No. 703,083. Patented June 24, 1902.

A. A. PRATT.

INCANDESCENT GAS BURNER.

(Application filed June 15, 1901.)

(No Model.)

Fig. 1.

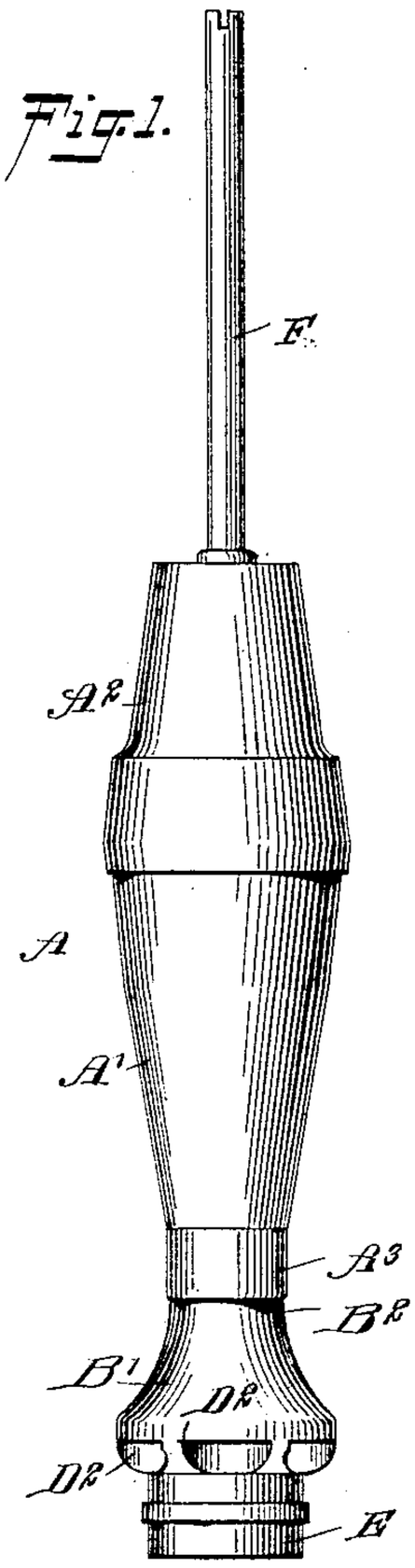


Fig. 2.

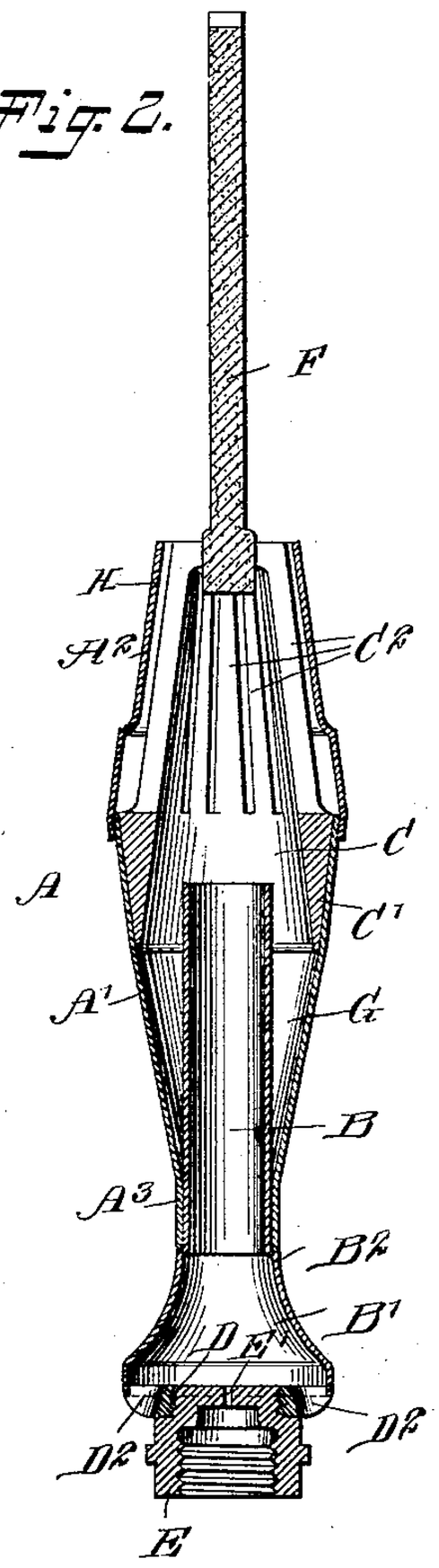
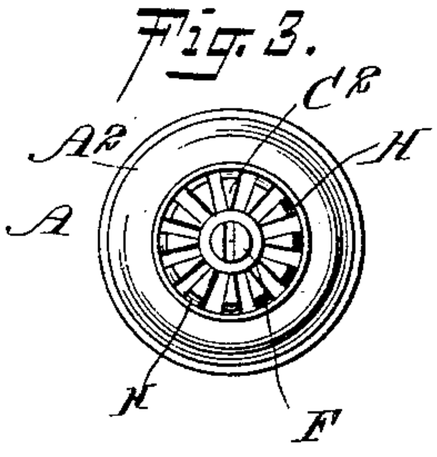


Fig. 5.

Fig. 3.



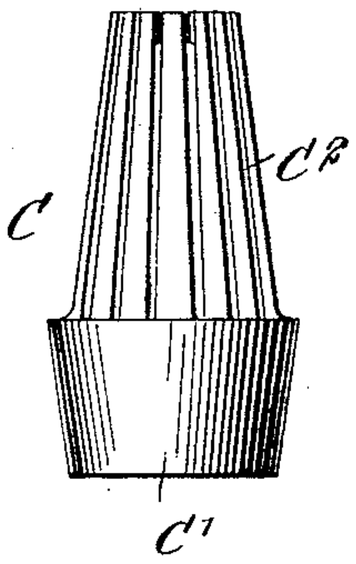


Fig. 4.

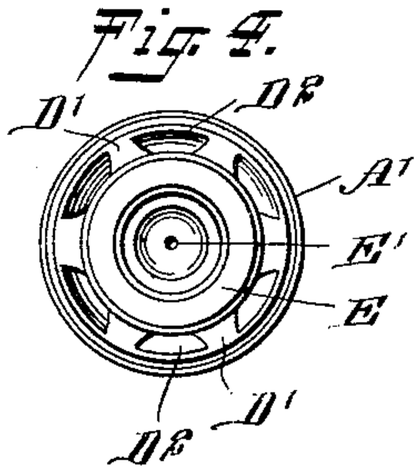
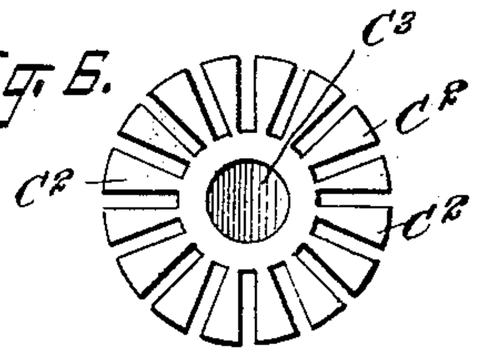


Fig. 6.



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INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 703,083, dated June 24, 1902.

Application filed June 15, 1901. Serial No. 64,676. (No model.)

To all whom it may concern:

Be it known that I, ALLISON A. PRATT, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Incandescent Burner, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved incandescent burner which is simple and durable in construction and arranged to give a very bright light on high or low gas pressure and without increase in the consumption of the gas over ordinary incandescent burners now in use.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement. Fig. 2 is a sectional side elevation of the same. Fig. 3 is a plan view of the same. Fig. 4 is a reversed plan view of the same. Fig. 5 is a side elevation of the mixing and pressure chamber, and Fig. 6 is a plan view of a modified form of the same.

The improved incandescent gas-burner is provided with a shell A, preferably made in two parts or sections A′ A² of approximately frusto-conical shape, the base ends of the sections being fastened together, as is plainly indicated in Figs. 1 and 2. The lower or apex end of the section A′ terminates in a tubular extension A³, into which fits a conductor B, made tubular and projecting up through the section A′ into the lower end of the mixing and pressure chamber C, as is plainly shown in Fig. 2, the lower end of the said conductor terminating in a base B′, made bell-shaped, with a shoulder B² at the apex for the lower edge of the section A′ to rest on. The base B′ of the conductor integrally supports a ring D by means of arms D′, which form with the ring and the base the air-inlet openings D². (See Fig. 2.) The ring D is set up somewhat in the base B′ to allow the air to readily enter the base B′ at the bottom without much friction and nearly in a direct line with the flow of the gas, the arrangement being such that the gas is not liable to be influenced by a draft in the room in which the burner is located. The inner walls of the openings D² at the sides of the ring D are inclined upward and inward to properly direct the air to the gas in the base B′ to cause a preliminary mixing of the gas and air.

In the ring D screws a gas-inlet E, having its lower portion threaded to screw upon the gas-supply pipe, and the upper portion of the said gas-inlet is formed with a central jet-opening E′ to cause the gas to pass in a fine jet into the base B′ to mix with the air passing through the openings D², as above explained.

The chamber C, previously referred to, consists of a base C′, in the form of an inverted frustum of a cone, (see Fig. 5,) snugly fitting into the upper end of the shell-section A′, and from the top of this base C′ extend the prongs C², arranged in the form of a cone and carrying at their upper ends the post F of a suitable refractory material for supporting the usual mantle of the burner. The lower portion of the shell A′ forms, with the tube B, an expanding-chamber G, opening into the pressure and mixing chamber C, and the shell-section A² is spaced from the exterior surface of the prongs C² to form an annular exit-chamber H for the passage of the mixture to the interior of the mantle. The prongs C² are closely set together, so as to form continuous narrow slits between the adjacent prongs, the slits extending from the base C′ to the top of the prongs to cause the mixture to pass in narrow streams to the chamber H and also out at the top of the prongs in one continuous stream. No division is had of the mixture while passing through a slit at the side and top of the chamber C, and consequently there is very little friction of the outrushing mixture, especially as one slit is about the capacity of the inlet-tube B″. In small burners the upper ends of the prongs C² are not united, as shown in Fig. 5; but for large burners the upper ends of the prongs are integrally connected with a ring-shaped socket C³ for securing and holding the mantle-support F; but

in either case it is clearly understood that the slits extend clear to the top of the chamber C for the purpose above described.

By the construction described the gas passes centrally into the base B′ of the conductor B through the jet-opening E′, while the air enters the base B′ at the bottom close to the sides of the base, so that the air and gas are partly mixed and pass up into the conductor B to then pass from the latter into the pressure and mixing chamber C, from which a portion of the mixture passes down into the expanding-chamber G. Now when the burner is in use the heat from the flame heats the prongs C^2 to such an extent that the mixture contained in the chamber C is heated, and thereby expanded and set in motion to insure an exceedingly intimate mixture of the gas and air. As this mixture finally passes through the slits between the adjacent prongs C^2 to be burned in the mantle, as previously described, it is evident that a complete combustion takes place, with the result of an intensely-strong flame and the use of comparatively little gas. The slits between the prongs forming the exit at the sides and top of the chamber C are many times the area of the discharge of the tube B into the chamber C, and as the mixture passes from the tube B into the chamber C it expands in the latter and the chamber G, and as it is heated by coming in contact with the highly-heated prongs it still more expands and is set in motion to such an extent that the outrush of the mixture at the top exit of the chamber H and the upper ends of the prong-slits is such that the mixture travels at a high velocity to prevent back pressure on the mixture coming up the tube.

The details of construction may be varied without departing from the spirit of my invention.

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

1. A gas-burner, having a shell, a conductor, and a pressure and mixing chamber in the said shell and into which the conductor extends, the said pressure and mixing chamber having slits in its wall extending to the top of the chamber for the passage of the mixture of air and gas, the material between the slits being adapted to be heated by the flame when the burner is in use, so that gas and air passing from the shell into the said chamber become intimately mixed before passing to the point of ignition, as set forth.

2. A gas-burner, having a shell, a conductor open to the gas-supply and formed with air-inlet openings, and a mixing and pressure chamber in the said shell and into which discharges the said conductor, the base of the said chamber fitting closely into the shell, and the chamber opening at its lower end into an expansion-chamber formed between the conductor and the said shell, as set forth.

3. A gas-burner, having a shell, a conductor extending into the same and open to the gas-supply, the conductor being provided with air-inlets, and a mixing and pressure chamber set in the said shell and into which opens the said conductor, the said chamber comprising a base and prongs extending therefrom to form slits between adjacent prongs for the passage of the mixture of air and gas, the said slits extending from the base to the top of the prongs, as set forth.

4. A gas-burner, having a shell, a conductor extending into the same and open to the gas-supply, the conductor being provided with air-inlets, and a mixing and pressure chamber set in the said shell and into which opens the said conductor, the said chamber comprising a base and prongs extending therefrom to form slits between adjacent prongs for the passage of the mixture of air and gas, the said prongs being arranged in the form of a cone with the upper ends of the prongs forming carrying means for the mantle-supporting rod, as set forth.

5. A gas-burner, having a mixing and pressure chamber, comprising a hollow base and prongs extending from the said base and arranged in cone shape, adjacent prongs forming narrow slits for the passage of the mixture of gas and air, the slits extending from the base to the top of the prongs, as set forth.

6. A gas-burner comprising a shell, a mixing and pressure chamber in the said shell, and a tubular conductor extending into the shell and opening into the mixture and pressure chamber, the said conductor terminating at its lower end in a base having a shoulder for engagement with the lower end of the said shell, the base being provided with air-inlets and adapted for connection with a gas-supply, as set forth.

7. A gas-burner, having a conductor comprising a tubular portion, terminating at its lower end in a bell-shaped base, a ring forming part of the conductor and having arms integrally connected with the lower end of the said base, the spaces between the arms of the ring forming inlet-openings for the air, the said ring being set up in the said base with the inner walls of the air-inlet openings inclined inwardly and upwardly and a gas-inlet screwing into the said ring and adapted for connection with a gas-supply pipe, as set forth.

8. A gas-burner having a mixing and pressure chamber comprising a hollow base and prongs extending from the base and arranged in cone shape, the prongs being close together forming narrow slits between adjacent prongs for the passage of the mixture of air and gas, and a mantle-supporting rod carried at the upper ends of the prongs, as set forth.

9. A gas-burner, comprising a shell having a tubular extension at its lower end, a mixing and pressure chamber having its base fitting closely in the said shell, and a conductor adapted for connection with a gas-supply and provided with air-inlets, the conductor having a tubular portion fitting in the tubular exten-

sion of the shell and extending at its upper end into the lower end of the mixing and pressure chamber, the conductor being spaced from the inner surface of the shell above the tubular extension forming an expansion-chamber below the mixing and pressure chamber and into which the lower end of the mixing and pressure chamber opens, as set forth.

10. A gas-burner, comprising a shell formed in two tapering sections fastened together at their base ends, the lower or apex end of the lower section terminating in a tubular extension, a mixing and pressure chamber set in the said shell and comprising a base and prongs extending therefrom to form slits between adjacent prongs for the passage of the mixture of air and gas, the said prongs being arranged in the form of a cone and spaced from the inner surface of the shell, a mantle-supporting rod carried at the upper ends of the prongs, and a tubular conductor fitting in the tubular extension of the shell, and terminating in a base provided with air-inlet openings, the said base being adapted for connection with a gas-supply, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALLISON A. PRATT.

Witnesses:

THEO. J. HOSTER,

EVERARD B. MARSHALL.