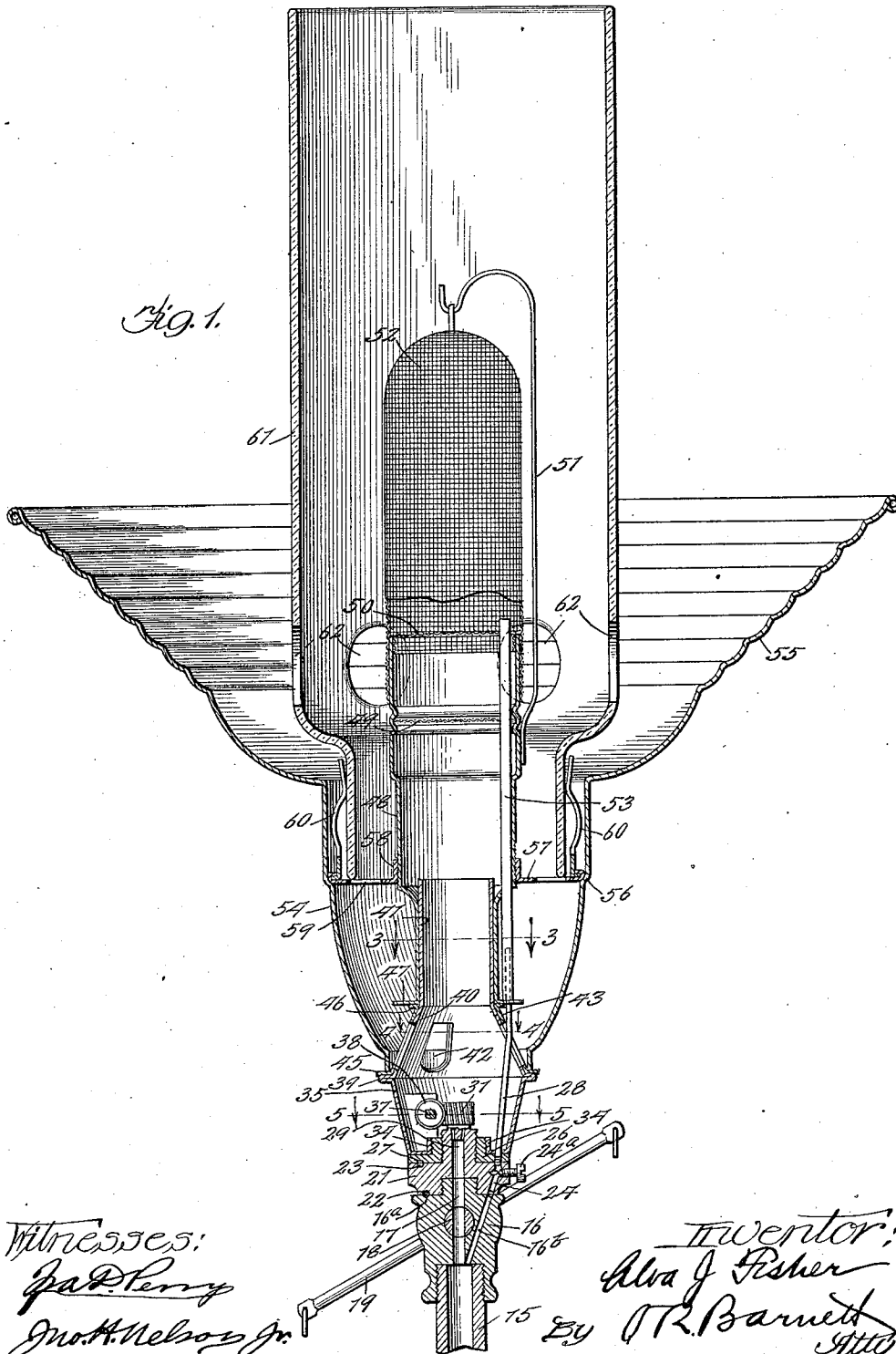


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GAS BURNER.
APPLICATION FILED JAN. 13, 1911.

1,046,758.

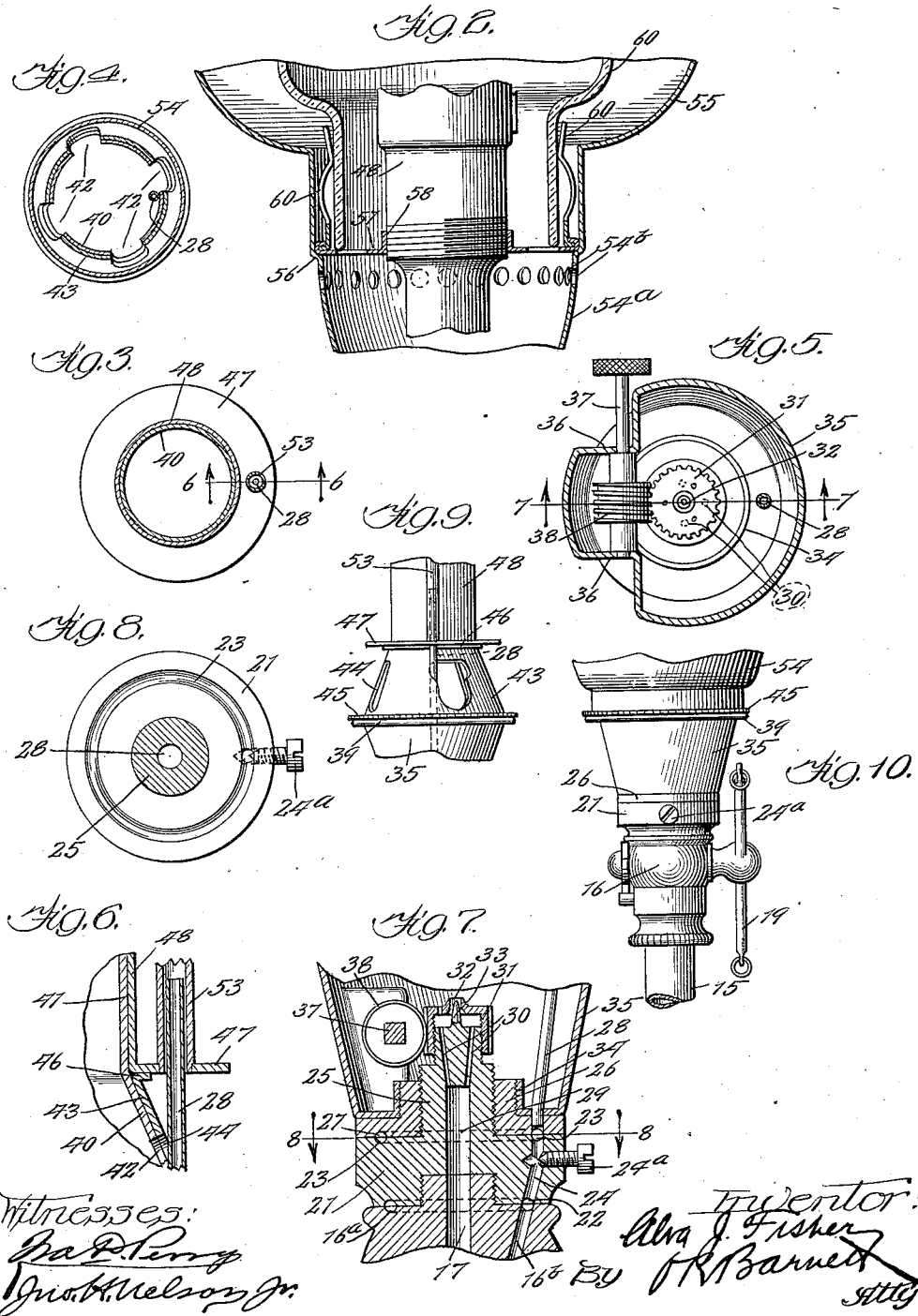
Patented Dec. 10, 1912.
2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

ALVA J. FISHER, OF EVANSTON, ILLINOIS.

GAS-BURNER.

1,046,758.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed January 13, 1911. Serial No. 602,467.

To all whom it may concern:

Be it known that I, ALVA J. FISHER, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

My invention relates to a gas burner of the incandescent type and the invention has for its object to provide certain novel and improved constructions, arrangements and devices in gas burners which will be hereinafter described and claimed.

One of the specific objects of the invention is to provide a novel form of burner in which the air which is used to support combustion is heated to a relatively high temperature before it reaches the point where combustion takes place. This initial heating of the air, in place of simply allowing cold air to be drawn into the flame, resulting in a considerable saving of gas or the production of a greater amount of light with the same expenditure of gas.

Another object of the invention is to provide a burner of the incandescent type which is silent in its action.

Another object of the invention is to provide a novel combination of burner and reflector designed to give a light which is evenly diffused throughout the apartment, thus doing away with strong lights and shadows.

A further object of the invention is to provide certain other improved features of construction which facilitate and cheapen the manufacture of the burner, which simplify the taking apart and putting together of the different members constituting the burner and which, in general, make the device more convenient and desirable for the user than the incandescent gas burners which have heretofore been in common use.

The invention, in a preferred form, is illustrated in the accompanying drawings, wherein—

Figure 1 is a longitudinal sectional elevation, Fig. 2, a fragmentary sectional view illustrating a modification, Fig. 3, a sectional plan taken on line 3—3 of Fig. 1, Fig. 4, a similar view taken on line 4—4 of Fig. 1, Fig. 5, a similar view taken on line 5—5 of Fig. 1, Fig. 6, a fragmentary sectional view taken on line 6—6 of Fig. 3, looking in the direction of the arrows, Fig. 7, a sectional view on line 7—7 of Fig. 5, looking

in the direction of the arrows, Fig. 8, a sectional plan taken on line 8—8 of Fig. 7, Fig. 9, a fragmentary elevation illustrating the means for admitting and controlling the air, and Fig. 10, a fragmentary view in elevation of the lower portion of the burner.

Like characters of reference indicate like parts in the several figures of the drawings.

Referring to the drawings, 15 designates a gas pipe threaded for the union 16 which latter has the bore 17 controlled by the usual valve 18 operated by the lever 19. These parts are familiar in their construction and arrangement.

The union 16 has a circular groove 16^a on its upper surface connected by a by-pass 16^b with the bore of pipe 15. It is also formed with the threaded projection 20 on which is secured the union 21 formed on its lower surface with the circular groove 22 registering with groove 16^a, and on its upper surface with the circular groove 23. A by-pass 24, the effective size of which is controlled by a screw 24^a connects grooves 22 and 23. Union 21 has the threaded stem 25 on which is secured a union 26, the lower face of which is formed with a circular groove 27 adapted to register with the groove 23 in the union 21. A pilot light pipe section 28 is seated in a perforation in union 26 which extends down to the circular groove 27. Union 21 has the port 29 alining with the bore 17 and the small ports 30. A valve 31 is threaded on the end of stem 25 and is formed with the gas port 32 into which extends the projection 33 on the end of stem 25.

Union 26 is threaded for the upturned flange 34 of the casing or tubular member 35. This casing is formed, preferably, with the indented portions 36 (Fig. 5) in which is mounted a shaft 37 carrying a worm 38 meshing with the threaded or milled exterior of the valve 31. The casing or tubular member 35 is formed with the rib 39 and the part of the tubular member above the rib is preferably tapered inwardly, as indicated at 40. The upper part 41 of the tubular member is preferably cylindrical. The conical portion 40 of the tubular member is formed with the air openings 42. Preferably the burner is constructed with a shutter to vary the effective size of these ports. This part may consist of the piece of metal 43 (Figs. 1 and 9) formed with the openings 44 and with a flange 45 which

rests upon the rib 39. The shutter 43 is formed with the flange 46 at its upper end which supports the horizontal flange 47 of the mantle sustaining tubular member 48 provided, preferably, with the two transverse screens 49 and 50.

The mantle supporting hook 51 is secured to the side of the tubular member 48 and supports the mantle 52 in the usual manner. By providing the tubular member 48 with the screen 50 at its upper end it is not necessary that the mantle should have the usual construction at its lower end.

The tubular members 35 and 48 together with the mantle constitute the burner element of the lamp. Obviously the precise construction of this part of the lamp might be varied without departure from my invention.

I prefer to arrange the pilot light so that it will terminate within the mantle. A pipe section 53 is secured to the flange 47 alining with a perforation therein. This pipe or tube has its bore somewhat larger than the diameter of the pipe section 28 which has been described as rigidly connected with the union 26. The pipe 22 will therefore telescope within pipe 53 and there will be no difficulty in making this adjustment because the tubular member 48 may be turned with the flange 47 resting on the top of pipe 22 until the opening communicating with pipe 53 is reached. The pipe sections will then telescope together and the tubular member 48 slip down into place.

Resting on the flange 45 of the shutter 43, this flange in turn being supported on the rib 39 of the lower tubular member or casing 35, is an inclosing shell 54 which is preferably made imperforate. The reflector of the burner is preferably made integral with shell 54 and consists, in the preferred form, of the flaring upwardly extending fluted or corrugated metal element 55. The inner surface of the reflector is preferably nickel plated or otherwise treated so as to make it reflect the light. The portion of the element 54—55 which has been termed the inclosing shell, is formed with a shoulder 56 which supports a ring 57 preferably having the flange 58 engaging with the tubular member 48 and formed with the openings 59. The ring 57 is, by preference, formed with the upwardly extending fingers 60 which constitute a holder for the chimney 61. The latter has preferably the openings 62 in the lower portion thereof.

It will be seen that the air which supports the combustion taking place at the mantle, instead of entering the burner in a relatively cold state beneath the mantle, which is the ordinary arrangement in gas burners, enters the upper portion of the burner and is compelled to pass through the space intervening between the outer casing 54 and the inner

or tubular element of the burner before it is admitted to the latter. In this way the air is thoroughly heated before it reaches the mantle, all of the parts with which it comes into contact in passing through the burner being of course heated up when the burner is in use. As a result the mantle is brought to a higher degree of incandescence than is possible with the burners heretofore used, and, moreover, there is a considerable saving of gas. Furthermore, the action of the burner is noiseless. The usual buzzing and whizzing noise which accompanies the operation of a gas burner is done away with entirely. It will be observed further that the amount of air may be regulated by simply turning with the thumb and finger the projecting flange 45 of the controlling shutter. The flow of gas may be adjusted by turning the shaft 37. There is no difficulty in taking the fixture apart or in putting it together again. The making of the pilot light in two sections and the arrangement of these parts so that one telescopes within the other simplifies the taking apart and putting together of the device very materially.

In Fig. 2 I have shown a somewhat modified construction in which the inclosing shell, here designated 54^a, is formed with a series of perforations 54^b. While this arrangement I do not consider as desirable as that shown in Fig. 1, the air admitted to the point of combustion is nevertheless heated, at least to a certain extent.

While I have illustrated the invention in a preferred form of incandescent gas burner, it will be obvious to those skilled in this art that some modifications in the form, construction and arrangement of the parts might be made without departure from my invention; therefore I do not limit myself to these particulars except so far as the same are made specifically limitations on certain of the claims herein.

Some of the preferred features of the invention might obviously be omitted without destroying the utility of the burner.

I claim:

1. A gas burner comprising in combination a burner element formed with air openings at one end, means for introducing gas into said burner element, a casing inclosing the end of the burner element in which the air openings are formed and which is open at the other end, a flaring opaque reflector at the open end of said casing which is provided on the inside with a light reflecting surface; said casing and reflector inclosing a space around said burner element through which the air must pass and be heated before it enters the air openings in said burner element.

2. A gas burner comprising in combination a burner element formed with air openings at one end, means for introducing gas

into said burner element, and an impermeate metal casing surrounding said burner element which is flaring at the end remote from said air openings, the inside of the flaring portion being provided with a light reflecting surface; said casing inclosing a space around said burner element through which the air must pass and be heated before it enters the air openings in said burner element.

3. A gas burner comprising in combination a burner element formed with air openings at one end, means for introducing gas into said burner element, a casing inclosing the end of the burner element in which the air openings are formed and which is open at the other end, a flaring opaque reflector at the open end of said casing which is provided on the inside with a light reflecting surface; said casing and reflector inclosing a space around said burner element through which the air must pass and be heated before it enters the air openings in said burner element, and a chimney surrounding said burner element formed with air openings.

4. A gas burner comprising in combination a tubular member formed with air openings, a casing surrounding said tubular member, and a rotatable perforated shutter around the portion of the tubular member formed with the openings, said shutter being provided with an adjusting ring which projects outwardly between said tubular member and said casing and sustains the latter.

5. A gas burner comprising in combination a burner element having air openings therein, means for introducing gas into said burner element, and means providing a flaring opaque reflector with the reflecting surface on the inside extending around said burner and arranged so as to conduct air to said air openings and cause the same to be heated.

6. A gas burner comprising in combination a lower tubular member formed with air openings, a rotatable perforated shutter surrounding the part of said tubular member formed with the openings, said shutter being provided at its upper edge with a projecting rim, and an upper tubular member which telescopes over said lower tubular member which is provided with means for supporting a mantle and which is supported upon the rim of said shutter.

7. A gas burner comprising in combination a lower tubular member, an upper tubular member which telescopes over the upper

end of said lower member which is provided with means for supporting a mantle and with a projecting flange formed with a perforation, and pilot light pipe sections adapted to telescope together, one of which has a fixed relation with the lower tubular member and the other of which is fixed in the perforation in the flange on the upper tubular member in alinement with the perforation therein so that said sections may be made to telescope by rotating the upper tubular member on the lower.

8. A gas burner comprising in combination a lower tubular member formed with an external flange and with air openings above said flange, a perforated rotatable shutter surrounding the portion of said tubular member formed with the openings, said shutter provided at its lower edge with an adjusting ring which rests upon said flange and at its upper end with a rim, an upper tubular member adapted to telescope over the lower tubular member and provided with a flange which rests upon the rim of said shutter, and a casing surrounding said tubular members which is supported on the adjusting ring of said shutter.

9. A gas burner comprising in combination a union, a tubular member formed with air openings, and with a flange below said air openings, a rotatable perforated shutter surrounding the portion of the tubular element formed with the air openings and provided with a rim which bears on said flange, and a casing which rests upon the rim of said shutter and incloses the upper portion of said tubular member.

10. A gas burner comprising in combination a union, a tubular member formed with air openings, and with a flange below said air openings, a rotatable perforated shutter surrounding the portion of the tubular element formed with the air openings and provided with a rim which bears on said flange, a casing which rests upon the rim of said shutter and incloses the upper portion of said tubular member, said shutter being formed with a flange at its upper edge, and a mantle holding member formed with a flange on its lower edge which rests upon said last mentioned flange on the shutter.

ALVA J. FISHER.

Witnesses:

G. Y. SKINNER,
L. A. FALKENBERG.

It is hereby certified that in Letters Patent No. 1,046,758, granted December 10, 1912, upon the application of Alva J. Fisher, of Evanston, Illinois, for an improvement in "Gas-Burners," errors appear in the printed specification requiring correction as follows: Page 3, line 85, strike out the article and word "a union;" same page, line 90, for the article and word "a rim" read *an adjusting ring*; and line 91, for the word "rim" read *ring*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of January, A. D., 1913.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.