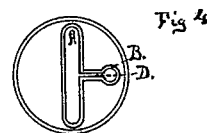
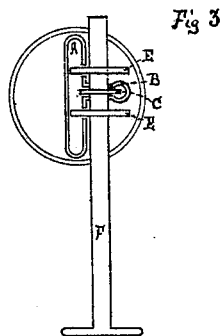
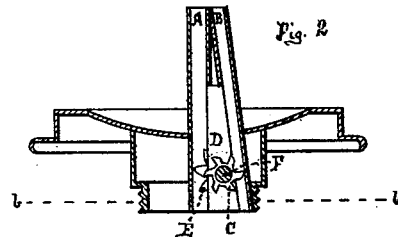
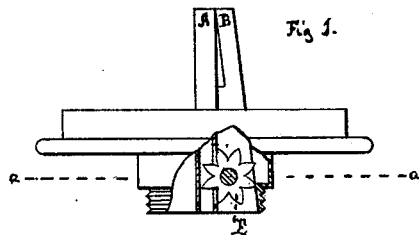


Z. B. ADAMS.  
Self-Lighting Burner.

No. 213,965.

Patented April 8, 1879.



Witnesses:

Chas. Adams, Jr.  
James Davis

Inventor:

Z. B. Adams  
per Henry W. Holland  
att'y

# UNITED STATES PATENT OFFICE.

ZABDIEL B. ADAMS, OF FRAMINGHAM, MASSACHUSETTS.

## IMPROVEMENT IN SELF-LIGHTING BURNERS.

Specification forming part of Letters Patent No. **213,965**, dated April 8, 1879; application filed November 20, 1878.

### *To all whom it may concern:*

Be it known that I, ZABDIEL BOYLSTON ADAMS, of Framingham, Massachusetts, have invented an Improved Self-Lighting Burner, of which the following is a specification:

The object of my invention is to provide a burner for kerosene and other lamps, by which, when the main light is extinguished, a small auxiliary light is kindled from it, which is, in its turn, extinguished and withdrawn, when the main light is relighted from it, thus providing an easy way of lighting the lamp without removing the chimney, and also giving a night-light, while the small wick is well protected and easily handled.

The following device I have found best adapted to the purpose: In addition to the main wick-tube A of the ordinary lamp I use a small auxiliary wick-tube, B, touching, or nearly touching, the main wick-tube at the top, and running down like it toward the oil below. I use the ordinary bar, with toothed feed-wheels upon it, and a knob at the outer end for raising the large wick in the ordinary way, and I place this bar between the two wick-tubes and fix upon it another feed-wheel, C, preferably of smaller size than the main feed-wheels, which plays into the smaller wick, (but does not move the larger,) in such a manner that the larger wick moves down as the smaller moves up, and then up as the smaller goes down, by the same turns of the knob.

I make the teeth of the smaller feed-wheel, C, reflexed, as shown in the drawings, Figure 2, so that while they move the wick accurately, they will readily allow it to be pulled past them for trimming. I make the smaller wick-tube, B, larger in its lower portion, in order to secure a more abundant flow of oil, and I find that the best way to effect this, and at the same time guide the wick with certainty, is by an enlargement of the inner side of the small tube in the mode shown in Figs. 3 and 4, so as to create for the oil a supplementary channel, D, which will be kept full by capillary attraction, and constantly supply the wick. I find it best to cut away a small portion of the hood or flame-guide directly over the small wick, both to make the flame more even and to keep the small wick cool and uncharred.

To prepare the lamp for use the small wick

is pulled up while the knob is held, and both wicks are trimmed to the proper height. The larger wick is then turned down, and the small one turned up and lighted, and the chimney put on. In this condition very little light is emitted, and there is scarcely any consumption of oil, and no smoke. When a bright light is required, it can easily be obtained by simply turning the knob so as to throw up the main wick to the level of the small one, when it will light at once; and by continuing the motion a little farther the small wick is drawn down into its tube and extinguished. By reversing the knob the small wick is again raised and lighted, while the large one is withdrawn and put out, and the light can be used as a night-lamp, or set aside until its full light is again needed. If it is desired to extinguish the lamp entirely, it is easily done in the ordinary way.

I do not claim the use of a small auxiliary wick, for that is not new; but in the burners now in practical use with that feature, the small wick cannot be drawn up or down without removing the chimney, and it is therefore left burning by the side of the main flame. This makes the main flame uneven and smoky, and the small wick is soon burned down or crusted over, so that it will not work without removing the chimney and trimming it. Moreover, in order to use the small wick at all it has to be made so very slender that it is constantly burning out. These evils interfere very seriously with the value of these burners; but in mine they are entirely avoided by withdrawing the small wick as soon as the other is lighted. My automatic device for accomplishing this is simple, strong, easily used, and cheaply constructed. By it I am further enabled to use a larger and better auxiliary wick than would otherwise be possible; and by the relative size and arrangement of the feed-wheels I give the small wick a less motion than the large one, and thus, while it is perfectly protected, the two wicks are made sure of meeting at just the right point for lighting.

Another difficulty in all small wicks is that in order to get a sufficient flow of oil it is necessary to make the tube so large that the wick plays about in it, and the feed-wheel does not catch and move it with certainty. My wick-

tube I make so small that it holds the wick firmly in place against the feed, while the capillary channel attached to it provides the necessary flow of oil.

Where there are two wick-tubes, as shown in the drawings, I make this channel open into each, so equalizing the flow of oil in the two; but it may be made to open into the small tube alone, and in this way can be used separately on all small lamp-wick tubes.

My invention is quite distinct from those burners in which the wick-tube is fluted for the purpose of holding the wick off from the tube, so that gas may circulate between the wick and the tube, and the wick not char. I do not find these flutings necessary in my burners, and I make my wick-tube fit the wick smoothly, the chamber attached to it being so made as to keep itself filled with oil by capillary attraction, and supply its oil steadily to the wick in its upper part.

I claim—

1. The combination, in a lamp, of two wicks,

one of which is smaller than and auxiliary to the other, with feeding mechanism adapted to automatically raise one wick, and withdraw the other by the same motion.

2. The combination of the main wick-tube and auxiliary wick-tube with feed-wheels placed on a single bar between the tubes.

3. The combination shown of feed-wheels C and E, bar F, wick-tubes A and B, and wicks.

4. The wick-tube B, closely fitting the wick, with the capillary oil-chamber D.

5. The combination of large and small lamp-wicks and large and small feed-wheels on a single bar, so arranged that the large wick is fed up and down by the large feed-wheel through a greater distance inversely than the small wick is moved by the small feed-wheel.

ZABDIEL BOYLSTON ADAMS.

Witnesses:

HENRY W. HOLLAND,

JAMES DAVIS.