(No Model.)

J. H. TAYLOR.

GAS FURNACE.

No. 365,950. Patented July 5, 1887.

Fig. 1.

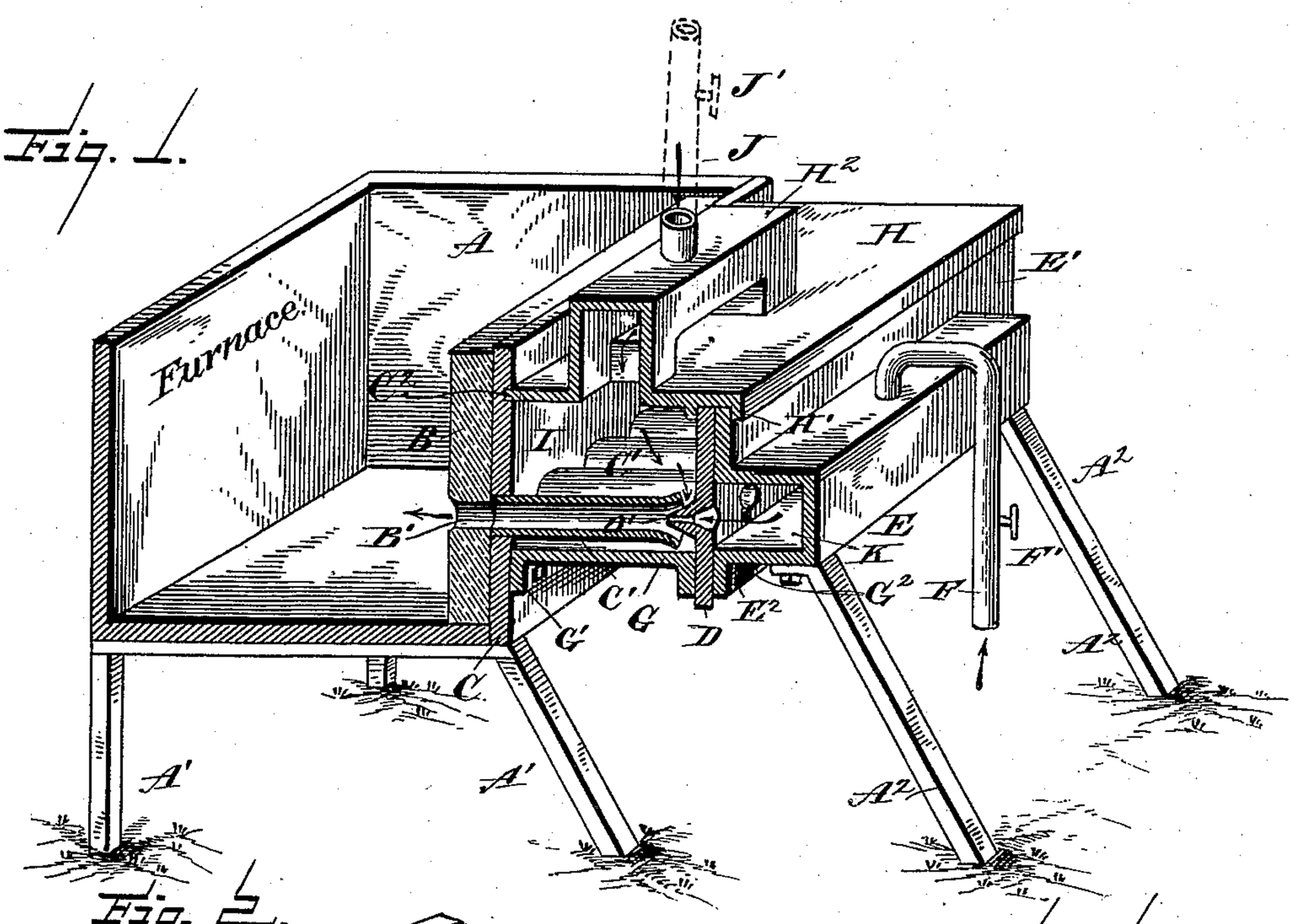


Fig. 2.

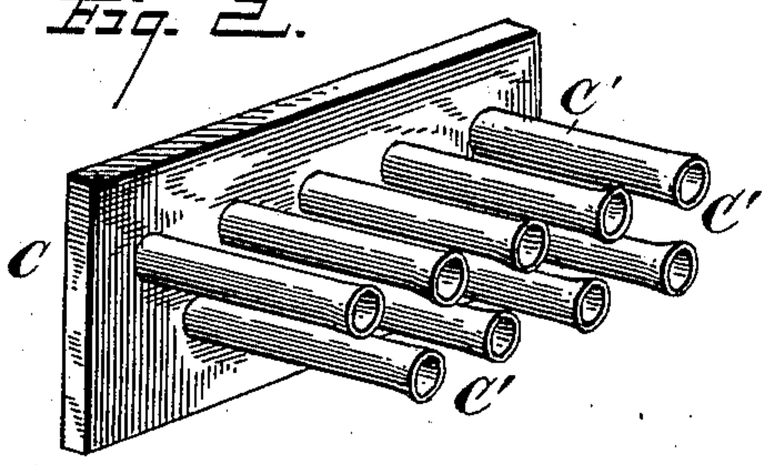


Fig. 3.

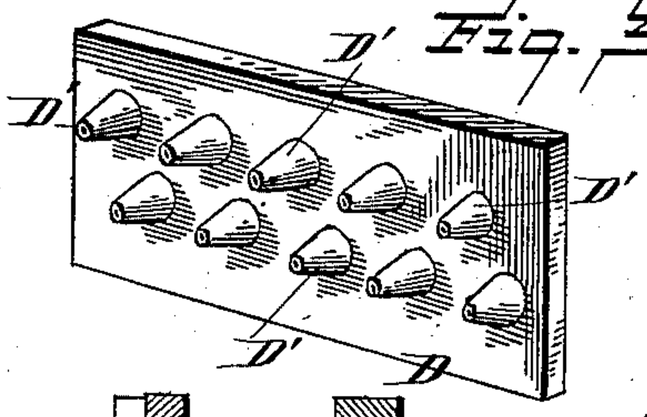


Fig. 4.

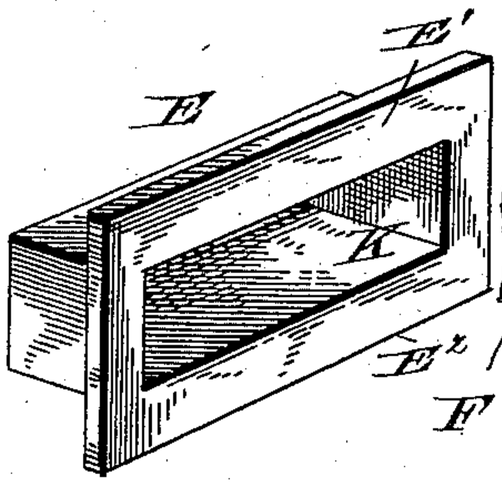
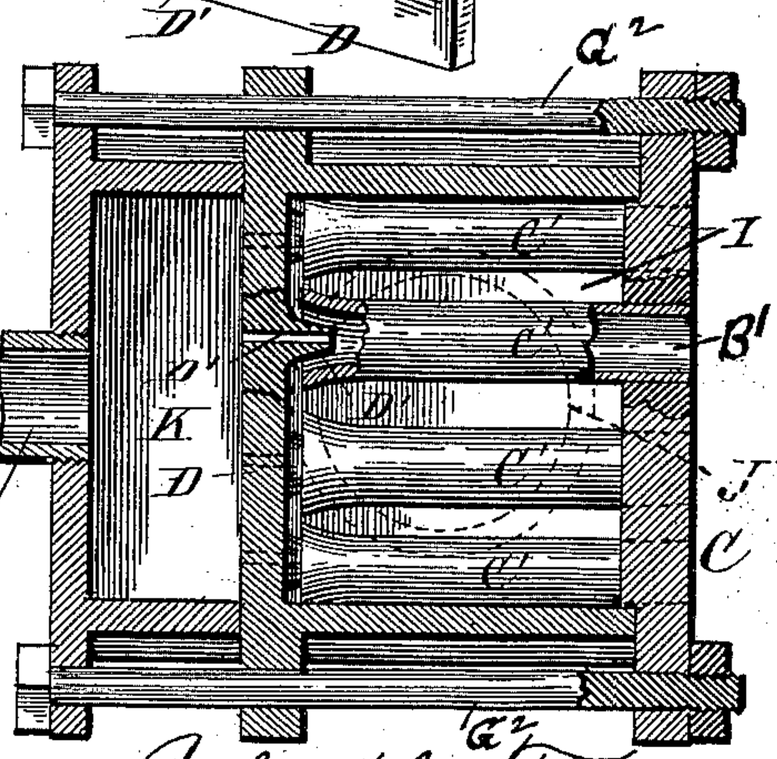


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN H. TAYLOR, OF BEAVER FALLS, PENNSYLVANIA.

GAS-FURNACE.

SPECIFICATION forming part of Letters Patent No. 365,950, dated July 5, 1887.

Application filed October 4, 1886. Serial No. 215,285. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. TAYLOR, a citizen of the United States, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Gas-Furnaces; 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.

This invention relates to metallurgical gas and air furnaces, and among the objects of the invention is a reduction of the cost of manufacture, a simplification and reduction of the number of parts composing the same, and the provision of a furnace that is light, portable, and effective.

With these general objects in view my invention consists in certain features of construction, hereinafter specified, and particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a vertical section and perspective of a furnace constructed in accordance with my invention; and Figs. 2, 3, and 4 are details in perspective, hereinafter described. Fig. 5 is a modification.

Like letters of reference indicate like parts in all the figures of the drawings.

A represents in this instance a rectangular combustion-chamber or furnace of any desired construction, and mounted upon suitable legs or standards, A′. Cement or other suitable non-combustible material, B, extends entirely or partly around the retort, so as to form one or more of its inner walls.

Mounted at one side of the furnace or combustion-chamber, upon suitable legs or standards, A^2, are the air and gas receiving chambers I K. These chambers are formed by the novel arrangement and combining of peculiarly-shaped plates or castings, as will be hereinafter fully described.

C represents a plate having formed integral therewith or screwed therein a series of air and gas receiving and discharging tubes, C′, each of which is formed with a bell-shaped or flared mouth. These tubes, of which there may be any desired number, extend along the plate at suitable intervals and register with burner-holes B′ in the lining B of the furnace. As shown in Fig. 2, there may be more than one series of tubes instead of the single series shown in Fig. 1.

Arranged opposite the plate C is a plate, D, which is formed with conical-shaped gas nipples D′, of a number and in a position to register with and enter into the flared openings of the tubes C′.

Back of the nipple-plate D, and secured thereto by means of downwardly and upwardly extending flanges E′ E^2, is the gas-receiving chamber plate or casting E, the chamber K thus formed being supplied with gas by means of a supply-pipe, F, the supply being regulated by means of an ordinary stop-cock or valve, F′.

Arranged between the plates C and D, under the tubes C′, is a spacing plate or casting, G, formed with outwardly-extending securing-flanges G′, through which and the plates C and D and the flange E^2 are passed securing-bolts G^2. The plate C is provided, near its top, with a groove, C^2, into which one edge of the flanged covering H enters. The remaining three edges of the covering is formed with downwardly-extending flanges H′, which take over the upper edges of the nipple-plate D and the flange E^2 of the chamber-casting E. The covering H is provided with a supplemental chamber, H^2, which communicates with the air-chamber I, to which air is supplied by an air-supply pipe, J, the supply being regulated by a stop-cock or valve, J′.

Fig. 1 illustrates what may be termed a "stationary furnace," and the details of construction in what may be termed a "burner." In Fig. 5 I have illustrated the burner detached from the furnace; or, in other words, a burner which is adapted to be connected to any ordinary furnace. In this modification the gas-chamber K consists of a single casting, and is bound against the nipple-plate, which constitutes one wall of the mixing-chamber, in which are the tubes C′, the dotted lines J representing the air-supply pipe. The burner-hole plate C constitutes the third casting of the burner, and the three are bound together by the bolts G^2, as shown. It is apparent that by this modified construction one or more burners may be applied to a furnace, as desired, and each being provided with an air and gas supply-valve having suitable cut-offs, one

or more of said burners may be simultaneously brought into operation.

By the above construction it will be seen that the structure is composed of simple castings so arranged and combined as to form air and gas receiving chambers I K, and that while the structure as a whole is light, simple, durable, and portable, excessive heat may be produced for the desired purposes, and that it is practically impossible to produce the explosion of gas within the burner, by reason of the thorough admixture of air and gas and its passage through the tubes C′ before reaching the place of ignition.

From the above description the operation is at once apparent, in that the air and gas being admitted through their respective pipes J and F into their respective distributing-chambers I and K the two elements will take the course indicated by the arrows into the tubes C′, where they are commingled and discharged at the openings B′ in the lining B, at which point the combustion occurs.

It will be seen that each of the plates may be easily cast and assembled without fitting, and held in position by means of securing bolts or rivets placed at suitable points, so that worn or warped parts may be replaced when necessary.

A large number of small articles—such as chains, links, and various blanks requiring welding—are placed in the furnace A and subjected to the heat of the flame issuing from the burners B′, and by replacing such as are withdrawn by additional articles a continuous operation of heating and welding may be carried on.

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

1. In a furnace of the class described, the combination of the plate C, having tubes C′, and plate D, having nipple D′, a space-plate, G, interposed between said plates and provided with securing-flanges, with the flanged casting E, provided with flanges and forming a gas-chamber, and with a covering provided with depending end flanges adapted to embrace the upper flange and edge of plate D and casting E, and suitable gas and air supply pipes, substantially as specified.

2. In a furnace of the class described, the combination of the plate C, provided with the flared tubes C′, the plate D, having nipples D′, adapted to register therewith, the gas-chamber K, and cover H, with the furnace A, provided with the lining B, perforated, as at B′, to register with the tubes C′, substantially as specified.

3. In a furnace of the class described, the combination of the plate C, bottom plate, G, space-plate D, casting E, and of the covering H, formed with the supplemental chamber H^2, said plates being arranged and combined to form air and gas chambers, substantially as and for the purpose specified.

4. In a furnace of the class described, the combination of the covering H, provided with the pipe and valve J J′, the casting E, provided with the pipe and valve F F′, with the grooved plate C, provided with tubes, the nipple-plate D, and the space-plate G, substantially as specified.

5. In a furnace of the class described, a burner consisting of three castings, forming, when arranged together as described, two chambers, the outer wall of one of the chambers being provided with burner-holes and mixed air and gas conducting tubes, and the intermediate wall of the two chambers being provided with gas-nipples arranged to register with the tubes, the whole being bound together in operative position, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. TAYLOR.

Witnesses:
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O. S. FLOING.