

R. W. HOIT.

Chandelier.

No. 30,319.

Patented Oct. 9, 1860.

Fig. 2

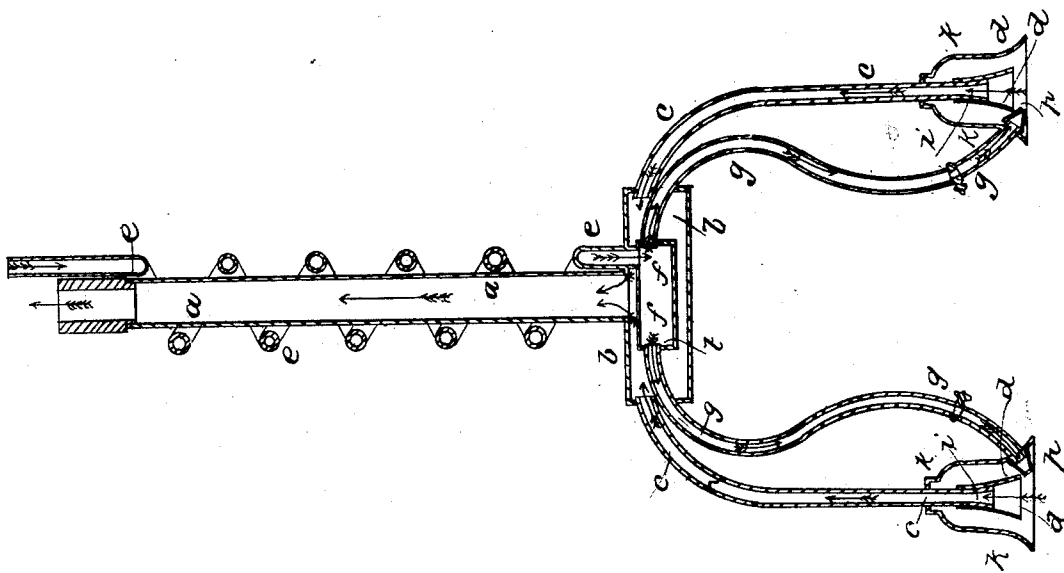
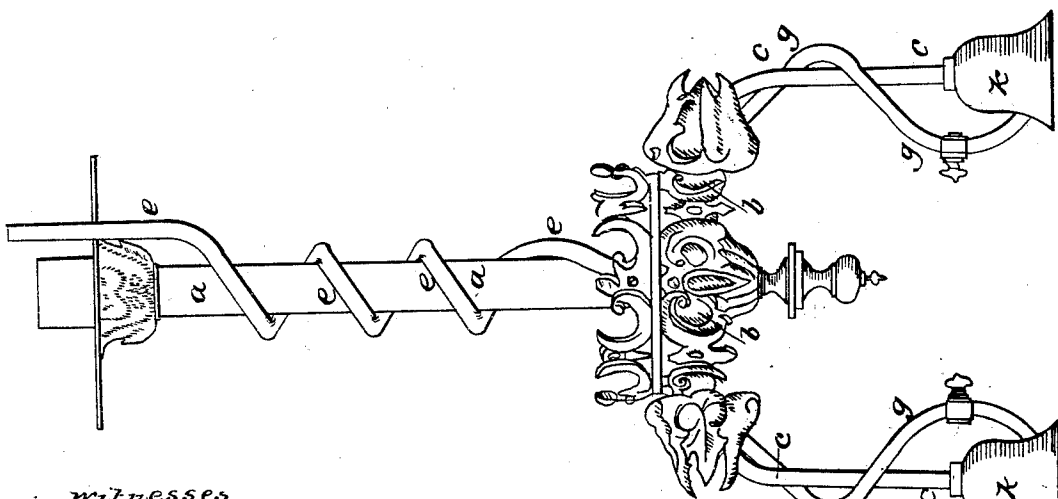


Fig. 1



witnesses

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REUBEN WM. HOIT, OF BOSTON, MASSACHUSETTS.

APPARATUS FOR BURNING GAS.

Specification of Letters Patent No. 30,319, dated October 9, 1860.

To all whom it may concern:

Be it known that I, REUBEN W. HOIT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Apparatus Used for Burning Gas, &c., for Illuminating Purposes, and that the following description, taken in connection with the accompanying drawings hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plate of drawings represent my improvements.

Figure 1 is a side elevation of a gas chandelier or pendant with my improvements applied thereto. Fig. 2 is a central vertical section.

In the burning of gas for illuminating purposes, it is well known, that heating it previous to its issuing from the jet or burner expands its volume, without increasing its pressure, and that the illuminating power can thus be increased without increasing the quantity consumed. The illuminating power of gas, is proportional first, to the quantity of carbon vapor it contains and can precipitate in the act of burning; and second, to the force and manner of jetting the gas and the quantity of air with which it is made to mix by the proper ventilation of the flame while burning. This follows from the fact, that it is the ignition of the charcoal or other solid matters within the flame at the temperature of a white heat, that alone can emit the prismatic rays in the concentrated form of white light, and that when mingled with too much air, the flame becomes blue and the light feeble, like that evolved by the burning of hydrogen, alcohol &c., because in proportion to the oxygen furnished by the air, will the carbon vapor unite with it to form carbonic acid, and too little of this vapor will be precipitated to emit a strong light—while, on the contrary, too little air allows a portion of the carbon to escape in smoke and the part burned is not heated above a red heat and consequently the light emitted will partake of this color. Due ventilation of the flame then, by means of a considerable draft of air and heating the gas to a high temperature before

jetting it, so as to insure perfect combustion, are the essentials to be aimed at in order to obtain its greatest illuminating power. This result is secured by my invention, as well as that of carrying off all the products of combustion, such as carbonic acid &c., that are deleterious to health, and that can not ordinarily escape from an apartment, as they are heavier than the air and will not ascend unless heated to about 250° Fahrenheit, above the temperature of the air of the room.

Having thus premised the general objects of my invention, I will now proceed to show the manner in which it may be practically carried out.

One form of my new apparatus is shown in the accompanying drawings in which—

a a represents the central stock of a gas chandelier or pendant made hollow and of sufficient capacity to conduct away the products of combustion of all the jets to be burned. The lower end of the stock *a a* terminates in a bulb or reservoir *b b* from which extends downward branch pipes *c c* terminating in bell-shaped receivers *d d*, the mouths of which extend directly over the flames and are of about the same size.

e e is the supplying gas pipe which enters a distributor *f* from which proceed the branch gas pipes *g g* having suitable burners *h h* upon their ends. The pipes *e* and *g g* through which gas is conveyed to the burners may if desirable be conducted through the main pipe *a a* and its branches *c, c*, instead of outside of them as represented in the drawings, but this would necessitate the enlarging of the flue pipes *a a* &c.

By the above described arrangement, the gas when lighted causes an upward current of air to impinge upon the lower surfaces of the jets and into the mouths of the bell-shaped receivers, thereby generating a strong draft of heated air and carrying the products of combustion into the branch ventilating flues, which being collected into the main stock or flue *a a* pass off in the direction shown by red arrows in Fig. 2 into any proper flue or chimney of the house. This arrangement affords the most perfect ventilation to the flames and inclines them upward to a horizontal plane in which position they are steadily and firmly held, so as to prevent all flickering between two forces, viz; the jetting force of the gas and the rising currents of the heated air &c. The heat generated also within the bells suffi-

ciently lessens the specific gravity of the carbonic acid produced from the burning of the gas as to allow it to rise and be carried off with the other heated currents. The direction which the gas takes in passing to the jets, is shown by blue arrows in Fig. 2 and the distributor *f* from which each burner is to draw its supply is inserted within the bulb or reservoir *b b* and is thus exposed to the heated currents in their upward passage to the main flue or stock *a a*, thereby heating the gas before it is jetted to a high temperature and producing the advantageous results hereinbefore fully stated.

Within the bell-shaped receivers *d d* are placed adjustable cones or mouth-pieces *i i*, by means of which the size of their openings into the tubes *c c* may be varied so as to regulate the draft or amount of air passing through the flames, so as to meet the various contingencies of ventilation depending upon the height of the apartment to be ventilated &c.

R R are outside bell-shaped receivers that cover the inner bells *d d* which are liable to be tarnished by the excessive heat and also serve to retain the heated air around the flame and cause a reflux of the same downward, within them, the branch gas pipes entering through them as shown or otherwise.

Glass shades may be suspended from the

bottom of the outer bells having an opening of the same capacity as that of the inner bells, for the purpose of softening the light protecting the flame from sudden drafts and forming a guide to conduct the air in a fixed channel or upward current to the under surface of the flame, instead of from all directions as would otherwise be the case.

Having thus described my improvements what I claim as my invention and desire to have secured to me by Letters Patent is—

1. Carrying off the unconsumed products of combustion of the flame or jet by forming within the apparatus itself, ventilating flues, arranged and operating as described, the same consisting of the main stock *a a* and branch pipe *c* terminating in a bell-shaped mouth, extending over the flame or jet, as set forth.

2. So arranging and locating the gas supplying pipes or the reservoir from which all the branch pipes for conveying gas to the burners receive their supply, that they or it shall receive and be exposed to the upward heated currents that proceed from the flames or jets substantially as described and for the purposes specified.

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Witnesses:

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