

No. 685,081.

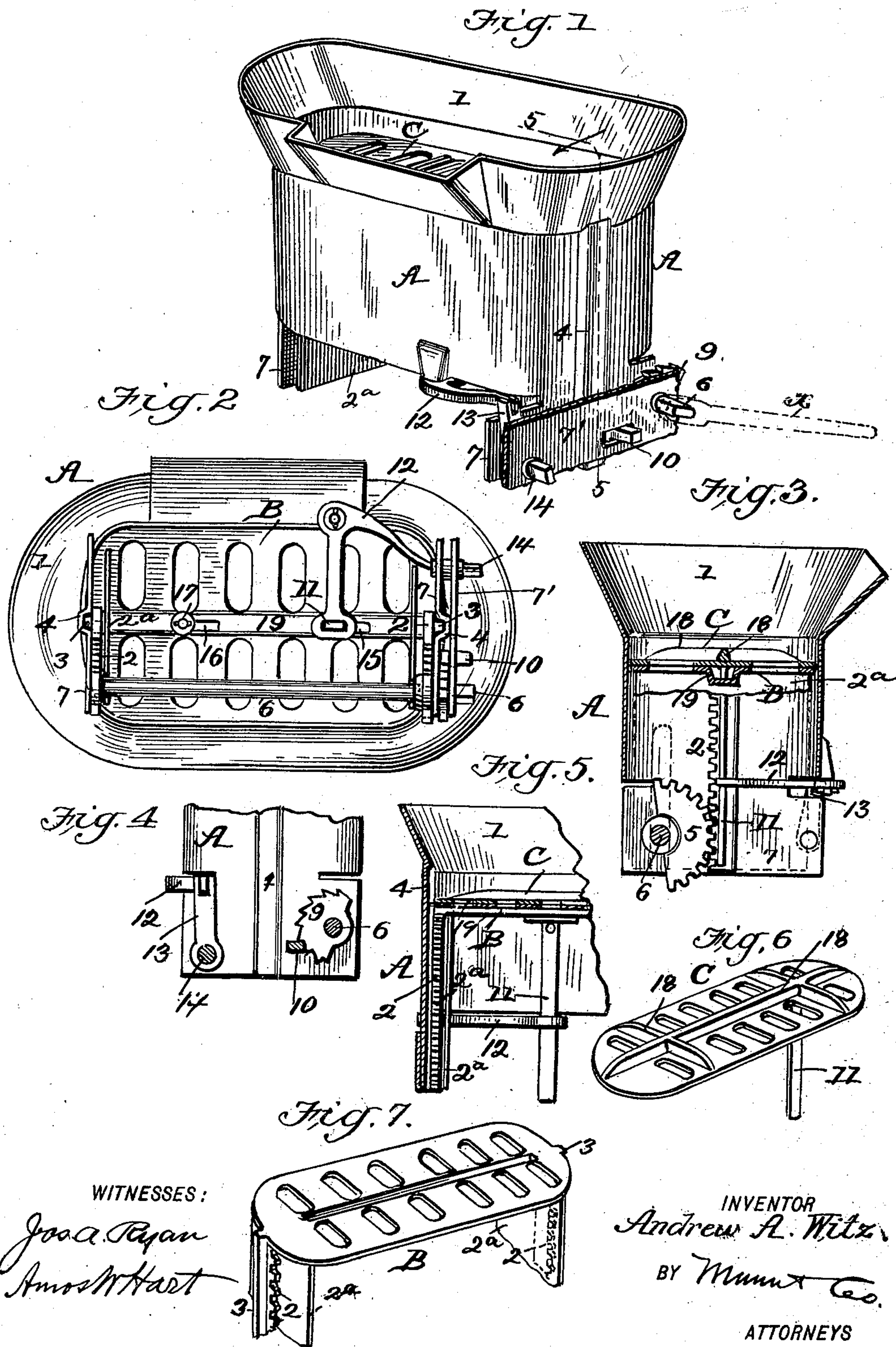
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A. A. WITZ.

FIRE BOX AND GRATE FOR COOK STOVES.

(Application filed Apr. 3, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

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FIRE BOX AND GRATE FOR COOK-STOVES.

SPECIFICATION forming part of Letters Patent No. 685,081, dated October 22, 1901.

Application filed April 3, 1901. Serial No. 54,190. (No model.)

To all whom it may concern:

Be it known that I, ANDREW A. WITZ, a citizen of the United States, residing at Harvey, in the county of Wells and State of North Dakota, have made certain new and useful Improvements in Fire Boxes and Grates for Cook-Stoves, of which the following is a specification.

My invention is an improvement in that class of fire-boxes having vertically-adjustable grates; and it includes a fire-box proper adapted to be placed in a stove, more particularly a cook-stove, the same being provided with a grate and attachments thereof for raising and lowering and also shaking it for dislodging ashes, cinders, &c. The construction, arrangement, and combination are as hereinafter described, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a fire-box provided with my improved attachments. Fig. 2 is a bottom plan view of the same. Fig. 3 is a vertical transverse section. Fig. 4 is a vertical section of a portion of the fire-box. Fig. 5 is a longitudinal vertical section of a portion of the fire box and grate on about line 5 5 of Fig. 1. Fig. 6 is a perspective view of a sliding portion of the grate, and Fig. 7 is a perspective view of the main portion or body of the grate.

The fire-box A is constructed of sheet metal or other suitable material and is oval in form and provided with a top flange 1, whereby it is adapted for insertion and support in a cook-stove.

B indicates the vertically-adjustable portion of the grate, and C the slidable portion thereof, which rests flat upon the part B. Both these parts B and C (see Fig. 7) are provided with transverse slots or openings, which when brought into coincidence, as shown in Figs. 3 and 5, permit the entrance of air to support the combustion and discharge of ashes, cinders, &c., downward through the body of the fire-box A. The part B of the grate is provided with parallel pendent rack-bars 2 at its ends, and said rack-bars have guide-ribs 3, which work in grooves 4, formed vertically in the ends of the fire-box A. (See especially Fig. 2.) The said grooves thus serve as guides for the grate in its vertical adjust-

ment. The means for adjusting the grate vertically are segment-gears 5, which engage the racks 2, and a transverse shaft 6, on which the said gears are keyed. This shaft is mounted in bearings formed in flanges 7, pendent from the end portions of the fire-box A and extending parallel to each other, as shown best in Figs. 1 and 2. One end of the shaft 6 projects as shown in Fig. 2 and is made polygonal to adapt it for application of a lever-handle α , as shown in Fig. 2. The said handle serves for rotating the shaft 6, as required to adjust the grate higher or lower. The shaft is locked and the grate held in any desired adjustment by means of a ratchet-segment 9 (see Fig. 4) and a slidable dog 10, which is arranged between one of the pendent flanges 7 and an adjacent and parallel plate 7'. (See Figs. 1 and 2.) It will be seen that the said dog is adapted to be slid horizontally to bring it into or out of engagement with the ratchet 9. For the purpose of shaking the grate—that is, for sliding the superposed part C—I provide the latter with a pendent arm or bar 11, which is engaged and operated by the following-described mechanism—that is to say, an elbow-lever 12 (see Fig. 2) is pivoted at its angle to the lower portion of the body A of the fire-box and provided at its inner end with a slot adapted to receive the aforesaid bar 11. The outer end of the said lever is loosely connected with the lever 13 by a short rock-shaft 14, which has its bearings in the parallel plates 7 7', forming an attachment of the fire-box. The outer end of said shaft 14 is made polygonal to adapt it for application to the lever-handle α , and it is obvious that by oscillating said handle the arm 13 will be vibrated in a vertical plane and the lever 12 in a horizontal plane, thereby reciprocating or sliding the part C of the grate upon the body B of the same. It is apparent that to permit such movement of the part C the part B is necessarily provided with a slot 15, in which the bar 11 works. Another slot 16 (see Fig. 2) is also provided for a stud 17, which is pendent from the part C and provided with a key for the purpose of holding the parts B and C properly connected. It will be seen that by reason of the adaptation of the pendent arm

or bar 11 to slide in the slot formed in the inner end of the vibrating elbow-lever 12 provision is made for shaking the grate, whatever the elevation or vertical adjustment of the latter. In other words, the sliding engagement of the said bar and lever-arm is the same, whatever be the position of the grate, and it is even practicable to shake the grate while being raised or lowered. As shown in Figs. 3, 5, and 6, the part C is provided with ribs 18, extending longitudinally and transversely on its upper side, for the purpose of imparting the requisite strength and rigidity thereto. The said ribs also serve to assist in disturbing and discharging the ashes and cinders when the part C is reciprocated, as before described. The body B of the grate is similarly provided with a longitudinal rib 19, which extends between the rack-bars 2 and imparts due strength and rigidity.

The main portion B of the grate is provided at its ends with pendent sheet-metal fenders 2^a, (shown best in Fig. 7,) the same serving to cover the gears and racks and prevent ashes and cinders falling thereon.

As thus constructed my improved fire-box, with its grate attachments, is adapted to be used in old forms of cook-stoves and even in stoves not originally intended therefor. The shafts 6 and 14 and the dog 10 will in practice project through the outside case of a stove, which is indicated by 7', Figs. 1 and 2. The flaring flange 1 of the fire-box A may serve as a means for support of the latter in the stove, or other means of support may be provided, as occasion requires. The fire-box is adapted for combustion of any kind of fuel, like the ordinary fire-box. It is apparent that the openings in the two parts B and C make ample provision for the admission of air to supply combustion and that the draft may be perfectly regulated for adjusting the part C to close the openings more or less. It is further apparent that a great economy in fuel may be obtained by adjusting the grate—that is to say, when there is a comparatively small quantity of fuel on the grate and the degree of heat corresponds the grate may be raised to bring the fuel-surface nearer to the bottom of the pots, kettles, or other cooking-receptacles placed in the stove-holes. Again,

in case there be a comparatively large amount of fuel on the grate and the combustion and heat are greater than required for cooking purposes the grate may be lowered in order to lessen the effect of the heat upon the cooking-receptacles. Thus with a small amount of fuel a comparatively high degree of heat may be applied to the receptacles, or, on the other hand, the effect of a larger quantity of fuel and a higher combustion may be lessened, as occasion requires.

What I claim is—

1. The combination with a fire-box, of a grate which is vertically adjustable therein, means for effecting the vertical adjustment, and a slidable part arranged on the body of the grate and both provided with openings as specified, a bar which is pendent from and rigidly connected with the slidable part, and means for reciprocating the latter, said means including a device through which the pendent bar is adapted to slide to permit the vertical adjustment of the grate, substantially as shown and described.

2. The combination with the fire-box, of a grate arranged therein and having a slidable portion and provided with openings as specified, an arm pendent from and rigidly connected with the slidable part; an elbow-lever which engages said bar and is pivoted at its angle to the body of the fire-box, and a rocking arm and shaft engaging the outer or free end of said lever, substantially as shown and described.

3. The combination with a fire-box, having a pendent end flange 7, of a rock-shaft having a lever-arm and journaled in said flange, an elbow-lever loosely connected with the said arm and pivoted at its angle as specified, a vertically-adjustable grate arranged in the fire-box and having a slidable part provided with a rigid pendent arm which passes through a slot in the inner end of the elbow-lever, and means for adjusting the grate higher or lower, substantially as shown and described.

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Witnesses:

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