F. H. POMEROY.

GAS LIGHTER.

APPLICATION FILED NOV. 19, 1908.

940,276. Patented Nov. 16, 1909.

Fig. 1.

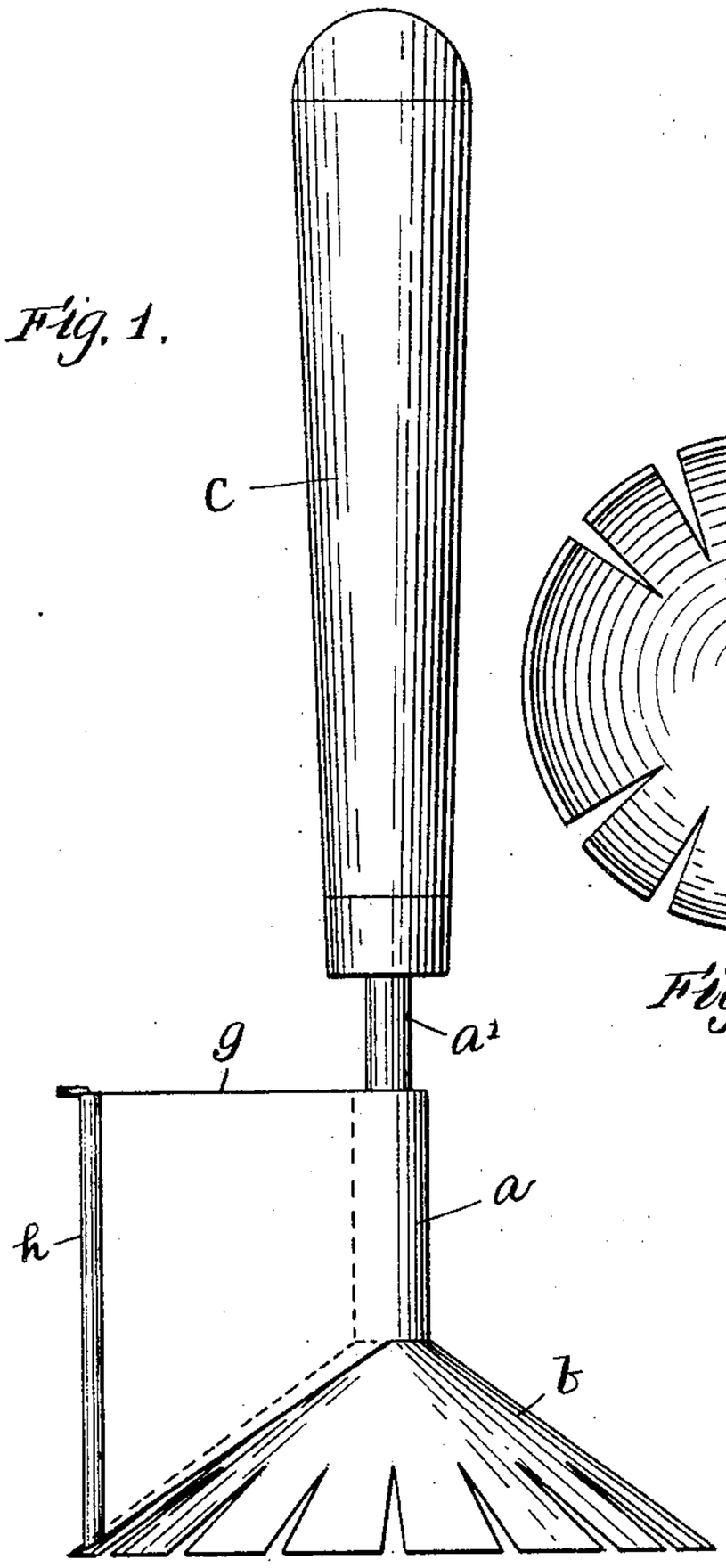

Fig. 3.

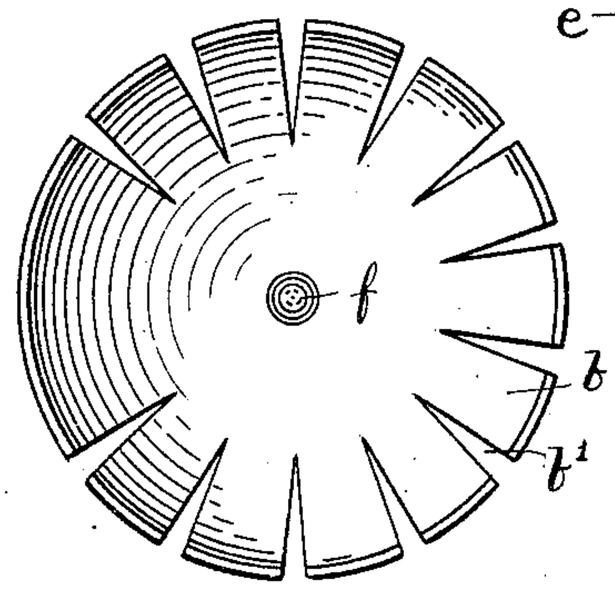

Fig. 2.

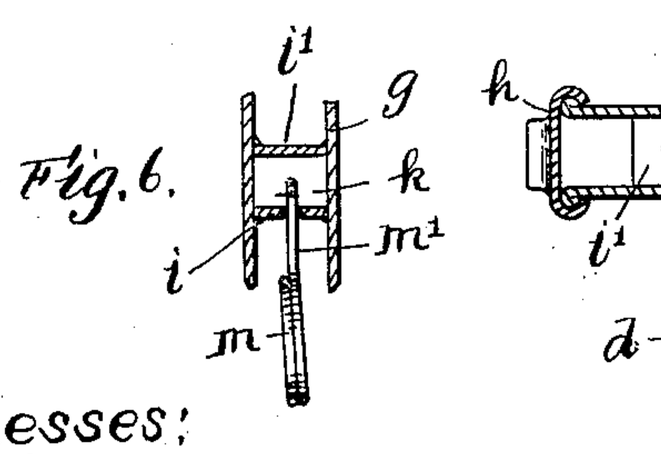

Fig. 6.

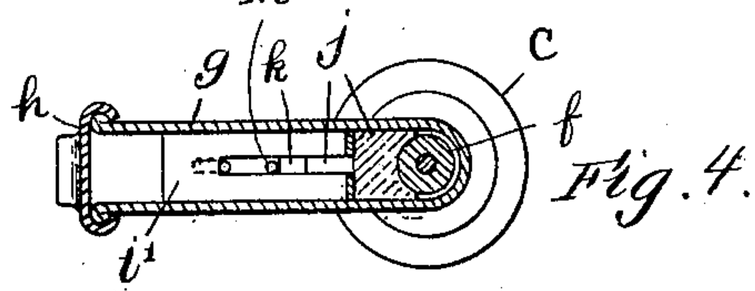

Fig. 4.

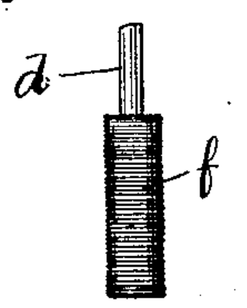

Fig. 5.

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UNITED STATES PATENT OFFICE.

FREDERICK H. POMEROY, OF BRADFORD, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SAFETY GAS LIGHTER CO., OF HAVERHILL, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

GAS-LIGHTER.

940,276. Specification of Letters Patent. Patented Nov. 16, 1909.

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To all whom it may concern:

Be it known that I, FREDERICK H. POMEROY, of Bradford, county of Essex, State of Massachusetts, have invented an Improvement in Gas-Lighters, of which the following is a specification.

This invention relates to a device which is especially adapted to be used in lighting gas, more particularly in gas stoves, but which may be used for lighting any highly inflammable material.

The object of my invention is to produce a simple and compact device for the above described purpose which will be capable of being used for a large number of times, and which is simple, durable and of inexpensive construction. I accomplish this object by the means shown in the accompanying drawing, in which,

Figure 1 is a side elevation of a device made according to my invention. Fig. 2 is a longitudinal, central sectional view thereof. Fig. 3 is a bottom plan view, on a reduced scale. Fig. 4 is a cross-section at the line 4—4 of Fig. 2. Fig. 5 is a detail view of the abrading device. Fig. 6 is a sectional view on line 6—6 of Fig. 2.

As shown in the drawing, a holder is provided which comprises a cylindrical body portion *a* having a flaring or conical-shaped hood, or cup *b*, connected to the end thereof. A handle *c* is provided with a longitudinal bore *c'* in which a rod *d* is inserted, said bore being of greater diameter than the rod throughout the greater portion of its length and being reduced at its inner end so that the rod may be firmly secured to the handle in any convenient manner, as by screw threads *d'*. A shoulder c^2 is formed at the end of the larger portion of the bore, which provides an abutment for one end of a coiled spring *e*, which is coiled about the rod *d*. The body *a* is also provided with a cylindrical extension *a'*, which is adapted to fit in the bore *c'*, so as to slide freely therein, and both said body and its extension are provided with a central longitudinal bore through which the rod *d* passes and in which said rod is fitted to slide. The spring *e* is of sufficient length to engage the inner end of the extension *a'*, so that it constantly acts to force the handle upwardly.

A cylindrically shaped abrading device *f*, consisting of a transversely corrugated steel rod, similar to an ordinary round file, is mounted on the outer end of the rod *d*, the latter passing centrally therethrough and having a head d^2 and a shoulder d^3, between which the abrader *f* is held from longitudinal movement with relation to the rod. The bore of the body *a* is enlarged at its lower end to receive said abrader, so that the latter is free to reciprocate therein, a shoulder a^2 being provided against which the upper or inner end of the abrader is held by the spring *e*, and said shoulder being arranged so that the outer end of the abrader is normally held flush with the top of the hood *b*.

A flat casing *g*, having a sliding cover *h* on its edge, is mounted on the upper side of the hood *b* and the adjacent side of the body *a*, said casing extending radially with relation thereto, and a pair of guide plates *i* and *i'* are mounted therein, in a position oblique to the bore of said body *a*, a square, open ended tube being formed which terminates at its lower end adjacent the lower or outer end of the bore in the body *a*, and opens at its upper end in the casing.

A spark-producing material *j*, which is a substance composed of materials such as cerium and alloys of cerium, which, when abraded will emit a number of sparks, is arranged between the guide-plates *i*, *i'*, so that it will slide freely therein and will bear against the surface of the abrader *f*, and a follower *k* is provided, to bear against the upper end of said material *j*, said follower being pressed downward by a coiled spring *m*, having two arms *m'* and m^2, the arm *m'* being held in engagement with the follower *k*, the arm m^2 being held in engagement with the plate *i*, and the spring being under tension to press said arms away from each other. The material *j* is thus constantly held against the surface of the abrader *f*, with a yielding pressure, the force of which is such as to produce the best results, said spring also acting to feed said material into engagement with the abrader *f*, as the material becomes worn away in use.

In using my device for lighting a gas stove the gas is turned on and the edge of the hood *b* is pressed against the burner, or surrounding grating by means of the handle with sufficient force to compress the spring

e and, as the spring yields, the abrader is forced down to the dotted position of Fig. 2, so that it abrades the surface of the material *j*, with the result that a large number of sparks will be formed and discharged into the hood. As the gas will rise and fill the hood it will instantly become ignited. When the device is removed from the stove the spring *e* will at once return the parts to the normal position.

It will be noted that, in the form of my invention shown, while the edge of the hood is most conveniently employed as an engaging face which, when pressed against the stove by the handle enables the device to be readily operated, yet, that it may be readily operated by holding the hood or holder in one hand and pressing the handle with the other.

On account of the mixture of the gas with air before it is ignited, there is a tendency to cause a slight explosion when it is ignited, which sometimes even forces back the gas so that, in a Bunsen burner, it "lights back". This is prevented by providing perforations in the hood which will relieve the pressure or permit the gas under pressure to escape therethrough when it is ignited, and also, by providing means for permitting the ignited gas to puff out horizontally, the whole burner in a gas stove will be instantly lighted.

In the drawing I have shown the hood as provided with a series of V-shaped slits *b'* which extend from the edge thereof radially, although the particular form of said perforations is not material, any opening which will permit the gas to escape freely serving the purpose.

By providing a follower between the spring and spark producing substance I am enabled to use the substance almost completely, and as the rate at which the substance is worn away or used is very small the material needs to be replenished only at long intervals.

As the abrader *f* is cylindrical in form and is adapted to be rotated, as well as reciprocated in the holder, the entire surface thereof will be brought into engagement with the material *j* in the ordinary use of the device, so that the wear will be uniform throughout its surface and the length of time which the abrader will successfully operate is greatly increased.

It is not necessary that the device be used in the vertical position shown, as it may be used in any position, in proximity to the burner, the action of the abrader causing the sparks to be thrown for some distance in the direction in which the abrader is forced, and while the hood is desirable when the device is used as a hand implement, it is unnecessary when the device is fixed in a horizontal position to light a single burner in a gas stove.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A gas lighter comprising a holder, a spark-producing material supported thereby, an abrader having a longitudinally extending abrading face and mounted in said holder to move longitudinally of said face, a handle for directly moving said abrader, and means for holding said material in engagement with said abrader while it is being moved by said handle, substantially as described.

2. A gas lighter comprising a holder, a spark-producing material supported thereby, an abrader having a longitudinally extending abrading face, and mounted in said holder to move longitudinally of said face, a handle connected to said abrader and movable therewith to reciprocate the same, and means for holding said material in engagement with said abrader while the latter is reciprocating, substantially as described.

3. A gas lighter comprising an abrader having an abrading face, a spark producing material, a holder therefor, a spring for pressing said material and said abrader together to hold said abrading face and the material in frictional engagement and to feed them together as either becomes worn by the other, and means permitting relative movement of said abrader and said material while in engagement, substantially as described.

4. A gas lighter comprising an abrader having an abrading face, a spark-producing material, a holder therefor, a spring for pressing said material against said abrading face to hold the material in frictional engagement therewith and to feed the same thereto, and means permitting relative movement of said abrader and said material while in engagement, substantially as described.

5. A gas lighter comprising a holder, an abrading-rod, mounted to reciprocate longitudinally therein, a spark-producing material, and means for pressing the same against the side of said rod, substantially as described.

6. A gas lighter comprising a holder, a transversely corrugated abrading-rod mounted to reciprocate longitudinally therein, a spark-producing material and means for pressing the same against the side of said rod, substantially as described.

7. A gas lighter comprising a holder, a cylindrically shaped abrading-rod having a roughened surface and reciprocally and rotatably mounted in said holder, a spark-producing material supported by said holder in engagement with said rod in position to permit the rod to be reciprocated while in engagement therewith, substantially as described.

8. A gas lighter comprising a holder having a cup or hood at one end, and an opening leading through the wall of said cup, an abrader mounted to reciprocate in said opening, a spark-producing material held in engagement with said abrader adjacent the mouth of said opening, and a handle for forcing said abrader into the cup while in engagement with said material, substantially as described.

9. A gas lighter comprising a holder, an abrading-rod reciprocally mounted thereon, a handle connected to said abrading-rod, a spring for holding said handle and rod in retracted position, a spark-producing material carried by said holder and means for holding the same in engagement with said abrading-rod as the latter is advanced, substantially as described.

10. A gas lighter comprising a holder, an abrading-rod reciprocally mounted therein, guide-ways connected to said holder and leading to one side of said rod, a spark-producing material supported by said guide-ways, and a spring for forcing said material along said ways and holding it in engagement with said rod as the latter is reciprocated, substantially as described.

11. A gas lighter comprising a holder having a longitudinal bore, an abrading-rod reciprocally mounted in said bore, a guide-tube opening at one end into said bore, a spark-producing material in said tube, and a spring for feeding said material to said rod and holding it in yielding engagement therewith, substantially as described.

12. A portable gas lighter comprising a holder having an engaging face, an abrader connected thereto and movable therein toward and from said face, a stop on said holder for limiting the movement of said abrader from said face, a spring for moving said abrader toward said stop, and a spark-producing material carried by said holder and having means for holding the same in engagement with said abrader as the latter is moved toward said face, substantially as described.

13. A gas lighter comprising a holder having a bore, an abrader having a longitudinal abrading face and mounted to move longitudinally in said bore, a spark-producing material carried by said holder and having means for holding the same in engagement with said face, and a handle for moving said abrader toward one end of said bore while said material is held in engagement with said face, substantially as described.

14. A gas lighter comprising a holder having a bore, an abrader having a longitudinal abrading face and mounted to move longitudinally in said bore, a spark-producing material carried by said holder and having means for holding the same in engagement with said face, and a handle disposed at one end of said bore for moving said abrader toward the other end thereof while said material is held is engagement with said face, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FREDERICK H. POMEROY.

Witnesses:
L. H. HARRIMAN,
H. B. DAVIS.