(No Model.) 2 Sheets—Sheet 1.

H. J. BELL.

GAS HEATING BURNER.

No. 408,073. Patented July 30, 1889.

Fig. 1.

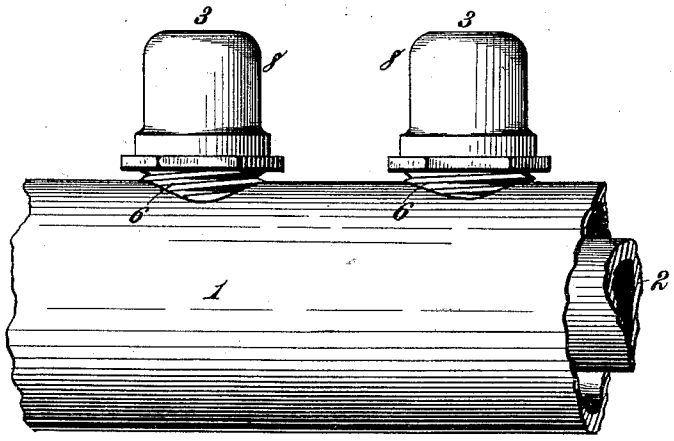


Fig. 2.

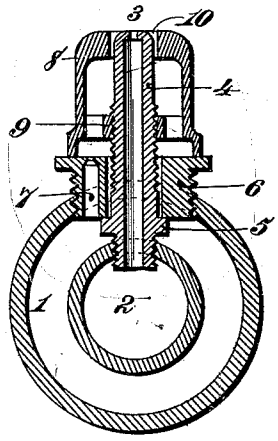
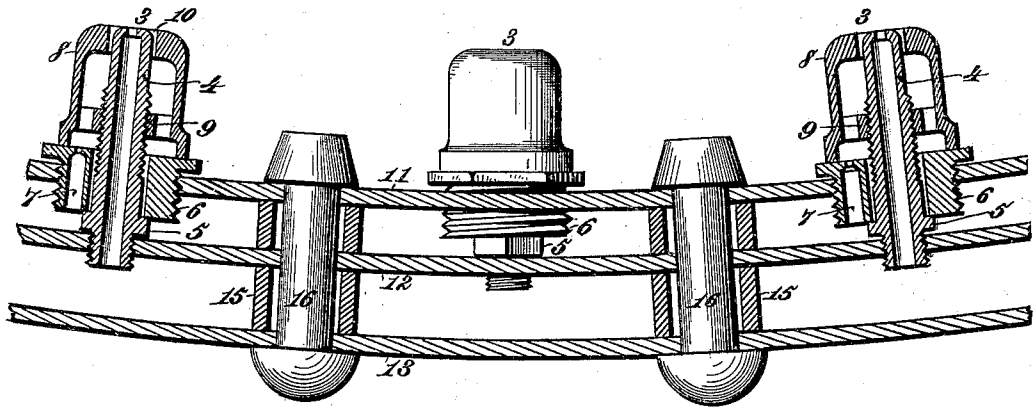


Fig. 3.



Witnesses:
Robt Ewett,
Dennis Sunby.

Inventor:
Harold J. Bell.
By James L. Norris.
Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

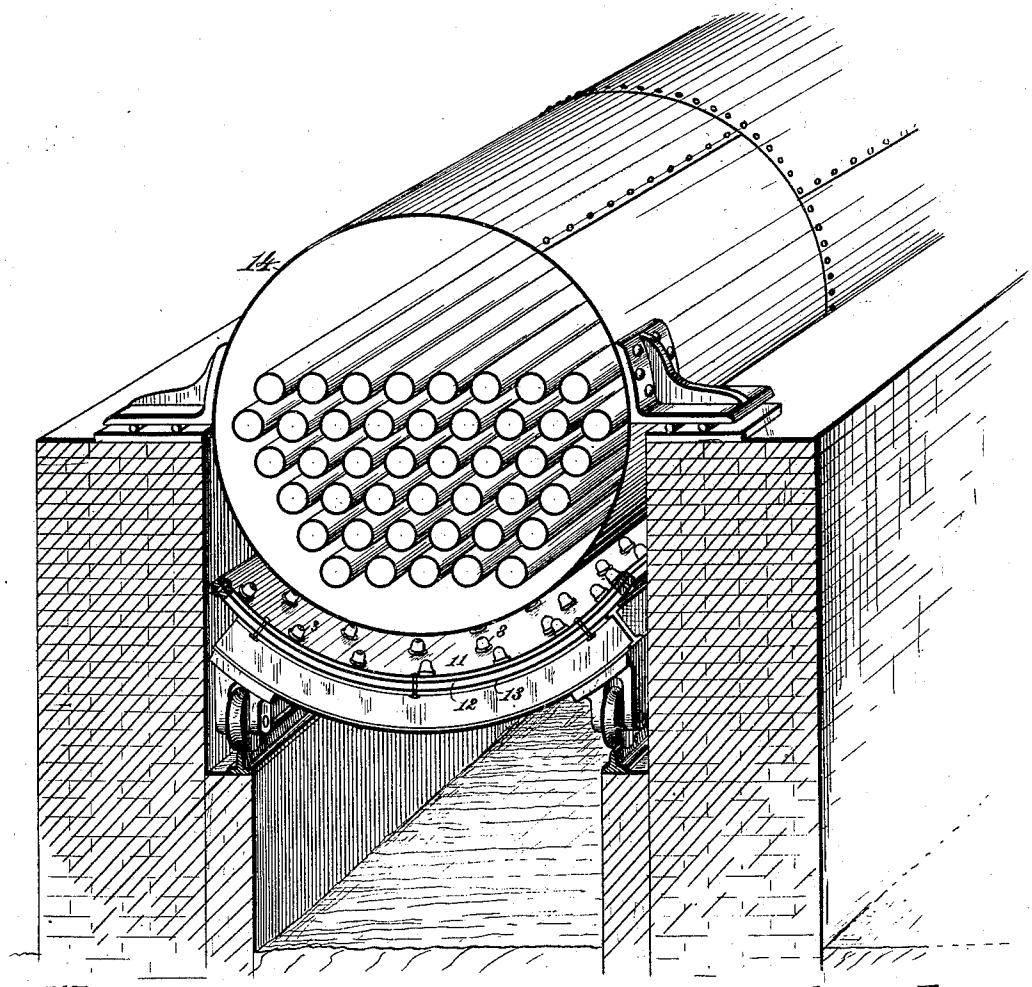
(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.



Witnesses.
Robt Everett.
Dennis Sumby.

Inventor.
Harold J. Bell.
By James L. Norris
Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

HAROLD J. BELL, OF GLOUCESTER CITY, NEW JERSEY, ASSIGNOR TO THE WELSBACH INCANDESCENT GAS LIGHT COMPANY, OF NEW JERSEY.

GAS HEATING BURNER.

SPECIFICATION forming part of Letters Patent No. 408,073, dated July 30, 1889.

Application filed February 8, 1889. Serial No. 299,168. (No model.)

To all whom it may concern:

Be it known that I, HAROLD J. BELL, a citizen of the United States, residing at Gloucester City, in the county of Camden and State of New Jersey, have invented new and useful Improvements in Gas Heating Burners, of which the following is a specification.

This invention relates to a blow-pipe attachment for heating steam-boilers and furnaces by the combustion of gas; and it consists in the construction and combination of devices hereinafter described and claimed.

In the annexed drawings, illustrating the invention, Figure 1 is a side view of a gas pipe, tube, or conduit inclosing an air tube or conduit, which is connected to the gas-tube by a number of compound tubes or burners, this construction being especially adapted for the heating of furnaces. Fig. 2 is a vertical cross-section of the same. Fig. 3 is a sectional elevation of an arrangement of burners and supporting-plates forming conduits or passages for gas and air, in which the parts are especially adapted for the heating of steam-boilers. Fig. 4 is a cross-section of a steam-boiler with my improved blow-pipe heating attachment applied.

The numeral 1 designates the gas-conduit, and 2 the air-conduit. These conduits are connected at suitable intervals by laterally-projecting compound burner-tubes 3, constructed to permit the passage of a central air-jet and a surrounding annular gas-jet, in the manner hereinafter described.

In Figs. 1 and 2 I have shown a construction that is particularly adapted for the heating of furnaces, though useful also for other purposes. In this construction the gas-conduit consists of an outer pipe 1, in which an air-conduit or inner pipe 2 is inclosed. These pipes are tapped laterally at suitable intervals and in the same line for the attachment of air-nozzles 4, which have a screw-threaded connection with the inner pipe or air-conduit and project through the outer pipe or gas-conduit.

Each air-nozzle is provided within the gas-conduit and near the air-conduit with an annular shoulder 5, on which rests a bushing 6, that is screwed into the outer gas-pipe around said air-nozzle. This bushing 6 has a central perforation by which it is enabled to surround the air-nozzle, and on one side it is provided with a longitudinal gas-passage 7, that communicates with the gas-conduit.

Above the bushing 6, resting thereon and surrounding the air-nozzle 4, is a burner cap or tip 8, which is provided internally with a perforated disk 9, having a central screw-threaded engagement with the air-nozzle, by which it is thus supported. In the upper end of the cap or tip 8 is a gas-exit 10, that surrounds the exit end of the air-nozzle, thus providing for the annular gas-flame having a central air-supply to promote combustion, and it will be seen that as the air-nozzle 4 is supplied with air under pressure it will act as an injector or blow-pipe to increase the intensity of the gas-flame.

In Figs. 3 and 4 I have shown a construction in which the blow-pipe burner-tubes 3 are attached to and supported by plates 11 and 12, inclosed by an outer plate 13, all of which plates are supported by or in proximity to a steam-boiler 14, which they partly surround, in such a manner as to form a gas-conduit 1 and an air-conduit 2, both of which communicate with burner-tubes 3, constructed as already described. This construction of gas-conduits is particularly adapted for attachment of the burners when employed to heat a steam-boiler. The plates 11, 12, and 13 are stayed and connected by sleeves or tubular stays 15 and bolts 16 at required points.

By providing suitable cocks (not shown) for the gas and air conduits it is obvious that the supply of gas and air can be regulated as required.

What I claim as my invention is—

1. The combination, with a gas-conduit and an air-conduit, of an air-nozzle 4, communicating with the air-conduit and projecting laterally through the gas-conduit, a bushing 6, supported by the gas-conduit and surrounding the air-nozzle, said bushing being pro-

vided with a gas-passage 7 and a burner-tip 8, surrounding the air-nozzle on the outside of said bushing, substantially as described.

2. The combination, with the plates 11, 12, and 13, forming a gas-conduit and an air-conduit, of stays 15 and bolts 16, connecting said plates, and a number of laterally-projecting burners 3, each having a central air-nozzle 4 and a surrounding burner-tip 8, substantially as described.

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

HAROLD J. BELL.

Witnesses:

WILLIAM E. BARROWS,

CLAUDE A. SIMPLER.