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T. SCHRAMM & O. L. SKINNER.

GAS FURNACE.

APPLICATION FILED AUG. 27, 1904.

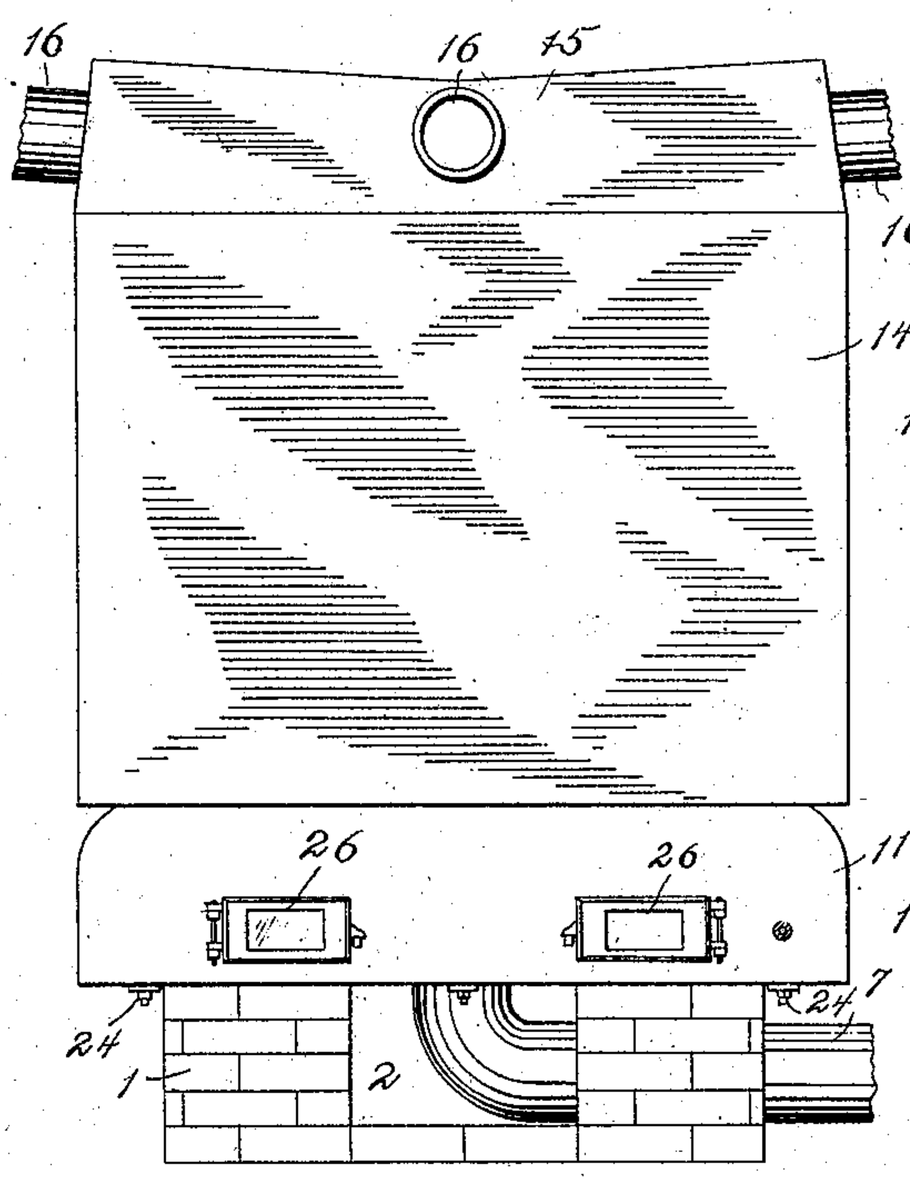

Fig. 1.

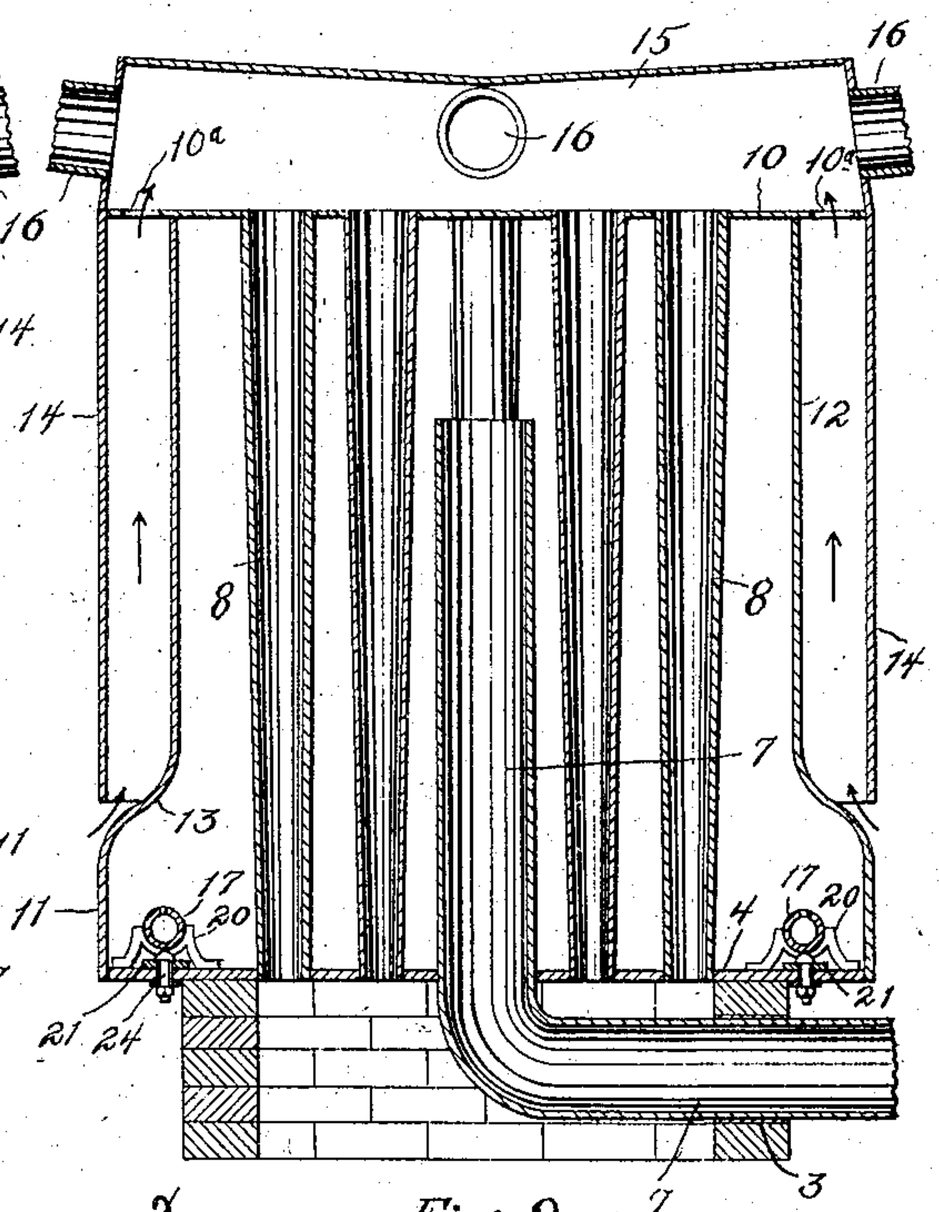

Fig. 2.

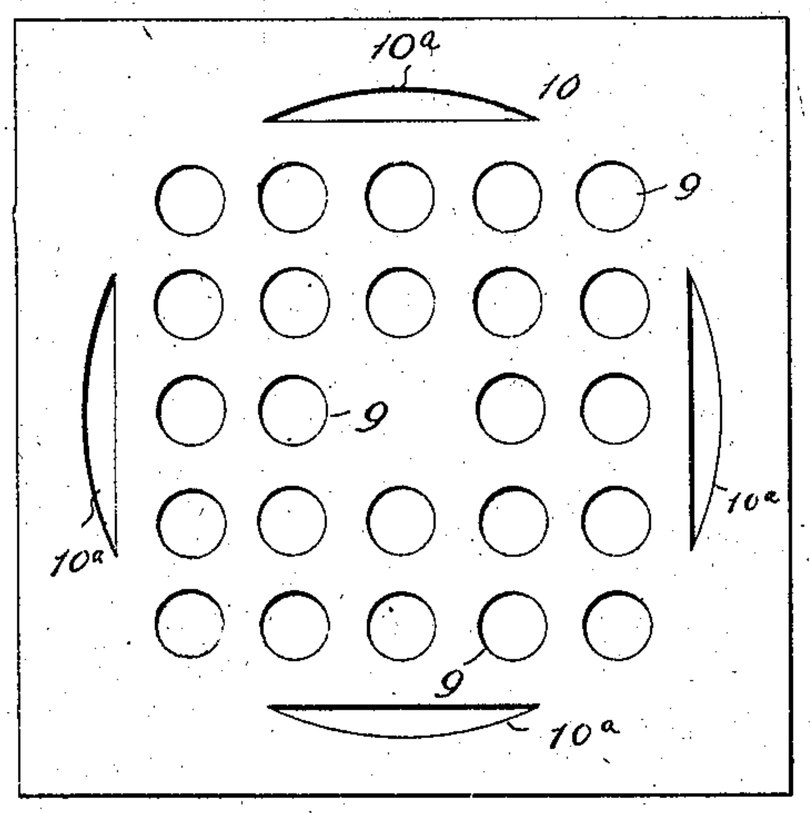

Fig. 3.

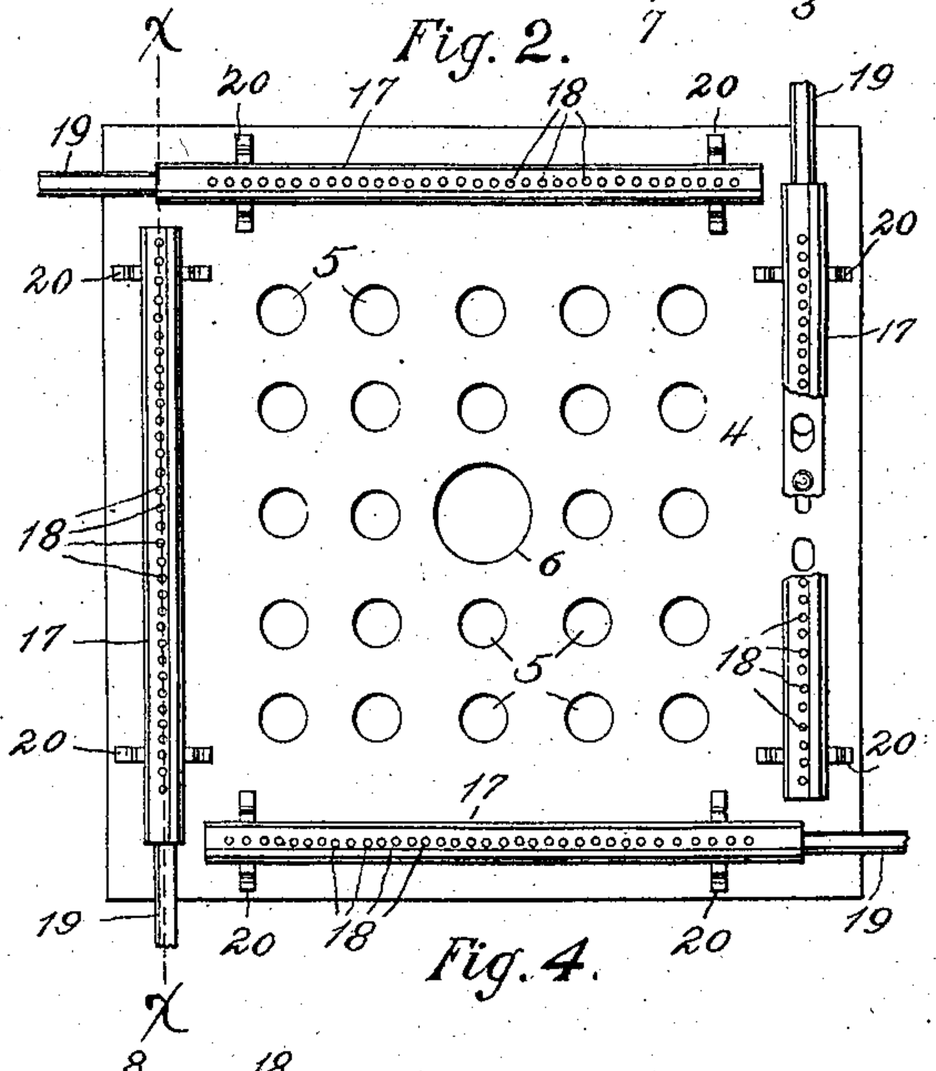

Fig. 4.

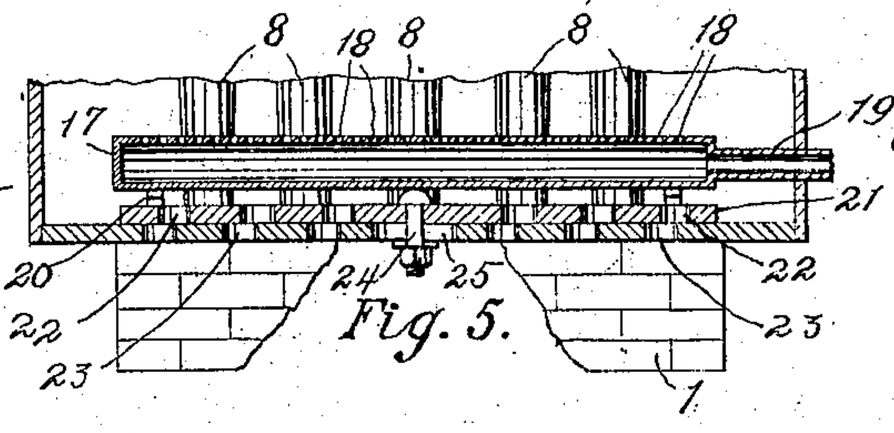

Fig. 5.

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PHOTO-LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 791,823. Patented June 6, 1905.

UNITED STATES PATENT OFFICE.

THEOBALD SCHRAMM AND OTTO L. SKINNER, OF COLUMBUS, OHIO.

GAS-FURNACE.

SPECIFICATION forming part of Letters Patent No. 791,823, dated June 6, 1905.

Application filed August 27, 1904. Serial No. 222,481.

To all whom it may concern:

Be it known that we, THEOBALD SCHRAMM and OTTO L. SKINNER, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Gas-Furnaces, of which the following is a specification.

Our invention relates to a new and useful improvement in gas-furnaces.

The object of the invention is to produce a superior construction whereby a greatly-increased heating-surface is produced and one in which the products of combustion are utilized to their greatest extent before escaping from the furnace.

Another feature resides in the means for regulating the draft to the burners and also in the means for preventing the radiation of the heat from the furnace-body.

Finally, the object of the invention is to provide a device of the character described that will be strong, durable, and efficient and simple and comparatively inexpensive to construct and one in which the several parts will not be liable to get out of working order.

With the above and other objects in view the invention consists of the novel details of construction and operation, a preferable embodiment of which is described in the specification and illustrated in the drawings, wherein—

Figure 1 is a front elevation of the furnace. Fig. 2 is a longitudinal vertical sectional view. Fig. 3 is a plan view of the crown-sheet. Fig. 4 is a top plan view of the base-plate and the burners; and Fig. 5 is a partial vertical sectional view taken on the line *x x* of Fig. 4, showing the base-wall broken away to illustrate the damper-sliding means.

In the drawings the numeral 1 designates the base, which is provided with the draft-opening 2 in its front wall and the pipe-opening 3 in its side wall. The base is preferably constructed in the form of a hollow rectangle and supports the base-plate 4, which is provided with a plurality of apertures 5, disposed in parallel rows in the central portion of the plate, and an enlarged opening 6, through which passes the right-angular draft-pipe 7. Fitting in the apertures 5 and extending upwardly therefrom are a plurality of flaring air-tubes 8, which terminate in enlarged apertures 9, formed in the crown-sheet 10. A casing 11 extends upwardly from the outer edges of the base-plate 4 and terminates at the crown-sheet 10. The upper portion 12 of the casing 11 is reduced by inwardly curving the walls of the casing at 13, so as to produce an inner casing which has a width less than that of the crown-sheet which projects over the same. A jacket 14 projects downwardly from the crown-sheet and terminates in juxtaposition to the curved portion 13, so as to afford an air-passage between the inner casing 12 and itself. A dome 15 is supported upon the crown-sheet 10 and is provided with radiating hot-air flues 16, which convey the heated air to the various compartments of the building. The draft-pipe 7 terminates some distance below the upper end of the inner casing 12, while its lower end passes through the opening 3 and is suitably connected with a chimney, whereby a downdraft is created and the products of combustion are drawn into the pipe 7 and carried off through the chimney.

Disposed upon the base-plate 4 between the air-tubes and the casing 11 are burners 17, of which we preferably employ four. Each burner is provided with a plurality of perforations 18 and a supply-pipe 19, through which the gas is introduced. Chairs 20 support the burners above the base-plate and at a sufficient height to allow the free movement of slide-dampers 21 therebeneath. The slide-dampers 21 are provided with a plurality of openings 22, which are adapted to register with openings 23 in the base-plate 4. The dampers 21 are guided between the legs of the chairs 20 and are held in position on the base-plate by means of bolts 24, which pass through slots 25 in the base-plate 4. The projecting ends of the bolts 24 may be used as a means for sliding the dampers, and thereby regulate the amount of air admitted to the furnace.

It will be readily understood that where natural gas is supplied to the burners considerable air is necessary and that it is often advantageous to vary the amount of air supplied.

Therefore we have devised the damper construction described in order that the best results may be obtained. The casing 11 is provided with a pair of clean-out doors 26.

Air being supplied through the opening 2 passes into and up the air-tubes 8. The products of combustion generated by the burners circulating about the tubes thoroughly heats the same, thereby causing the air passing up through the flues to be heated, and owing to the flaring construction of the tube it is allowed to expand as its temperature is raised. The heated air emerging from the tubes 8 passes into the dome 15 and from there into the pipes 16, by which it is distributed to the various rooms throughout the building. The products of combustion after circulating around the tubes 8 are caused to pass down through the pipe 7, from which they are conveyed to the chimney. It will be seen that by causing the products to take a downward course any heat not utilized during their passage about the tubes will be given up as the products pass down the pipe. It will also be apparent that by separating the jacket 14 and the inner casing 12 cold air will enter therebetween and pass up through openings 10^a in the crown-sheet 10, which air cools the jacket and prevents a radiation of the heat from the furnace, which is common in furnaces of this character. As it is desirable that all the heat possible be delivered to the pipes 16, the advantage of confining the heat to the interior of the furnace is apparent. As before described, the air supplied to the burners may be regulated by manipulating the dampers 21. Such air mixing with the products passes out through the pipe 7. Thus it will be seen that means whereby fumes and foul air may be carried off is provided.

We do not wish to limit ourselves to the exact details of construction herein set forth, as we may make various changes in the same without departing from the spirit of our invention.

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

1. In a furnace, a base, a casing supported upon the base, flaring air-tubes passing entirely through the casing, a dome supported upon the casing and in communication with the tubes, a jacket disposed about the casing and separated therefrom so as to form a space therebetween having communication with the dome, burners disposed within the casing, means arranged below the burners for regulating the supply of air thereto, and a draft-pipe extending from the casing.

2. In a furnace, a base, a casing having a contracted upper portion supported upon the base, flaring air-tubes passing through the casing, a dome supported upon the casing and in communication with the tubes, a jacket disposed about the contracted portion of the casing and spaced therefrom, burners disposed within the casing, and a downdraft-pipe extending from the upper portion of the casing through the bottom thereof.

THEOBALD SCHRAMM.
OTTO L. SKINNER.

In presence of—
M. B. SCHLEY,
A. L. PHELPS.