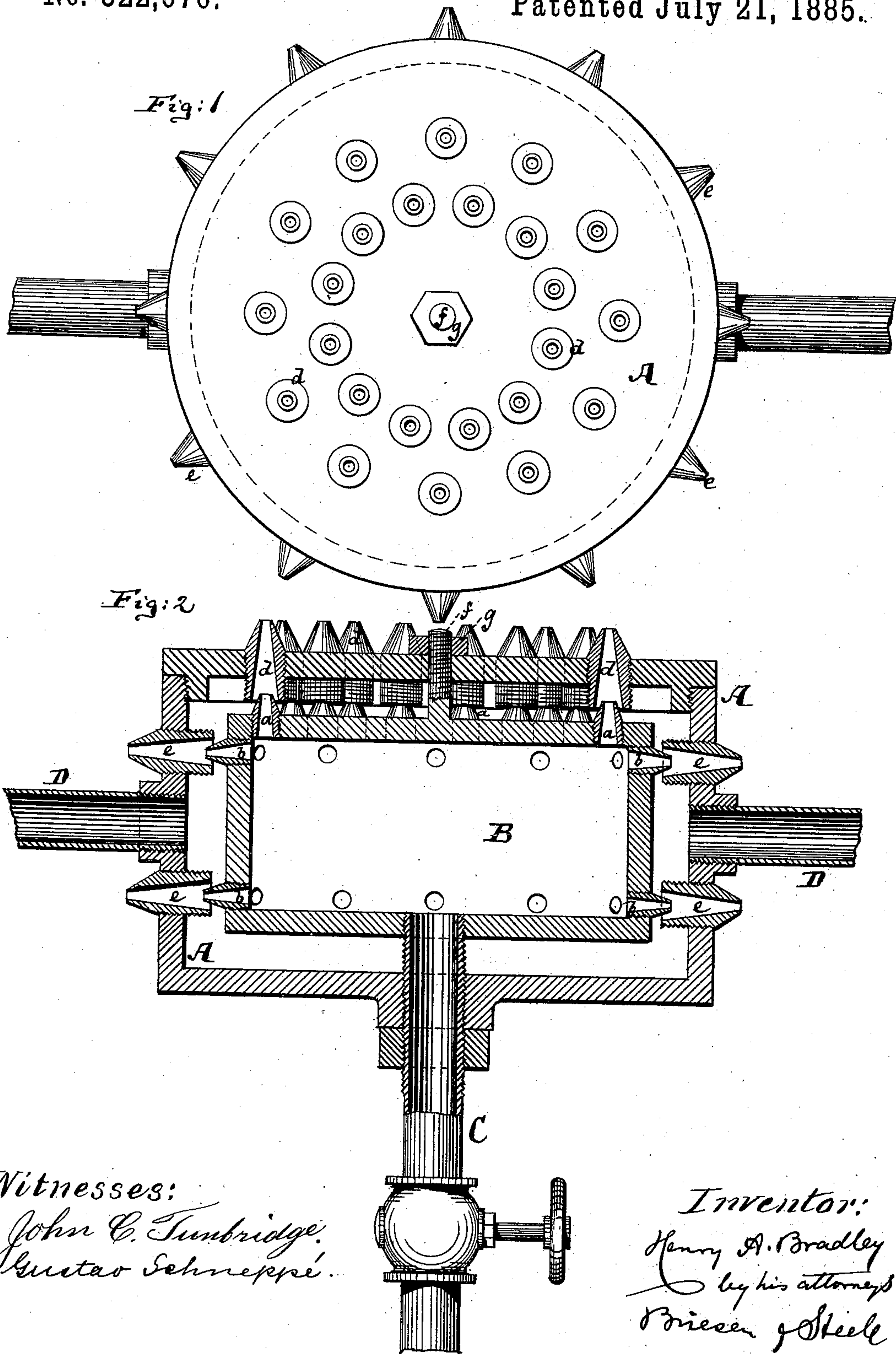


(No Model.)

H. A. BRADLEY.  
HYDROCARBON BURNER.

No. 322,676.

Patented July 21, 1885.





# UNITED STATES PATENT OFFICE.

HENRY A. BRADLEY, OF NEW YORK, N. Y.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 322,676, dated July 21, 1885.

Application filed December 8, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY A. BRADLEY, of New York, in the county and State of New York, have invented an Improved Hydrocarbon-Burner, of which the following is a complete specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of my improved hydrocarbon burner, and Fig. 2 a vertical central section of the same.

This invention relates to an improved construction of hydrocarbon-burner, being based upon the burners that are described in Letters Patent Nos. 217,259, 233,397, and 295,145, which were granted to me.

The present invention consists more particularly in surrounding the steam-box of the burner at the top and sides by the oil-chamber; also, in providing said steam-box and said oil-chamber with side jets, and, also, in making said steam-box vertically adjustable, all as hereinafter more fully described.

In the accompanying drawings, the letter A represents the outer case or shell of my improved hydrocarbon burner, and B is the steam-box thereof.

It will be seen that the steam-box is wholly contained within the oil-box A, and for the purposes of my invention it is particularly noticeable that the steam-box is embraced at the top and sides by the oil in the oil-box, it not being essential that it should be in contact with the oil at the bottom. Steam is admitted to the steam-box B through a pipe, C. Oil is admitted to the oil-box A by one or more pipes, D.

Nipples *a* project from the top of the steam-box, and other nipples, *b*, project from the sides of the steam-box. The nipples *a* discharge steam into the nipples *d*, which are adjustably secured in the top of the oil-box A, and the nipples *b* admit steam into nipples *e*, which are adjustably secured into the sides of the oil-box A.

The steam-box B is secured in position by the screw *f*, which protrudes through the top of the oil-box A, and receives at the outer end a nut, *g*. By means of this screw and nut the position of the oil-box B may be regulated and adjusted in a vertical direction.

The device, as described, operates as follows: Steam being admitted to the steam-box B and hydrocarbon liquid to the oil-box A, the steam issues in jets from the nipples

*a b*, and forces some of the oil out of the oil-box A through the nipples *d e*. The mixture of steam and oil is ignited as it issues in jets from the nipples *d e*. The steam-box, being surrounded by the oil, causes the latter to become heated before it issues from the apparatus, and hence prepares it in best and most economical manner for the production of a perfect flame. By having the nipples at the sides jets of flame are produced, which in many instances will greatly enhance the value of the burner. By making the steam-box vertically adjustable the size of the jets, or rather the extent to which the oil is permitted to escape from nipples *d*, can be regulated with great nicety. This vertical adjustment of the steam-box of course is most essential where side jets are not provided.

The apparatus described can be used as a heating-burner, and also for generating gas or other purposes.

When I use the term "oil-box" or "oil-chamber" in this specification, I desire it understood that a chamber containing suitable fuel that would be of use in such an apparatus is intended to be embraced in this specification, for the device is as useful in connection with coal-dust as it is in connection with hydrocarbon or other liquid fuel.

What I claim is—

1. The combination of the oil-box A, having discharge-nipples, with the steam-box B, having discharge-nipples corresponding with those of the oil-box, and with the oil-supply pipe D and steam-supply pipe C, all arranged so that the oil-box shall be surrounded at the top and sides by oil in the oil-box for the purpose of heating the same, as specified.

2. The combination of the oil-box A, its upper discharge-nipples, *d*, and side discharge-nipples, *e*, with the steam-box B, its upper discharge-nipples, *a*, and side discharge-nipples, *b*, and with the pipes C and D, substantially as herein shown and described.

3. The oil-box B, having series of nipples *a a*, combined with the steam-box A, having series of nipples *d d*, and with the single screw *f* and nut *g*, all arranged for permitting the vertical adjustment of the box B within the box A, as specified.

HENRY A. BRADLEY.

Witnesses:

GUSTAV SCHNEPPÉ,

CHARLES G. M. THOMAS.