To all whom it may concern:

Be it known that I, HAROLD SYDNEY THORNTON, of the city of Montreal, Province of Quebec, Dominion of Canada, mechanical 5 engineer, have invented certain new and useful Improvements in Burners; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to burners of the 10 Bunsen type for burning fluid illuminants and particularly those for vaporizing a liquid illuminant and burning the same in its vaporous state upon a mantle.

The invention has for its object to intensify the flame projected upon the mantle and cause the same to bear upon the mantle with a uniform centrifugal force neutralized at the point of contact with the mantle with the advantage that danger of damage to the mantle due to the torque of the flame is eliminated; and the invention may be said to consist of the construction and combination and particular arrangement of parts hereinafter described and pointed out in the claims. For full comprehension, however, of my invention reference must be had to the accompanying drawings forming a part of this specification in which similar reference characters indicate the same parts, and wherein:

Fig. 1 is a longitudinal vertical sectional view of a complete burner embodying my invention; Fig. 2 is a plan view of the member for intensifying the flame and preventing the torque of the latter from affecting the mantle; Fig. 3 is a part elevation and part vertical sectional view taken on line A A. Fig. 2; Fig. 4 is a plan view of the underside of the member; Fig. 5 is a similar view to Fig. 4 of the intensifying device proper of this member; and Fig. 6 is a diametrical sectional view of the said intensifying device.

The burner illustrated comprises a mantle 10, which may be of any preferred construction and suspended as usual from a hanger 15 preferably clamped to the burner proper 20 over the upper end of which the lower open end of the mantle hangs. This burner proper is of cylindrical form and carries a conical member 25 arranged so as to be readily removed therefrom to be cleaned. This member is specially designed for the consumption of a gaseous illuminant under comparatively high pressure and to apply to the interior of the mantle without damaging the latter a volume of gas increasing in density toward the center. To this end the member, which is disposed in the burner with its base upward, is formed with a circumferential series of radial slots 30, a central chamber 3 the wall of which presents an annular shoulder 4 and terminates in a tubular passage 5 truncating the apex of the cone. Within this chamber is supported a relatively small cone 6 also arranged with its base upward, and it is formed with a circumferential series of slots 7 tangential to a smaller concentric circle and has a series of feet 8 through which it rests on the annular shoulder 4. The diameter of this inner cone is sufficiently smaller than the mouth of the chamber to permit free egress of a portion of the gas projected from the combined vaporizer and mixer. The vaporizer and mixer receives oil at its lower end by means of a feed pipe 10 of diminutive bore through which it is forced under pressure by any suitable means, and it passes upwardly through the vaporizer tube or retort 12 to a mixing tube 14 to which air is admitted by port 15. Subflame tubes 16 constitute means by which the vaporizer or retort is heated. This vaporizing and mixing member is neither described nor illustrated in detail but simply indicated sufficiently to set forth an operative combination. This member is not more fully described herein as it forms the subject-matter of and is claimed in a separate application filed the twenty-fifth day of March nineteen hundred and twelve under Serial No. 686,083.

Operation: When the flow of oil is started and the vaporizer or retort heated to the required degree the oil vapor will be projected through the mixing tube 14, during its passage through which it becomes mixed with air and this highly inflammable mixture in part enters the port 5 and in part impinges upon the apex of the inverted cone 6 to the surface whereof it clings and is projected through the slots 2, tending to flow rapidly upward within the mantle and burning in cylindrical form without rotation. Simultaneously the portion of the mixture projected into the chamber 3 flows rapidly upward over the surface of the inverted inner cone 6, through the tangential slots 7 therein and into the center of the
mantle. The effect is that the gas issuing from the inner part of the burner combines with the outer body of gas and together therewith completely floods the mantle with gently upwardly moving burning gas.

Claims:

1. A member for delivering an illuminant consisting of a cone having a circumferential series of slots and a central chamber with a central passage through the apex; and a cone located in the said chamber and having a circumferential series of slots.

2. A member for delivering an illuminant and for rotating the illuminant and neutralizing the torque of a portion thereof, consisting of a cone having a circumferential series of radial slots, and a central chamber with a central passage through the apex; and a cone located in the said chamber and having a circumferential series of tangential slots.

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

HAROLD SYDNEY THORNTON.

Witnesses:

E. R. PITTS,
RUSSELL HUDSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."