(No Model.)

J. JOHNSON.

GAS OR OIL RADIATOR.

No. 459,882. Patented Sept. 22, 1891.

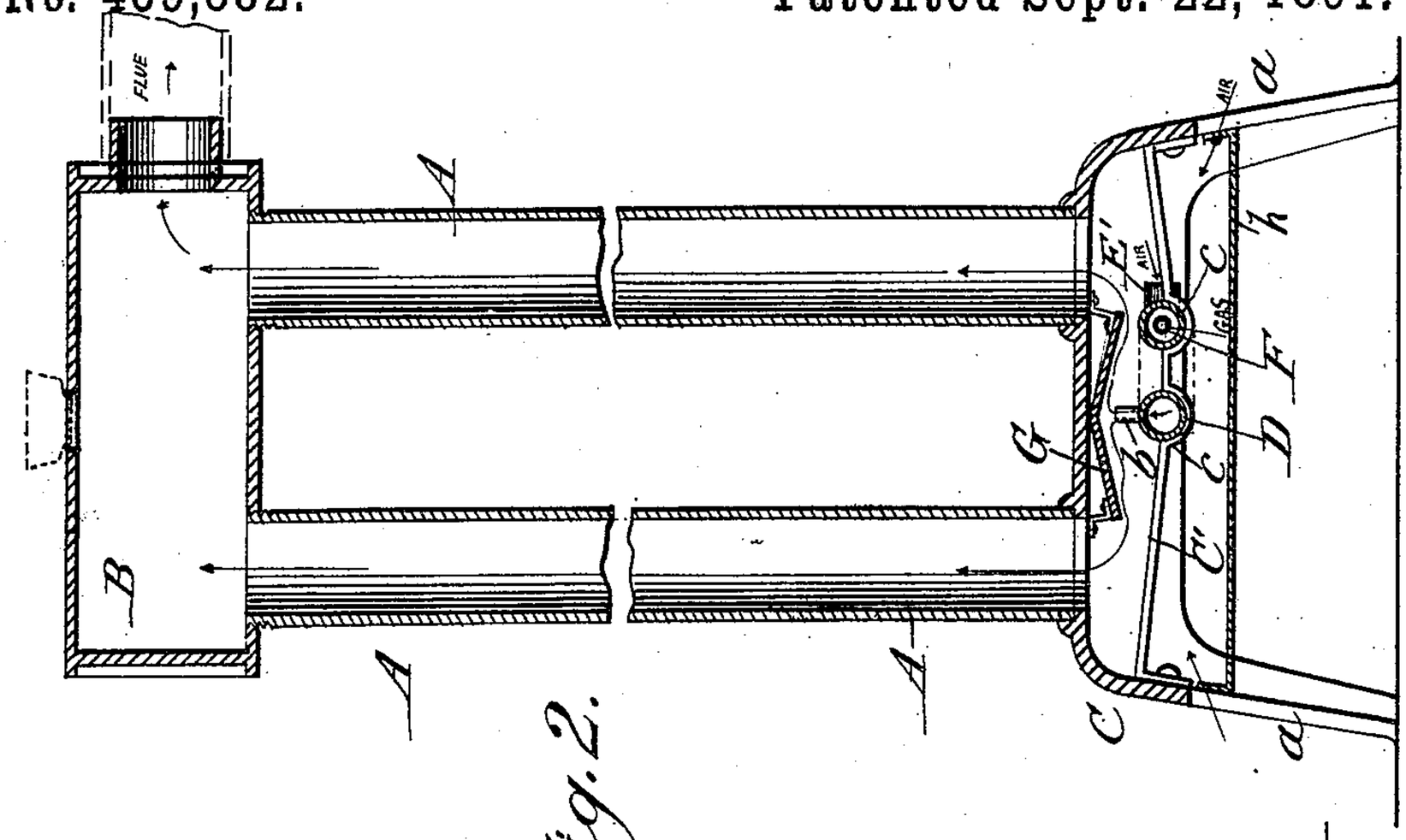

Fig. 2.

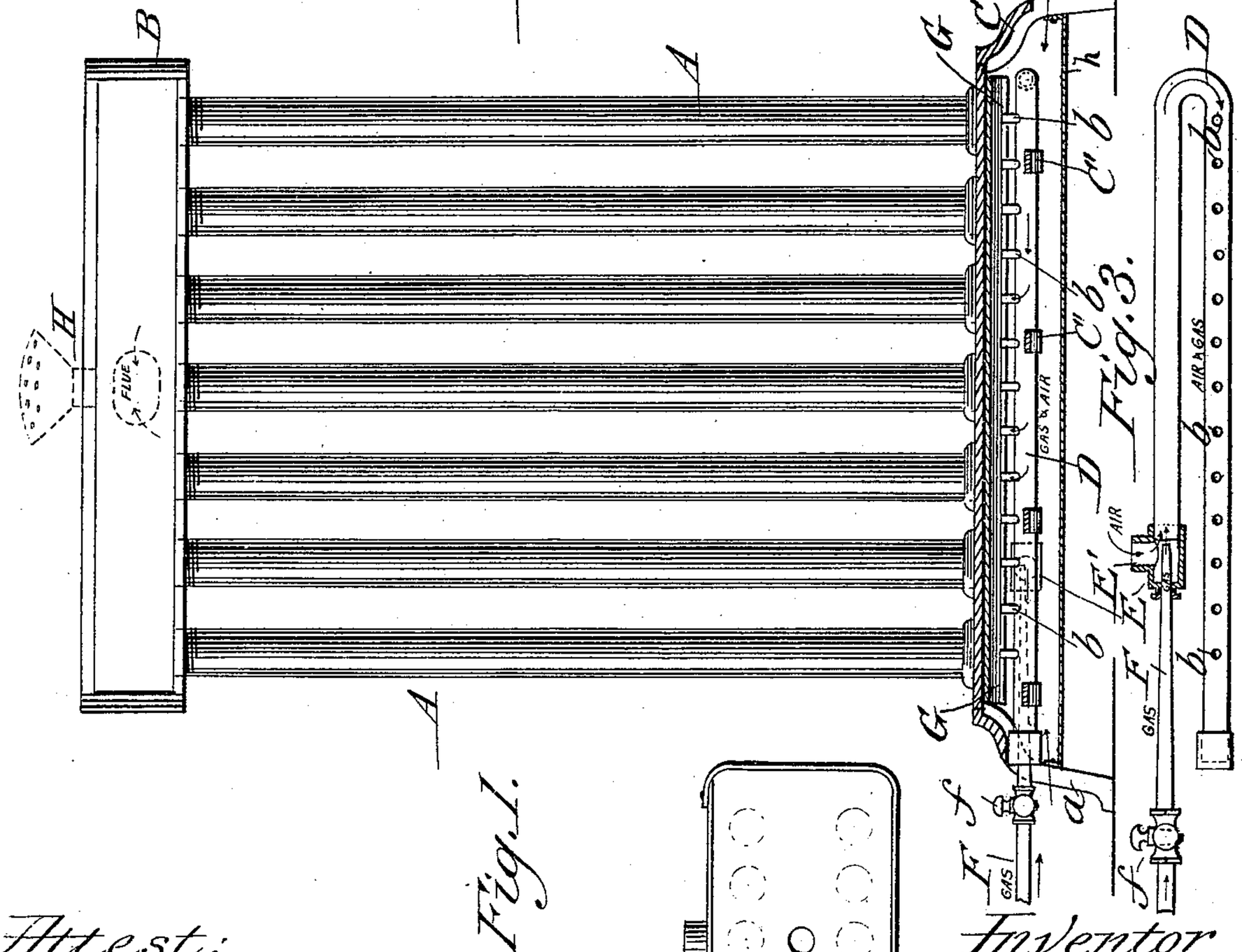

Fig. 3.

Fig. 3a.

Attest:

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UNITED STATES PATENT OFFICE.

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GAS OR OIL RADIATOR.

SPECIFICATION forming part of Letters Patent No. 459,882, dated September 22, 1891.

Application filed August 16, 1890. Serial No. 362,184. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN JOHNSON, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Gas or Oil Radiators; 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.

My present invention has reference to certain improvements in gas or oil radiators or heaters wherein gas or oil is used for fuel, the object of the invention being to simplify and perfect the construction of heaters or radiators of this class; and the invention consists, essentially, in the arrangement and combination of the several mechanical parts, substantially as will be hereinafter described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a front elevation of my improved gas or oil radiator with certain parts shown in section. Fig. 2 is an enlarged transverse section of the same. Fig. 3 is a detail plan view of the gas-injector, the pipes provided with burners and containing the air and gas, and the air-inlet. Fig. 3ª is a detail of the radiator head and flue.

Like letters of reference designate like parts in the several figures.

B designates the radiator-head, which is hollow and made of any suitable and desirable size and shape, it preferably having its top surface made plain and also being preferably provided on its front side with some kind of ornamentation for the purpose of embellishing and beautifying the appearance thereof.

C indicates the base of the radiator, which is of any suitable and desirable form and size and is provided with suitable feet *a a* to sustain it at a proper height from the floor. Between the radiator-head B and the radiator-base C are the vertical radiating pipes or flues A, which are connected to the head and base, they being threaded, expanded, or otherwise suitably connected. The base-plate C is simply a hollow casting. Secured thereto beneath the same so as to support the burner-pipes is a row of transverse bars or rods C′, which are preferably formed with a couple of bends or semicircular seats *c c*, adapted to receive the burner-pipes and hold the same securely in place, one of said bends being located midway of the length of each bar C′, while the other seat *c* is closely adjacent thereto on one side.

D designates the pipe which contains commingled air and gas. Said pipe is suitably bent upon itself, so as to form two longitudinal parallel sections, through the end of one of which the air and gas enter, as shown in Fig. 3, while the other parallel part is provided with a series of short vertical tubes, pipes, or burners *b b b*, projecting upwardly therefrom and receiving the combined air and gas, which courses through the pipe from the point of entry around the bend in said pipe until it reaches them, and is thus supplied for ignition at the proper point. The end of the burner-provided section of the pipe D is closed by a suitable cap. Its other end is furnished with a suitably-shaped elbow or T-coupling properly fastened thereto, said T-coupling having an air-inlet E′, which admits atmospheric air into the pipe, and the T-coupling is also formed for the entrance thereinto through a suitable stuffing-box or tight joint, preferably of the nozzle of the gas-injector pipe F, which enters the T-coupling at right angles to the air-inlet E′ and has the tip of the nozzle so placed within the coupling that the entering gas will pass through and become commingled with the inlet air, so that as they course through the pipe D together they will become more and more thoroughly combined until they reach the burners in the desired condition. The gas-injector pipe F is provided with a suitable valve or cock *f* for controlling the gas-supply. Instead of being used for gas, this pipe may be employed for conveying oil whenever it is desired to use the radiator with oil instead of with gas.

Above the longitudinal row of burners *b b* and directly beneath the upper side of the base-plate C (being below the latter only sufficiently to provide space enough to prevent any excessive heating of the said base-plate) is a plate or plates G, the under faces of which are closely contiguous to the tips of the burners *b b*. The plate G may be made in the

shallow V form indicated in Fig. 2, or it may be entirely horizontal. There may be a series of these plates arranged longitudinally with their ends meeting in such a manner as to admit of the necessary expansion and contraction which takes place during the heating and cooling thereof. Considerable variation may take place in the structure of these plates, it being only necessary that they should be contiguous to the point of ignition and combustion of the combined air and gas which emerges from the tips of the several burners arranged in a longitudinal row, as already described. It will be noted that the flames at the several points of combustion below the plate G will impinge centrally against the bottom side of the plate and will then spread both ways, front and back, as shown in Fig. 2, forming thus nearly a complete sheet of blue flame beneath the said plate G and passing over the edges of the said plate into the vertical radiator pipes or flues, whereby the heated air reaches the radiator-head B, which provides a top chamber to receive it. From this top chamber or space a funnel connection H is constructed, so that when the radiator is used in a sick-room ventilation can be easily had. As the pipes just described, containing the mixture of air and gas, occupy so much space on the under side of the radiator-base, it will be evident that a lighted match placed at either end of said base or at any point on the sides thereof will serve to ignite all the fluid mixture, and if perchance a strong current of air should extinguish any of the flames, leaving but one ignited, they would all instantly relight from that one. Thus it will be seen that this arrangement of burner-tips beneath the base is a valuable one for the purpose of allowing all the jets of flame to be constantly kept lighted, and thus causing a constant and regular heating action. The radiator-head will have an outlet centrally on the rear side. (See Fig. 2.) Sometimes funnel-pipes may be run up several feet and carried through a partition to a chimney in another room. An evaporating-vessel may be placed on the top of the head, if desired. The fire becomes so intensely hot at the base of this radiator that I find it necessary to secure a galvanized plate at a point, say, about one-quarter of an inch below the edge of the hollow base, whereby the heat may be kept from the floor, said plate being lettered *h*. I have made this plate the whole length and width of the bottom of the base. I leave the one-fourth inch of space all around below the edge of the base to admit air for mixing and also to supply additional air necessary to come in contact with the gas and heated plate while combustion is taking place, since it will not do in putting on this protection-plate to cut off the air necessary to secure a perfect combustion.

It will be seen that in this device I burn mixed gas through a plain or open tube. This mixture could not be successfully burned through simply a small drilled hole without strong pressure, but works very nicely with light pressure.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described improvement in gas or oil radiators or heaters, consisting in the combination of radiating-pipes, a radiator-head above the same, and a radiator-base on which they are supported, a suitably-supported pipe containing commingled air and gas and located longitudinally within the base, said pipe being provided with a longitudinal series of burners, an air-inlet at one end of the pipe and the adjoining gas or oil injector pipe, and a longitudinal plate or plates located closely above the series of burners and extending from end to end of said series and longitudinally beneath and between the lower ends of the radiating-pipes, so that the flame may spread out evenly under the entire surface of the said plate or plates, so that the flame may be readily ignited at all the burners, substantially as described.

2. The combination, with the radiator-head, the radiating-pipes, and the base, of the bent longitudinal pipe provided with a longitudinal series of burner-pipes and adapted to contain combined air and gas, one end of said pipe being closed, a T-coupling secured to the other end of the pipe, there being an air-inlet on said coupling, the gas-injector pipe entering said coupling, and the longitudinal plate located closely above the burner-pipes and extending from one end to the other of said line of burners and longitudinally beneath and between the two rows of radiating-pipes, so that the flame may spread out evenly under the entire surface of the said plate or plates, substantially as described.

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

JONATHAN JOHNSON.

Witnesses:

SAMUEL B. WYMAN,

GEO. H. STEVENS.