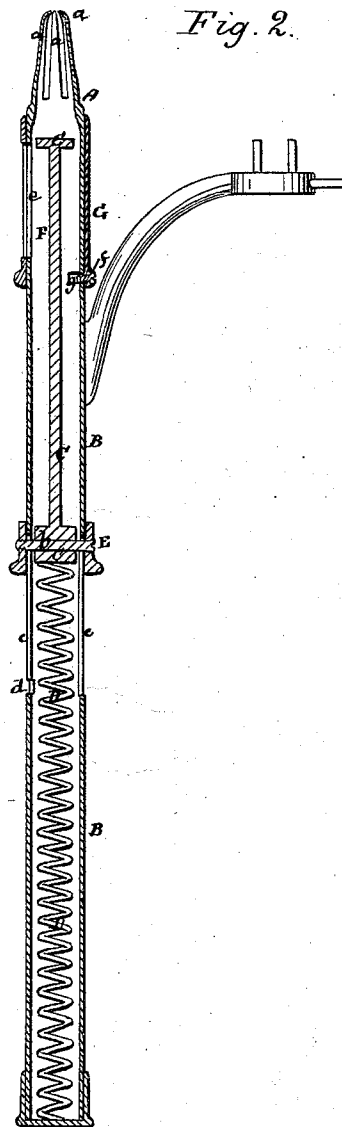
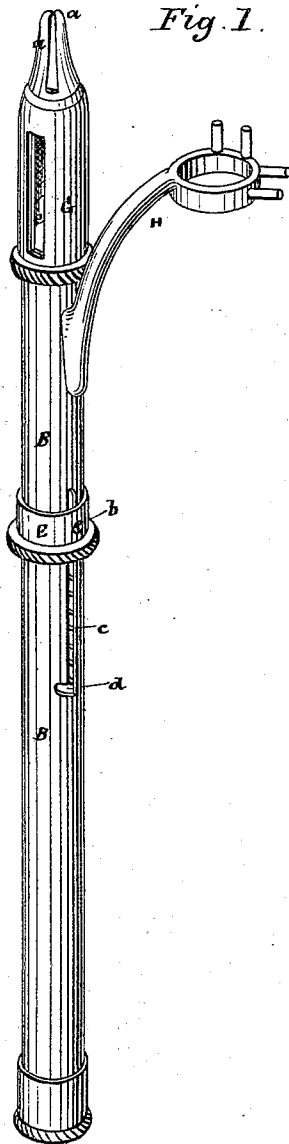


S. W. FRANCIS.
Gas-Lighters.

No. 147,926.

Patented Feb. 24, 1874.



Witnesses
E. Adick.
Geo. T. Smallwood Jr.

Inventor.
Saml W. Francis by
att'y, A. H. H. H.

UNITED STATES PATENT OFFICE.

SAMUEL W. FRANCIS, OF NEWPORT, RHODE ISLAND.

IMPROVEMENT IN GAS-LIGHTERS.

Specification forming part of Letters Patent No. **147,926**, dated February 24, 1874; application filed February 12, 1874.

To all whom it may concern:

Be it known that I, SAMUEL W. FRANCIS, of Newport, Rhode Island, have invented certain new and useful Improvements in Lamp and Gas Lighters, of which the following is a specification:

This invention relates to devices for lighting gas, lamps, candles, &c., in which a match is forced up between yielding surfaces, by means of which the match, by the time its end is projected from between said surfaces, is lighted and in position to effect the lighting of the gas-jet or lamp or candle wick. Under my invention the forcing of the match between and its projection beyond the said yielding surfaces is effected by spring-power, which, independently of any assistance from the hand, will drive up and outward the match with a sudden impulse well calculated to insure its ignition.

The manner in which my invention is or may be carried into effect will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a lighting device made in accordance with my invention. Fig. 2 is a longitudinal central section of the same.

The yielding match igniting and holding surfaces consist of elastic jaws *a*, converging to a point, and most readily formed by making longitudinal slots in a conical or tapering hollow cap, *A*, as fully shown in the drawing. The jaws approach each other closely at their free ends, which are bent inward and pointed, so as to bite the end of the match forced between them. The jaws are mounted on the end, and close and constitute a prolongation of a tubular case, *B*, which contains the spring-impelled piston *C*. This piston is arranged to move easily up and down in the case *B*, and has sufficient upward movement to insure that the match shall be projected the proper distance beyond the jaws. Below the piston is the spiral or other suitable spring *D*, bearing at its upper end against the base of the piston-rod, and at its lower end against the bottom of the tubular case. It is this spring that gives the upward impulse to the piston. To the base of the piston is attached, by a cross-pin, *b*, an external sleeve, *E*, which encompasses and can slide up and down on the tubular case *B*. The

cross-pin *b* passes through longitudinal slots *c* in case *B*, the length of which slots determines the range of movement of the sleeve, and consequently of the piston. At the base of one of the slots is a side notch or horizontal slot, *d*, into which, when the sleeve is drawn down to its lowest position, the pin *b* may be brought by turning or rotating slightly the sleeve. When the pin is thus caught in the notch, the piston will be retained in its lowest position against the upward pressure of the compressed spring. That portion of the tubular case *B* that intervenes between the piston in its lowest position and the jaws *a* constitutes what I have termed the intermediate chamber or receptacle, into which the match is to be inserted preparatory to being partially shot out from between the jaws. The portion referred to of the case is indicated at *F*. In it is formed an aperture, *e*, of sufficient size to admit of the match being placed in an upright position in the chamber, with its base resting on the piston. The part *F* can be encircled by a rotary sleeve, *G*, with an aperture corresponding to the aperture *e*, this sleeve being held in position by a pin or stud, *f*, passing into a horizontal slot, *g*, in the case, of such length and so located that when the pin bears against one end of the slot, the apertures in the sleeve and chamber will coincide, and, when the sleeve is rotated to bring the pin to the other end of the slot, the chamber will be closed.

To operate the device, the piston-sleeve *E* is drawn down, and the cross-pin engaged in notch *d*. A match is inserted in chamber *F*, and then, by slightly turning sleeve *E* so as to release the pin from the notch, the piston will, under the impulse of the spring, fly up and drive out from the top of the lighter the match, which, during its passage between the jaws, will have been ignited. The lower end of the match will, of course, be held between the jaws, and the lighted match will thus be maintained in proper position for lighting the gas, lamp, &c.

Extending from the main or tubular case *B* is a branch arm, *H*, provided with devices of suitable construction for turning gas on and off.

I am aware that spring-impelled pistons for the above purpose have been so arranged as to

be locked and released at pleasure, and this I do not broadly claim.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. A lamp, gas, or candle lighter in which the external case of said instrument, and the match-driving piston and its actuating-spring, inclosed and held therein, are combined with converging elastic jaws, closing the top, and constituting a prolongation of said case, as shown and set forth.

2. The spring-impelled piston for forcing the match between and through the match-igniting surfaces, in combination with the tubular case, provided with slots and a retaining-notch, and the external sleeve mounted on said case, and connected with the piston by a pin work-

ing in the slots and retaining-notch in said case, substantially as shown and set forth.

3. In a lamp, gas, or candle lighter, the combination of the match receiver or chamber, the spring-impelled piston working therein, and the match igniting and holding jaws, with the rotary sleeve inclosing said chamber, and provided with a lateral aperture, which, when brought into coincidence with a corresponding aperture in the side of the chamber, will permit the match to be inserted therethrough into the chamber, as shown and set forth.

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

SAML. W. FRANCIS.

Witnesses:

JAS. T. POWELL,

HENRY BULL, Jr.