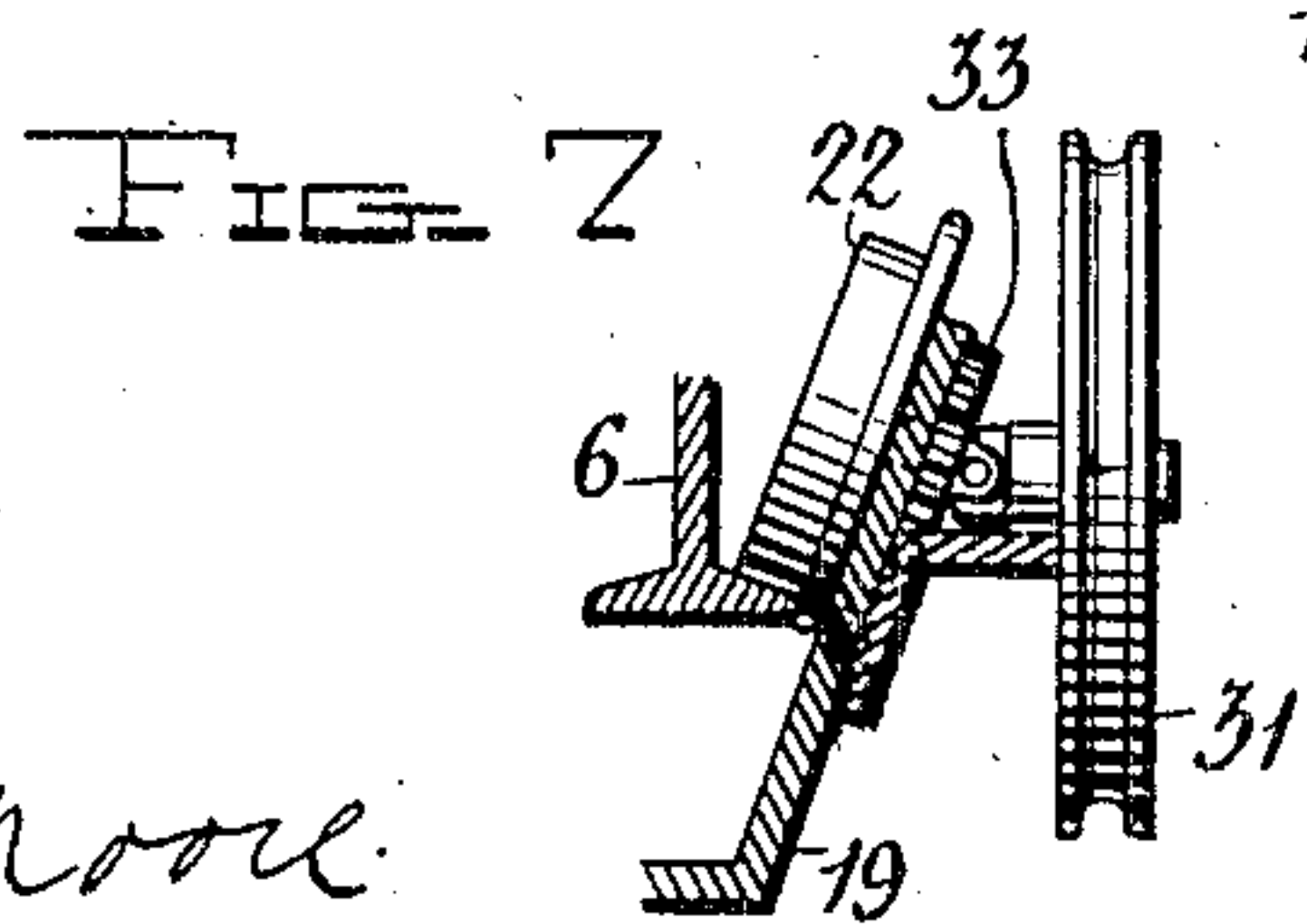
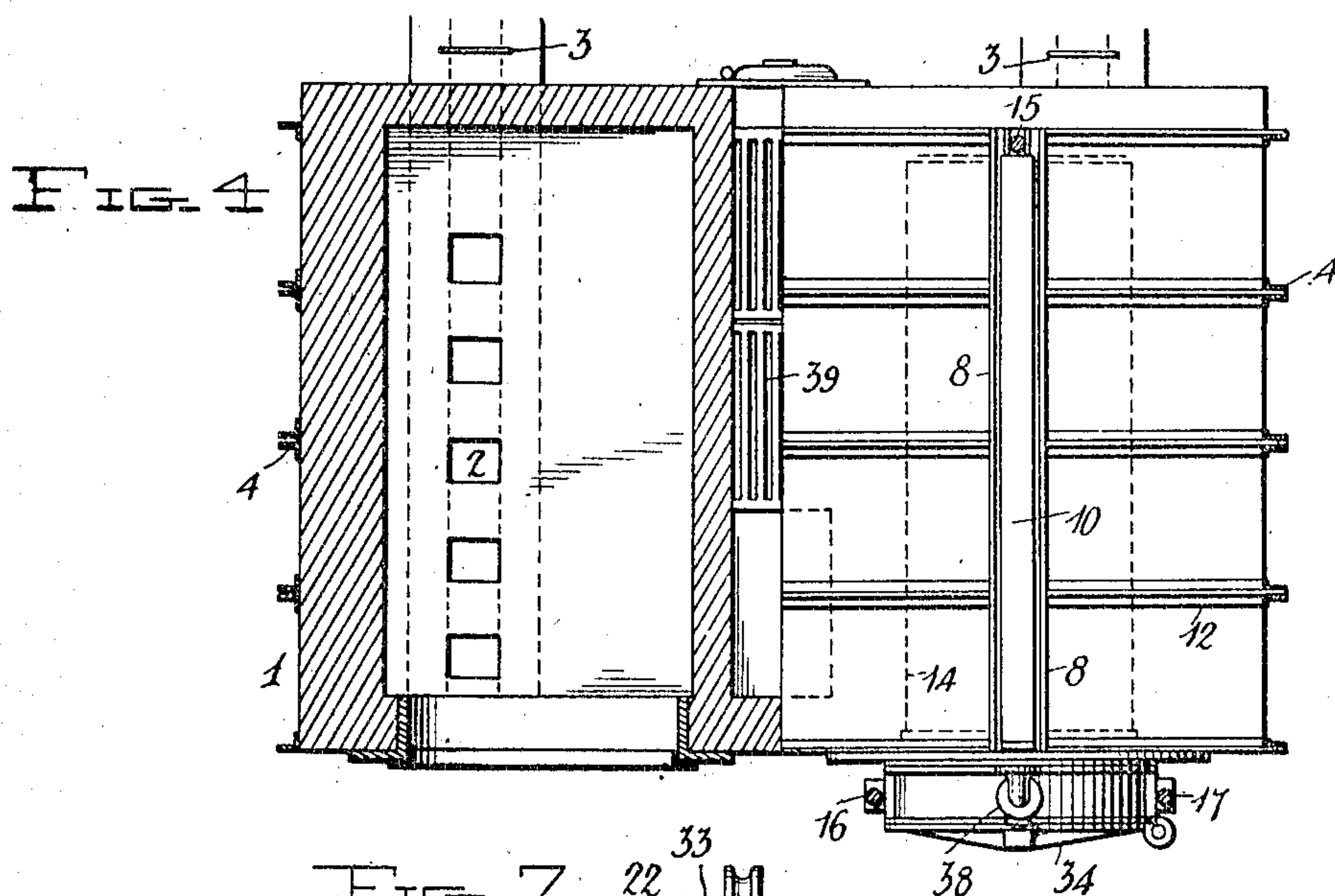
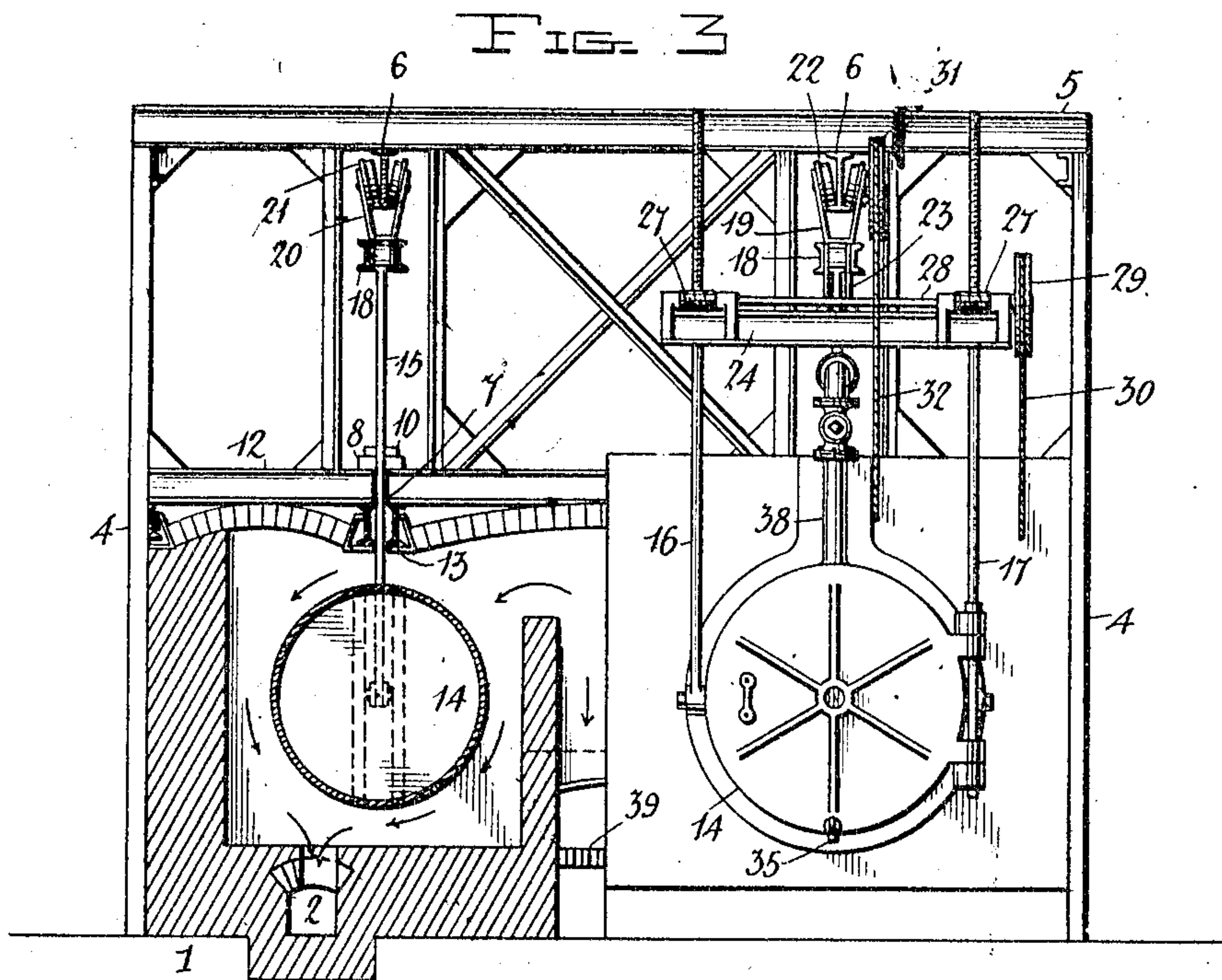
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UNITED STATES PATENT OFFICE.

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CHARCOAL-RETORT.

No. 871,313.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed June 7, 1907. Serial No. 377,743.

To all whom it may concern:

Be it known that I, WILLIAM AUG. T. WILLINK, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Charcoal-Retorts, of which the following is a specification.

My invention relates to charcoal retorts, and has for its object the production of means for carbonizing wood or the like, having devices and mechanism of special construction and particular arrangement, for lowering and raising the retort and for moving it into and out of the furnace, whereby it is believed that the process is more expeditiously and conveniently conducted and the product thereof superior to that obtained from any apparatus for like purpose with which I am familiar.

I accomplish the stated object by fashioning and associating the parts as illustrated in the accompanying drawings, of which

Figure 1 represents a vertical section lengthwise of the furnace and the retort in its horizontal attitude within the furnace. Fig. 2 is a side view of the retort withdrawn from the furnace upon its suspending track and shows the parts concerned in the movement of withdrawal. The inclined position of the retort which it is caused to assume to empty it, is indicated in broken lines. Fig. 3 is a front view of the closure of the retort and the furnace in part, and, in part a cross-section of the furnace and retort therein. Fig. 4 is a top plan view of the furnace in part, and, in part, a horizontal sectional view of the furnace. Fig. 5 is a cross-section of those parts immediately concerned in closing the longitudinal slot in the top of the furnace. Fig. 6 is a fragmentary side view, partly in section, showing the front end of the retort and its closure, and the devices employed for retaining the closure in its closed position, and for holding the retort within the furnace. Fig. 7 is a fragmentary front view of a portion of one of the carriages and shows the operating pulley and the universal joint which connects it to the gearing that turns one of the pulleys that travel the track which suspends the retort.

Like numbers are employed to designate the same parts throughout the description and drawings.

The numeral 1 marks the furnace wall. 55 The furnace has, as ordinarily constructed, the sub-floor smoke flue 2 provided with a damper 3. The outside vertical frame bars or wall-retaining bars are referred to by number 4, and the horizontal cross-beams constituting the top of the frame are designated by number 5. 60 The flanged track beams 6 are secured beneath the cross-beams 5 lengthwise of the furnace. It is upon the lower flanges of the track beams that the carriages supporting the retort are movable as hereafter explained. 65

Through the middle of the top of the furnace is a longitudinal slot 7, best shown in Figs. 4 and 5, and following the edges of the slot on the outside of the top of the furnace are the channel irons 8, filled with sand 9. Into the sand are inserted the edges of the sides of the grooved cap piece 10 which effectually closes the slot against the escape of smoke from the interior of the furnace. To 75 more positively close the slot, I provide, in addition to the cap piece 10, a sheet metal plug 11 which has the form in cross-section illustrated in Fig. 5, and extends the length of the cap piece, to which it may or may not be attached. I may use the cap piece alone to close the slot, and the sheet metal plug is omitted in Fig. 1. In Fig. 5 it will be observed that the cross-beams 12 which support the top of the furnace stop at the slot 7, 85 and that their ends are supported by the beams 13 running lengthwise under them.

The retort 14 is supported at the rear by the single vertical rod 15 pivotally connected with the back of the retort. Rod 15 passes upwardly through the slot 7. At the front, the retort is upheld by the screw rods 16 and 17, and those rods do not enter the furnace but extend upwardly in front of it as shown in Fig. 3. The upper end of rod 15 is secured between the pair of horizontal bars 18 longitudinally arranged near the upper part of the frame and above the furnace. The front and rear carriages 19 and 20 are also attached to the bars 18. The wheels 21 and 22 of the carriages run upon the lower flanges of the longitudinally-arranged track beams 6, as best indicated in Fig. 3. 100

At the point where the front carriage 19 is attached to the bars 18, there are also secured to the bars suitable hangers 23, the purpose of which is to support the parallel,

transverse short beams 24. The short beams 24 are joined together near their ends by the blocks 25, and the screw rods 16 and 17 pass upwardly through the blocks 25 and through the worm wheels 26, which are provided with internal threads that engage the threads of the rods. The worm wheels rest on the blocks 25, and they mesh with worms 27 on the transverse shaft 28. It is believed to be made apparent that if the shaft 28 be turned by means of a wheel 29 operated by the cable or chain 30, the worm wheels 26 will be correspondingly revolved, and the screw rods 16 and 17, and, consequently the retort will be raised or lowered. Attention is here called to the fact that the weight of the retort is constantly upon the worm wheels by reason of their engagement with the screw rods, and those wheels are held in their positions upon the blocks 25 from which position no part of the operation can displace them. The lowered position of the retort is indicated by broken lines in Fig. 2.

In the construction of my invention, the irons which I have termed the track beams are extended before the furnace and suitably supported. Thus, the carriages 19 and 20 permit the retort to be drawn from the furnace in order to discharge it, and it is convenient but not absolutely necessary to have a pulley 31 operated by cable or chain 32, to turn the wheels 22 of the carriage 19 and cause it to travel either way upon the track. It will be observed that the wheels 22 are inclined with respect to the pulley 31, but, as best shown in Fig. 7, the shaft of the pulley may be provided with a universal joint and thereby operate the gears 33 arranged for driving the wheel or wheels 22. Any desired contrivance may be substituted for the parts just described and which constitute no essential part of my invention.

A hinged door 34 closes the front opening or mouth of the retort, and the door is secured to the annular mouth-frame of the retort by the hinged clamp 35. It is also desirable that the retort when introduced into the furnace shall be effectively held there against displacement, particularly in the direction which would cause it to move out of the furnace. To suitably hold retort in the furnace, I provide the turnbutton 36 on the flange 37 of the mouth-frame of the furnace, and the turnbutton engages the flange 38 of the mouth-frame of the retort. Again considering Fig. 1, it will be noted that the door 34 which is shown in section has formed in its upper portion a curved channel 39, which is connected with a discharge pipe 40, and by way thereof the gases emitted by the charring wood find vent.

In the operation of my invention, after the retort has been charged in the customary

manner, it is pushed or propelled into the furnace. It will then take the position shown in Fig. 1 with the vertical suspension rod 15 near the rear wall of the furnace. To reach that position and to again move from it the rod must clearly pass along the slot 7, and the slot must be closed by the cap piece 10 and plug 11 before the firing begins. When the process has been completed, and it is desired to move the retort out of the furnace to cool, discharge and recharge it, without at the same time cooling the furnace and losing much heat, the cap piece must necessarily be removed until the rod passes out of the slot 7, whereupon the cap piece may be replaced and the damper 3 closed to retain the heat within the furnace for another charring operation. The retort having passed out of the furnace into the position illustrated in Fig. 2, the worm wheels 26 are rotated by turning the shaft 28 by means of the pulley 29, and the retort is lowered until it takes the attitude indicated by the broken lines. The door 34 being then unfastened and opened, the contents of the retort are discharged.

Having now described my invention and explained the mode of its operation, what I claim is—

1. In a charcoal retort, the combination with a furnace having a slot lengthwise through its top, of a track arranged above and extending in front of the furnace, carriages adapted to travel upon the track, a retort, supporting rods connected with the retort and with the said carriages, the said rods being less in diameter than the width of the slot, and means for closing the unoccupied portion of the slot, substantially as described.

2. In a charcoal retort, the combination with a furnace having a slot lengthwise through its top, of a track arranged above and extending in front of the furnace, carriages adapted to travel upon the track, a retort, a plurality of supporting rods connected with the retort and with the said carriages, part of the said plurality of rods being threaded, mechanism constructed and arranged to engage the said threads whereby one end of the retort may be raised and lowered, the said rods being less in diameter than the width of the slot, and means for closing the unoccupied portion of the slot, substantially as described.

3. In a charcoal retort, the combination with a furnace having a slot lengthwise through its top, of a track arranged above and extending in front of the furnace, carriages adapted to travel upon the track, a retort having a mouth-frame projecting beyond the front of the furnace, a plurality of supporting rods connected with the said retort and with the said carriages, part of the said plurality of rods being threaded and having their connection with the mouth-frame of the retort normally outside the furnace,

mechanism constructed and arranged to engage the threads whereby the front of the retort may be raised and lowered, and means for closing the unoccupied portion of the slot, 5 substantially as described.

4. In a charcoal retort, the combination with a furnace having a slot lengthwise through its top, of a track arranged above and extending in front of the furnace, carriages adapted to travel upon the track, a retort having a mouth-frame projecting beyond the front of the furnace, a plurality of supporting rods connected with the said retort and with the said carriages, a pair of the 15 said plurality of rods being threaded and having their connection with the mouth-frame of the retort normally outside the furnace, mechanism constructed and arranged to engage the threaded rods whereby the front of the retort may be raised and lowered, and means for closing the unoccupied portion of the slot, substantially as described. 20

5. In a charcoal retort, the combination with a furnace having a slot lengthwise

through its top, of a track arranged above and 25 extending in front of the furnace, carriages adapted to travel upon the track, a retort having a mouth-frame projecting beyond the front of the furnace, a single supporting rod connected with the rear of the retort and 30 normally within the furnace, the said rod passing through the said slot and being connected with one of the carriages, a pair of threaded rods connected with the mouth-frame of the retort normally outside the furnace, mechanism suspended from one of the 35 carriages and constructed to engage the threaded rods whereby the front end of the retort may be raised and lowered, and means for closing the unoccupied portion of the slot, 40 substantially as described.

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

WILLIAM AUG. T. WILLINK,

Witnesses:

JOSIAH A. SPRINGER,
V. M. BOWEN.