

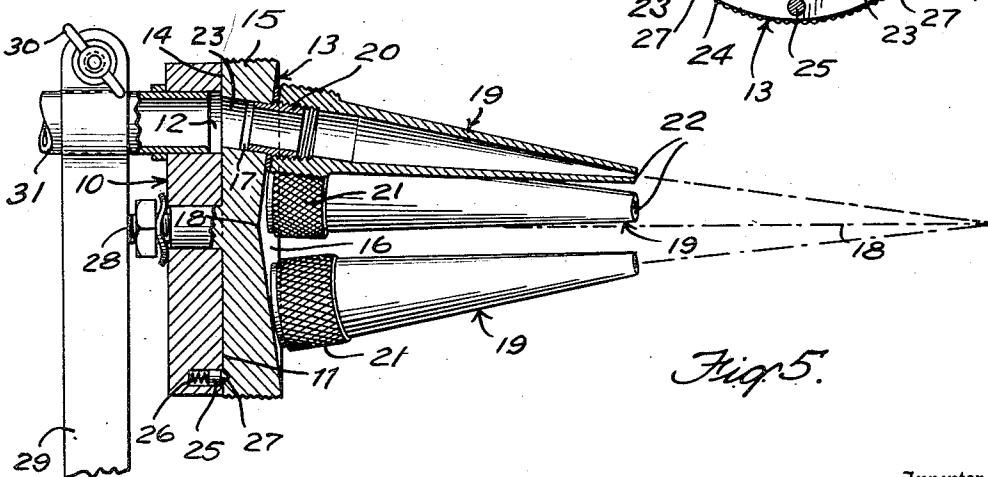
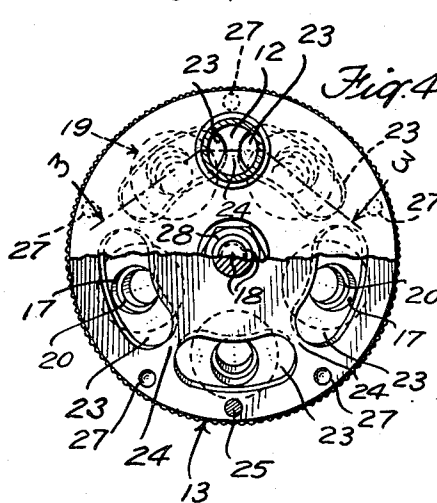
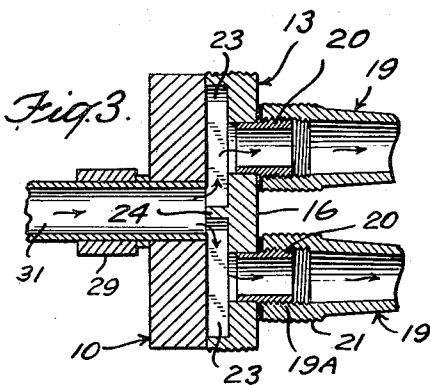
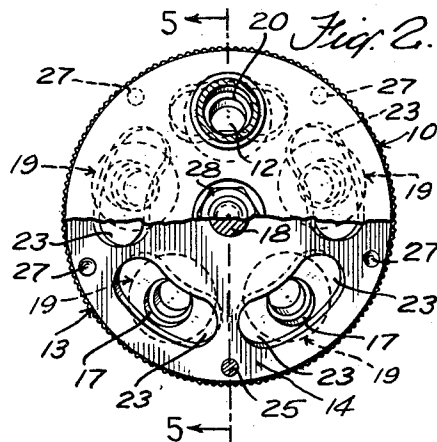
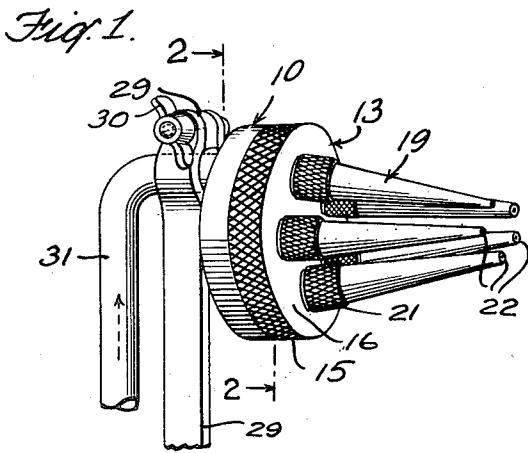
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TURRET-TYPE GAS BURNER

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TURRET-TYPE GAS BURNER

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2 Claims. (Cl. 158—105)

This invention relates to improvements in fuel burner heads adapted to burn gaseous or vaporous fuels.

It is common practice among glass blowers, welders and the like to have a plurality of burners or burner heads each adapted to a specific type of flame or volume of combustible gas. Much valuable time is spent in such burner operations in changing burners or burner tips since such interchange necessitates an extinguishment of the flame and ignition of a new flame along with time wasted in adjusting the size of the newly ignited flame.

Moreover during such interchange of burner tips the substance or material being treated cools, which frequently results in defective final products especially as they relate to glass, vitreous, or metallic products. Clearly an invention which obviates such disadvantages is advantageous not only in an economic sense but also in the quality of the product.

The hereinafter described invention is adapted for use in the arts of glass blowing, welding, flame throwing, blast furnaces, and for general shop usage.

An advantage when used in conjunction with military type flame throwers is that it obviates the need for changing of burner tips, avoids wastage of combustible gas, and nullifies the need for adjusting the size of the gas flame.

An advantage when used in conjunction with blast furnaces for the smelting of ore is that only one compact turret-type burner is necessary, in lieu of a plurality of separate burners.

One object of the invention is to provide a turret type burner having a plurality of burner tips say 1, 2, 3 etc. in which as 2 replaces 1 by rotation of the burner head 1 is not extinguished until 2 is lighted, 2 being automatically ignited from 1.

Another object is to provide a practical means of sealing the rotatable turret to the fixed base to prevent the leakage of gas or gaseous fuel mixtures.

Another object of this invention is to produce a burner adapted to rotary sealing-off of the burner gases.

Still other objects will become apparent upon reading the following description of this invention.

This invention is illustrated in the accompanying drawing which forms a part of this specification and in which, Fig. 1 is a perspective view of the novel burner head, Fig. 2 is a partial cross-sectional view taken along line 2—2 of Fig. 1 and looking in the direction of the arrows, with the lower portion of the base 10 cut away and showing a fuel orifice in register with the inlet port 12 for continuous burning, Fig. 3 is a cross-sectional view taken along line 3—3 of Fig. 4 and showing the path of travel of the combustible gases during interchanging of burner tips, Fig. 4 is a partial cross-sectional view analogous to Fig. 2 but showing the position of the inlet port 12 relative to two adjacent feeder chambers 23 during interchange between burners, and Fig. 5 is a cross sectional view taken on line 5—5 of Fig. 2, showing the inlet port 12 in register with a burner tip and further showing the alignment of the burner tips to effect a common focal point.

Turning now to the drawing, and in accordance with my invention, a base, i. e. a base portion or base element 10, having a highly polished or lapped surface 11 is provided with an incoming or inlet gas port 12.

In juxtaposition to the base portion or element is a turret 13 having a highly polished or lapped surface 14, which surface is held in gas-tight frictional contact with the adjacent lapped surface 11 of the base 10. This ar-

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range of frictionally engaged surfaces allows for the rotatability of the turret 13 relative to the fixed base 10 without escapement of gas because of the lapped surfaces therebetween. For ease of gripping the turret to effect rotation by one hand, a knurled circumferential surface area 15 may be provided.

The turret 13 is preferably provided with a concave or dished-in surface 16 on the side of the turret opposed to its lapped surface 14. A plurality of selectable gas, or fuel mixture orifices 17 have their axes located at points equidistant from the turret axis 18 and diameters which may be equal to the diameter of and therefore adapted to register with inlet port 12 of the base element 10. Selectable burner tips 19 communicate with said orifices in any suitable manner e. g. by engagement of threaded portions 19A with nipples 20. The axes of the burner tips 19 and nipples 20 preferably are substantially perpendicular to the dished-in surface 16, whereby the burner tips 19 converge, as in Fig. 5.

Because of the concavity 16 of the turret, the burner tips are focused to a common focal point, which focal point is the location of the object, e. g. the glass being heated.

Burner tips 19 may be provided with a knurled surface 21 adjacent their base for easy detachment from the rotatable turret and have outlet openings 22 of selectable greater or lesser diameter.

Extinguishment of the burner flame during the interval of switching or changing from one selectable burner tip 19 to another adjacent tip is prevented by feeder chambers or recesses 23 in communication with each of the several orifices 17.

These chambers 23 have, as specifically shown in the drawings, an elongated or sausage shape the extremities of which are equidistant from the axis of the orifice 17 communicating thereto. These elongated feeder chambers 23 are circumferentially disposed around and radially equidistant from center axis 18. The feeder chambers approach each other on a common circular orbit but do not communicate with each other inasmuch as they are separated by a web 24 of the turret element 13.

The width of web 24 must be less than the diameter of the inlet port and the ratio of that width may be as low as is consistent with reasonable mechanical strength. About 0.25 is an illustrative value of said ratio and 0.10 to 0.45 may be taken as a preferred range. The web is preferably defined by two opposed convex-concave walls as shown in Figs. 2 and 4.

As can be readily seen from Figs. 3 and 4 which illustrate a position of the web 24 during interchanging between two adjacent burner tips 19, gas from inlet port 12 is supplied to each of two adjacent feeder chambers 23 thereby allowing split second or instantaneous ignition of the gas issuing from a newly ignited burner tip 19 by the heat and flame of the gas issuing from the burner tip being displaced, aided by the proximity of the outlets 22 caused by the convergence of the axes of the tip 19.

Fig. 4 and Fig. 5 show the registry of inlet port 12 of the base 10 in communication with a selected orifice 17 located in the turret, and is the position for continuous burning or normal operation of the flame. For locking the selected burner tip 19 in place for normal operation, a locking pin 25 is recessed into the base element 10 and is actuated by a spring 26. The locking pin 25 co-acts with a recessed well 27 adapted to engage the pin head and frictionally lock the base 10 to the turret 13. A plurality of recessed wells 27 are circularly disposed through the lapped surface portion of turret 13 equidistant from axis 18. The co-acting locking pin is located in the base 10 so as to lock the base to turret 13 only when the inlet port 12 of the base 10 is in register with any one of the selected orifices 17 communicating with a burner tip 19. Other conventional automatic means for locking base 10 to turret 13 are equally feasible.

Base 10 is axially connected to rotatable turret 13 by any conventional means, for example, a bolt and nut assembly 28.

Furthermore the entire burner head may be removably fixed to a two pronged bracket 29 mounted to a rigid surface, said pronged bracket being tightened, by means

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of a conventional wing nut assembly 30, to the gas inlet conduit or pipe 31.

While this invention has been illustrated by a preferred embodiment thereof it is to be understood that the scope of this invention is not to be limited to this embodiment, but rather only as defined in the claims ultimately appended hereinafter.

In accordance with well established law the applicant is entitled to all uses to which his invention may or can be put. For example the burner of this invention is not limited to the use of fuels in the gaseous or vapor phase. It can also be used with any fuel in the liquid or solid phase which can be carried in a stream of gas including air or oxygen, for example oil or pulverized coal, carbon, etc. What is claimed is:

1. A burner head comprising in combination a substantially flat disk-shaped base member provided with a fuel inlet port, a substantially flat disk-shaped turret member provided with a plurality of fuel outlet ports, said members being provided with peripheral contacting surfaces, one of said members being provided with separate circumferentially extending interior recesses for feeding fuel from said inlet port to said outlet ports, each recess individually communicating with an outlet port, means for holding said two members in face to face, relatively rotatable, sliding engagement, with their peripheral contacting surfaces in fluid tight engagement, and a plu-

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rality of converging, individually detachable burner tips carried by said turret member and respectively communicating with the fuel outlet ports therein, said tips being in igniting relation at their outer ends, said fuel feeding interior recesses being larger than any of said fuel outlet ports, adjacent recesses being so shaped as to overlap said inlet port and feed fuel to two adjacent outlet ports when the turret member is turned to bring another burner tip into operative position.

2. The combination as set forth in claim 1 wherein said turret member is provided with a dished-in outer surface sloping toward the center thereof, the respective axes of the several burner tips being substantially perpendicular to said dished-in surface of the turret member.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,118,215	Mossman	Nov. 24, 1914
1,154,974	Custer	Sept. 28, 1915
1,639,328	Coberly	Aug. 16, 1927

FOREIGN PATENTS

Number	Country	Date
469,254	France	May 15, 1914
1,914	Great Britain	of 1914