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R. RUETSCHI.

FURNACE.

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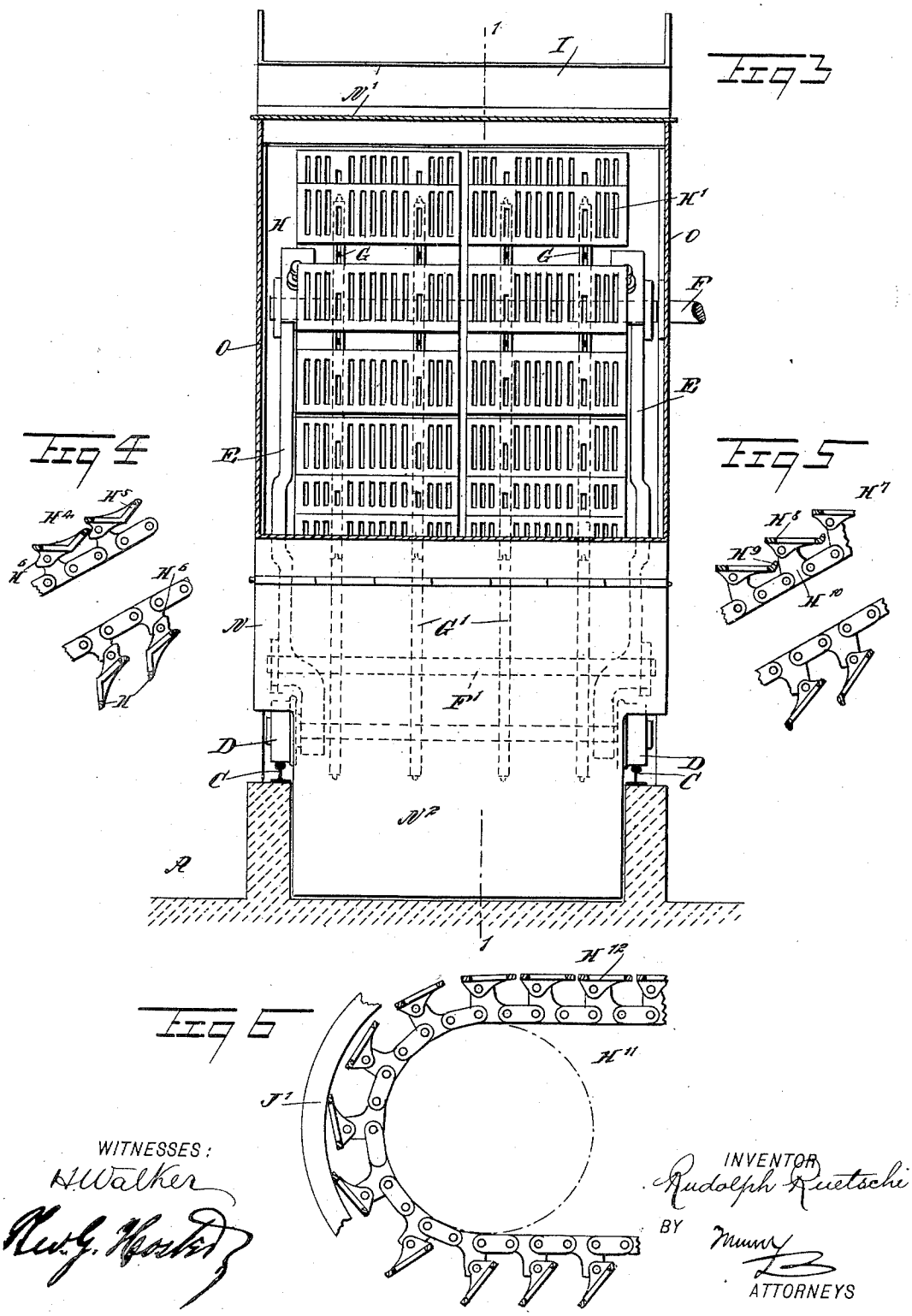
(No Model.) 2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

FRANK W. RUPPMAN, OF PHILADELPHIA, PENNSYLVANIA.

DOOR-HOLDER.

SPECIFICATION forming part of Letters Patent No. 642,261, dated January 30, 1900.

Application filed April 5, 1899. Serial No. 711,827. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. RUPPMAN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Door-Holders; 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 that class of door-holders in which a plate is adapted to be fixed to the door and a vertically-reciprocating plunger adapted to engage the floor.

The invention consists in certain novel features in the construction and arrangement of parts, all as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical section on the line $x\,x$, Fig. 3. Fig. 2 is a side elevation showing the cup-shaped disk in section. Fig. 3 is a horizontal section on the line $y\,y$, Fig. 1.

In the accompanying drawings, A represents a plate of any preferred outline and having its face of any desired ornamental design and provided with suitable perforations or screw-holes for permitting its attachment to the door. Rigidly attached or formed integral with the plate is a vertically-arranged bar A′, provided upon its inner side adjacent to the plate with a groove a and on its outer side edge with a groove a', hereinafter referred to. This plate is provided on its inner face with a series of teeth with the pitch in a downward direction, also hereinafter referred to.

A plunger B has its upper end formed to closely fit the bar and is provided with ribs $b\,b'$ to engage the grooves in the bar and with the upper end forming a casing. The plate A is also provided with a groove or channel a^2, with which a rib b^2 on the plunger engages. The upper or head portion of the plunger is provided with a slot B′, parallel with the face of the plate A, in which is mounted an elongated jaw or latch C, provided on its inner face with a number of teeth C′ with the pitch on the reverse incline to those of the bar, the number of teeth being at least five or more to give greater rigidity and strength to the holder. This jaw or latch is pivoted in the plunger-head near its upper end and at a point to tend to throw the teeth thereof into engagement with those on the bar, so that the simple action of pressing upon the head hereinafter referred to, without other manipulation, will cause the plunger upon coming in contact with the floor to be immediately locked.

To further facilitate the action of the jaw or latch and insure its proper action, a spring D is connected to the head of the plunger to engage the rear face of the pawl and act in a manner readily understood.

A projecting arm or toe-piece E extends out from the lower end of the jaw or latch, which permits the releasing of the jaw or latch from engagement with the toothed bar by the simple engagement of the toe with such piece E.

The upper rear face of the jaw or latch in rear of the pivot is formed on an incline, as shown at d, which acts in the outward throw of the jaw or latch by its engagement with the lower face of the slot in the head of the plunger to form a positive stop, taking off all strain from the spring.

A lug F projects from the face of the plate A and acts as a stop to limit the upward movement of the plunger. Formed on the lower end of the plunger is a circular head G, having its upper face corrugated to more readily permit the engagement of the foot therewith without slipping for depressing the plunger. This head is provided with a circular recess, and in which recess is mounted a cup-shaped flexible or suction disk H, preferably of rubber, being secured in place by a bolt h, the action being such that as the plunger is depressed and the disk brought into engagement with the floor the air will be excluded, creating a vacuum, engaging the holder firmly with the floor. This portion of my invention is especially desirable on marble or like smooth floors and is adapted for use with other door-holders, and therefore I do not limit myself to its combination with the particular construction herein shown and described.

By the construction and arrangement of parts hereinbefore described it will be seen that the device is equally operative without the use of the spring, the same being simply employed to make the action more positive, and also that no strain is brought upon the spring after the holder is in action.

Having now described my invention, what

admission of air passing in an upward and inward direction from the front lower end of the fire-box under the plate L, while the fuel on the uppermost grate-bars of said upper run is coked under a partial exclusion of air, so that this coked fuel will readily ignite as the grate-bars advance in the fire-box in a downward and inward direction. The burning fuel on a preceding bar readily ignites the fuel on the following grate-bar, especially as the following grate-bar is located somewhat higher than the preceding one, as will be readily understood by reference to Fig. 1.

The ashes from the burning fuel readily pass through the slots in the grate-bars and drop into the ash-pit B′, and any ashes left on the grate-bars is finally dumped therefrom at the time the grate-bar swings over and strikes the fire-bridge J. The grate bars upon passing in a downward direction on the lower run of the grate hang loosely and in an approximately vertical position, and as these grate-bars pass through the current of air rising upward and inward in the fire-box said grate-bars are cooled to a considerable extent before receiving a fresh supply of fuel when passing under the hopper I, and after they have passed to the upper run of the grate around the wheel G.

The outer end of the shaft F is connected with suitable machinery for imparting a slow rotary motion to said shaft to rotate the sprocket-wheel G and cause the grate H to travel in the direction of the arrow a', as indicated in Fig. 1. As the grate-bars H′ on the lower run of the grate hang vertical, sufficient space is left between adjacent grate-bars to form passages for the dropping ashes from the grate-bars on the upper run.

A front N is attached to the frame E, and is provided with a hinged door N′ for giving convenient access to the grate-bars and the sprocket-chains at the time they pass around the wheel G, so that repairs can be readily made on any one of the grate bars or links of the chains during the passage of the same around the wheel G. As the gate travels very slowly it is evident that such repairs can be made without stopping the rotation of the shaft F. The front N is further provided with a door N^2, extending down into the ash-pit B′, to close the front end thereof. The side edges of the front N reach to a fixed casing O, which supports the hopper I and abut against the front of the brickwork A, to completely close the front end of the fire-box.

When it is desired to have access to the fire-box or other parts of the furnace, it is only necessary to run the frame E, with its grate and front outer end, on the rails C to allow of cleaning the furnace and also the grate, if necessary.

I do not limit myself to the peculiar form of grate-bars shown in Figs. 1 and 2, as the same may be varied. For instance, as shown in Fig. 4, the grate H^4 has its L-shaped grate-bars H^5 provided with lugs H^6 at the pivot end to form a support for the next following grate-bar, as will be readily understood by reference to the said figure. In Fig. 5 the grate H^7 has grate-bars H^8, made flat, with small lugs H^9 at the rear ends to abut against the link H^{10} for supporting the next following grate-bar. The grate may also be arranged with its upper and lower ends horizontal, as indicated in Fig. 6, and in this case the grate H^{11} has grate-bars H^{12}, which are flat and form a continuous surface when at the top run of the endless grate to properly support the fuel. The grate-bars H^{12} strike against the fire-bridge J′ when moving from the upper run to the lower run at the inner end of the grate to properly discharge the ashes, as previously explained.

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

1. A furnace provided with a fire-box, and an endless traveling grate having pivoted grate-bars arranged to form a continuous support for the fuel at the upper run of the traveling grate, and to form open spaces between adjacent grate-bars at the lower run of said grate for the passage of ashes and coal-dust, said grate being arranged in an inclined position, the grate-bars being arranged in step form on the upper run, substantially as shown and described.

2. A furnace provided with a fire-box, an endless traveling grate having pivoted grate-bars arranged to form a continuous support for the fuel at the upper run of the traveling grate, and to form open spaces between adjacent grate-bars at the lower run of said grate for the passage of ashes and coal-dust, a table under part of the upper run at the front or fuel-receiving end thereof, and a deflecting-plate extending downwardly and forwardly between the upper and lower runs and below the lower end of said table, substantially as shown and described.

3. In a furnace, the combination of an inclined traveling grate mounted in the fire-box, and means mounted beneath the outer portion of said grate, such means receiving the coal-dust from the grate and carrying the same outwardly beyond the ashes.

4. A traveling grate, comprising pivotally-connected links, alternate links of which are formed with outwardly-projecting lugs, and grate-bars pivotally mounted on said lugs, whereby the bars are held away from the chain proper.

5. A traveling grate, comprising links pivotally connected with each other to form a chain, alternate links being formed with outwardly-projecting lugs, and grate-bars of angular cross-section pivotally mounted on said lugs.

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Witnesses:
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REYNORD P. REESE.