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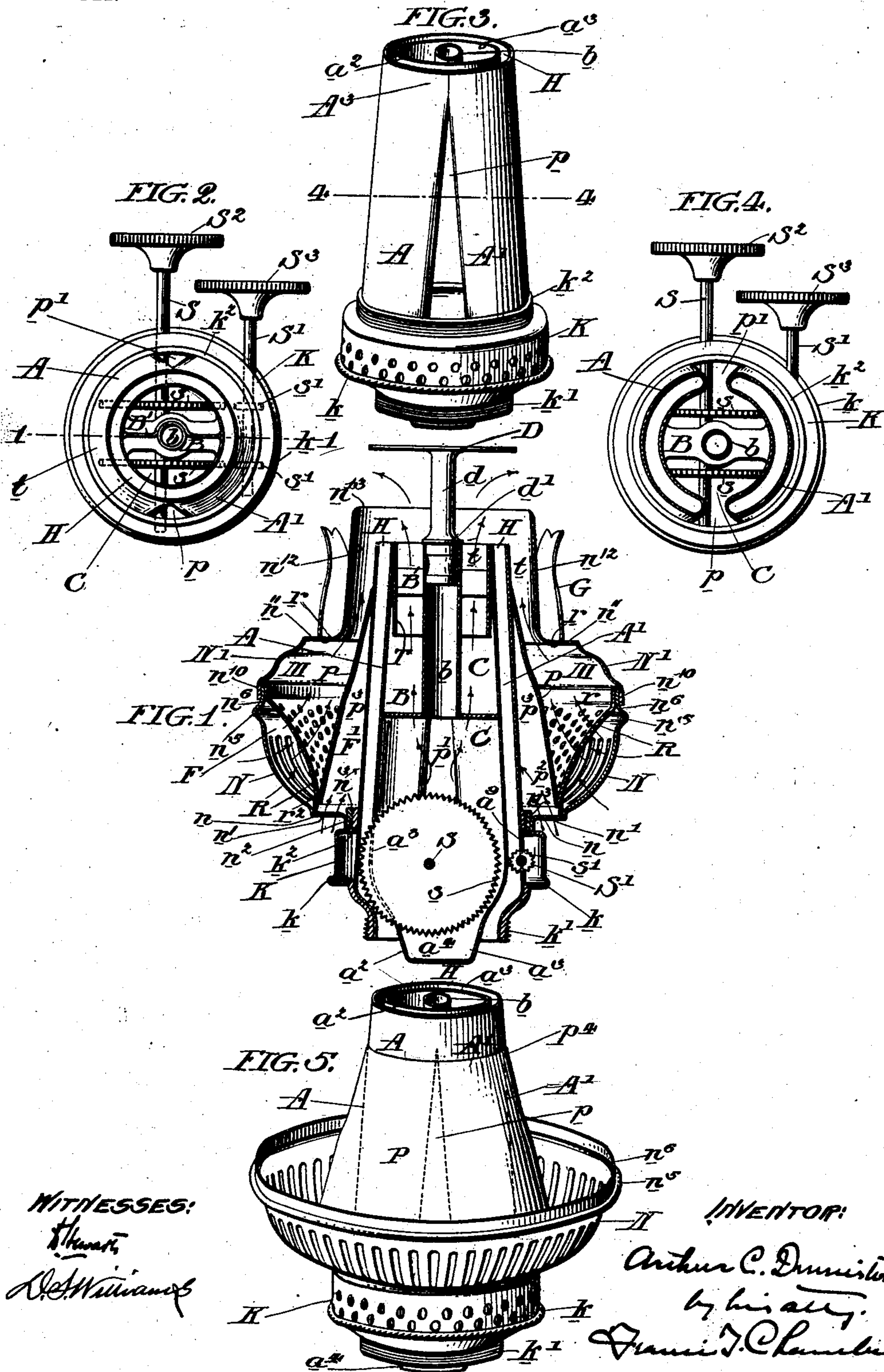
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A. C. DENNISTON.

LAMP BURNER.

APPLICATION FILED MAY 1, 1902.

NO MODEL.



WITNESSES:
Thomas
W. Williams

INVENTOR:
Arthur C. Denniston
by his atty.
Francis J. Chambers

UNITED STATES PATENT OFFICE.

ARTHUR CLARK DENNISTON, OF PHILADELPHIA, PENNSYLVANIA.

LAMP-BURNER.

SPECIFICATION forming part of Letters Patent No. 721,358, dated February 24, 1903.

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To all whom it may concern:

Be it known that I, ARTHUR CLARK DENNISTON, a citizen of the United States of America, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Lamp-Burners, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to central-draft lamp-burners, and especially to those in which the central draft is introduced at a point or points above the liquid-fuel fount.

15 The chief object of my invention is to promote in the flame of a burner of the designated class steadiness in its conformation and increased luminosity for unit of fuel consumed.

20 Further objects are to provide improved means for preventing that whirling in the flame which heretofore has been due to difference in speed in adjacent portions of the external and internal drafts, which drafts embrace the flame and are induced by it; also, to equalize more nearly than has heretofore been the case the physical conditions of the said drafts on their way through the burner; to contrive to be delivered at points adjacent 30 upon the external and internal surfaces of a hollow flame drafts equated in temperature, and in attaining the latter object to provide for a ready interchange in temperature between said external and internal drafts on their way through the burner; to provide that 35 from the point of entrance within the burner to the point of application in the flame the external and internal drafts shall be distinct and positively separated, and to contrive and combine a mechanism or mechanisms adapted 40 practically to attain above objects in a burner of the designated class.

Still further objects are best to be understood from this specification as a whole.

45 My invention consists in the novel elements and combinations of devices by which I carry the above objects into practice.

50 A new and useful feature of my invention also resides in the fact that even in the full preferred embodiment of my invention hereinafter illustratively described the burner

readily and completely takes down for cleaning.

Reference now being had to the accompanying drawings, which form a component part 55 of this specification, my invention will be found illustrated as follows:

Figure 1 is a sectional elevation of a central-draft-lamp burner of the class described embodying my invention in its preferred 60 form, the section being as if by a plane passed vertically through the lines 1 1 of Figs. 2 and 4. Fig. 2 is, with the outer and preferably removable parts taken away, a plan view of the central and preferably permanently-en- 65 gaged parts of the burner shown in Fig. 1. Fig. 3 is a side perspective view of the parts shown in Fig. 2. Fig. 4 shows by a cross-section through the parts shown in Fig. 2 a plane passed on line 4 4, Fig. 3, the parts below 70 that line in plan. Fig. 5 is a side view in perspective of certain other parts assembled upon the portion shown in Figs. 2, 3, and 4.

Referring first to Fig. 1, a metallic shell, the chief parts $N N'$ of which are preferably 75 separable, will be seen to circumscribe the burner. The main middle portion of this shell is substantially globular, the upper part being flanged at n^{10} to fit socketwise and claspingly upon a spigot-flange n^6 , which latter flange forms, the burner being in its working position, the level brim of the lower part N . A corrugation n^5 forms both a seat to the top member N' and to the brim of the lower 80 part N , in which it is formed, a stiffening device. The shell part N is apertured with intake-ports, as indicated in Fig. 1 by transfixing-arrows. These ports are so distributed that they may be divided into distinct zones by what I shall call the "petticoat" P , which 85 ports thus divided are severally appropriated to the external and internal drafts, the latter being indicated at n' , Fig. 1, by pairs of afore-said transfixing-arrows. To form a convenient seat for the petticoat P , which is here 95 approximately a "right" hollow-cone frustum, preferably of aluminium, a highly-diatheinous material, and also the better to connect the shell part N to the other part or parts, which below this point form the remainder of 100 the circumscribing shell, the part N is flanged at $n n^2$ to the L-section, (shown in Fig. 1.)

and to its tubular and downwardly-extending margin n^2 has affixed, as by brazing, an internally-screw-threaded ring n^3 . The ring n^3 has engaged with it a male threaded ring k^2 , forming the upper member of a concentric hollow collar K. This collar, despite its thus, and by preference, separable nature, is but a part of the circumscribing shell and is preferably crimp-flanged and knurled at k , whereby it is stiffened and affords a handhold. Thence by an extension, preferably of the "ogee" section, (shown in Fig. 1,) collar K is connected to a lamp-socket-engaging ring k' . The shell part N' above the socket-flange n^{10} is preferably corrugated for stiffness, and trending inward in uniform way forms within itself an upwardly-diminishing chamber M. This chamber acts as a speeding device or "cone" to the external draft the zone of whose intake-ports defined by the petticoat P is indicated in the spherical portion of shell part N by single transfixing-arrows. On its top the part N' has preferably an annular flange n^{11} , to which, as by rivets r , is affixed the crenelated chimney-engaging gallery G, within and substantially parallel to which gallery the shell N' then rises and in this instance terminates above combustion-ring H in a rim n^{13} , (useful when the wicks are adjusted to their lower burning-point to mask the flame, but in itself, save it is part of the shell, not of my invention.) I have said that petticoat P is approximately a right hollow cone. Near its base it is preferably, however, provided (see Fig. 1) with an offset p^2 , upon the shoulder of which, preferably with freedom for removal, may be seated a perforated baffle-plate R, here shown bottomless, disk-shaped, and having on its upper part a flange which nests snugly within the shell-flange n^6 aforesaid. This baffle-plate by itself forms no part of my present invention, but lends to it, as it does to other burners in which it is a familiar device, certain good features of which I am glad to take advantage. I have therefore shown how it may be conveniently yet removably associated in the preferred form of my invention.

Upon inspection of the Figs. 1 and 5 petticoat P will be seen at p^3 to have a slight deflection or warp. This is to make the petticoat correspond, as near as may be, in form and effect to part N' , the one acting as a cone upon the external, the other as a cone upon the internal drafts. (See the shell-included arrows, Fig. 1.) At its top p^4 , which top when assembled is parallel to but below the masking-rim n^{13} , petticoat P is of bigness and cross-section appropriate removably to clasp the external wall of the twin wick-tubes A A'. These wick-tubes are preferably merged at their tops to form an annular hearth H, Figs. 1, 2, 3, but below the zone where they are clasped by top of petticoat P they are separated, so as to form between them the chamber C, also its communicating tunnels $p p$. These tunnels are preferably of the inverted-V

shape. (Best shown in Fig. 3.) To form the chamber C correctly, each said wick-tubes should have their margins curved toward those of the other, also (see Fig. 1) separating as they descend from the hearth H. The said tubes define the said chamber as an upwardly-diminishing oppositely-ported cone. Fig. 5 shows how the petticoat P acts to shield the ports or tunnels $p p$ (which, as shown in Figs. 2 3, are preferably diametrically opposite) from transverse currents, and Fig. 1 how, the burner being in action, the said petticoat concentrates upon the tunnels $p p$ impinging and (to the external draft) equally-heated volumes of air. I say equally heated, for the forebay M, being divided from the forebay F' by a petticoat of the aforesaid extended surface, diathermous nature, and unbroken continuity, once it is filled with external air, by way of its own proper zone of intakes, also defined by the petticoat P, must set up a heat interchange with that air which is at the same time stored in the forebay F' and to have therewith a mutual reaction as to temperature without interchange of aerial volumes. It should also be obvious from inspection of Fig. 1 that neither draft—external or internal—whatever the cause can steal from the volume of heated equating air which at any given time is stored in the forebay of its mate. As they descend within the collar K the wick-tubes A A', still curving marginally, are swept in toward each other and finally nest in and with conformity to the under periphery of the lamp-socket-engaging ring k' aforesaid. This construction permits of the passage of broad wicks through a small lamp-socket. To facilitate insertion of wicks, as well as to prevent spilling liquid fuel, the inner walls $a^2 a^3$, Fig. 1, of the wick-tubes A A' are best carried down below ring k' and there joined by a plate a^4 . (See also Figs. 3 and 5.)

With collar K (the walls of which are presumably perforated with the usual bearings for the next-to-be-described shafts S S') the chief wick lowering and raising devices are housed. These I form, preferably, of toothed wheels $s s s' s'$, a pair for each wick, the pair members spread and fixed to their respective shafts S S'. These shafts have fixed to projecting end thumb-wheels $S^2 S^3$ and pass across said burner, as shown in Figs. 1, 2, and 4—viz., so that the shaft S (equipped with the toothed wheels $s s$ of diameter sufficient to reach from it to within the wick-tube A) lies square across and, say, its own diameter to said wick-tube's side of the center of form of the burner, the said wick-tube A having, as indicated at a^8 , Fig. 1, its inner wall slotted for the free entry of said wheels and the other shaft S' passed tangentwise to the outside of the other wick-tube A', also at the same level and parallel to shaft S, the toothed wheels $s' s'$, fixed to this shaft S', being of such (here smaller) diameter as to reach from shaft S' to within their proper wick-tube A', which tube, as indicated at a^9 , Fig. 1, is slotted for

their reception. By thus passing one shaft between and the other without the wick-tubes and having wheels of proper reach I contrive that, despite said tubes, curvatures, and widely-spread middle parts, either wick raising or lowering shaft being given a like direction of motion will produce a like direction of wick raising or lowering.

Within chamber C there is shown, Fig. 1, a horizontally-disposed bridge-plate B, its ends being brazed to the tubes A A'. Upon this bridge is stepped a tubular socket *b*, into which is seated the tang *t* of a removable disk-shaped flame-deflector D.

A vertically-disposed plate B', (see Figs. 1 and 2.)—This plate is in its central part bent to conform to one side of aforesaid socket *b*, to which it is also fixed by brazing. Upon its ends this plate has fixed a concentrically and vertically disposed thimble T. This thimble I prefer to employ, though in itself it is not of my invention, because it tends to equate the conditions of the internal draft's passage to those conditions which in passing along the vertical upper shell part N' the external draft is subject to in this my novel burner.

If desired, the collar K may be perforated, as shown in Figs. 3 and 5.

Figs. 2 and 4 show the typical circular cross-section of my preferred construction, which, as shown in Fig. 1, is substantially relatively symmetrical with relation to its vertical and major axis.

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

1. In a lamp-burner of the central-draft type, the combination of a metallic circum-scribing shell, intake-ports, an aluminium petticoat within and dividing said shell into non-communicating forebays also dividing said intake-ports into distinct zones severally proper to the external and internal drafts as described.

2. In a lamp-burner of the over-font central-draft type, the combination of a cone for speeding the internal drafts said cone being formed of and by the walls of wick-tubes whose margins are curved toward each other whose tops are brought together to form a substantially circular and continuous burning-ring and whose mid-bodies are spread apart to form opposite tunnels, said tunnels being for the access of air to the interior of said cone, a shaft passed through said tun-

nels and a shaft passed tangentwise and external to said cone and a finger-hold and a wick-engaging toothed wheel or wheels fixed to each said shafts.

3. In a lamp-burner of the over-font central-draft type, the combination of a cone for speeding the internal drafts, said cone being formed of and by the walls of wick-tubes the margins of which tubes are curved toward each other, the tops of which tubes are brought together to form a substantially circular hearth, and the bottoms of which tubes are spread and distinct to form opposite tunnels, said wick-tubes and said tunnels, the latter giving access of air to the interior of said cone, a shaft passed through said tunnels, a shaft passed tangentwise and external to one of said wick-tubes, a finger-hold and wick-engaging toothed wheel or wheels fixed to each said shafts, whereby motion of said shafts in like direction produces like direction of "raising" and "lowering" in the wicks.

4. In a lamp-burner of the over-font central-draft type, the combination of a lamp-socket-engaging ring, wick-tubes nested therein and curved in conformity thereto, said wick-tubes also being separate and outwardly molded above said ring to form an internal-draft cone with a burning-ring at the top thereof and also lateral tunnels giving access to the draft-cone.

5. In a lamp-burner of the over-font central-draft type, the combination of a circum-scribing shell, a part thereof tapering inwardly to form a speeding-up device for the external draft, twin wick-tubes nested therein, said wick-tubes each having their margins curved toward those of the other, also so molded as to form between them an upwardly-diminishing chamber which speeds an internal draft, said wick-tubes being also spread and separated for a portion of their length to form draft-tunnels giving access to said diminishing chamber and at their tops brought together to form a substantially circular hearth, and a continuous petticoat apt not only to shield said tunnels but also to define in said shell's interior distinct forebays and also preventing the drafts therein from mingling their volume but allowing an interchange of heat between said drafts.

ARTHUR CLARK DENNISTON.

Witnesses:

CHAS. F. MYERS,
D. STEWART.