W. H. SMITH.

Improvement in Devices for Igniting Gas and other Lights.

No. 115,373. Patented May 30, 1871.

Fig 1.

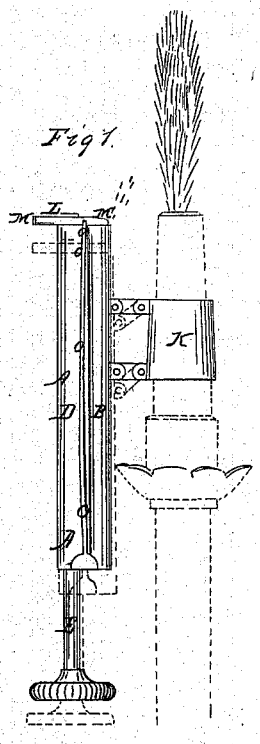


Fig 2

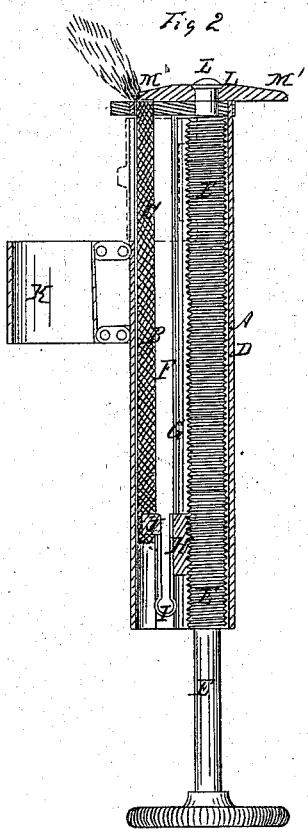


Fig 3

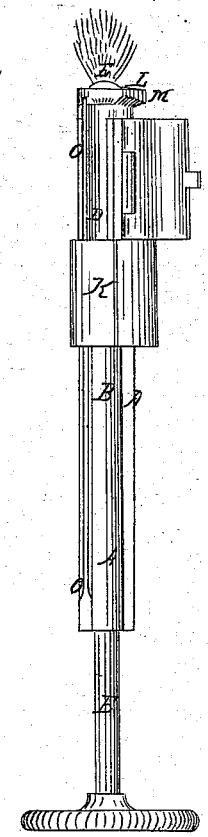
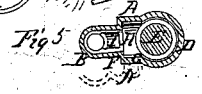


Fig 4

Fig 5



Witnesses
T. Burnond.
R. Bielau

Inventor
W. H. Smith

# UNITED STATES PATENT OFFICE.

WILLARD H. SMITH, OF NEW YORK, N. Y.

## IMPROVEMENT IN DEVICES FOR IGNITING GAS AND OTHER LIGHTS.

Specification forming part of Letters Patent No. 115,373, dated May 30, 1871.

*To all whom it may concern:*

Be it known that I, WILLARD H. SMITH, of the city, county, and State of New York, have made certain new and useful Improvements in Devices for Igniting Gas and other Lights; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings making part of this description, in which—

Figure 1 represents a side elevation of my improvements in the device shown as applied to a gas-burner; Fig. 2, a central vertical section of the same on an enlarged scale; Fig. 3 is an end elevation; Fig. 4, a top view; and Fig. 5 a horizontal section of the same.

Similar letters of reference indicate corresponding parts in the several figures.

In devices heretofore used for this purpose the friction-fuse is frequently incapable of service, it being liable to be damaged by damp air, which makes it useless, and in dry weather on account of igniting by handling the same, which makes it an unsafe article to be left in buildings. The devices now in use and employed for operating the match or fuse are complicated and expensive, and have no provision for extinguishing the match to prevent its undue consumption and the throwing off of a continuous stream of smoke, which creates a disagreeable smell in the room, and the feed motion employed is capable of igniting the fuse before desired. Consequently the devices heretofore used have failed to provide the practical effect and advantage to the public.

The invention consists in constructing the feeding device by means of employment of a sliding match-holder operated by means of a vertical screw, whereby the feeding device is greatly simplified and made to operate more certain, and the match is less liable to be ignited or damaged in the feeding device; and the same device can be manufactured for less expense than the devices heretofore known; and it also consists in covering the match or fuse with gutta-percha or rubber, whicha prevents it from becoming unserviceable by influence of damp air or wet weather, and also provides against ignition unless a great friction is applied. By these means the match may be of great service and capable of sea-voyage.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents a vertical oblong tube, of which the one side or portion B is made to inclose loosely the fuse or match C, while the other side or portion D is made to guide and fit around the vertical feed-screw E. The central portion F is made with a parallel space, G, between the screw E and fuse, in which space I employ a sliding screw-nut, H, which is attached on its side opposite the fuse to the one prong of a spring, I, while the other prong of it has the fuse-holder J secured to it, so that by rotating the screw E the nut H and fuse-holder and fuse are moved or fed up or down, according to the direction in which the screw is rotated. After the said nut H has been elevated to the top portion of the tube B the same can be removed through an aperture in that portion of the tube, and is refurnished with a fuse and inserted on the bottom end of said tube by means of the door or cap *z*. The aperture *y* is closed while the instrument is in use. K represents a vertical ring or eye-piece, which may form part, but I prefer to hinge it, as shown, with the portion B, from which it projects, and serves for holding and securing the tube A upon the burner of the gas-light. The said ring is made open on its periphery, as shown in Figs. 3 and 4, in order to be elastic and more readily fit the said burner. The object in hinging it to the part B is to allow it to drop away from the light after its use. The top end of the tube A is made with a flat face, and the screw E has its bearings in the said top end below the said face, while the extreme upper end of the screw E projects above the said face, and upon it is riveted or otherwise secured a flat cross-plate, L, which serves with the one end M for striking and rubbing and thereby igniting the fuse in passing the discharge-opening N of the fuse, while the other end M′ is made to cover the said opening for extinguishing the fuse. The lower end of the screw is provided with a circular head for taking hold of the screw in turning it. In order to prevent the operator from turning the feed-screw in the wrong direction I employ a simple vertical wire spring, O, which is attached on the outside of the lower part of the tube A. It lies flat against the side of said tube, and projects somewhat above the said

top face, so that, in turning the screw in proper direction for feeding the fuse upward, the cross-piece in passing the said spring will force the spring to yield to one side, while in passing in opposite direction the said spring stops against the top portion of the tube A and prevents the turning of the screw, as clearly shown in Figs. 1, 3, and 4. When the fuse has been consumed entirely, and another is supplied by inserting it through the lower opening of the tube B, the holder of the fuse is thereby discharged on the upper side through a side opening, *x*, and is also inserted through the bottom opening and placed with the fuse for proper operation. In order to effect superior friction of the end M upon the fuse I make the bottom and end face of that portion of the end M rubbing the fuse inclined or rounded, and with sharp teeth, as clearly shown in Figs. 3 and 4.

From the foregoing it will be perceived that by means of covering the fuse or match with rubber or gutta-percha the same is made sufficiently water-proof and capable for service in damp air, and is protected sufficiently for preventing it becoming damaged by exportation or sea-voyage, and prevented from spontaneous combustion; and that the igniting device herein shown is more simple and positive in its operation, and may be manufactured at less expense than those heretofore used.

Having fully described my invention, what I claim therein, and desire to secure by Letters Patent, is—

1. The coating of friction-fuse or match with gutta-percha or rubber, substantially as and for the purpose herein described.

2. The employment of the sliding fuse-holder and nut H, in combination with the feed-screw E, substantially as and for the purpose herein described.

3. The combination of the tube A, feed-screw E, cross-plate L, the fuse-holder J, with elastic ring or eye K, substantially as and for the purpose shown.

W. H. SMITH.

Witnesses:
Y. BERMOND,
JOHN C. FOSTER, Jr.