E. L. MEGILL.

GAS-LIGHTING TORCH.

No. 193,535. Patented July 24, 1877.

Fig. 1.

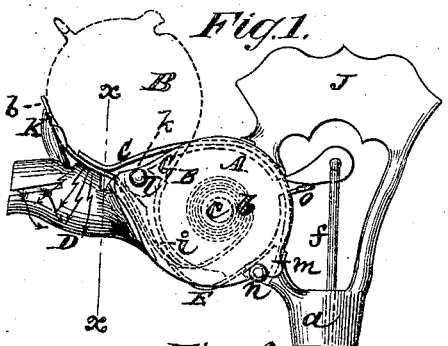


Fig. 4.

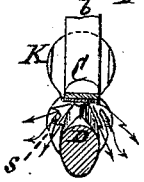


Fig. 3.

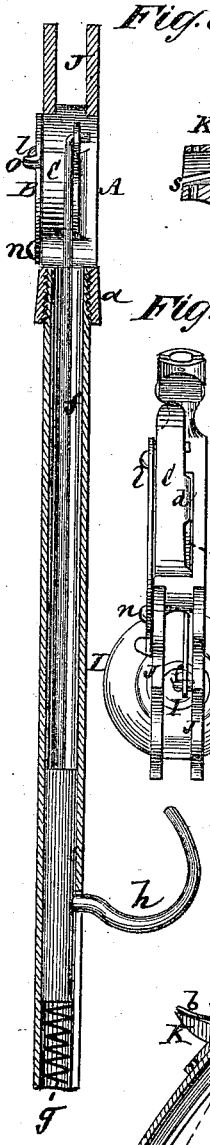


Fig. 2.

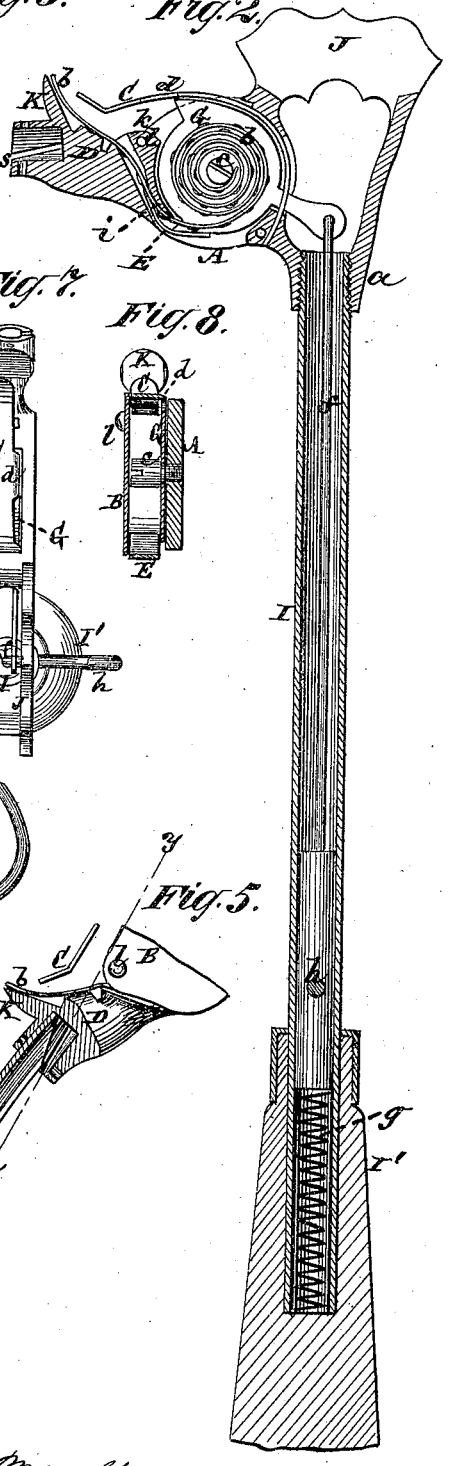


Fig. 7.

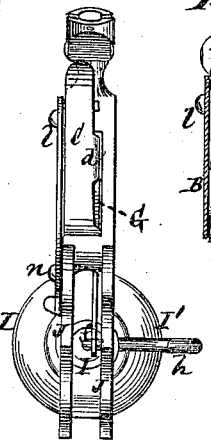


Fig. 8.

Fig. 6.

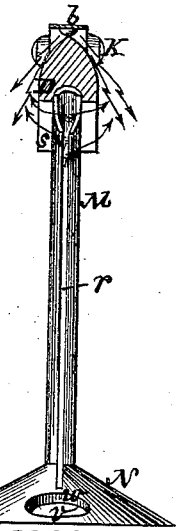
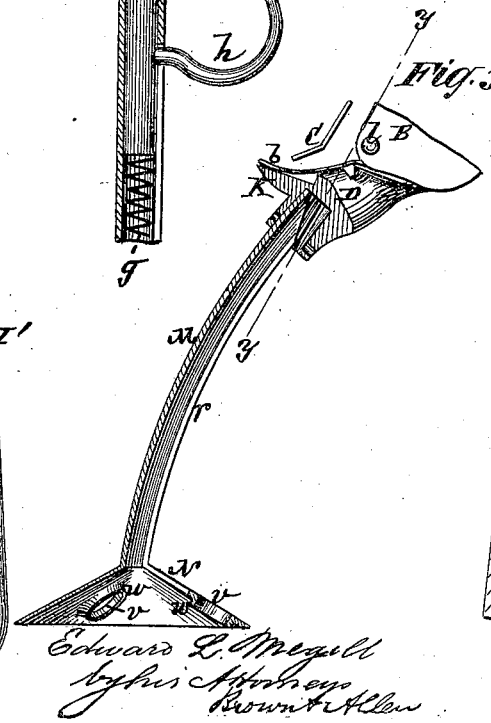


Fig. 5.



Witnesses
John Becker
Fred. Haynes

Edward L. Megill
by his Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE.

EDWARD L. MEGILL, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN GAS-LIGHTING TORCHES.

Specification forming part of Letters Patent No. **193,535**, dated July 24, 1877; application filed January 31, 1877.

To all whom it may concern:

Be it known that I, EDWARD L. MEGILL, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Torches for Gas-Lighting Purposes, of which the following is a description, reference being had to the accompanying drawing, forming part of this specification.

This invention has for its object the production of a fulminate torch for gas-lighting purposes; and the invention consists in various peculiar constructions and combinations of parts in a portable gas-lighter of this description, whereby many conveniences are afforded in the working or handling of it, and its efficiency generally is insured.

Figure 1 represents a side longitudinal view of a fulminate-torch constructed in accordance with my invention, and showing by dotted lines the lid of the magazine as thrown up or open. Fig. 2 is a section taken centrally and longitudinally through the stem in a plane parallel with Fig. 1. Fig. 3 is a section taken centrally and longitudinally through the stem in a plane at right angles with the former figures. Fig. 4 is a transverse section, through the hammer and anvil of the torch, on the line *x x*. Fig. 5 is a sectional side view of a bell and tube applied to the anvil of the torch when the torch is used to ignite the gas of an Argand burner, or of a burner to which a chimney or shade is applied, and Fig. 6 is a view of the same, taken as indicated by the line *y y*. Fig. 7 is an upper end view of the torch, mainly in illustration of the hammer and the action thereon of the lifting-cam, and Fig. 8 a transverse section through the magazine, the cam operating therein, and the hammer.

In my fulminate-torch, which is the subject of this invention, I employ what is known as fulminate-tape—that is, a tape of paper or other suitable material having fulminate-pellets on it at given distances apart—and arrange said tape in a magazine, from which it is passed by an automatic feeder onto an anvil, and so that when a hammer is brought down the latter strikes an exposed pellet and produces a flash of flame which ignites the gas.

A is the magazine, constructed to receive the fulminate-tape *b* in the form of a coil within it, and closed on its one side by a lid, B. C is the hammer, which is here represented as composed of a bent flat spring, and is made to form a part of the inclosing-walls of the magazine. D is the anvil in front of the magazine, and attached to the latter, and E the tape-feeder, which latter is composed of an elastic lateral projection from a plate-cam, G, within the magazine. This cam is fitted to freely turn about a stud, *c*, on which the coil of tape is placed, and serves the purpose not only of operating the tape-feeder E, but also the hammer by its action under a side lip, *d*, on the hammer. The magazine-frame has combined with it a key-turner, J, having cheeks or sides arranged at suitable distances apart, and serving to receive within them the handle of a gas key or tap, in order that the tap may be turned by the torch to let the gas on or off, which will be found very convenient, especially when the gas-key is situated at a distance out of convenient reach by hand. Said key-turner J is here represented as combined with the magazine or frame of the latter by casting it in one piece with the frame and with the socket *a*, by which said frame is connected with the stem I. This construction is not only a simple and cheap one, but it gives great stability and strength, and causes the key-turner and magazine to mutually support each other.

The devices for operating the tumbler or cam G to feed forward the fulminate-tape *b* its required distance, and to raise the hammer C, consist of a connecting-rod, *f*, attached to the cam and passing down through the stem I, where (or in the handle I′ of the torch) it is pressed upward or outward by a spring, *g*, when the thumb of the hand holding the torch is removed from a trigger, *h*, which projects laterally from the rod *f* through a slot in the stem near the inner end of the handle. By pulling down on the trigger the tape-feeder E is moved forward, and the hammer C raised until the cam G clears the slide-

lip on the latter. The spring-hammer C, then being liberated, strikes the fulminate-pellet of the tape, advanced by the forward action of the feeder E onto or over the anvil D, and gives the necessary flash to ignite the gas.

To facilitate the feed of the tape from the magazine onto the anvil and prevent it from being caught by any angular projection likely to impede it, the front of the magazine is constructed or provided with a circular concentric guide, *i*, which serves to direct the tape in a regular and easy manner to the anvil as the tape leaves the magazine.

To insure the proper insertion of the coil of tape within the magazine so that its free end will not be projected through the opening *k*, between the hammer and the magazine, but will be projected, as required, through the lower opening in the magazine for the operation upon it of the feeder E, the lid B is pivoted at *l* to the upper forward portion of the magazine-frame—that is, at a point between the hammer C and the feeder E—and when thrown up or opened, as shown by dotted lines in Fig. 1, is arrested by a stop, K, whereby said lid closes the opening *k* at the receiving side of the magazine, thus acting as a bar to the entry of the free or loose end of each fresh coil of fulminate-tape through said opening, and restricting the introduction of the coil so that its free end will pass through the lower opening in the magazine to the guide *i*, or surface, against which the feeder E operates. Furthermore, the magazine cover or lid B is constructed at its opening end with a hook, *m*, which engages with a stud, *n*, on the frame, and locks said lid when closed. It is also furnished with a thumb-piece, *o*, to facilitate the opening and closing of it.

The piece K, which projects from the upper side of the anvil in front of that portion of the latter which receives the blow of the hammer, not only forms a stop for the lid B, as described, but also a guide for the spent end of the fulminate-tape to assist in its direction, and likewise serves as a guard to prevent the firing of the exposed end of the tape by the ignited gas.

The anvil D, where it receives the blow of the hammer, is made wedge-shaped or sharp, so as to prevent an easy or uninterrupted passage on either side of it for the flame produced by the striking of the hammer on the fulminate-tape in the direction in which the flame is required to take.

The following are additional peculiarities of construction and operation which have not yet been specially pointed out in the foregoing description: The tape-feeder E and the guide *i* unite with the hammer C to form in part the walls of the magazine A. Again, the lid *d* of the hammer C, under which the cam G operates to lift the hammer when the trigger *h* is depressed, is made inclined, as clearly represented in Figs. 7 and 8, whereby, in the lifting-operation of the cam, the hammer is retained in position on the latter by the inclination of the overlapping lip; but after the feeder E, which here is shown as an attachment to, or forms part of, the cam, has fed forward the fulminate-tape, and the hammer has been released and fired the pellet, the lifting portion of the cam in the return stroke of the latter catches on the end of the lid *d* and pushes the spring-hammer slightly to one side to allow of the cam making its return stroke without lifting the hammer or interfering with the hold of the tape by the hammer against the back action of the feeder E.

This completes the description of the construction of the instrument as regards the adaptability of the latter to burners not provided with a chimney or shade-excluding application of the torch to the burner otherwise than down through the chimney or shade, it only being necessary in the manipulation of the instrument first to open the gas-key or tap by means of the key-turner J, then to bring the anvil D over the burner, and simultaneously to pull down on the trigger *h*, so as to feed forward the fulminate-tape and cause the hammer C to explode one of the pellets thereof.

When, however, it is required to apply the torch to an Argand burner or to a burner having a chimney or shade, as above described, then the nose or forward end of the anvil has applied to it (as shown in Figs. 5 and 6) a tube, M, having a bell, N, attached to its outer end for insertion down within the shade or chimney, and serving to conduct the gas as it issues from the burner to the flame produced by the striking of the hammer. To this end the tube M is constructed with a longitudinal slit, *r*, on its inner side, and the nose of the anvil formed with a cross-slit, *s*, to facilitate the passage and distribution of the gas as required. The bell N has holes *v* in it, to provide for escape of the gas generated by the mingling of the illuminating-gas with atmospheric air when the light is applied, thereby reducing the force of the explosion which then occurs.

To prevent a too free escape of the illuminating-gas through the holes *v* as the bell N is brought over the burner, said holes are surrounded by flanges or necks *w*, which have the effect of retarding the flow of gas through them.

The transverse slit *s* in the nose is advantageous without the tube M, as it provides for the spread of the gas across the flames of the fulminate, as indicated by arrows in Fig. 1.

I claim—

1. The combination, with the frame of the magazine A, of a key-turner, J, cast in one piece with said frame, essentially as and for the purposes herein set forth.

2. The combination of the stem I, the handle I′, the magazine A, the connecting-rod *f*, the spring *g*, the trigger *h*, and the tumbler or cam G, substantially as and for the purposes specified.

3. The magazine lid or cover B, pivoted to

the magazine-frame at a point, *l*, between the hammer C and the tape-feeder E, essentially as described.

4. The guide, guard, and stop K, in combination with the magazine A and its lid B, substantially as specified.

5. The combination of the circular concentric tape-guide *i*, with the magazine A, and the tape-feeder E, working outside of the exterior concentric surface of said guide, whereby the feed of the tape from and outside of the magazine is facilitated, essentially as described.

6. The sharp anvil D, in combination with the hammer C, having a striking action in the the direction in which it is required to pass the flame, substantially as specified.

7. The anvil D, constructed with a transverse slit, *s*, in its nose, substantially as and for the purpose herein described.

8. The magazine A having its walls in part formed of the hammer C, the tape-feeder E, and the guide *i*, essentially as described.

9. The vibrating cam G, in combination with the hammer C and its inclined lip *d*, substantially as and for the purpose herein described.

10. The combination, of the fulminate-tape feeder E, with the cam G, to which said feeder is attached, substantially as specified.

EDWARD L. MEGILL.

Witnesses:

FRED. HAYNES,

BENJAMIN W. HOFFMAN.