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SAFETY BOILER LIGHTER

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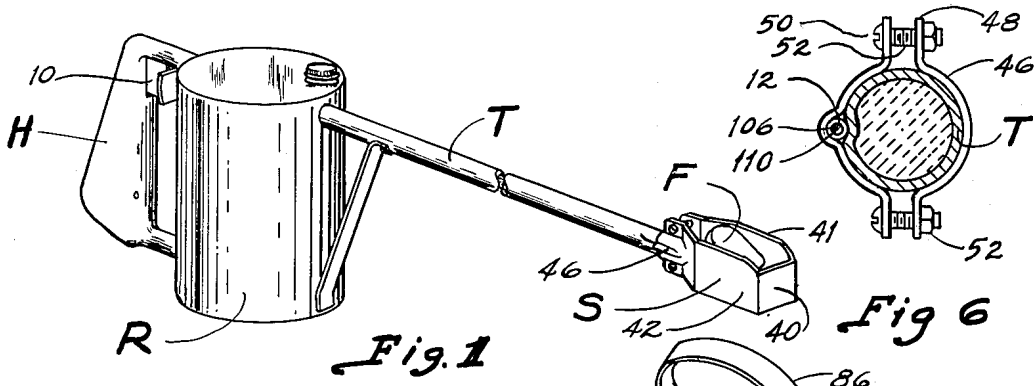


Fig. 1

Fig. 6

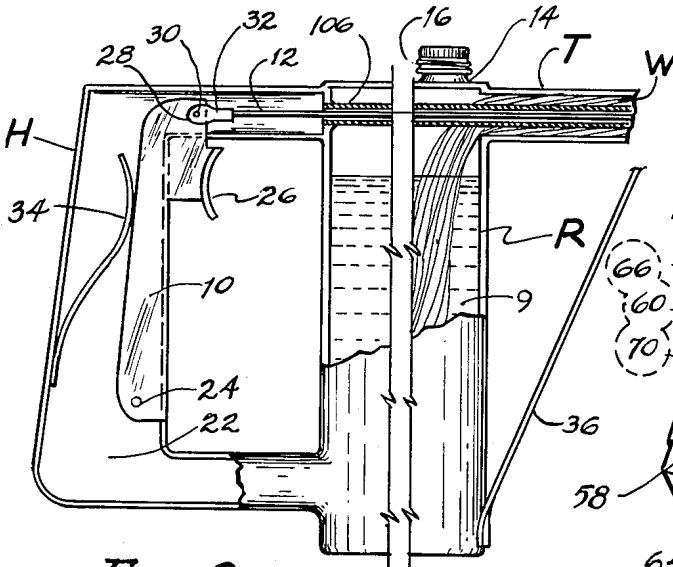


Fig. 2

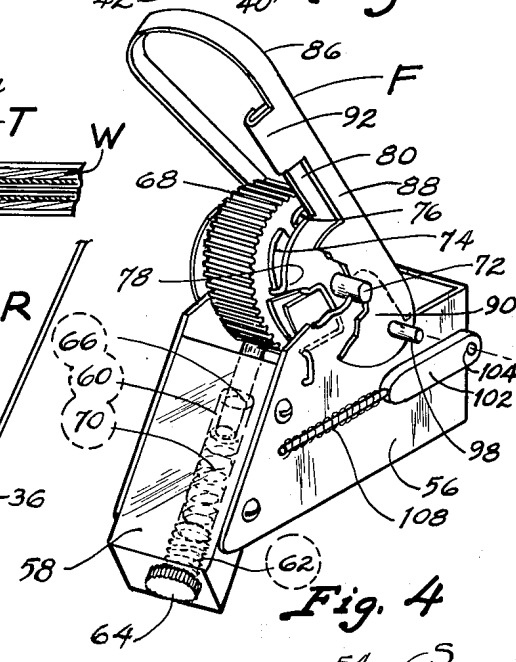


Fig. 4

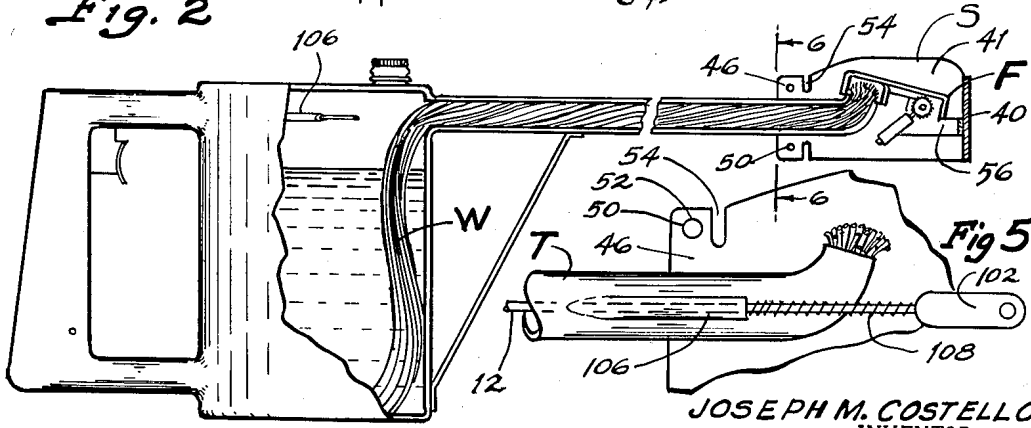


Fig. 3

Fig. 5

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SAFETY BOILER LIGHTER

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3 Claims. (Cl. 67-6.1)

The present invention relates generally to fire igniting devices, and more particularly to a novel and improved fire igniting device especially adapted for use in lighting boilers.

The most common system presently used for igniting the firebox of a boiler, is to toss or otherwise place a burning rag or the like, into the firebox adjacent the fuel jets thereof. The burning rag upon contacting the liquid or gaseous fuel issuing through the fuel jets of the firebox causes the ignition of such fuel. This system is both dangerous, inconvenient and often time-consuming. Thus, it commonly occurs that the rag will either fall short of the fuel jets or else it will stop burning before it can cause ignition of the fuel, whereupon the fuel will substantially fill the firebox before it can be shut off. Upon such occurrence it is dangerous to again attempt to light the firebox until this fuel has been dissipated therefrom. If a liquid fuel is being utilized the dissipation thereof from the firebox may require a considerable length of time. There is also the likelihood that the boiler operator may be inadvertently burned while handling the burning rag.

It is the major object of the present invention to provide a boiler lighting device which is safe and foolproof in operation in that it incorporates a flame-producing mechanism that is disposable directly adjacent the fuel jets of a boiler's firebox. With this arrangement, the danger of inadvertent ignition of escaped fuel disposed upon the floor adjacent the boiler is completely eliminated, which danger is very great where a burning rag is employed to light a boiler.

A further object of the present invention is to provide a novel boiler lighting device which is capable of igniting a fire quickly and positively.

Yet another object of the invention is to provide a boiler lighting device which is simple of design and rugged of construction whereby it may afford a long and trouble-free service life.

An additional object is to provide a boiler lighting device which may be fabricated from readily obtainable material at low cost.

These and other objects and advantages of the present invention will become apparent from the following detailed description of a preferred embodiment thereof, when taken in conjunction with the appended drawings wherein:

Figure 1 is a perspective view of a boiler lighting device embodying the present invention;

Figure 2 is an enlarged fragmentary central vertical sectional view of the rear portion of said device;

Figure 3 is a central vertical sectional view of said device;

Figure 4 is an enlarged perspective view of the flame-producing mechanism of said device;

Figure 5 is a fragmentary enlarged side elevational view of a detail of the front portion of said device; and,

Figure 6 is an enlarged vertical sectional view taken along lines 6-6 of Figure 3.

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Referring to the drawings, the preferred form of a boiler lighting or fire igniting device embodying the present invention will be seen to broadly comprise a reservoir R adapted to contain a lighting fluid 9; an elongated tube T extending from one side of the reservoir R; a handle H formed at the other side of the reservoir R; a flame-producing mechanism F mounted on the free end of the tube T; and a wick W that extends through the interior of the reservoir R through the tube T and into the flame-producing mechanism F. A trigger 10 is carried by the handle H, which trigger is connected to the flame-producing mechanism by a flexible element such as a cable 12. With this arrangement, an operator may support the igniting device by the handle H and simultaneously actuate the trigger 10 so as to cause the flame-producing mechanism F to ignite the front end of the wick W.

More particularly, the reservoir R may be of cylindrical configuration and includes an externally threaded neck 14 which mounts a filler cap 16. This filler cap 16 may be removed for filling the reservoir with lighting fluid 9. Handle H includes a horizontal upper leg 18 and a horizontal lower leg 20, which legs are interconnected by a generally vertically extending rear leg 22. Each of these legs is hollow and the lower portion of the vertical leg 22 pivotally mounts the lower portion of the trigger 10 by a horizontal pin 24 as shown in Figure 2. The upper portion of the trigger 10 is formed with a forwardly extending finger hold 26, which finger hold extends into the open space between the rear of the reservoir R and the inner edges of the handle-defining legs 18, 20 and 22. The upper end of the trigger 10 is formed with aligned horizontal bores 23 for receiving a horizontal pin 30 that is utilized to anchor the end of an eyelet 32. A spring 34 formed of an elongated, forwardly bowed strip of flexible steel is secured at its lower end to the rear wall of the vertical leg 22. The front edge of this spring 34 abuts the rear edge of trigger 10 so as to constantly bias it toward the reservoir R.

The elongated tube T is rigidly secured, as by welding, to the upper front portion of the reservoir R, and is in communication with the interior of the latter. This tube should be of sufficient length to be readily disposable adjacent the fuel jets of a firebox to be ignited from a point adjacent the door of such firebox. A diagonally extending brace 36 may be utilized between the lower front end of the reservoir and the under side of the tube T. The front end of the tube T is bent upwardly as shown in Figure 3. The wick W is seen to extend from the lower portion of the reservoir R through the tube T, the front end of the wick extending upwardly a short distance from the front end of the latter tube.

The flame-producing mechanism F is mounted at the free end of the elongate tube T within a shield member S. Shield member S is preferably of integral construction and includes a vertical front wall 40 and a pair of vertical walls 41 and 42, which side walls extend rearwardly from the edges of the front wall 40. The rear of the shield S is formed with a socket 46 wherein is received the front end of the tube T. Conveniently, this socket 46 may be defined by integral rearward extensions of the side walls 41 and 42, which extensions are bowed outwardly at their intermediate portions for this purpose. The upper and lower portions of these extensions define ears 48 which are formed with aligned horizontal bores 50 for receiving bolts 52. These bolts in turn receive nuts 53 whereby the bolt and nut combinations may secure the shield S to the front of the tube T. The front of the ears 48 are separated from the rear of the side walls 41 and 42 by vertically extending slots 54.

Referring to Figure 4, the rear of the shield's front wall 40 rigidly mounts the front of a generally U-shaped base member 56 of the flame-producing mechanism F.

A flint holder 58 is secured within the rear portion of the base member 56, which flint holder is formed with a bore 60 as shown in Figure 4. The lower end of this bore 60 is formed with threads 62 that are engaged by a threaded plug 64. A piece of flint 66 is slidably disposed within the upper portion of the bore 60. This flint 66 is constantly biased upwardly against a knurled striker wheel 68 by a helical compression spring 70 that is interposed between the plug 64 and the flint. The striker wheel 68 is journaled upon a horizontal shaft 72, the ends of the shaft being mounted by the upper end of the base member 56. A ratchet wheel 74 having a plurality of sidewardly extending circumferentially spaced teeth 76 is rigidly secured to the striker wheel 68. The teeth 76 are adapted to be successively engaged to a dog 78 that is formed on a link element 80. This link element 80 includes an ear 82 which is journaled by the horizontal shaft 72. The link element also includes an integral radially extending finger 84.

A flame-snuffing member 86 is carried by the upper end of base member 56, which flame-snuffing member includes an arm 88 formed with vertical bifurcations 90 and a lug 92. A cap 94 is rigidly secured to the end of the arm 88 opposite the bifurcations 90. The bifurcations 90 are formed with aligned bores for receiving the horizontal shaft 72 whereby the arm 88 is journaled by this shaft for rotation relative thereto. One of the bifurcations rigidly mounts a sidewardly extending pin 98.

As shown clearly in Figure 4, the lug 92 of the flame-snuffing member 86 receives the free end of the link element finger 84. Accordingly, clockwise rotation of the flame-snuffing member 86 about the horizontal shaft 72 will effect concurrent clockwise rotation of the link element 80. Such rotation of the latter will in turn be transferred to the ratchet wheel 74 and the striker wheel 68 by virtue of the engagement of the dog 78 with one of the teeth 76. Rotation of the striker wheel 68 relative to the exposed ends of the flint 66 will serve to produce sparking at this point.

Rotation of the flame-snuffing member 86 is effected by means of the interconnection of the trigger 10 with the pin 98 of the flame-snuffing member, which interconnection is through the aforementioned cable 12. The rear end of the cable 12 is secured to the front end of the eyelet 32, which eyelet is anchored to the upper end of the trigger T as shown in Figure 2. Referring to Figure 4, it will be seen that the front end of the cable 12 is anchored to the rear end of a second eyelet 102 formed with a bore 104. The bore 104 is received by the pin 98 of the flame-snuffing member. This pin 98 is seen to be radially offset from the horizontal shaft 72 and accordingly a lever arm is defined therebetween. Thus, rearward movement of the trigger T will effect concurrent rearward movement of the cable 12 so as to cause the flame-snuffing member to be pivoted upwardly relative to the base member 56.

The cable 12 is housed within a tubular enclosure 106 that is rigidly secured as by welding at its rear end to the rear walls of the reservoir R as shown in Figure 2. This enclosure 106 extends forwardly through the elongated tube T and is secured at its front end to one side thereof as shown in Figures 5 and 6. Referring to Figure 5, it will be seen that a helical compression spring 108 is interposed between the front end of the tubular enclosure 106 and the rear of the second eyelet 102 for constantly biasing the latter forwardly relative to the elongate tube T. With this arrangement, the free end of the flame-snuffing member 68 will constantly be biased downwardly toward the position of Figure 3. In this position the cap 94 completely encompasses the exposed end of the wick W. It should also be noted that the exposed front end of the tubular enclosure 108 serves as a key for locking the shield S against rotation relative to the front of the elongated tube T. For this purpose one side of the socket 46 may be formed with a groove 110

which receives the exposed end of the tubular enclosure, as shown in Figure 6.

In operation, the reservoir R is partly filled with lighting fluid 9. A portion of this fluid will be drawn forwardly through the wick W by capillary attraction whereby the exposed end of the wick becomes partly saturated with the fluid. The shield S may then be disposed adjacent a fuel jet to be ignited, and the finger hold 26 is pulled rearwardly. Such movement effects concurrent rearward movement of the cable 12 and upward pivotal movement of the flame-snuffing member 86. Sparks are thereby produced by the flint 66 in the manner described hereinbefore, which sparks cause the lighting fluid at the exposed end of the wick W to burst into flames. The resulting flames ignite the fuel issuing through the fuel jets. The finger hold 26 is then released and the spring 34 will urge the trigger forwardly to its original position. Similarly the compression spring 108 urges the free end of the flame-snuffing member 86 downwardly to its original position, in which latter position the cap 94 shuts off oxygen from the exposed end of the wick W so as to positively extinguish the flame burning thereon.

It will be seen that the fire igniting device shown and described hereinbefore is capable of being utilized for igniting fires in a minimum amount of time and with a maximum degree of safety. It should also be noted that although the particular structure shown and described constitutes the presently preferred embodiment of the invention, various modifications and changes may be made thereto without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. A fire igniting device, comprising: a reservoir for a lighting liquid; an elongated tube extending from said reservoir; a handle formed on said reservoir; a trigger carried by said handle; a shield secured to the free end of said elongated tube; a wick extending from the interior of said reservoir, through said tube and into said shield; a base member affixed within the confines of said shield; a flint holder formed on said base member for holding a flint; a horizontal shaft mounted by said base member; a knurled striker wheel journaled on said shaft; a ratchet wheel coaxially secured to said striker wheel and having a plurality of sidewardly extending circumferentially spaced teeth; a link element journaled on said shaft and formed with a dog adapted to successfully engage said teeth; a flame-snuffing member journaled on said shaft and secured to said link element, said flame-snuffing member including a cap for normally covering the exposed front end of said wick; a sidewardly extending pin formed on said flame-snuffing member at a point radially spaced from said shaft; spring means normally biasing said flame-snuffing member downwardly; and, a flexible element connecting said pin and said trigger whereby rearward movement of said trigger will effect limited rotation of said flame-snuffing member and striker wheel relative to said shaft.

2. A fire igniting device, comprising: a reservoir for a lighting liquid; an elongated tube extending from said reservoir; a handle having a hollow rear leg secured to the side of said reservoir opposite said tube; a trigger pivoted to said handle within said rear leg; spring means constantly biasing said trigger forwardly; a shield secured to the free end of said elongated tube; a wick extending from the interior of said reservoir, through said tube and into said shield; a base member affixed within the confines of said shield; a flint holder formed on said base member for holding a flint; a horizontal shaft mounted by said base member; a knurled striker wheel journaled on said shaft; a ratchet wheel coaxially secured to said striker wheel and having a plurality of sidewardly extending circumferentially spaced teeth; a link element journaled on said shaft and formed with a dog adapted to successfully engage said teeth; a flame-snuffing member journaled on said shaft and secured to said link element, said flame-

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snuffing member including a cap for normally covering the exposed front end of said wick; a sidewardly extending pin formed on said flame-snuffing member at a point radially spaced from said shaft; spring means normally biasing said flame-snuffing member downwardly; and, a cable extending through said tube and connecting said pin and said trigger whereby rearward movement of said trigger will effect limited rotation of said flame-snuffing member and striker wheel relative to said shaft.

3. A fire igniting device, comprising: a reservoir for a lighting liquid; an elongated tube extending from said reservoir; a hollow handle extending from the rear of said reservoir including a vertical leg and a pair of upper and lower horizontal legs; a trigger pivotally connected at its lower end to the lower portion of said vertical leg, said trigger including a forwardly extending finger hold; a forwardly bowed spring finger affixed to said rear leg for constantly biasing said trigger forwardly; a shield secured to the free end of said elongated tube; a wick extending from the interior of said reservoir, through said tube and into said shield; a base member affixed within the confines of said shield; a flint holder formed on said base member for holding a flint; a horizontal shaft mounted by said base member; a knurled striker wheel journaled on said shaft; a ratchet wheel coaxially secured to said striker wheel and having a plurality of sidewardly extending circumferentially spaced teeth; a link element journaled on said shaft and formed with a dog adapted

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to successfully engage said teeth; a flame-snuffing member journaled on said shaft and secured to said link element, said flame-snuffing member including a cap for normally covering the exposed front end of said wick; a sidewardly extending pin formed on said flame-snuffing member at a point radially spaced from said shaft; spring means normally biasing said flame-snuffing member downwardly; a tubular enclosure extending from the rear of said reservoir to the front of said tube, the main portion of said enclosure being encompassed within said reservoir and tube with only the front portion thereof extending along the exterior side of said tube; a socket formed at the rear of said shield and including a groove for receiving the exposed portion of said tubular enclosure; a cable extending through said tubular enclosure and connecting the upper end of said trigger and said pin; and, a helical compression spring interposed between the front end of said tubular enclosure and said pin.

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