(No Model.)

C. H. WATEROUS, Jr.

BOILER ATTACHMENT.

No. 367,481. Patented Aug. 2, 1887.

Fig. 1.

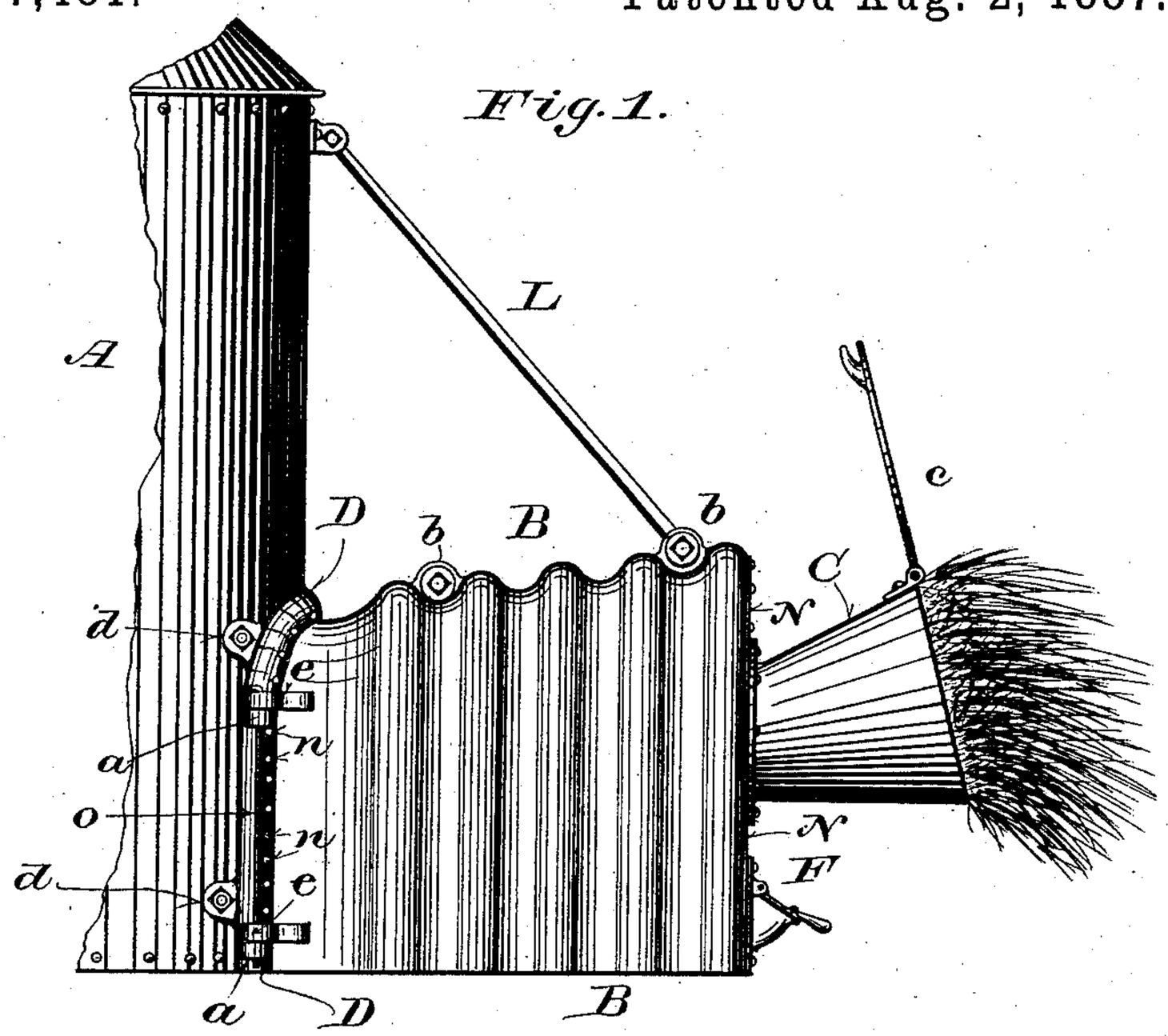
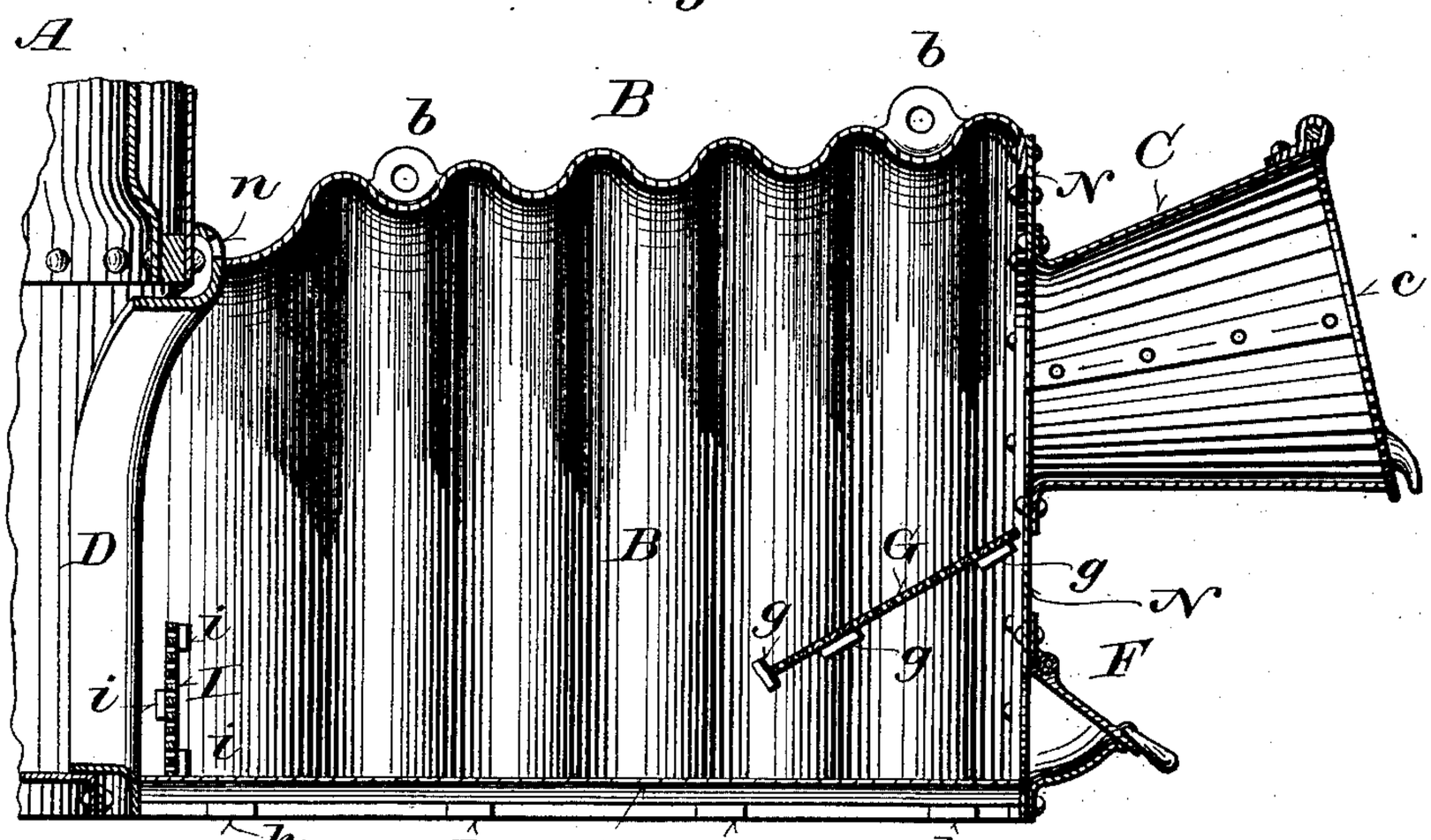


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

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BOILER ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 367,481, dated August 2, 1887.

Application filed September 4, 1886. Serial No. 212,705. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. WATEROUS, Jr., of Brantford, in the county of Brant, Province of Ontario, and Dominion of Canada, have invented certain new and useful Improvements in Boiler Attachments; and I do hereby declare that the following is a full, clear, and exact a description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to utilize straw or other similar combustible material for fuel; and it consists, essentially, of a box or chamber attached to the boiler and communicating through a wide opening with the fire-box thereof, an outwardly-flaring feeding-chute, a perforated frame and shield by means of which said box or chamber is attached to the boiler and the rivets and shell of the boiler protected, and of certain other details, hereinafter described.

In the accompanying drawings like letters refer to the same parts in both figures.

Figure 1 is a side elevation. Fig. 2 is a vertical section.

My improved device is particularly designed for use with portable engines, and is especially useful in connection with farm-engines for burning straw.

Referring to the drawings, A represents a portion of an upright or vertical flue-boiler to which my furnace attachment is applied.

B is the straw-burner or combustion-chamber, preferably composed of two corrugated cast-iron side sections secured together at the top by bolts passing through the ears *b b*, formed upon their contiguous edges, of the sheet-iron end section, N, riveted thereto, and the bottom H, made of longitudinally-corrugated cast-iron plates, which rest upon lugs *h h*, formed upon said side sections, as seen in Fig. 2.

The end of chamber B next to the boiler A is open, and the shell of the boiler is cut entirely away adjacent thereto, so as to form an unobstructed opening for the flame and heat to pass from said chamber into the fire-box of said boiler.

D is a cast-iron door-frame, provided at each side with perforated ears *d d*, by means of which it is bolted to the boiler, and with vertically-perforated ears *a a*, corresponding with ears *e e*, formed on the side sections of chamber B. By means of rods *o*, passing through said ears *a* and *e*, as shown in Fig. 1, said chamber B is attached to the boiler, and may be readily removed therefrom when it is desired to use the engine as a wood-burner or for any other purpose. The frame D is curved over the rivets about the door-hole, and extends slightly through the opening into the boiler, thus protecting the shell and riveting about said door-hole from the flame and heat, which at that point is quite intense.

Perforations *n n*, formed in the frame D, just outside of the walls of chamber B, admit fresh air, which prevents said frame and the adjacent parts from being overheated.

A brace, L, attached to the boiler and the outer end of the chamber B, supports the latter at that point.

To the outer end and near the top of chamber B is attached the funnel-shaped or outwardly-flaring feeding-chute C, which is provided with a door, *c*. Underneath the feeding-chute C, at the bottom of chamber B, is a door, F, by means of which the ashes may be removed from said chamber and the draft of the burner regulated if desired.

An inclined perforated plate, G, supported just underneath chute C inside of chamber B upon lugs *g g*, cast on the side sections of said chamber, prevents the straw or other fuel as it is fed into the burner from falling immediately, before it is ignited, to the bottom of said chamber B. A similar perforated plate, I, placed in an upright position across the lower part of chamber B, adjacent to its opening into boiler A, and retained in place by lugs *i i*, prevents the fuel and ashes from working out of the burner into the boiler.

In practice I find that the most satisfactory results are attained with the least labor by leaving the door *c* of the feeding-chute C open and keeping said chute constantly filled with straw, by crowding that already in the chute, whenever the fire needs replenishing, into chamber B with a fresh forkful or supply, which takes its place and closes the opening

into the burner. The outside air is thus prevented from entering the burner and from passing thence into the boiler and cooling the flues, which is an unavoidable consequence when the door *c* is opened and closed and the fuel thrust at the outset entirely into said chamber B. The funnel shape of the feeding-chute retains the straw therein until it is forced into the burner by a fresh supply. As the fuel enters chamber B, it falls upon the inclined plate G, is ignited by the fire below, and falls over the edge of said plate to the bottom of said chamber B, away from the door F. The flame, heated gases, smoke, &c., pass freely through the open end of the burner into the boiler, the plate I retaining the fuel and ashes in chamber B.

The details of my improved burner attachment may be modified in various ways without departure from the spirit of my invention.

I claim—

1. The combination, with a steam-boiler, of an auxiliary combustion-chamber having the end by which it is attached to said boiler entirely open, substantially as and for the purposes set forth.

2. The combination, with a steam-boiler, of an auxiliary combustion-chamber attached thereto and opening into its fire-box, and a funnel-shaped feeding-chute attached to said auxiliary combustion-chamber and opening into the upper part thereof, substantially as and for the purposes set forth.

3. The combination, with a steam-boiler, of a combustion-chamber having corrugated walls attached thereto and opening into the fire-box of said boiler, and a feeding-chute opening in the outer end of said combustion-chamber, substantially as and for the purposes set forth.

4. The combination, with a steam-boiler, of the chamber B, attached to said boiler and open at the end adjacent thereto into the same, and the perforated frame and shield D, substantially as and for the purposes set forth.

5. The combination, with a steam-boiler, of the chamber B, attached to said boiler and opening into the same at the end adjacent thereto, feeding-chute C, and plate G, substantially as and for the purposes set forth.

6. The combination, with a steam-boiler, of the chamber B, attached to said boiler and open into the same at the end adjacent thereto, feeding-chute C, and plate I, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES H. WATEROUS, JR.

Witnesses:
FRED S. WILKES,
D. J. WATEROUS.