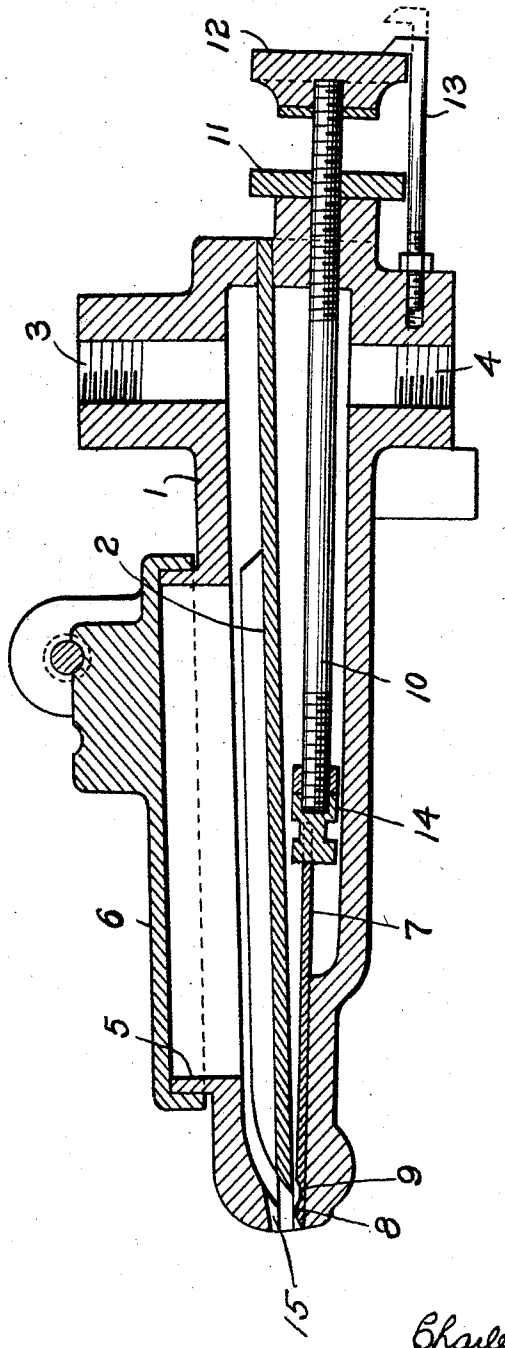
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BURNER FOR COMBUSTIBLE LIQUIDS

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WITNESSES

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BURNER FOR COMBUSTIBLE LIQUIDS.

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To all whom it may concern:

Be it known that I, CHARLES LINKÉ, residing at Paris, France, a citizen of the Republic of France, have invented or discovered certain new and useful Improvements in Burners for Combustible Liquids, of which improvements the following is a specification.

The invention relates to burners for liquid fuels and particularly to those having a wide flame.

Burners hitherto made have the disadvantage that the parts of the burner with which the liquid comes in contact are exceedingly difficult to clean. The introduction of scrapers or like devices does not yield satisfactory results. In the cleaning operation it is necessary to see the parts being cleaned so that no combustion residues such as carbon or the like will be left, since in burners of this kind ordinarily employed the carbon tends to collect.

Moreover it is possible with burners of the kind described to obtain only a single direction of flame mainly downwardly after leaving the burner tip which often has certain advantages but more often leads to inconveniences. In the improved burner in accordance with the present invention the above-mentioned disadvantages are avoided.

The improved burner includes as its essential feature of a thin plate for example of steel, nickel or similar material which at its end adjacent the burner tip is slightly hollowed out or grooved. The other end of the plate is secured in suitable manner in a socket which at its other end is engaged by the one end of a rod which is screwthreaded at both ends, the free end of this rod projecting through the rear wall of the burner casing.

The lengths of the plate, of the socket and of the rod are such that when the rod is screwed home into the burner casing the grooved end of the plate projects beyond the burner tip.

This forward end of the plate which projects beyond the mouth of the burner can be cleaned with any desired amount of care. It is to be observed that it is just at this part that carbon and other residues from the combustion of the liquid fuel almost automatically settle. As is known the carbon resulting from this combustion is quite dense and requires thorough and repeated cleaning.

The plate is secured in the socket in such manner that it can be detached as required to permit of interchange or of repair if necessary. This advantage is of great importance. Previously the whole burner had to be taken apart requiring quite a considerable time. Moreover provision of the groove or recess on the plate in the front portion of the burner permits adjustment of direction of the flame.

In the ordinary burners the plate is fastened, the liquid fuel flows over it and the jet of flame which leaves the burner is always directed downwardly. If a particular use of the flame requires such a direction, the burner fulfils its purpose. It is clear however that what in one case is an advantage in other cases is a disadvantage, as for example when an actual horizontal direction of flame is required or the flame after leaving the burner is to be directed upwards.

Since the plate of my present invention is movable it is possible to direct the flame to the desired extent. According to the object intended the direction of the flame can be regulated as closely as desired.

For this purpose it is only necessary to rotate a milled nut at the end of the rod to move the plate forwards and backwards and to vary the angle at which the jet of flame leaves the burner tip.

In the drawing is shown in longitudinal and vertical section one embodiment of the invention applied to a burner with a wide flame.

A casing 1 is provided in its wall with an elongate, horizontally extending slot 15. Within the casing an approximately horizontal, but slightly sloping plate 2 divides the space into an upper fuel chamber and a lower gas chamber. This slightly sloping plate 2 extends at its lower edge to proximity to the orifice 15, and forms within the casing walls passageways for confluent streams of liquid fuel and of compressed air which, mingling (with atomization of the liquid) emerge through the orifice 15. Provision is made at 3 for the introduction into the upper chamber of fluid fuel, and at 4 for the introduction to the lower chamber of compressed air. An opening 5 is formed in the upper wall of the casing for which a swinging closure 6 is provided, to the end that, as may be desired, additional streams of flame-nourishing air may pass with the

stream of liquid fuel to the point of atomization at the lower edge of plate 2, and thence through orifice 15, whence the flame springs.

Within the lower chamber a plate 7 is arranged. This plate 7 underlies the plate 2, stands opposite the lower face of plate 2, and forms the opposite walls of the air passageway leading to the point of atomization, and to the orifice 15. This plate 7 adjacent its forward edge 8 is provided with a shallow, round-bottomed groove 9 which normally underlies the edge of plate 2, as is clearly shown in the drawing. The plate 7 is movable in the plane of its extent, and in right-and-left direction transversely of the edge of plate 2, as seen in the drawing. This movability of the plate 7 has particular value and importance in two respects. First, by minute adjustment with respect to the edge of plate 2, the size of the orifice through which the stream of compressed air emerges to effect atomization may be varied, and the direction of the emerging stream of compressed air may be varied, with consequent effect upon the direction of the flame which springs from orifice 15. Second, the plate 7 is movable, to the end that for purposes of cleaning it may be extended through and beyond orifice 15; at least, its grooved edge may be so extended. When the edge of the plate is so extended, it may, as has been said, be carefully and completely cleaned.

The drawing shows a convenient and effective mounting for plate 7, by which the movement for the ends already defined may be effected. The plate 7 is carried in a socket 14, and it will be understood that for purposes of replacement and repair, the plate 7 may be removable in its mounting in socket 14. The socket 14 is carried upon one end of a rod 10, which rod 10 extends at its opposite end through the remote wall of casing 1. The remote end of rod 10 is screw-thread and carries an adjustable nut 11. Additionally, it conveniently carries a knob 12. The particular position of the nut 11 upon the rod 10, effected, of course, by screwing it along the rod in one direction or the other, places a limit upon the right-to-left shift of plate 7. The knob 12 is merely a convenient handle to effect the shifting of the rod 10 longitudinally, and of the plate 7. An adjustable stop 13 carried by a casing 1 may be provided. This stop is arranged to be engaged by the knob 12, and affords a limit to the left-to-right shift of rod 10. Thus by the careful adjustment of nut 11 upon rod 10, and of stop 13 in casing 1, the range of shift of plate 7 may be accurately limited. As shown in the drawing, the position in which the plate 7 finds itself may not be changed. Shifting from right to left is prevented by abutment of nut 11 upon the wall chamber 1. Shifting from left to right is prevented by engagement of knob 12 with stop 13. It will, however, be manifest that if nut 11 be shifted from left to right along rod 10, the plate 7 may then be shifted from right to left, and if stop 13 be shifted from left to right, the plate 7 may then also be shifted from left to right.

The liquid fuel entering at 3 spreads upon the plate 2 and runs from its left hand lower edge. Compressed air or its equivalent enters at 4 and sweeps along the upper surface of plate 7 and across the lower edge of plate 2 from beneath, and thence through the mouth of the burner.

By the regulation of the grooved plate a better atomization of the liquid fuel is obtained in consequence of the regulated intersection of the current of compressed air with that of the combustible liquid.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a liquid-fuel burner a plate adapted to sustain a stream of fluid fuel and to allow the fuel to escape by gravity over its edge, and a wall arranged beneath and opposite the edge of said plate and forming therewith a nozzle, such nozzle constituting the orifice of a conduit for compressed gas, the said wall being provided with a round-bottomed groove and being movable in right-line course beneath and transversely of the edge of said plate.

2. In a liquid-fuel burner the combination of a casing having an elongate horizontally extending slot in its wall, a sloping plate arranged within the casing and extending at its lower edge into proximity to said slot and dividing the space within the casing into an upper fuel chamber and a lower air chamber and forming with the slotted chamber walls passageways for confluent streams of fuel and of air, a conduit for liquid fuel opening to such upper chamber, and a conduit for compressed air opening to such lower chamber, and a second plate arranged within such lower chamber opposite and at an interval from the first-named plate and constituting the opposite wall of the air passageway, said second plate being extensible through the slot in the casing wall.

3. In a liquid-fuel burner the combination of a casing having an elongate horizontally extending slot in its wall, a sloping plate arranged within the casing and extending at its lower edge into proximity to said slot and dividing the space within the casing into an upper fuel chamber and a lower air chamber and forming with the chamber walls passageways for confluent streams of fuel and air, a conduit for liquid fuel opening to

such upper chamber, and a conduit for compressed air opening to such lower chamber and a horizontally extending plate, grooved in its upper surface, arranged within such lower chamber with the groove which it carries opposite the edge of the first-named plate and constituting one wall of the air passageway, said last-named plate being adjustable beneath the edge of the first-named plate, and extensible through the slot in the casing wall.

In testimony whereof I have hereunto set my hand.

CHARLES LINKÉ.