(No Model.)

W. H. RIESS.

FUEL BURNING ATTACHMENT FOR STOVES, &c.

No. 600,621. Patented Mar. 15, 1898.

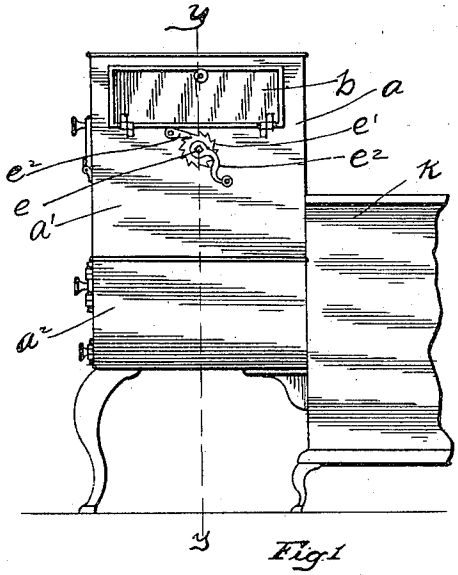


Fig. 1

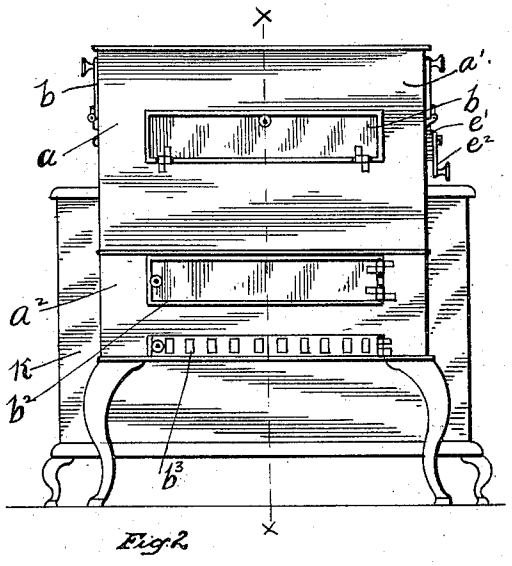


Fig. 2

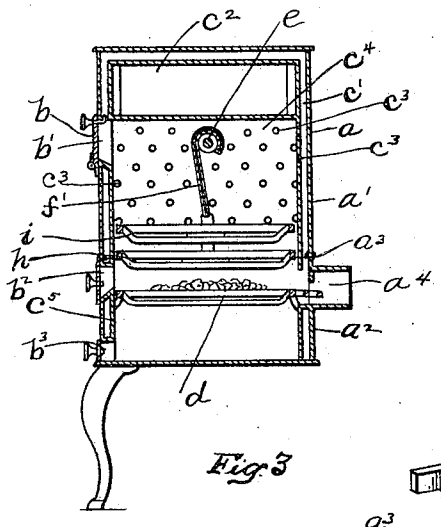


Fig. 3

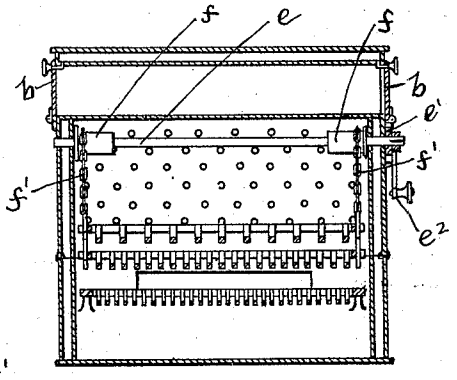


Fig. 4

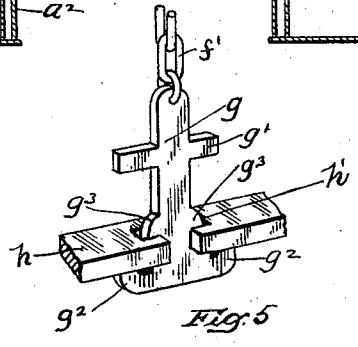


Fig. 5

WITNESSES:

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FUEL-BURNING ATTACHMENT FOR STOVES, &c.

SPECIFICATION forming part of Letters Patent No. 600,621, dated March 15, 1898.

Application filed September 14, 1895. Renewed September 4, 1897. Serial No. 650,662. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HERMANN RIESS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a certain new and useful Improvement in Fuel-Burning Attachments for Stoves, &c., of which the following is a specification.

My invention relates to the improvement of attachments for stoves and similar heating devices; and the objects of my invention are to provide a combined fire-box and smoke-consuming and gas-generating attachment, drum of improved construction and arrangement of parts and to produce other improvements, the details of construction of which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is an end view of my improved attachment. Fig. 2 is a front view. Fig. 3 is a sectional view on line x x of Fig. 2. Fig. 4 is a sectional view on line y y of Fig. 1; and Fig. 5 is a detail view in perspective of one of the grate-supports, illustrating the manner of connecting the same with the end of the grate.

Similar letters refer to similar parts throughout the several views.

a represents a rectangular casing or drum, which, if desired, may consist of an upper section a' and lower section a^2, said sections being made to rest one upon the other at a point a^3. The external casing or drum a thus formed is provided at each end and in its upper portion with a doorway and door b, and the forward side or face of said drum or casing is provided in its upper portion with a doorway b', the latter being provided with a door. The upper portion of the lower section a^2 of the casing is provided on its front side with a normally-closed doorway b^2, while a doorway b^3 leads through said casing front adjacent to its bottom plate.

c represents an inner drum or casing, which is arranged within the casing a at such distance therefrom as to result in the formation of a chamber or space c' between the top plates and side and end walls of said drums. The side walls and top plate of the inner drum or casing form the side walls and top plate of a horizontal oven c^2, which is supported lengthwise within the upper portion of the casing a. The unclosed ends of the oven c^2 communicate with the doorways b at the ends of the casing a. As indicated in the drawings, the inner casing c may, as prescribed for the outer casing, consist of upper and lower sections c^4 c^5, the latter being suitably supported from said outer sections. In the walls of the inner casing c are provided openings or perforations c^3, which form a means of communication between the two drums. The rear side of the double drum, formed as above described, at a point horizontally opposite the doorway b^2 is provided with an outlet extension a^4 in the form of a short pipe, as shown, the latter communicating with the interior of the inner drum and with the space c' between said drums.

d represents a horizontal grate-bar, which is suitably supported within the inner drum of the casing-section c^5 at a point below the center of the height of the outlet a^4. Extending longitudinally through the upper sections a' and c^4 of the casings and journaled in the ends of said outer casing is a shaft e, the latter carrying on one of its outwardly-projecting ends a ratchet-wheel e', with the teeth of which is adapted to engage a pawl e^2, pivotally connected with the end of the external casing. The shaft e is also made to carry on its outer end a suitable crank-handle. About suitable spools f, carried on the shaft e, adjacent to the inner walls of the inner casing, are secured corresponding ends of chains or metallic cords f'. The lower end of each of these chains has suspended therefrom a supporting bracket or hanger g, the latter consisting of a vertical bar provided in its upper portion with a cross-bar g' and in its lower end portion with outturned fingers g^2. Adjoining the lower portion of the hanger-body the central bar thereof is provided with lateral enlargements g^3.

h represents a horizontal grate-bar, each end of which is provided with a substantially T-shaped recess h'. This grate-bar is normally supported at the desired height above the grate-bar d by means of the hangers g, the central bars of said hangers being at their narrower portions first inserted into the recesses h' of the grate-bar ends, and said grate-

bar being thus allowed to drop downward until its ends rest upon the fingers g^2 and its lateral enlargements g^3 are within the inner portion of the recesses h'. The end portions of the upper arms g' are adapted to engage with similar recesses formed in the ends of an upper horizontal grate-bar i, said grate-bars h and i being thus detachably suspended one above the other.

As indicated in the drawings, the rear portion of the double drum formed as herein described is adapted to be made to communicate through the outlet a^4 with the interior of an ordinary stove k or other suitable heater.

As indicated more clearly in Fig. 4 of the drawings, the openings between the bars of the grate-bar frame i are of larger size than those between the bars of the grate-bar frame h.

In operation the material to be utilized as fuel or for the purpose of generating a fuel-gas therefrom is fed through the doorway b onto the upper grate-bar frame i, while the finer particles of the fuel pass downward between the bars of said grate onto the grate-bars h. A fire being started on the lower grate-bar d, and the upper grate-bars h and i being supported at the proper distance above the fire, the heat generated from said fire must result in a charring of the fuel contained in the upper grate-bars and in a consequent generation of a fuel-gas. The gas thus generated is ignited by contact with the flames of the fire d, while the smoke which may pass into the space c' between the drums through the perforations c^3, and which in escaping is drawn downward to the mouth of the outlet a^4, meets the flame at said outlet and is consumed thereby.

It is evident that when the gas generated as above described has been consumed the charcoal or charred mass contained in the upper grate-bars may by rotation of the shaft e be lowered into the flame from the grate d and thereby be consumed. In the manner described it is evident that straw, cobs, or any refuse matter, in addition to coal and wood, may be utilized as fuel, and that the soot or smoke, carbon, and other products of combustion will be entirely consumed instead of being allowed to pass outward or clog the stove-outlets.

The construction of my improved stove attachment is such as to admit of its being produced at a reasonable cost of manufacture in a neat and substantial form.

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

1. In a fuel-burning attachment for stoves the combination with a casing, an outlet in the back of said casing and a grate-bar in the lower portion of said casing, of one or more grate-bars adjustably suspended above said lower grate-bar and within said casing substantially as and for the purpose specified.

2. In a fuel-burning attachment for stoves the combination with a casing, an outlet in one side thereof and a grate-bar in the lower portion of said casing, of a shaft journaled in the upper portion of the casing, chains secured to and adapted to be wound on said shaft, hangers suspended from said chains, one or more grate-bars above said lower grate-bar, said upper grate-bars being detachably connected with said hangers, substantially as and for the purpose specified.

3. In a fuel-burning attachment for stoves the combination of an external casing, a suitably-supported internal casing, an outlet in the lower portions of said casings, a lower grate-bar adjacent to said outlet, perforations in said inner casing-walls and adjustably-supported grate-bars above said lower grate-bar, substantially as and for the purpose specified.

W. HERMANN RIESS.

In presence of—
C. C. SHEPHERD,
C. M. VOORHEES.