United States Patent

Whitehead

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[54] **LOG LIGHTER**

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[73] Assignee: **International Products Inc.,** Pasadena, Calif.

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[21] Appl. No.: **97,735**

[52] **U.S. Cl.**.....**126/92 R,** 126/127, 431/125

[51] **Int. Cl.**.....**F24b 1/18**

[58] **Field of Search**.....126/92 R, 127, 164, 165; 431/125

[56] **References Cited**

UNITED STATES PATENTS

3,042,109	7/1962	Peterson	126/127
3,385,651	5/1968	Rasmussen et al.	126/92 R X

Primary Examiner—Charles J. Myhre

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[57] **ABSTRACT**

A log lighter includes support structure for transversely extending front and rear logs (which may function as log rests), together with a transversely elongated gas burner carried by the support structure; flame chute structure extending generally frontwardly of the burner; and the burner having ports located in such combustible gas release relation to the chute structure as to produce full flame projection channeled for forward flow under the front log and to rise at the front of that log, as well as additional flame rising upwardly between the front and rear logs. Other flame chute structure may also produce flame projection below the rearlog to rise at the rear of that log, and a flame deflector may extend lengthwise over the burner and in predetermined relation to the chute structure.

15 Claims, 5 Drawing Figures

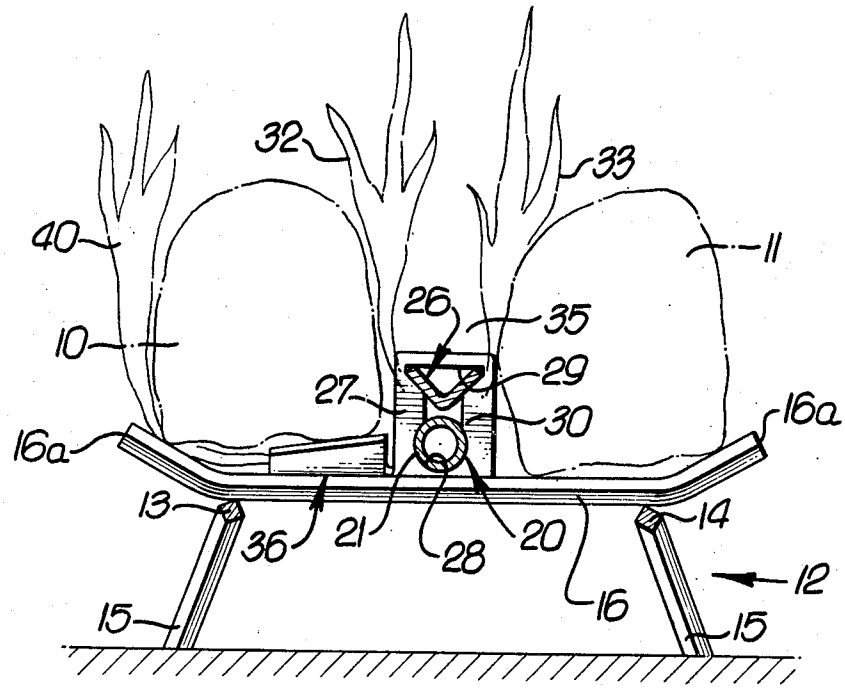


FIG. 1.

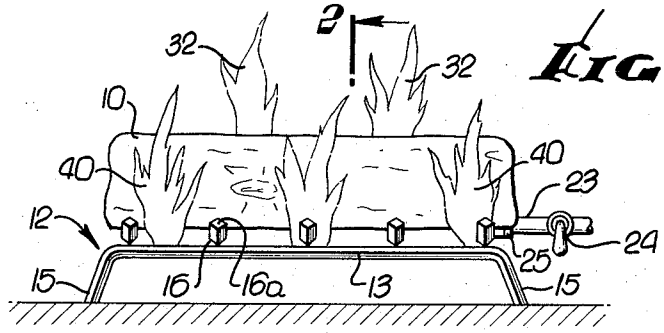


FIG. 3.

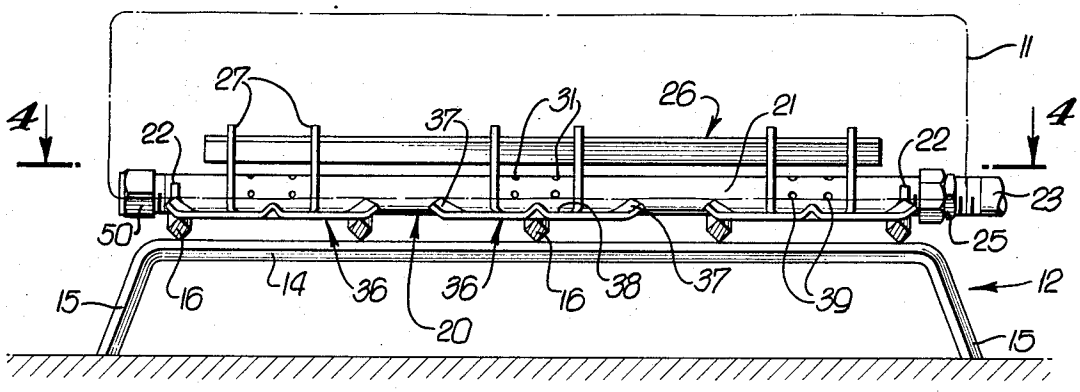


FIG. 4.

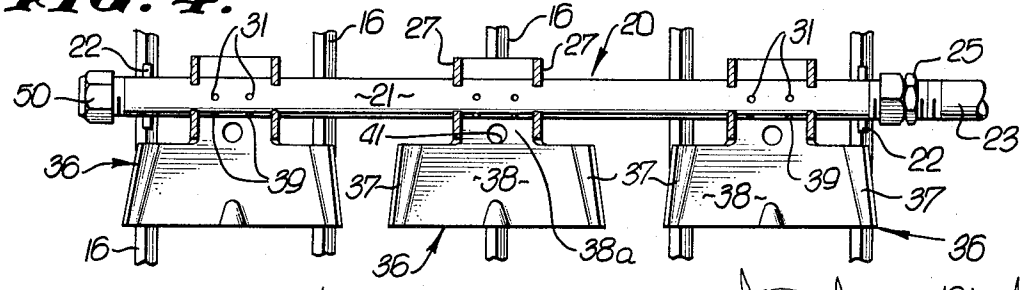


FIG. 2.

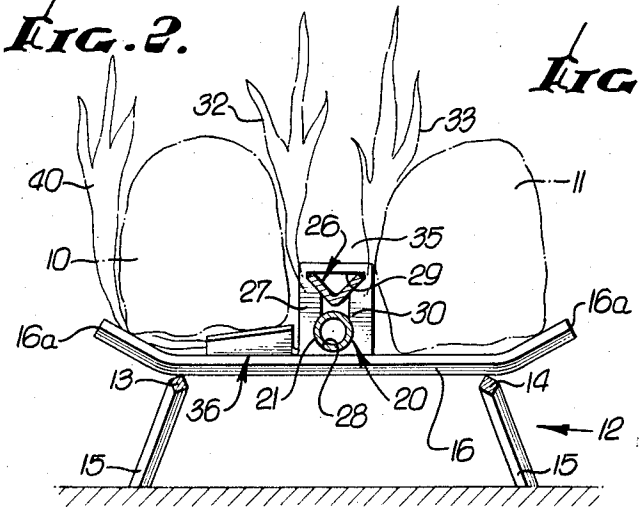
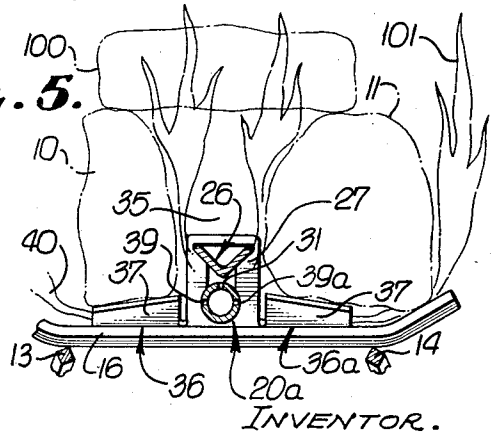


FIG. 5.



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LOG LIGHTER

BACKGROUND OF THE INVENTION

This invention relates generally to fireplace lighters, and more particularly concerns improvements in log lighters, and especially in gas burners associated with such lighters.

The advantages and desirabilities of fireplaces incorporating gas burners for use with either real or artificial logs, has become recognized. When used with artificial logs, the burners are desirably constructed to produce a flickering wood-like flame playing over the logs; and, when used with real logs, the burner should desirably function as a lighter operable to produce flame for igniting the log or logs. However, to my knowledge no prior burner construction is adapted for such highly effective use in either of the above environments as is the present burner, or log lighter.

SUMMARY OF THE INVENTION

It is a major object of the invention to provide a log lighter, and also an improved gas burner construction, especially well adapted for use in fireplaces, in conjunction with either real or artificial logs.

Basically, the log lighter of the invention includes support structure for front and rear logs (which may function as log rests) extending transversely, together with a transversely elongated gas burner carried by the support structure; a flame chute structure extending generally frontwardly of the burner; and, the burner having ports located therealong in such combustible gas release relation to the deflector and chute structure as to produce full flame projection channeled by the chute structure for forward flow under the front log (or log rest) and to rise at the front thereof, as well as additional flame rising upwardly between the front and rear logs. As will be seen, other flame chute structure may also produce rearward flame projection below the rear log (or log rest), to rise at the rear thereof. Typically, the ports include side ports opening to release gas to rise under the deflector, the side ports characterized as cumulatively releasing gas at about the same rate as do the top ports, cumulatively. For this purpose, the number of side ports may approximately equal the number of top ports.

Additional objects include the provision of a flame detector extending lengthwise over the burner and in predetermined relation to the flame chute structure; upright bracket arms integral with the chute structure and carried by the burner, the arms also supporting the deflector; and the provision of multiple flame chutes each having spaced terminals which project upwardly to seat log above a flame zone between the terminals, at least two side ports opening to that flame zone at each chute.

These and other objects and advantages of the invention, as well as the details of an illustrated embodiment, will be more fully understood from the following detailed description of the drawings, in which:

DRAWING DESCRIPTION

FIG. 1 is a frontal elevation of a log lighter incorporating the invention;

FIG. 2 is an enlarged vertical section taken on lines 2—2 of FIG. 1;

FIG. 3 is a frontal elevation of an improved gas burner assembly;

FIG. 4 is a plan view taken on lines 4—4 of FIG. 3; and

FIG. 5 is a view like FIG. 2 showing a modification of the invention.

DETAILED DESCRIPTION

In FIGS. 1 and 2, front and rear logs 10 and 11 are carried on support structure 12 which may comprise a grate having transversely extending front and rear metal members 13 and 14. The latter are supported on legs 15, and in turn support forewardly and rearwardly extending metallic bars 16, which are transversely spaced apart and have upwardly inclined terminals 16a. Either or both logs 10 and 11 may consist of combustible material, such as wood, or of a non-combustible material such as refractory, ceramic, or fire resistant material, the object being that a natural log burning hearth will be simulated or created, when viewed from the front as in FIG. 1.

The combination also includes a transversely elongated gas burner carried by the support structure. As one example, the gas burner 20 includes a duct or pipe 21 supported by mounts 22 on bars 16, and supplied with combustible gas via line 23. A valve 24 controls gas flow to the burner pipe, and a nut controlled air inlet 25 regulates the combustible mixture to vary the flame color. See in this regard U. S. Pat. No. 3,042,109 to Peterson. A cap 50 closes the opposite end of the pipe.

The combination may further include a flame deflector carried, for example, by the pipe to extend lengthwise thereover. The illustrated deflector 26 has V-shaped cross section as best seen in FIG. 2, and is carried by pairs of bracket arms 27. Each of the arms has a pair of openings 28 and 29 therethrough respectively to pass the burner duct and the deflector, whereby the duct carries the arms 27 which in turn may carry the deflector. Note the inward projections 30 formed by the arms to engage the upper side of the duct, for support purposes. Gas released by upper ports 31 in the duct 21 is deflected to produce flame 32 rising at the front of the deflector, and flame 33 rising at the rear of the deflector. Note that the deflector prevents clogging of the ports 31 by catching particles that might otherwise fall into those ports. Also, the burner 20 and deflector 26 are concealed in the space 35 between the front and rear logs.

The assembly additionally includes flame chute structure extending generally frontwardly of the burner structure 20. Such chute structure may for example include multiple (i.e., two or more) metallic chutes 36, each of which is integral with a pair of bracket arms 27, as shown, providing extreme simplicity of construction. Each chute 36 has transversely spaced terminals 37 which project upwardly to seat a front log (indicated by the broken line 10 in FIG. 3) above a flame projection zone 38 formed between the terminals 37, so that flame produced upon forward escape of gas from forward ports 39 may be channeled for forward flow under the log, and to rise at the front of that log as seen at 40 in FIGS. 1 and 2. Ports 39 open to the zone 38, as is clear from FIG. 3.

It is an important aspect of the invention that the ports be located along the burner in such combustible gas release relation to the deflector and chute structure as to produce the desired balance of flame at **32**, **33** and **40**. It has been found, in this regard, that the side ports **39** should cumulatively release gas at about the same rate as the top ports, cumulatively. For this purpose, the number of side ports may with unusually advantageous effect, be approximately equal in number to the top ports where the diameters of the ports are the same; thus, for three chutes **36**, there may be two side ports **39** opening to the throat region **38***a* of each chute, making a total of six side ports, and there may be six top ports **31** (of the same size as ports **39**) distributed as seen in FIG. **4** in overlying relation to the chutes. This configuration produces a very satisfactory flame distribution both transversely and vertically, at the front of the log set, and between the two logs. If too many top ports are used, not enough gas is released forwardly to produce flame rising satisfactorily at the front of the logs. An air inlet hole **41** in each chute at its throat **38***a* provides ready access of air to the released gas, for forward flow and combustion as flame **40**. It should be realized that where the port sizes differ, the number of ports may differ, provided that the balanced flame effect is retained.

Accordingly, the apparatus of the invention may function as a log lighter, or as a source of flames realistically rising from artificial logs, as described. As mentioned, the logs **10** and **11** may function as rests for a top log **100**, as for example is shown in FIG. **5**, log **100** being combustible or non-combustible.

FIG. **5** also shows a modified form of the invention, in which the chute structure includes rear chutes **36***a* corresponding to the front chutes **36**, and with the same general construction. The rear chutes support the rear log **11** in the same manner that the front chutes support the front log, as described. Burner **20***a* has top ports **31**, front ports **39** and rear ports **39***a*. The latter release gas rearwardly over the tops of the rear chutes to produce flame **101** rising at the rear of the rear log.

I claim:

1. In a fireplace lighter including support structure for front and rear logs extending transversely, the combination comprising.

a. a transversely elongated gas burner carried by the support structure,

b. flame chute structure extending generally frontwardly of the burner, and

c. the burner having ports located therealong in such combustible gas release relation to the logs and chute structure as to produce full flame projection channeled by and over the chute structure forwardly and under the front log , to rise at the front thereof, as well as additional flame rising upwardly between the front and rear logs.

2. The combination of claim **1** including said logs consisting of non-combustible material, the logs carried on the support structure, and the burner extending above the chute structure.

3. The combination of claim **1** including said logs consisting of combustible material, the logs carried on the support structure, and the burner extending above the chute structure.

4. The combination of claim **1** including a flame deflector extending lengthwise over the burner and above the level of the chute structure.

5. In a fireplace lighter including support structure for front and rear logs extending transversely, the combination comprising,

a. a transversely elongated gas burner carried by the support structure,

b. flame chute structure extending generally frontwardly of the burner,

c. the burner having ports located therealong in such combustible gas release relation to the logs and chute structure as to produce full flame projection channeled by the chute structure forwardly and under the front log, to rise at the front thereof, as well as additional flame rising upwardly between the front and rear logs, and

d. flame chute structure extending generally rearwardly of the burner, the burner having ports to release gas to flow rearwardly over the rear chute structure and under the rear log.

6. In a fireplace lighter including support structure for front and rear logs extending transversely, the combination comprising,

a. a transversely elongated gas burner carried by the support structure,

b. flame chute structure extending generally frontwardly of the burner,

c. the burner having ports located therealong in such combustible gas release relation to the logs and chute structure as to produce full flame projection channeled by the chute structure forwardly and under the front log, to rise at the front thereof, as well as additional flame rising upwardly between the front and rear logs, and

d. said ports including side ports opening to release gas to said chute structure, and top ports opening to release gas to rise between the front and rear logs, the side ports characterized as cumulatively releasing gas at about the same rate as do the top ports, cumulatively.

7. The combination of claim **6** wherein the number of side ports is approximately equal to the number of top ports.

8. An improved burner assembly for use with support structure to provide a lighter for front and rear fireplace logs extending transversely, said assembly comprising

a. a transversely elongated gas burner to be carried by the support structure,

b. flame chute structure extending generally frontwardly of the burner, and

c. the burner having ports located therealong in such combustible gas release relation to the logs and chute structure as to produce full flame projection channeled by and over the chute structure for forward flow under the front log and to rise at the front thereof, as well as additional flame rising upwardly between the front and rear logs.

9. The assembly of claim **8** wherein said ports include side ports opening to release gas to said chute structure, and top ports opening to release gas to rise under the deflector, the side ports characterized as cumulatively releasing gas at about the same rate as do the top ports, cumulatively.

10. The combination of claim 8 including a flame deflector extending lengthwise over the burner and above the level of the chute structure.

11. The combination of claim 8 including flame chute structure extending generally rearwardly of the burner, the burner having ports to release gas to flow rearwardly over the rear chute structure and under the rear log to rise as flame at the rear of the rear log.

12. An improved burner assembly for use with support structure to provide a lighter for front and rear fireplace logs extending transversely, said assembly comprising,

a. a transversely elongated gas burner to be carried by the support structure,

b. flame chute structure extending generally frontwardly of the burner, and a flame deflector above the burner,

c. the burner having ports located therealong in such combustible gas release relation to the deflector and chute structure as to produce full flame projection channeled by the chute structure for forward flow under the front log and to rise at the front thereof, as well as additional flame rising upwardly between the front and rear logs, and

d. bracket arm means integral with the chute structure and carried by the burner and also supporting the deflector thereabove.

13. The combination of claim 12 wherein the chute structure includes multiple metallic chutes each having transversely spaced terminals which project upwardly to seat a front log above a flame zone formed between said terminals, at least two side ports opening to that flame zone at each chute.

14. In a fireplace lighter including support structure for log means extending transversely, the combination comprising,

a. a transversely elongated gas burner carried by the support structure,

b. flame chute structure extending generally frontwardly of the burner, and

c. the burner having ports located therealong in such combustible gas release relation to the log means and chute structure as to produce full flame projection channeled by and over the chute structure forwardly and under the log means, to rise at the front thereof.

15. In a fireplace lighter including support structure for log means extending transversely, the combination comprising,

a. a transversely elongated gas burner carried by the support structure,

b. flame chute structure extending generally rearwardly of the burner, and

c. the burner having ports located therealong in such combustible gas release relation to the log means and chute structure as to produce full flame projection channeled by and over the chute structure rearwardly and under the log means, to rise at the rear thereof.

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