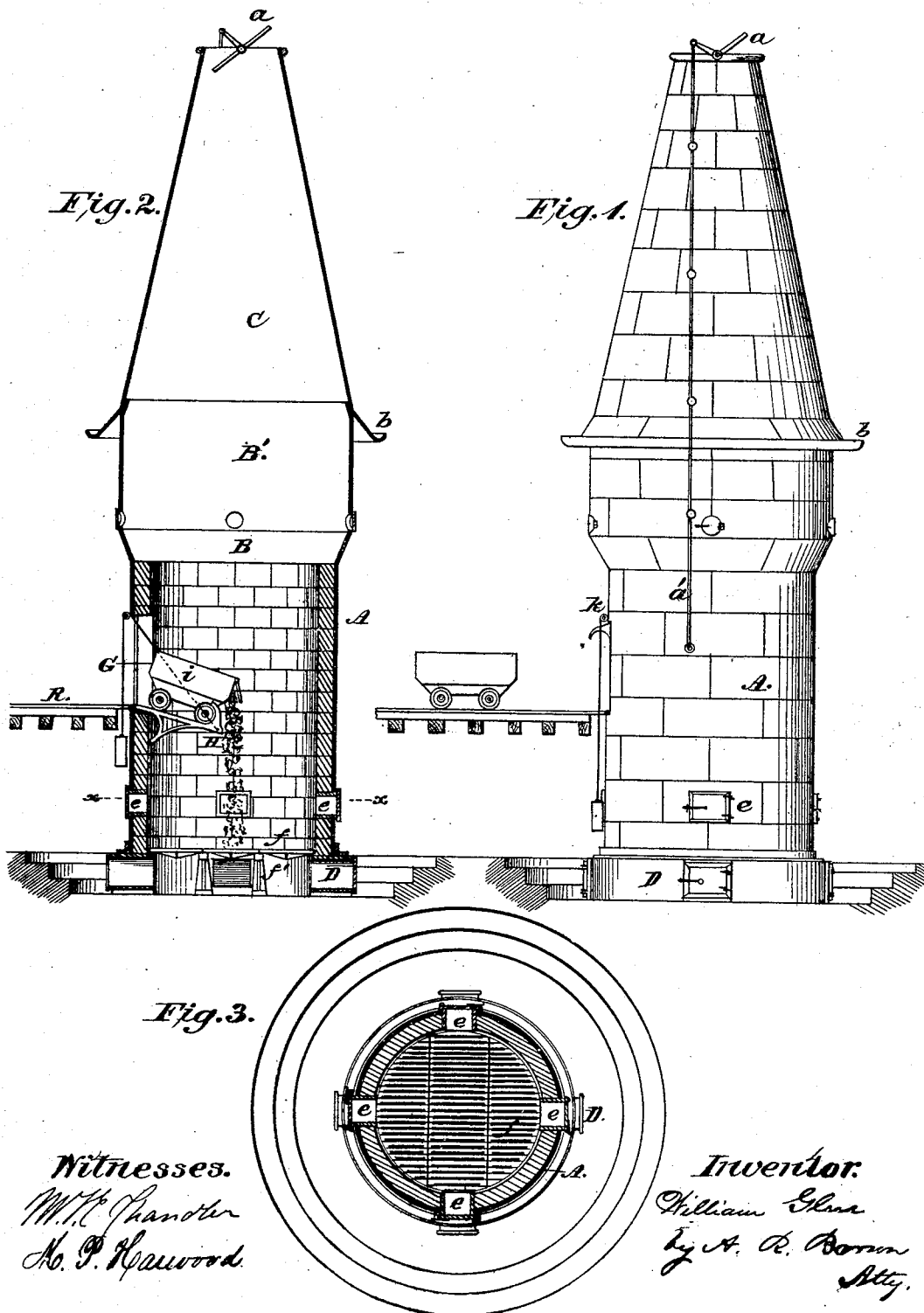


W. GLUE.
Refuse-Burners.

No. 145,861.

Patented Dec. 23, 1873.



Witnesses.
W. H. Chandler
H. P. Hawwood

Inventor.
William Glue
By A. R. Borron
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM GLUE, OF MUSKEGON, MICHIGAN.

IMPROVEMENT IN REFUSE-BURNERS.

Specification forming part of Letters Patent No. **145,861**, dated December 13, 1873; application filed October 14, 1873.

To all whom it may concern:

Be it known that I, WILLIAM GLUE, of Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Furnaces for Burning the Refuse of Saw-Mills; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to that class of furnaces intended for the combustion of wet fuel, and principally to those constructed for the purpose of destroying lath-edgings, sawdust, and other refuse matter of a similar nature, which, if allowed to accumulate about a saw-mill, are a source of great danger, as, after becoming dry, they are easily ignited by falling sparks. It may also be used in connection with any other manufactories in which it is found necessary to provide an efficient means for the destruction of similar refuse matter, as tanneries and sugar-mills; and it consists in the construction and arrangement of the different parts of the furnace, as will be hereinafter fully set forth.

In the accompanying drawings, similar letters of reference indicate corresponding parts in the different figures.

Figure 1 is a perspective view of the furnace, showing its external contour and the position of the various openings for the admission of air and fuel, as well as removal of the ashes. Fig. 2 is a vertical section through the axis of Fig. 1, and shows the interior of the furnace, with the door over which the cars run open, and a car in the act of dumping its load upon the grate. Fig. 3 represents a horizontal section of the furnace just above the level of the grate, and showing a plan of the same.

The outer shell of this furnace, marked A in the drawings, is of sheet-metal plates cut to the proper form and secured to each other by rivets, in the manner commonly practiced for putting together smoke-stacks and similar structures, the thickness of the plates being, of course, proportionate to the size of the structure and strength required, the lower cylindrical portion A being lined with fire-brick or

other refractory material capable of enduring a high degree of heat. Immediately above this the shell is enlarged by means of a funnel-shaped portion, B, above which it forms another vertical cylinder, B'. This enlargement affords ample space for combustion, and at the same time places the unprotected shell where it will not be exposed to the direct impact of the flame. The remainder of the stack above this point, which is marked C in the drawing, consists of a conical chamber reduced at its upper end to about one-half the diameter of the cylinder A, and provided with a circular valve, *a*, secured to a shaft, which has its bearings upon opposite sides of the stack, and is operated by a rod, *a'*, attached to a crank upon one end of the shaft. This rod comes down to a position which places it within convenient reach of the attendant, who, through it, opens or closes the valve, as may be necessary. A drip-receiver or gutter, *b*, encircles the stack at the base of the cone, and catches the rain which falls upon it, thus preventing disfiguration and injury of the more highly-heated parts below. The base D, upon which the whole superstructure rests, is formed, preferably, of cast-iron, and incloses the ash-pit. It is provided with a suitable number of doors, to allow of the removal of the ashes, and for the purpose of admitting air below the grate. Other openings, *e e*, are also provided for the admission of air to the stack above the grate, to assist in the combustion and to cool the stack. *f* is the grate, in the present instance formed of bars perforated longitudinally with narrow slits, and laid in three sections supported by an inwardly-projecting ledge of the base D, and two bearers, *f' f'*, as shown in Fig. 2. At a suitable height from the base is the large opening G, through which the fuel is introduced. This opening is closed by a door, H, hinged at its lower side to the outer shell of the stack, opening inward, and provided on its under side with braces, which, when it is open, rest against the inner wall of the stack, retaining the door in an inclined position, its inner end being the lowest; or, if desired, this support may be dispensed with and the same result produced by affixing appropriate stops upon the wire ropes or chains *i*. These ropes or chains are attached to the upper end of the

door, and pass over sheaves *k*, and thence downward to balance-weights secured to their lower ends. These weights are sufficiently heavy to keep the door closed at all times when it is not held forcibly open. Upon the outer surface of the door are secured two rails or tracks, the upper ends of which are curved into a semi-circle of about the same diameter as the wheels of the fuel-trucks carried by them, and their lower ends correspond in position with the rails of the railway *R*.

It will be obvious that a loaded car or truck upon the railway being pushed against the door *G* will cause it to open, and the car passing forward upon it runs with force down the inclined plane until caught by the curved ends of the rails encircling the wheels. At this moment the front end of the car, being hinged at the top and secured at the bottom by a catch, is opened, and the contents will be ejected into the furnace by its momentum. The car being then withdrawn, the door closes automatically through the agency of the balance-weights.

I am aware that furnaces have been heretofore constructed for the purpose of burning

wet fuel; but I believe none have ever been provided with the same ready and efficient means for introducing the fuel; and, further, to my knowledge, none have been heretofore constructed capable of accomplishing the same amount of work for the same cost.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. In combination with the furnace herein described, the conical part *C*, provided with projecting drip-receiver *b*, placed over the cylinder *B'*, substantially as and for the purpose set forth.

2. The balanced door *H*, provided with the rail-tracks, having one end curved, as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of September, 1873.

WILLIAM GLUE.

Witnesses:

JOHN GRAHAM,
D. C. McLAUGHLIN.