

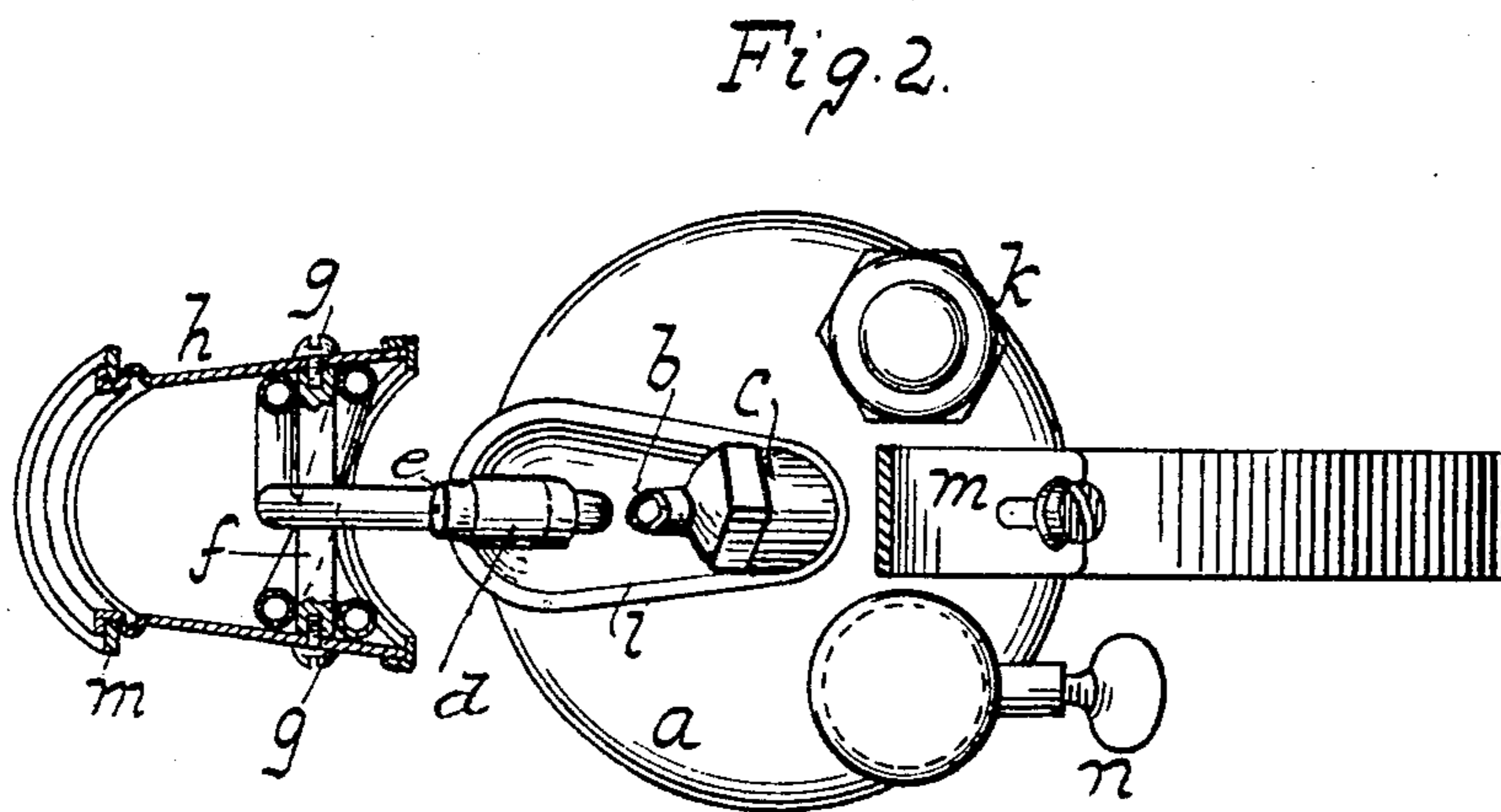
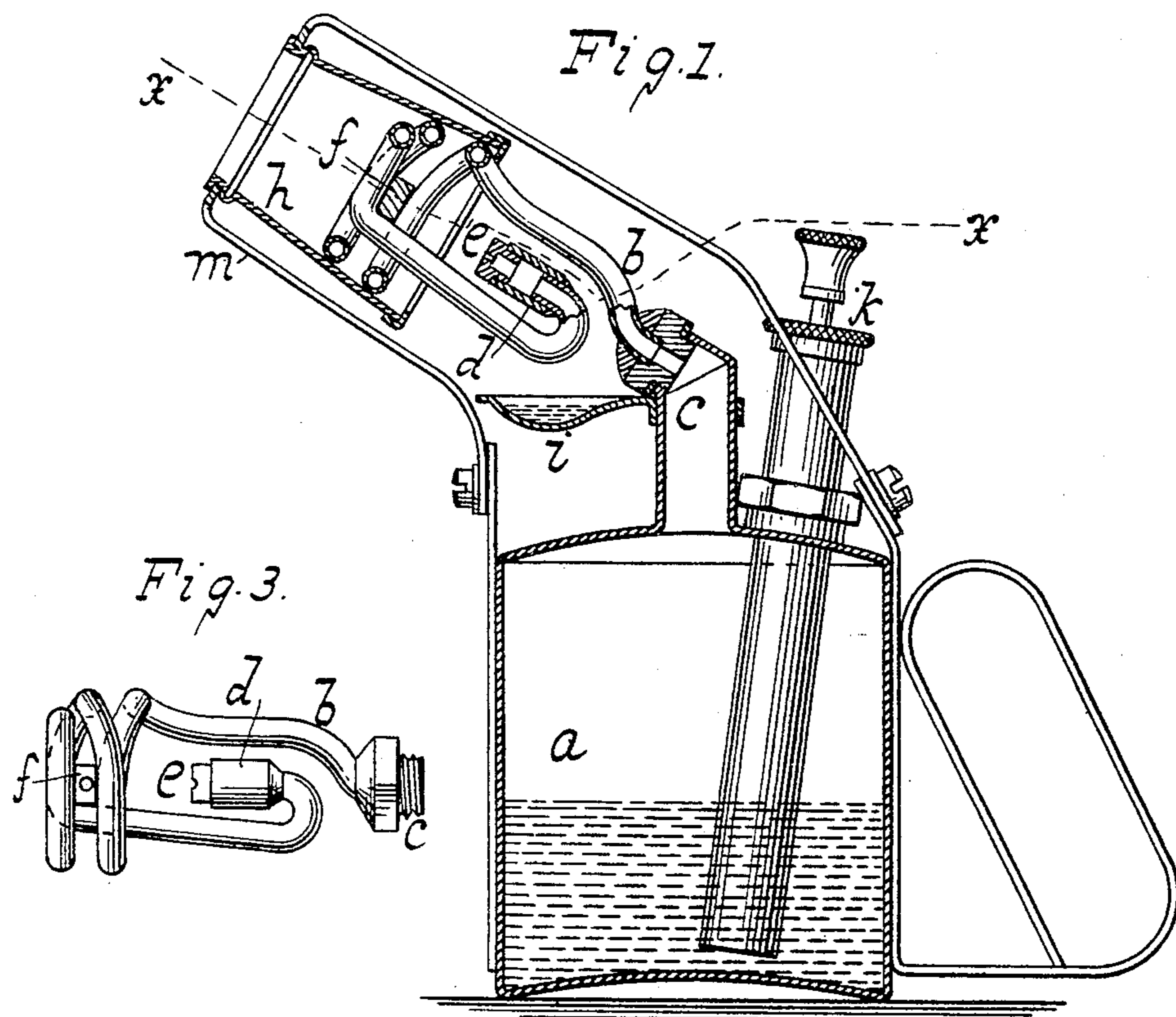
No. 795,356.

PATENTED JULY 25, 1905.

E. J. LYONS.

BURNER.

APPLICATION FILED AUG. 23, 1904.



WITNESSES:

William Miller
George Hulsberg

INVENTOR

Edward J. Lyons

BY

W. C. Hauff

ATTORNEY

UNITED STATES PATENT OFFICE.

EDWARD J. LYONS, OF JERSEY CITY, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-THIRD TO MARK FLATOW, OF NEW YORK, N. Y.

BURNER.

No. 795,356.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed August 23, 1904. Serial No. 221,874.

To all whom it may concern:

Be it known that I, EDWARD J. LYONS, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Burners, of which the following is a specification.

This invention relates to a burner having considerable efficiency which can be operated economically, cleanly, and with safety and convenience. The burner can also be made durable and simple.

This invention is set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a side elevation of a burner embodying this invention, parts being sectioned. Fig. 2 is a section along *x x*, Fig. 1. Fig. 3 shows the burner dismounted.

In the drawings is shown a reservoir *a* of suitable size and material. A supply-tube *b* has a nut or attaching branch. This nut *c* is adapted to connect or screw to the reservoir. This nut in practice having been brazed to the tube has been found to connect firmly with the tube to be secure against attachment or loosening by heat, knocks, or usage. This tube runs or is formed into a spiral or coil and extends or terminates in a burner or nipple branch *d*. This burner branch was also brazed to the tube. A tip *e* is shown at the terminal *d*. The flame from the burner-tip is directed into the spiral, so as to heat the latter.

A practical and compact structure is obtained by bending or alining the terminal portions of the tube to come central to or in the axis of the coil or spiral. The flame entering the spiral heats the vapor or combustible flowing therethrough to the outlet or burner.

A flame-breaker is shown at *f*. This flame-breaker is slipped or held between convolutions of the spiral, but need not be screwed or secured in place, but can be simply held by pressure. This flame-breaker is in the line of or is struck by the flame or heat of the burner and enables the device to retain heat and also serves for even distribution of heat. Such flame-breaker or brass bar *f* is shown tapped or with threaded portions or ends to receive a screw or screws *g* for the attachment of a sleeve or flame-ring *h*. As the sleeve can be screwed or detachably connected in place, no brazing of the sleeve is necessary. Its attachment is simple, and in case it is desired

to remove the sleeve the same can be readily dismounted or freed.

A device thus constructed was found to be an efficient heater. It would bring one quart of water to the boiling-point in three and one-half ($3\frac{1}{2}$) minutes. It would burn at full heat for four hours with a consumption of not more than one quart of oil or combustible. A thorough or economical consumption of fuel was thus obtained. Its perfect combustion gave a pure blue odorless and smokeless flame, avoiding soot. It was safe, as it could be turned entirely over without danger or damage. It was easily lighted. A table-spoonful of wood-alcohol ignited in cup *i* would start the flame, and the latter reached full heat in about one minute.

The pump *k* is applied and worked as usual in this class of devices. A brass or strengthening ring and arm *m* can be provided and is useful in hard usage to protect certain parts. This ring or frame *m* can be secured to suitable parts at the reservoir and is shown removable or simply secured in place.

The device is durable. All parts of this burner can be made from brass. Therefore the life of a burner should be practically indefinite. This burner, as noted, has a flame-breaker of solid brass, which is the part that gets the hottest. Therefore the rest of the burner retains an even heat and will not burn out so quickly. The flame-breaker also holds in place the sleeve or flame-ring which the flame comes through, doing away with unnecessary brazing.

This burner is simple, being free from any complicated mechanism whatever. Every part is free and exposed and cannot get out of order. The parts are few, being only six (6) distinct parts before it is put together. Three (3) parts *b*, *c*, and *d* are brazed together into one, (1,) and the other three parts—namely, the part *f*, sleeve *h*, and tip *e*—are interchangeable.

It needs no mechanic, for anyone can take the device apart or put it together.

Another point is that the nipple can be made of machine-steel. Therefore the nipple will not get enlarged or unduly expand. It is cheaper to manufacture. Therefore it can be put on the market cheap, being cheap to construct.

The fuel used for the burner can be, for example, fuel-oil, crude oil, or distillate.

The mixture of air and combustible leaving the reservoir is compelled to travel continuously through tube *b*, so as to be thoroughly mixed before issuing at the combustion-point *e*, thus insuring perfect combustion, the gas or vapor having been perfectly formed by the time the combustible issues from the nipple. By its long continuous travel through tube *b* the combustible is thoroughly heated, so as to readily form into vapor on issuing from nipple *e*.

To extinguish the lamp, the thumb screw or valve *n* is turned or opened to let out the air.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A burner comprising a supply-tube formed into a coil or spiral and a flame-breaker inserted into the windings of the spiral but not secured thereto so that it can be removed and replaced as required.

2. A burner comprising a supply-tube with a coil or spiral, a flame-breaker in the spiral and a sleeve or flame-ring held by the breaker, so that by removing the ring the breaker will become free to be dismantled.

3. A burner comprising a supply-tube with a coil or spiral, a flame-breaker in the spiral and a sleeve or flame-ring slipped over the spiral and secured to the flame-breaker, so that when said ring and breaker are connected they will hold one another against dislocation, and when the ring is removed the flame-breaker will be free to be taken out of place.

4. A device of the class set forth, comprising a reservoir, a supply-tube having an attaching branch running into a coil or spiral and terminating in a burner or nipple branch directed into the spiral, a flame-breaker in the coil in the line of direction of the burner or flame, a sleeve or flame-ring slipped over the spiral and detachably connected to the flame-breaker, and securing means secured to the outer terminal of the sleeve and to the reservoir.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWARD J. LYONS.

Witnesses:

C. E. POENSGEN,

GEORGE HULSBERG.