E. L. MEGILL.

Gas-Lighting Torch.

No. 197,523. Patented Nov. 27, 1877.

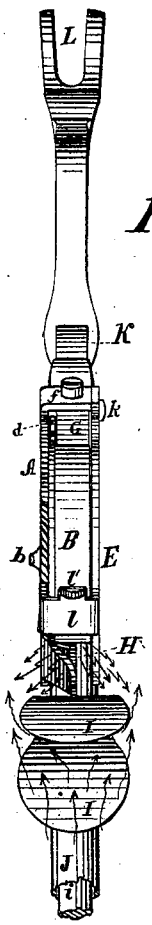

Fig. 2.

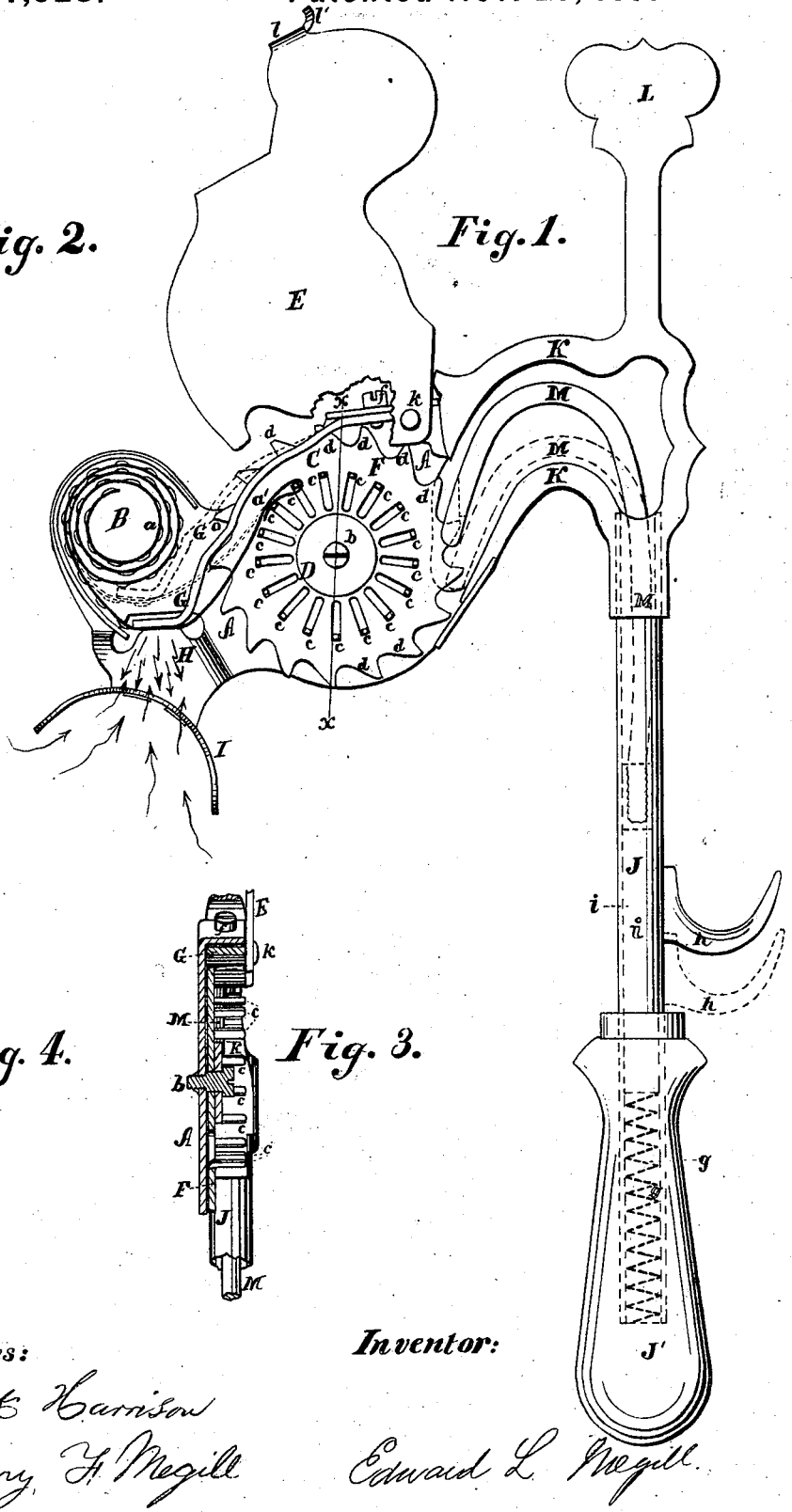

Fig. 1.

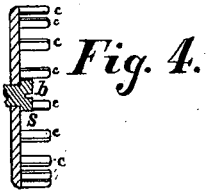

Fig. 4.

Fig. 3.

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EDWARD L. MEGILL, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN GAS-LIGHTING TORCHES.

Specification forming part of Letters Patent No. **197,523**, dated November 27, 1877; application filed September 24, 1877.

To all whom it may concern:

Be it known that I, EDWARD L. MEGILL, of the city of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Gas-Lighting Torches, of which the following is a description:

My invention relates to improvements upon, and is intended for the same purpose as, my invention for which Letters Patent were granted July 24, 1877.

The object of this invention is to furnish a more compact and reliable mechanism for the feeding of the fulminate tape, and to provide a positive protection for the said tape from the flame of gas after the latter has been ignited.

The device is also intended to obviate the necessity of detaching small portions of the tape as it is being used, and confine the entire strip until the coil is expended.

Another object is to furnish an arrangement whereby the flame of gas, during the interval of ignition, may be prevented from smoking any part of the apparatus above the igniting-point, and at the same time admit the free lighting of the issuing gas.

Another object is to furnish or provide a place in the lighting apparatus where an extra coil of tape may be kept in reserve.

The invention consists of a long handle having a trigger, which, when pulled, acts upon a novel wire ratchet-rod, a feeding and striking device for exploding a percussion-tape over a gas-burner, and igniting the gas issuing therefrom, whether surrounded by a globe or otherwise arranged on a chandelier or bracket.

It particularly consists in a novel arrangement of parts, whereby three separate chambers or apartments are constructed within the torch. One I term a supply-chamber, in which a primed coil of tape is placed. Adjoining this is another chamber, containing a wheel, upon which the coil of tape is rolled from the supply-chamber in another coil of expended tape. This wheel is sufficiently large to admit within its center another primed coil for the purpose of instantly replacing the one in the supply-chamber. This I term a reserve-tape chamber. As the coils of tape are continually being used, for the convenience of consumers, I construct this apartment so that, on removing the cover, and finding the supply-chamber empty, a new coil may be taken from another part of the apparatus and put in its place. From this wheel the expended tape is withdrawn in one piece, and cast aside as waste.

The principle I adopt for insuring a positive feed or movement of the tape over the anvil upon which the pellets are to be struck for explosion is that of pulling or drawing, instead of pushing or driving. To carry out this principle I construct a suitable feeding device, in such position with relation to the coil of primed tape as to bring the anvil between them—*i. e.*, instead of placing the feeder between the anvil and the primed coil of tape, I place the feeder on one side of the anvil and the coil of primed tape on the opposite side—so that, by attaching one end of the primed tape, which may be left blank in making, to a proper pulling movement, which may be otherwise called a "feeder," I am enabled to draw the remainder of the tape from its coil across or over the anvil, where the pellets are struck by the hammer until all the pellets on the said tape are exploded. By thus arranging the tape, anvil, and feeder with relation to each other I obtain a positive, regular, and steady movement, and overcome the objections invariably encountered in apparatus heretofore invented, wherein the feeding is done by a pushing or driving motion, in which the end of the tape is compelled to sustain itself in passing between the hammer and anvil, where it often wrinkles, folds up, and stops feeding.

Another feature of importance in this invention is that of confining or inclosing within the apparatus that portion of the tape which has had the pellets discharged from it. Heretofore this portion of the tape has been passed to the outside of the apparatus, and either burned or torn off by degrees. Any suitable construction of parts may be employed for confining this expended portion of the tape, both for the purpose of permitting its removal in a single piece and of preventing it from coming in contact with the flame of gas.

As herein shown and described, the tape is placed inside the supply-chamber, and the end of it passed over the anvil and attached to a wheel, which acts as a drawing or pulling device for carrying the primed tape from its

coiled state in the supply-chamber across the anvil to the expended-tape chamber, where it is re-coiled upon the said wheel. Any suitable means, however, may be employed for confining the expended portion of the tape and of pulling it from one part of the apparatus to another, for drawing the pellets over the anvil; but my invention does not depend upon the particular constructions.

In the drawings, Figure 1 represents a side longitudinal view of my invention, which shows the cover thrown up or open, (with the lower part of it broken away,) disclosing to view the inner mechanism and the three apartments for the tape; also, showing in dotted lines the position of the hammer, when about to strike the tape, with relation to the drawn trigger and ratchet-rod. Fig. 2 is a longitudinal edge view of the torch with the cover closed, which is mainly in illustration of the anvil, gas-shield, and clasp of the cover. Fig. 3 is a transverse section taken through the center of the apartments of the expended and reserve tapes, on the line *x x* of Fig. 1, giving an inner central edge view of the feeding or winding wheel. Fig. 4 is a central edge view of a disk having tongues turned up from its periphery.

A is a frame or case, made of sheet metal, within which are constructed the three chambers for the tapes, and the feeding and striking devices. B is the supply-chamber, into which is placed the primed tape *a*, in the form of a coil; and C is the apartment for receiving the expended tape *a'*, and D the chamber for holding the extra coil of primed tape in reserve, all being closed on the one side by a lid, E. Turning freely upon a central screw or stud, *b*, is a ratchet-wheel, F, having lateral projections *c* arranged at regular distances apart in a circle around said central stud *b*, and within the circle of ratchet-teeth *d*.

The projections *c* may be formed either by striking and turning up tongues from the wheel F, or by turning up tongues from the periphery of a disk, S, attached to said wheel F, as shown in Fig. 4. Said circle of lateral projections *c* forms the dividing-wall between the apartments of the expended and reserve tapes. The wheel F serves the threefold purpose of operating the hammer G, of feeding or unwinding the primed tape *a* from the supply-chamber B, and of winding the expended tape *a'* around the projections *c*.

The hammer G is formed of a piece of flat spring metal, and is fastened at one end to the inside of the upper wall of the case A by a screw, *f*, and passes downward in a curved form toward, and rests upon, the anvil H, and thus provides a wall or partition between the supply-chamber B and apartment C, separating the primed *a* from the expanded *a'* portion of the tape.

The anvil H is stationed near the mouth of the supply-chamber B, and is constructed by being pressed up from the metal frame or case A in such a manner as to bring its upper edge under the center of the head of the hammer G, in a parallel line with it. Secured to the anvil H is an arch or shield, I, which is placed over the gas-burner, hereinafter more fully described.

The parts thus referred to are supported at a suitable distance from the stem or handle J by arms K K, cast with which is a key-turner, L, for letting on and turning off the gas.

The device for operating the wheel F to draw the tape *a* from the supply-chamber B its required distance, and to raise the hammer G, consists of a long wire ratchet-rod, M, which engages, by its own spring movement, with one of the teeth *d*, and, passing down through the stem J, it is pressed upward or outward by a spiral spring, *g*, when pressure is removed from the trigger *h*, which projects laterally from the piston-rod *i* through a slot in the stem J, near the inner end of the handle J'.

By pulling down on the trigger, the winding-wheel F is partially revolved, and the hammer G raised until one of the teeth *d* clears a lip on the side of the latter at *o*. The spring-hammer G then, being released, falls quickly upon the percussion-pellet of the tape *a*, drawn forward, by the turning of the wheel F, onto or over the anvil H, and explodes the pellet, which ignites the gas.

The wheel F is caused to revolve until the entire coil is wound around the projections *c* and withdrawn from the supply-chamber B, and each pellet has been successively exploded. The expended tape is then removed from the wheel as waste.

To adjust new tape, a loop is made of the loose end of the coil, and placed upon one of the lateral projections *c* on the wheel F, and continued down underneath the hammer G, (the caps or pellets facing the anvil H,) and dropped into the supply-chamber B, as shown in Fig. 1. I do not, however, wish to confine myself to this particular mode of attaching the tape, as it may be secured in any simple manner without affecting the principle.

The hammer G also acts as a stripper for unrolling the primed coil of tape as it is being drawn from the supply-chamber B. As the said hammer lifts, the end of it passes through the coil, which latter follows its upward and downward motion within the magazine, said magazine being made oval-shaped and open on the side toward the hammer, to allow its entrance and operation.

The ratchet-rod M is screwed into the piston-rod *i*, and extends up through the stem J in a very slight curve, which causes it to lean to one side of said stem in the direction of the wheel F. The end of said ratchet-rod is formed into a hook, having a slit or notch cut into it, through which the teeth *d* pass, and after each downward stroke of the trigger *h*, at the same instant that the spiral spring *g* forces the rod M back or upward, the elasticity through the entire length of the wire rod causes its upper hooked end, like a ratchet, to spring over and upon the teeth, the said

rod M being made stiff enough to enable its hooked end to turn said wheel and lift the hammer G.

The arms K K correspond in shape with the said hook, and rise sufficiently above the level of the shield or arch I to accommodate the edge of globes when over the gas-burner, as the shield I and the igniting part of the torch are made to extend inside all globes the correct distance, and need not be seen to be placed properly—an advantage gained when porcelain or other than transparent globes or shades are used.

The lid or cover E, pivoted at *k*, when slid aside, exposes at the same time the three inside chambers, which allows the tapes to be easily adjusted and removed. When closed, a spring clamp or band, *l*, made in one piece with said cover E, engages at the opening with the opposite side of the supply-chamber B, which keeps the said cover in place. The cover is disengaged by pressing against the thumb-piece *l'*.

To the anvil H is riveted a shield or arch, I, made in an open-shell shape. When the gas is to be ignited this shield or arch is placed over the burner, and the gas, flowing toward or against it, finds its way to the upper inner surface or center, and past its narrowest edges directly under the exploding-pellet. As the anvil H is made sharp and narrow, and the fire of the pellet is driven downward on each side of it by the force of the hammer coming in the same direction, as indicated by the arrows, this particular stream of gas receives the greater portion of the fire, and thus becomes ignited instantly without concussion. This shield does not confine and mix the gas as a deflector or bell, but attracts it toward the anvil from the front and rear, then spreads it, and allows it to pass unobstructed upward on both sides, so that it will ignite freely in the air. This shield is cheaply made, and by its combination the parts of the torch located above it are kept free from smoke caused by the burning gas during the interval of lighting it.

The feeding and striking devices of this invention may be applied in combination with lighters of various kinds.

I claim—

1. A lighting apparatus provided with suitable mechanism for pulling or drawing the igniting-tape over and beyond the anvil, substantially as herein described.

2. A lighting apparatus provided with an expended-tape chamber, for receiving and confining the tape after the pellets thereon have been exploded, substantially as herein described and set forth.

3. A lighting apparatus provided with a reserve-tape chamber for holding an extra coil of tape in readiness to replace the coil of tape being discharged, substantially as herein described.

4. The combination, with the supply-chamber B, of the expended-tape chamber C, whereby the coil of tape is unrolled from the former and recoiled into the latter, substantially as herein described and set forth.

5. In a gas-lighting apparatus, the combination, with the supply-chamber B, of the hammer G, for stripping or unrolling the tape as it is drawn from said magazine, substantially as described.

6. In a gas-lighting torch, a revolving wheel for feeding, winding, and holding upon itself the percussion-tape, substantially as herein described.

7. A ratchet-wheel, F, provided with lateral projections *c*, so as to form a cylinder with one or more notches or slits for securing the loose end of a coil of tape and drawing it from the magazine, substantially as herein set forth and described.

8. The spring-acting ratchet-rod M, secured to and acting with the trigger *h*, in combination with the ratchet-wheel F, by which said wheel is caused to revolve, and wind the tape, and lift the hammer to explode the pellets over the anvil at regular intervals, substantially as herein described and set forth.

9. The combination of the lateral projections *c* with the wheel F, forming a chamber for the reserve-tape, substantially as herein described.

10. The combination of the curved hammer-spring G with the frame or case A, whereby said hammer serves as a dividing-wall between the magazine B and expended-tape chamber C, substantially as herein set forth.

11. In a gas-lighting torch, a gas shield or arch, I, for attracting and spreading the gas under the igniting-point as it escapes from the burner, substantially as herein described and set forth.

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