W. W. BATCHELDER.

Scintillator for Lighting Gas.

No. 204,285. Patented May 28, 1878.

Fig. 1.

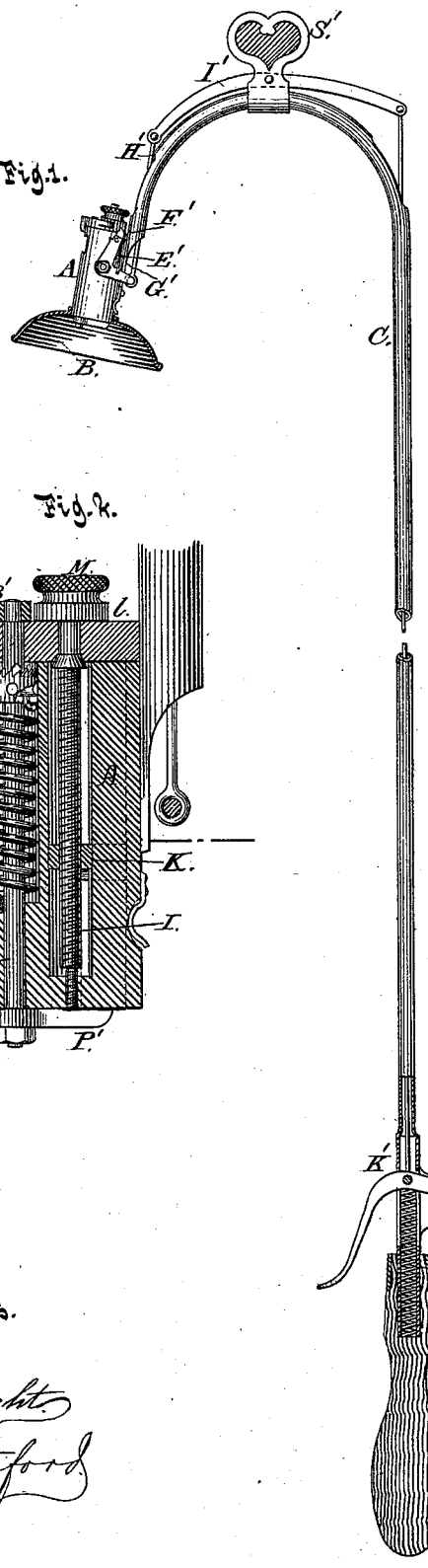


Fig. 2.

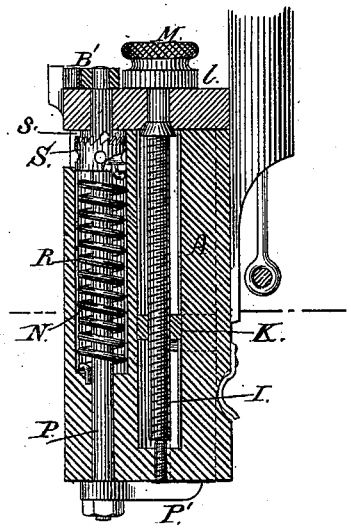


Fig. 3.

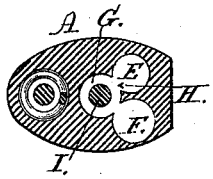


Fig. 4.

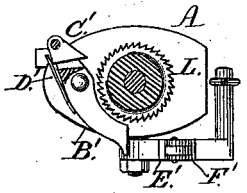
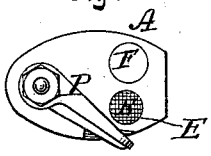


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM W. BATCHELDER, OF NEW YORK, N. Y.

IMPROVEMENT IN SCINTILLATORS FOR LIGHTING GAS.

Specification forming part of Letters Patent No. **204,285**, dated May 28, 1878; application filed May 1, 1875.

To all whom it may concern:

Be it known that I, WILLIAM W. BATCHELDER, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Scintillators for Lighting Gas, of which the following is a specification:

This invention relates to an improved instrument for lighting gas, which I denominate a "scintillating igniter;" its object being to provide a reliable, safe, handy, and cheap device, by means of which the gas may be turned on and ignited at the burners of a chandelier or bracket out of ready reach by hand.

To this end my invention consists, first, in the combination, in a suitable casing, of two or more separate substances or compounds which will not explode when separate, but will burn violently or explode when mixed or brought in contact with each other and rubbed or otherwise mechanically acted upon, and a suitable device for accomplishing such mixing or ignition of said substances or compounds, said casing being attached to a suitable handle provided with a lever, pivoted at its bend, and connected to a thumb-lever below, and the mechanism for operating the devices by which the mixing and ignition of them are effected.

My invention also consists in certain combinations of the parts constituting the operating devices of the casing, as more fully hereinafter described.

In the drawings, Figure 1 represents a view, partly in side elevation and partly in section, of my improved invention. Fig. 2 represents a longitudinal central section of the casing across its longest diameter. Fig. 3 represents a horizontal section of the shell; Fig. 4, a top view of the same, and Fig. 5 a bottom view of the same.

The letter A represents the casing of the apparatus, which consists of a short section or casing of metal, of approximately elliptical cross-section, having secured to its lower end a bell, B. Said section or casing is round at its upper end to the short arm of the bent tube C, which is provided with a handle, D, at its lower end, and serves as a means for extending the casing over the burner of a chandelier or elevated bracket.

The shell is provided with two parallel longitudinal cylindrical chambers, E F, in which the igniting substances are to be placed in the form of cylindrical sticks. At one side of said chambers and adjacent thereto is formed another chamber, G, which communicates with the chambers E F throughout its entire length by means of the slots H. Said chamber G has journaled longitudinally within it a screw, I, which is provided with a traveling nut, K, having projecting arms extending through the slots H into the chambers E F, forming followers, that traverse the chambers as the screw is rotated, and serve to project the substance therein, as more fully hereinafter specified.

The upper end of the screw-journal extends above the top of the casing, and is provided with a ratchet-wheel, L, and a milled head, M, above said ratchet-wheel.

The letter N represents a longitudinal chamber formed in the casing A, and extending only a portion of its length, the portion below being bored to form a journal for a shaft, P, extending entirely through the shell.

Within the chamber N, and surrounding the shaft P, is a spiral spring, R, the lower end of which is secured to the casing, and the upper end to a ratcheted nut, S, which is loosely fitted to the shaft, and is locked thereto by means of a projection, *s*, on the shaft, which sits into one of the ratchets.

By this means provision is made for regulating the tension of the spring, which is lessened or increased by shifting the position of the nut to the extent of one ratchet in either direction, as may be desired.

To the upper end of the shaft is secured an arm, B′, which is provided with a pawl, C′, and spring D′, by means of which said pawl is thrown forward to engage the ratchet-wheel L on the screw I, so as to give it a slight partial rotation at each vibration of the arm B′ in the proper direction to eject the igniting substances in the chambers E F.

The letter E′ represents a bent lever, fulcrumed at one side of the shell A, the upper end of which has mounted on it a pawl or dog, F′, held in a normal position by the spring G′. To the lower end of said lever is attached one end of the wire or connection H′ of the lever I′, extending across the bend of the tube

C and pivoted thereto, the other end of said lever having connected to it a wire or other extension, passing down through the long arm of the tube, and connected to a thumb-lever, K′, which is pivoted within a horizontal extension, L′, formed on the tube. The lower end of the tube C is provided with spring N′ on its interior, for throwing the thumb-lever forward after it has been retracted. To the lower end of the shaft P is secured an arm, P′, which moves with the shaft, and traverses the mouth or opening of the chambers E F at each movement of the said shaft.

The substances to be placed in the chambers E F are made into sticks of suitable diameter. One of said sticks is composed of chlorate of potash, or other equivalent material, with sufficient clay or other material to hold it in shape, and the other stick of amorphous phosphorus and clay. These sticks should be arranged in such relative positions in the chambers that the white or chlorate-of-potash compound will be first removed by the oscillating arm and rubbed thereby across the exposed surface of the red or phosphorus compound. This order of scraping and rubbing together the substances I have found preferable in practice; but the ignition may be produced by rubbing the red substance upon the white.

In order to prevent mistakes in arranging the sticks in their most effective relative positions the chambers may be formed of different sizes, and the respective sticks of corresponding sizes—thus, the larger chamber being designated for the white stick, and the smaller for the red, or vice versa.

The operation of my invention will be readily understood in connection with the above description.

The cock of the gas-fixture is turned by the key S′, secured to the bend of the tube, and the bell is held over the burner. Upon depressing the thumb-lever, the lever at the top of the tube will be operated, raising the end of the lever on the side of the casing A, and tripping the arm on the upper end of the shaft P, engaging one tooth on the ratchet-wheel, and rotating the ratchet-wheel and its screw to the extent of one tooth, so as to properly advance the respective sticks.

When the pawl on the lever E passes the arm of the shaft P, the said arm is released, allowing the shaft to return quickly to its normal position by the reaction of the spring, and causing the oscillating arm on its lower end to rub off the exposed portion of the white stick and carry it to and rub it in contact with the exposed portion of the red stick, producing the ignition which inflames the gas.

The followers are retracted for the insertion of fresh sticks by rotating the screw in a reverse direction by means of its milled head.

I claim—

1. The combination, in a suitable casing, of two or more separate substances or compounds which will not explode when separate, but will burn violently or explode when mixed or brought in contact with each other and rubbed or otherwise mechanically acted upon, and a suitable device for accomplishing such mixing or ignition of said substances or compounds, said casing being attached to a suitable handle, provided with a lever pivoted at its bend and connected to a thumb-lever below, and the mechanism for operating the devices by which the mixing and ignition of them are effected, substantially as set forth.

2. In combination with the mechanism in the casing of the apparatus, the lever pivoted at the bend of the tube connected with the mechanism of the casing, the shaft being provided with a projection adapted to engage one of the ratchets of the nut, and with the thumb-lever below, for transmitting motion around the bend of the apparatus, substantially as specified.

3. In combination with said parallel chambers in the casing secured to a suitable handle for the reception of the explosive substances, the longitudinal chamber, running parallel therewith and adjacent thereto, and provided with a traversing-nut carrying followers extending into the said parallel chambers, the screw-shaft by which the nut is traversed, the ratchet-wheel on top of said screw-shaft, the arm and pawl on the upper end of the oscillating lever, and the bent lever and pawl on the side of the casing, whereby the substances may be ejected, substantially as specified.

4. In combination with said parallel chambers, a casing attached to a suitable arm, the followers and nut, and the screw, the ratchet-wheel attached to the upper end of the screw, and the vibrating arm on the oscillating shaft and its pawl, and the bent lever and pawl on the side of the casing, whereby the shaft and screw are operated in conjunction with each other, as specified.

5. In combination with the vibrating arm on the oscillating shaft, the bent lever on the side of the casing and its pawl, whereby the said arm is tripped to oscillate the shaft and its igniting-arm, substantially as specified.

6. In combination with the oscillating shaft and its actuating mechanism, the spiral spring connected to a ratcheted nut set loosely on said shaft and the casing, whereby the tension of the spring may be regulated, and the reverse oscillation is given to the vibrating shaft and the igniting-arm at its lower end.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

W. W. BATCHELDER.

Witnesses:

JAMES L. NORRIS,

JAMES A. RUTHERFORD.