May 15, 1951 H. F. McKEE ET AL 2,553,101

PYROPHORIC BURNER LIGHTER

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Fig. 1.

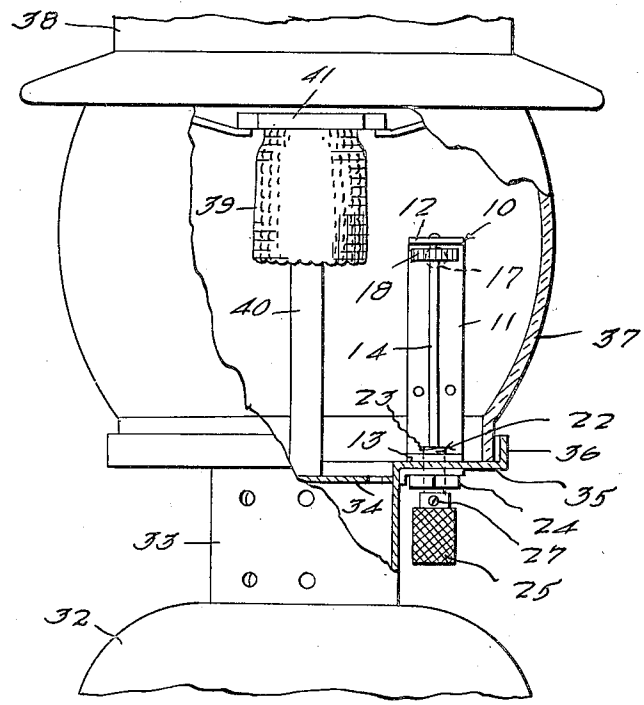


Fig. 2.

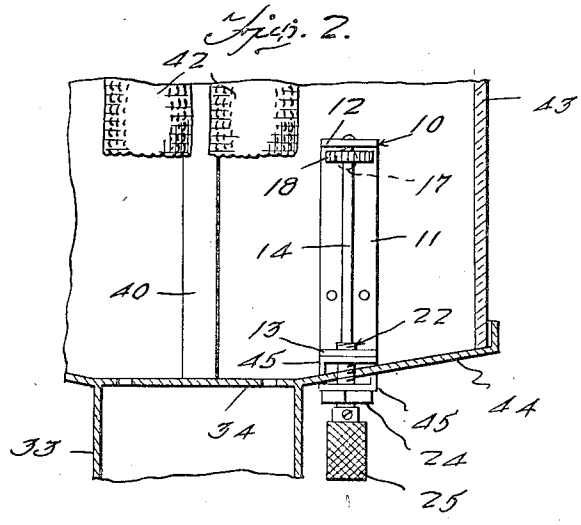


Fig. 7.

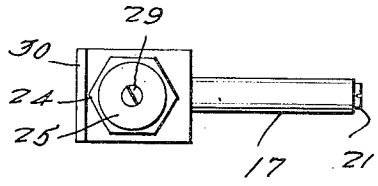
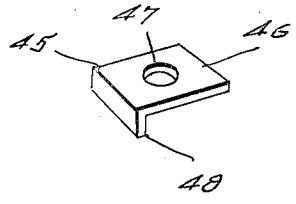


Fig. 8.



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Fig. 3.

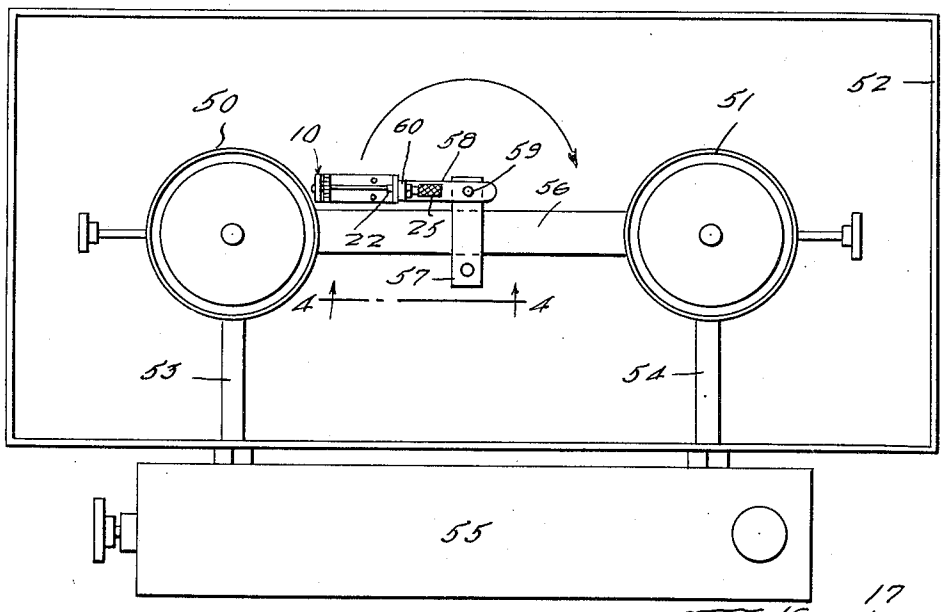


Fig. 5.

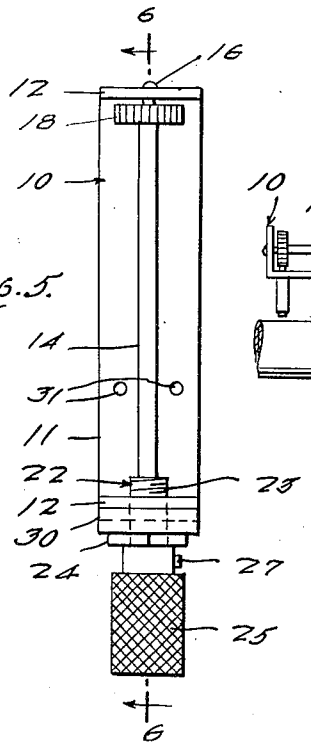


Fig. 4.

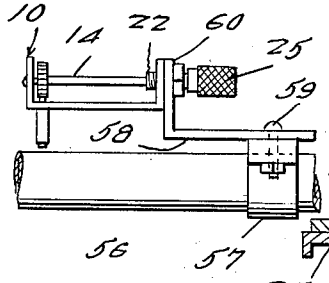
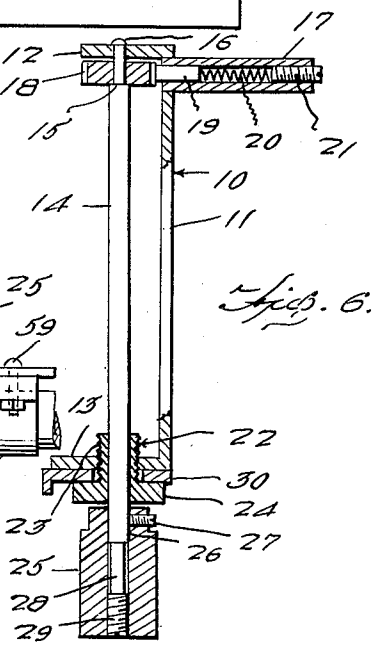


Fig. 6.



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PYROPHORIC BURNER LIGHTER

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1 Claim. (Cl. 67—10.1)

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This invention relates to pyrophoric lighters for lighting gaseous or vapor fuel burning devices, such as lamps, lanterns and stoves, and more particularly to a lighter which is permanently attachable to the fuel-burning device to ignite the fuel, when desired.

It is among the objects of the invention to provide an improved pyrophoric lighter which can be permanently mounted on a fuel-burning device, such as a lamp, lantern or stove, to ignite the fuel in the mantle or wick of such device, which is contained in the device, so that it is maintained in a dry and uncorroded condition, is properly positioned relative to the mantle or wick to obtain ignition with a minimum amount of sparking of the lighter, is mounted in closed devices, such as lamps and lanterns, so that it is accessible for operation from outside the device, rendering it unnecessary to open the device in order to ignite the mantle or wick and thereby greatly reducing the breakage of mantles, and which is simple and durable in construction, economical to manufacture, and can be applied to existing fuel-burning devices of the character indicated, without material modification of such devices.

Other objects and advantages will become apparent from a consideration of the following description and the appended claim in conjunction with the accompanying drawings, wherein:

Figure 1 is a side elevation of a fragmentary portion of a single mantle lantern and a pyrophoric device illustrative of the invention mounted in operative position in the lantern, a portion of the lantern being broken away and shown in longitudinal cross-section to better illustrate the positioning of the pyrophoric lighter therein;

Figure 2 is a longitudinal, medial cross-section of a fragmentary portion of a two-mantle lantern showing a pyrophoric lighter illustrative of the invention operatively mounted in the lantern;

Figure 3 is a top plan view of a two-burner gaseous or vapor fuel stove, such as a gasoline stove, showing a pyrophoric lighter illustrative of the invention operatively mounted on the stove for selectively igniting both of the stove burners;

Figure 4 is a side elevation of a fragmentary portion of the stove illustrated in Figure 3 and the pyrophoric lighter mounted thereon, looking from the line 4—4 of Figure 3;

Figure 5 is a front elevation of a pyrophoric lighter illustrative of the invention;

Figure 6 is a longitudinal cross-section on the line 6—6 of Figure 5;

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Figure 7 is a bottom end elevation of the lighter; and

Figure 8 is a perspective view of an angled washer used in mounting the lighter in a device having an inclined or support wall, such as in the two-mantle lantern of Figure 2.

With continued reference to the drawings, and particularly to Figures 5 and 6, the pyrophoric lighter comprises a bracket, generally indicated at 10, having a straight bight portion 11, and two opposite end portions 12 and 13 which project substantially perpendicularly from the same side of the bight portion 11 at the ends of the latter and are disposed in spaced-apart, substantially parallel relationship to each other. The bracket is preferably formed of a piece of metal having an elongated, rectangular shape with the end portions or legs 12 and 13 extending from one of the wider sides of the bight portion 11.

The end portions 12 and 13 are provided with respective apertures which are mutually aligned, and a shaft 14 extends through the apertures in the end portions of the bracket. Near the bracket end portion 12 the shaft is provided with a concentric extension 15 of reduced diameter which extends through the aperture in the bracket end portion 12 and is peened over at its end, as indicated at 16, so that the shaft is held against longitudinal movement relative to the bracket in one direction.

A flint-holding tube 17 is secured to the bight portion 11 of the bracket near the end portion 12, and projects outwardly from the bight portion in a direction substantially opposite that in which the end portion 12 projects from the bight portion, the tube 17 being also preferably disposed substantially perpendicular to the bight portion of the bracket.

A striker wheel 18 is secured on the reduced portion 15 of the shaft opposite the adjacent end of tube 17, and the bight portion of the bracket is provided with an aperture in registry with the bore of the tube, so that a flint 19 in the tube will project through the bight portion of the bracket and into contact with the adjacent peripheral surface of the wheel 18. The tube may be soldered or brazed to the bracket, or, the aperture in the bight portion of the bracket may be made of sufficient size to receive the adjacent end of the tube therein with a pressed fit, or may be screw threaded to receive screw threads on the tube adjacent the corresponding end of the tube. A compression spring 20 is disposed in the tube 17 and bears at one end against the adjacent end of the flint 19, and a screw plug 21 is

threaded into the end of the tube remote from the bight portion 11 of the bracket and bears against the adjacent end of spring 20 to apply sufficient compression to the spring to force the flint 19 into firm contact with the striker wheel 18.

The aperture in the end portion 13 of the bracket is larger than the aperture in the end portion 12, and is internally screw threaded, and a bolt, generally indicated at 22, has an externally screw-threaded shank 23 threaded through the aperture in the bracket end portion 13, and a head 24 opposed to that side of the bracket end portion 13 remote from the end portion 12. The bolt 22 is provided with a longitudinally-extending, concentric bore which receives the shaft 14 and in which the shaft is journaled.

The shaft 14 extends outwardly beyond the head of the bolt 22 and an externally-knurled knob 25 receives the outwardly-projecting end of the shaft in one end of a longitudinally-extending, concentric bore 26 provided through the knob. Adjacent one end, the knob is provided with a radially-extending, screw-threaded aperture through which a set screw 27 extends into engagement with the shaft to firmly secure the knob on the shaft.

If desired, a spare flint 28 may be placed in the bore of the knob 25 beyond the end of shaft 14, and a screw plug 29 may be threaded into the outer end of the knob bore to retain the extra flint 28 in the bore.

With the above-described construction, when the knob 25 is manually rotated or twirled, the striker wheel 18 will be rotated against the adjacent end of flint 19 and will cause sparks to fly away from the flint in the direction of rotation of the wheel. The lighter may be securely mounted on a gaseous or vapor-fuel-burning device by clamping a lighter-supporting structure, as indicated at 30 in Figures 5 and 6, between the head 24 of the bolt 22 and the adjacent side of the bracket end portion 13. The bight portion 11 of the bracket may also be provided with suitable screw or bolt holes, as indicated at 31, for securing the lighter to certain types of fuel-burning devices.

Figure 1 illustrates the manner of applying the improved pyrophoric lighter to a single-mantle gasoline lantern of known construction. This lantern has a fuel-containing bowl or tank 32 surmounted by a perforated, cylindrical neck 33 having a top wall 34 across its upper end, and an outwardly-extending, annular flange 35 disposed substantially perpendicular to the center-line of the bowl and the neck. The annular flange 35 is provided with an upstanding, marginal flange 36 which receives the lower end of the lantern globe 37, and a cap or cover 38 rests on the upper end of the globe. A lamp mantle 39 is supported in the globe 37 from the cover 38, and a tube 40 extends from the fuel bowl or tank 32 to the mantle support 41 to supply fuel to the mantle. The supply of fuel to the mantle is controlled by the usual manually-operated valve, not illustrated.

In order to mount the pyrophoric lighter in the lantern structure, above-described, a hole is provided in the annular flange 35 near the mid-width location of the latter, and with the bolt 22 and knob 25 removed, the lighter is placed on the upper side of the flange 35, so that the shaft 14 extends through the hole in the flange. The bolt 22 is then inserted through the hole in the flange and threaded through the aperture in the end portion or leg 13 of the lighter bracket, until the flange 35 is firmly clamped between the head of the bolt and the adjacent surface of the end portion 13 of the bracket, the lighter being turned so that sparks thrown from the flint by the striker wheel 18 will be directed against the mantle 39. The knob 25 is then secured in place on the end of the shaft extending below the bolt head 24 by the set screw 27. As is clearly illustrated in Figure 1, the knob will be positioned below the flange 35 and adjacent the neck 33, and is entirely outside of the lantern, so that it is readily accessible for operation of the lighter. All of the lighter structure except the bolt head and the knob is disposed within the lantern globe 37 where it is protected from dirt and moisture and against corrosion.

The lantern illustrated in Figure 2 is a two-mantle design having two lamp mantles 42 therein, and having a substantially cylindrical globe 43. Otherwise the construction of the lantern is substantially the same as that illustrated in Figure 1 and described above, except that the annular flange 44 extending outwardly from the upper end of the neck 33 is outwardly and upwardly inclined instead of being substantially perpendicular to the center-line of the neck and fuel bowl of the lantern. If the lighter of the invention were secured in the lantern illustrated in Figure 2, in the same manner as it is secured in the lantern of Figure 1, it would be inclined from the flange 44 toward the mantles 42, and would be placed too close to the mantles. In order to overcome this difficulty, a pair of apertured adapter washers 45 is disposed surrounding the shank 23 of the bolt 22, one above, and one below the lantern flange 44. Each of these washers comprises a rectangular plate 46 having a central aperture 47 therethrough to receive the bolt shank, and having at one end a perpendicularly-extending flange 48. When the washers are placed in position around the shank of the bolt 22 the flanges 48 are located to compensate for the inclination of the lantern flange 44 and provide surfaces for the bracket end portion 13 and the bolt head 24 of the lighter which surfaces are substantially perpendicular to the center-line of the fuel bowl and neck of the lantern.

Figure 3 illustrates the application of the lighter to a two-burner gasoline stove having two annular, wick-type burners 50 and 51 mounted in a rectangular stove box 52 and connected by respective fuel tubes 53 and 54 with a fuel tank 55 disposed outside of the box 52 and rigidly secured to the latter. A tubular conduit 56 rigidly inter-connects the burners 50 and 51 and a split clamp 57 is secured on the conduit 56 substantially at the mid-length location of the latter.

A lighter-supporting arm 58, constructed of a length of metal of elongated, rectangular cross-section, is pivotally secured near one end to the clamp 57 by suitable means, such as the screw or rivet 59 extending through registering apertures in the supporting arm and the clamp. At its other end the clamp is provided with a perpendicularly-extending, apertured end portion 60 through which the bolt 22 extends to rigidly clamp the lighter to the supporting arm 58. With this construction the lighter can be swung from a position adjacent one of the burners, as illustrated in Figure 3, around to a position adjacent

the other burner, as indicated by the arrow in Figure 3, and is operative to selectively light both of the burners upon rotation of the lighter knob 25. The end portion or leg 60 of the pivotally-mounted supporting arm 58 is made of sufficient length so that the knob 25 can be conveniently rotated without interference by the supporting arm.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claim rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claim are, therefore, intended to be embraced therein.

What is claimed is:

A pyrophoric lighter for attachment to a gaseous or vapor-fuel-burning device comprising an elongated bracket having a substantially straight intermediate portion and apertured lateral end portions extending perpendicularly from the same side of said intermediate portion in spaced-apart, substantially parallel relationship to each other, a shaft extending through and journaled in said end portions, a flint-carrying tube secured at one end to said intermediate portion adjacent one of said end portions and parallel therewith, said intermediate portion

having an aperture in registry with the bore of said tube for the projection of a flint therethrough, a striker wheel circumposed on said shaft opposite the aperture in said intermediate bracket portion, said other end portion being formed with a threaded opening, a bolt threaded through the opening and having a bore therethrough receiving said shaft for rotation therein, said bolt having a head opposed to the end portion and remote therefrom for clamping a lighter-supporting structure between said bolt head and said bracket end portion, and a knob secured on said shaft at the bolt head remote from said bracket for rotating said shaft and said striker wheel.

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