May 8, 1962 W. H. NICHOLS 3,033,275

CHARCOAL LIGHTER

Filed Aug. 31, 1960

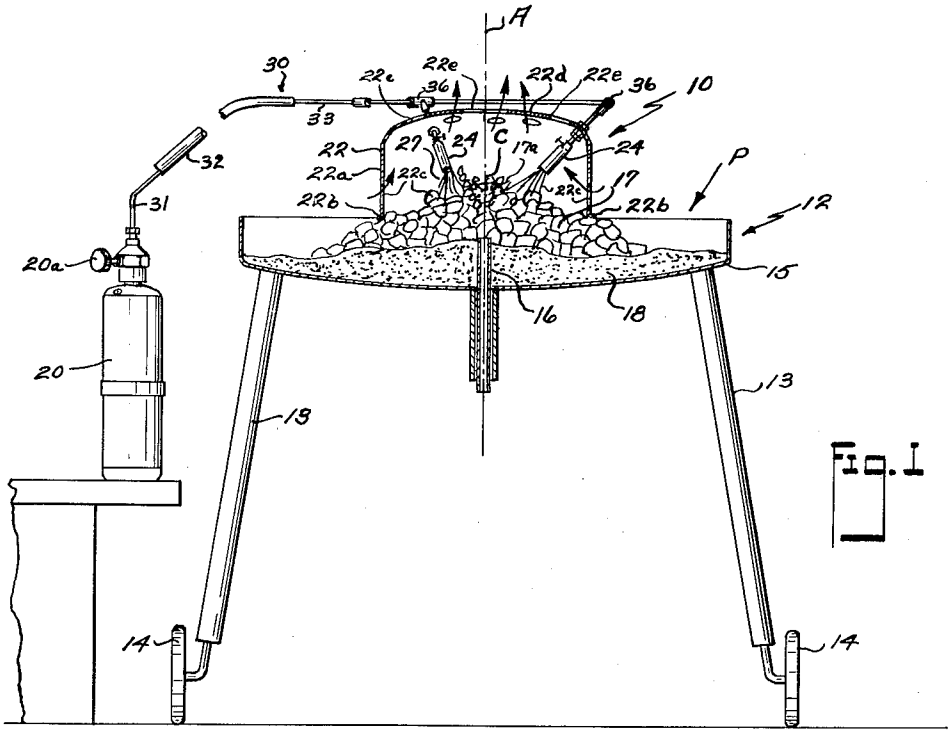


Fig. 1

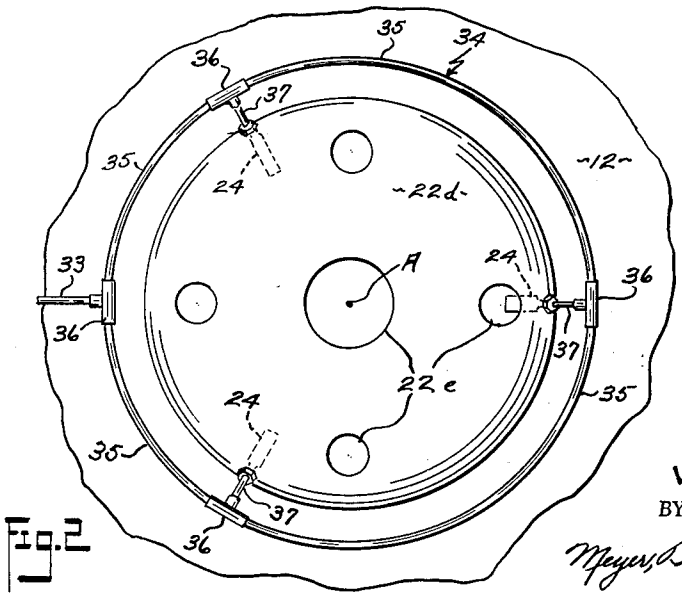


Fig. 2

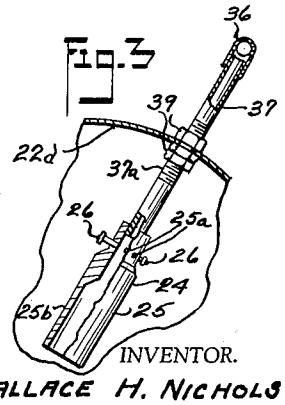


Fig. 3

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United States Patent Office 3,033,275 Patented May 8, 1962

3,033,275

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Filed Aug. 31, 1960, Ser. No. 53,207
1 Claim. (Cl. 158—10)

This invention relates to improvements in a lighter, and more particularly to a charcoal lighter for a portable grill.

One of the objects of the present invention is to provide a charcoal lighter having one or more fluid fuel nozzles directing a flame into a charcoal pile in a charcoal igniting position.

A further object of the present invention is to provide a charcoal lighter wherein said nozzle is constructed to produce a yellow flame by restricting the air thereto so that secondary combustion will occur within the charcoal bed or pile.

A further object of the present invention is to provide a charcoal lighter having a plurality of fuel burning nozzles located around and directed into a charcoal pile in a given position and adapted to be rotated about a vertical axis to a new position so as to ignite different areas in the charcoal pile for completely igniting the charcoal.

A further object of the present invention is to provide a charcoal lighter characterized by its structural simplicity, inexpensive manufacturing cost, ease of assembly of its component parts, and ease of use.

Other features of this invention reside in the arrangement and design of the parts for carrying out their appropriate functions.

Other objects and advantages of this invention will be apparent from the accompanying drawings and description and the essential features will be set forth in the appended claim.

In the drawings:

FIG. 1 is a side elevational view, partially in section, of the charcoal lighter in charcoal igniting position over a bed of charcoal on a portable outdoor grill with the nozzles thereof being supplied by a fluid fuel source;

FIG. 2 is a top plan view of a portion of the charcoal lighter; while

FIG. 3 is a vertical sectional view through the hood of the charcoal lighter with a portion of the fuel conduit and nozzle shown in section.

Before the charcoal lighter here illustrated and disclosed is specifically described, it is to be understood that the invention here involved is not limited to the structural details or arrangement of parts here disclosed since an article embodying the present invention may take various forms. It also is to be understood that the phraseology or terminology herein employed is for purposes of description and not of limitation since the scope of the present invention is denoted by the appended claim.

A lighter **10** may be used for any suitable purpose but is disclosed herein as a charcoal lighter **10** especially adapted to quickly and completely ignite charcoal **17** in a portable outdoor grill **12**. Grill **12** may be of any suitable construction, such as grill **12** having a plurality of legs **13**, some having a wheel **14** secured to its lower end and each having its upper end secured to the lower end of a metal pan **15** adapted to contain charcoal **17** on a sand or gravel bed **18**. Pan **15** has a spindle **16** extending up through its middle onto which a horizontal grill plate (not shown) may be detachably connected and located over the top of the charcoal **17** for barbecuing, grilling, or otherwise cooking food. Some of the charcoal **17** has been heaped into a charcoal pile or bed **17***a* for purposes of illustration herein.

Charcoal lighter **10** may be operated on any suitable

fluid fuel, whether gas or liquid. Here, fluid fuel source **20** is a portable, liquid petroleum gas tank of the conventional type having a conventional safety seal, or diaphragm, adapted to be punctured or having a spring closed valve adapted to be opened immediately before use.

Charcoal lighter **10** includes a hood **22**, or other suitable nozzle support member, constructed to at least partially cover charcoal pile **17***a* in charcoal igniting position P shown in FIG. 1. This hood **22** is preferably an annular shaped, stamped or spun, sheet metal member having generally cylindrical side walls **22***a* bottomed by an annular support base **22***b* with an annular bead, having apertures **22***c* in side walls **22***a*, and having a top cover wall **22***d* with apertures **22***e* therein. The sheet metal of the hood is preferably copper, or copper plated steel, so that it will not easily tarnish by oxidation or soot; will be a good heat conductor so will remain generally cool at all times; and will be easy to clean after use so that it will remain an attractive article to use at outdoor barbecue parties.

One or more fluid fuel burning nozzles **24** are carried by hood **22**. Here are shown a plurality of nozzles **24** arcuately spaced about annular base **22***b* in FIGS. 1 and 2. These nozzles are sometimes called "blast" tips. Each nozzle **24**, includes a sleeve **25** having a plurality of threaded holes, here shown as six equally arcuately spaced holes in a transverse plane, for supplying air into bore **25***b* to be mixed with the fluid fuel to burn as flame **27**. One or more screws **26** may be screwed into, and thus block off, one or more of these holes **25***a* to control the quantity of air admitted so as to provide a blue flame **27**, indicating complete combustion with few holes **25***a* blocked, or to provide a yellow flame **27**, indicating incomplete combustion with more holes **25***a* blocked.

After the safety seal or safety valve on fuel tank **20** has been pierced, charcoal lighter **10** has conduit **30**, carried by hood **22** and connected to nozzles **24**, connected in fluid communication with fluid fuel source **20**. Conduit **30** includes a metal tube **31** adapted to be screwed at its lower end into the top of tank **20**; a flexible, rubber hose **32** telescopically connected at opposite ends over tubes **31** and **33**; metal tube **33**; ring-like conduit portion **34** coaxial with base **22***b*, located outside and above hood **22**, and including a plurality of arcuate metal tubes **35** secured together by the cross bars of metal T-fittings **36**; and a metal tube **37** for securing each nozzle **24** to one of these T-fittings **36**. Each tube **37** has threaded portion **37***a* having screwed thereon two or more nuts **39** tightly straddling top wall **22***d* to properly locate its nozzle **24**. Tubes **33**, **35** and **37**; nozzles **24**; and T-fittings **36** may be secured together in any suitable manner, such as by brazing or by screw threads.

The operation of charcoal lighter **10** should now be readily apparent. Fuel is supplied from source **20** to nozzles **24** by opening the safety seal diaphragm or valve in gas tank **20**, securing conduit **30** to tank **20**, and opening control valve **20***a* on tank **20**. After nozzles **24** have been lit by a match to provide flame **27** to burn the fuel from source **20**, each flame **27** may be adjusted to the desired condition. A blue flame **27**, provided by few screws **26** in each nozzle and indicating complete combustion by an adequate air supply, will ignite charcoal pile **17***a*; but this flame will generally ignite only a restricted spot in the charcoal and does not quickly ignite a big area. Therefore, it is preferred that more screws be inserted to block more air holes **25***a* so that each flame **27** is yellow in color, indicating only partial combustion and a restricted air supply with incomplete combustion. Then, when lighter **10** is placed in charcoal igniting position P shown in FIG. 1, a secondary combustion will occur within charcoal pile **17***a* in combustion zone C, into which zone nozzles **24** are constructed and arranged to

direct their flames 27. Since flames 27 from nozzles 24 are preferably aimed below the top third of charcoal pile 17*a* in position P in FIG. 1, a large area of charcoal will be quickly ignited by this secondary combustion occurring within the charcoal bed. Each nozzle 24 is inwardly, downwardly and radially directed through the wall of hood 22. In position P, air for combustion in combustion zone C is circulated through hood 22 by natural convection by the air being admitted through bottom apertures 22*c* into zone C, traveling in the direction of the arrows in FIG. 1, and exhausting through top apertures 22*e* to carry away the products of combustion from zone C. After charcoal lighter 10 has remained in one position P for about two and one-half minutes, the user may grip with his hands diametrically opposite sides of ring-like conduit portion 34, forming a cool handle located outside and above the walls of hood 22 surrounding the ignited charcoal pile 17*a*; vertically lift hood 22; rotate hood 22 about central, vertical axis A of its base 22*b* through about 60 degrees, which would be about half the distance between the 120 degree spacing of nozzles 24 in FIG. 2; and lower hood 22 downwardly into a new igniting position P so flames 27 now ignite a different area in charcoal pile 17*a*. Flexible hose 32 permits hood 22 to be moved in this manner relative to fuel source 20 even though this gas tank 20 and portable grill 12 remain stationary. After lighter 10 has remained in the new position P for about two and one-half minutes, lighter 10 may be taken off grill 12 and valve 20*a* closed. Now, one can put the grill plate on spindle 16 and immediately cook on charcoal 17 of the grill after the charcoal has been leveled and the hot charcoal embers disbursed over pan 15. Charcoal pile 17*a* has been quickly lighted, or ignited, over a large area so that one can cook with the hot charcoal embers soon after grill 12 has been loaded with charcoal.

Various changes in details and arrangement of parts can be made by one skilled in the art without departing from either the spirit of this invention or the scope of the appended claim.

What is claimed is:

A charcoal lighter, including a nozzle support member adapted to at least partially cover a charcoal pile in a charcoal igniting position, a plurality of fluid fuel burning nozzles carried by said member, a conduit carried by said member and connected to said nozzles for connecting said nozzles in fluid communication with a fluid fuel source, said nozzles being adapted to direct their flame into a combustion zone in the charcoal pile in said position, said member having apertures to admit air to the combustion zone and to carry away products of combustion from said zone in said position, said member having an annular support base, said member carrying the aforesaid nozzles arcuately spaced about said base, said conduit including a ring-like conduit portion coaxial with said base and outside said member and having said nozzles radially inwardly directed therefrom, said conduit portion forming a cool handle for permitting vertically lifting said member by two hands and rotating it about the central vertical axis of said base to a new igniting position so as to be adapted to ignite different areas in the charcoal pile, with said member being an annular shaped, sheet metal hood having generally cylindrical side walls bottomed by said support base and having said apertures to admit air into said combustion zone formed therein, and having a top cover wall with said apertures to carry away the products of combustion from said zone formed therein so that air circulation through said hood is obtained by natural convection; said nozzles being inwardly, downwardly, and radially directed through the wall of said hood; said ring-like conduit portion being located above the walls of said hood to provide said cool handle; said conduit including a flexible hose connected to said handle and adapted to be connected to said fuel source to permit said member to be turned by said handle about the vertical axis relative to said fuel source.

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