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OXYGEN CANDLE BURNER

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2 Sheets-Sheet 1

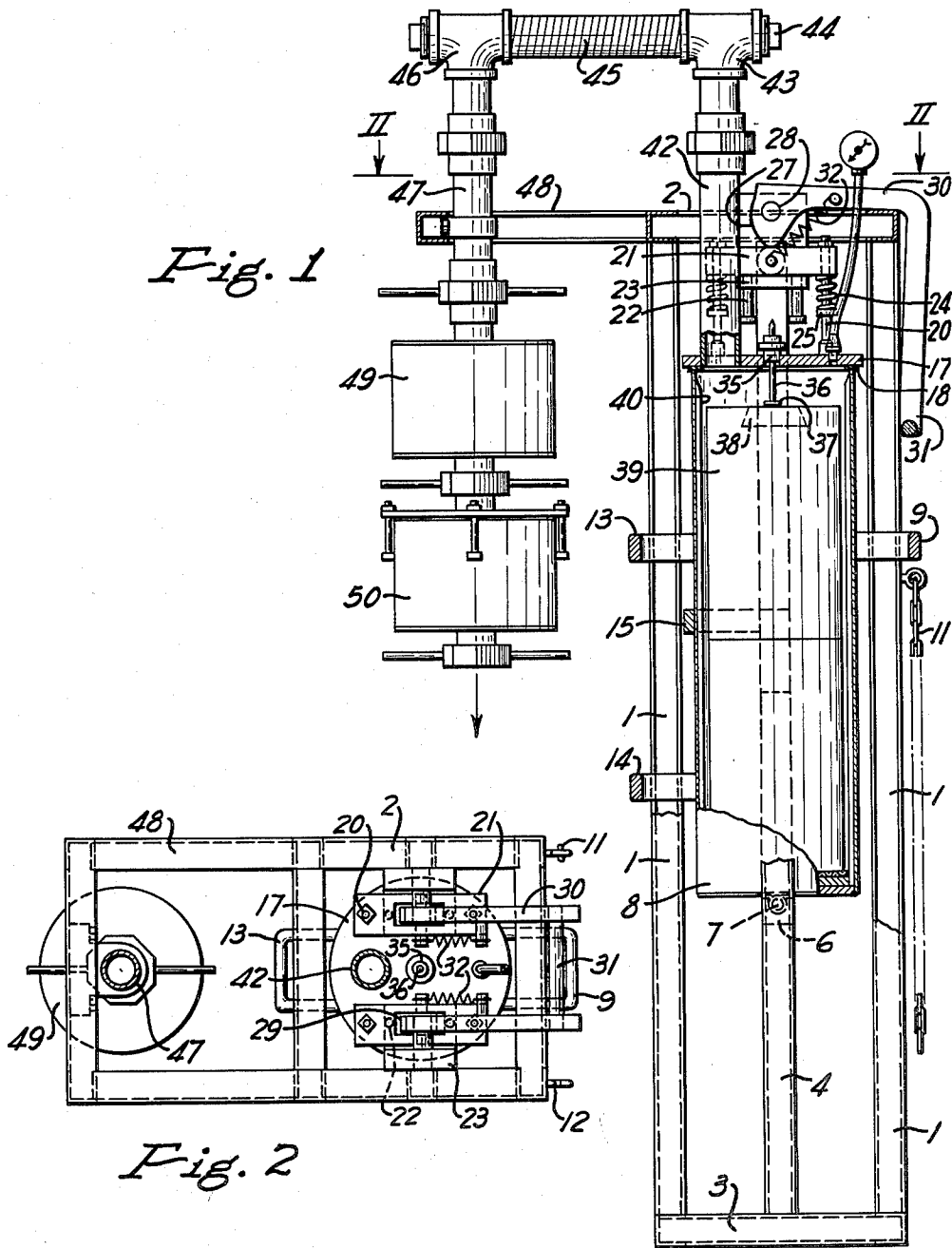


Fig. 2

INVENTOR.
ROBERT M. BOVARD

BY
Barnes, Cristallan, Glick & Puckham
HIS ATTORNEYS

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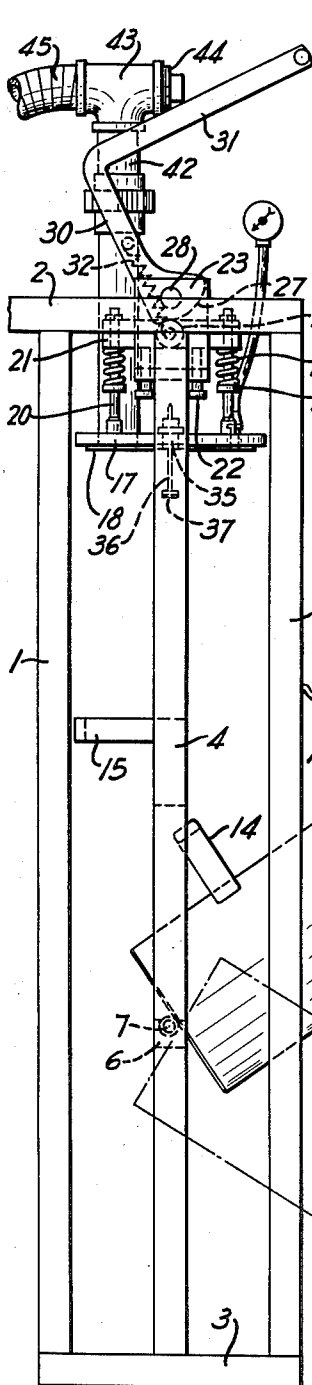
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OXYGEN CANDLE BURNER

Robert M. Bovard, Evans City, Pa., assignor to M.S.A. Research Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

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6 Claims. (Cl. 23—281)

This invention relates to the production of oxygen, and more particularly to apparatus for holding a sodium chlorate candle while it is burning and for collecting the oxygen thereby produced for delivery to a point of consumption.

It is among the objects of this invention to provide an oxygen candle burner which is simple in construction, which can be easily loaded with a candle or relieved of any unburned portion of a candle, which simultaneously seals the candle retainer and connects it with a delivery line, and which can be easily cleaned.

In accordance with this invention a normally upright can, which is open at its top, is mounted in a frame by means pivotally supporting the bottom of the can on a horizontal axis some distance above the bottom of the frame. The top of the can can be swung out of the frame into an inclined position to receive an oxygen candle, or into a lower inclined position to permit a candle to slide out of the can. In the frame there are a cover for the top of the can and cover-supporting means above the cover movable vertically with and also relative to the cover. Manually operable means normally holds the supporting means in a lowered position. The cover is pressed down tightly on the can by resilient means between the cover-supporting means and the cover. Extending through the cover is an opening connected with an oxygen outlet conduit. Means also is provided for igniting an oxygen candle in the closed can. The holding means for the cover-supporting means is retractable, and means is provided for lifting the supporting means upon retraction of the holding means, thereby to raise the cover and permit the top of the can to be swung out of the frame. Preferably, the cover is provided with a hole and the igniting means includes a rod that is slidably and rotatably mounted in the hole and has a phosphorous coating on its lower end. One or more filters are supported by the frame and may be connected with the outlet conduit by means of a flexible conduit that will not interfere with the vertical movements of the cover.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a side view of my candle burner, with parts broken away in vertical section;

Fig. 2 is a plan view;

Fig. 3 is an enlarged fragmentary front view, with parts broken away in section; and

Fig. 4 is a fragmentary side view, similar to Fig. 1, showing the open can swung out of the frame.

Referring to Figs. 1, 2 and 3 of the drawings, a frame that is rectangular in horizontal and vertical section is formed from corner legs 1 connected by rectangular top and bottom members 2 and 3 and by a pair of oppositely disposed intermediate legs 4. Several inches from the bottom of the frame the inner sides of the intermediate legs are provided with socket members 6 provided with recesses in their top, in which the outer ends of a horizontal pivot pin 7 are rotatably mounted. The pin extends across the bottom of a cylindrical can 8 and is

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secured to it in order to support the can when it is upright between the intermediate legs. The upper portion of the can is provided with a front handle 9, by which the can can be swung forward out of the frame and into an upwardly and outwardly inclined position where it is supported by a chain 11 having one end attached to the adjacent front leg of the frame and the other end portion attached to a hook 12 (Fig. 4) on the other front leg. The upper side of the inclined can is provided with two handles 13 and 14 to permit the can to be lifted out of the frame when desired. When the can is swung back into the frame, its movement is stopped in proper upright position by a stirrup 15 connected to the intermediate legs 4 and extending around the back of the can.

When this apparatus is in use, the open upper end of the can is closed by means of a cover 17 carrying a sealing gasket 18 on its lower surface in engagement with the upper edge of the can. Projecting upwardly from the top of the cover are two pairs of rods 20, one pair near each side of the frame. The upper ends of each pair of rods extend slidably through vertical openings in the opposite ends of a horizontal bar 21. Projecting downwardly from the bottom of each bar is a pair of studs 22 that are slidably mounted in openings in the lower part of an L-shaped bracket 23 attached to the top of the frame. The studs have heads on their lower ends to limit their upward travel. It will be seen that as bars 21 are moved up and down, the cover will be raised and lowered. Coil springs 24 are mounted on rods 20 between the bars and collars 25 on the rods to permit the cover to rise in case the oxygen pressure within the can becomes too great.

In order to raise and lower the cover-supporting bars 21, a pair of cams 27 are rotatably mounted by means of pins 28 in the upper portions of brackets 23 directly above the centers of the bars. Preferably, as shown in Fig. 3, each bar is provided with an opening through it, in which a roller 29 is journaled for engagement by the cam above it. The cams are provided with forwardly extending arms 30, the front ends of which are joined to a U-shaped handle 31. Consequently, by raising and lowering the handle, the cams are rotated. The rollers are held against the cams at all times by flexible means connecting the bars with the arms of the cams. For example, coil springs 32 may be used for this purpose. When the handle is lowered, the cams will be rotated and will press the bars downward. When the handle is raised, the cams will permit springs 32 to raise the bars to lift the cover.

In order to ignite a candle inside the can, it is preferred to provide the center of the cover with a small opening containing a packing gland 35, through which a small stem 36 slidably and rotatably extends. The lower end of the stem is provided with a head 37, the lower surface of which is coated with phosphorous. By pressing the head against the ignition cone 38 in the top of a candle 39 in the can and rotating the stem, the candle will be ignited. The candle may be spaced from the side of the can by vertical rods 40 secured to the can.

As oxygen is produced by the burning candle, it escapes through the can through an opening in the cover, to which the lower end of an outlet conduit 42 is connected. The upper end of this conduit is connected with a T fitting 43, one side of which normally is closed by a cleanout plug 44, and the other side of which is connected by a flexible tube 45 with another T fitting 46. The bottom of this fitting is connected to the upper end of a pipe 47 that is clamped against an arm 48 projecting from the back of the top of the frame. The lower end of the pipe is connected with a filter system for removing finely divided sodium chloride smoke and any carbon monoxide and chlorine that may be formed. For

this purpose, it is preferred to use at least two filters, one a particulate filter 49 and the other a chemical filter 50. Clean oxygen may issue directly from the lower filter or it may be conducted from there through a conduit (not shown) to another location. The flexible tube 45 permits the outlet conduit 42 to be raised and lowered with the cover.

When it is desired to load the can with a candle, ignition stem 36 is pulled up as far as possible and handle 31 is raised so that cover 17 will rise. Then the top of the can is swung forward out of the frame. If any part of the previous candle remains in the can, it is swung down to the dotted line position shown in Fig. 4 after chain 11 has been unhooked, so that the butt will slide out of the can. If the can was empty, it is swung only as far as the full line position, where it can be supported by chain 11. After a candle has been slipped into the open end of the can, it is swung back into the frame and the handle is pulled down to clamp the cover against the top of the can.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. An oxygen candle burner comprising a frame, a normally upright open-top can in the frame spaced from the bottom thereof, means pivotally supporting the bottom of the can on a horizontal axis, means for swinging the top of the can out of the frame into an inclined position to receive an oxygen candle, a cover in the frame for the top of the can, cover-supporting means above the cover movable vertically with and also relative to the cover between raised and lowered positions, manually operable means normally holding said supporting means in a lowered position, said holding means being movable relative to said supporting means, resilient means between said supporting means and cover pressing the cover down tightly on the can, the cover being provided with an opening therethrough, an oxygen outlet conduit connected with said opening, means for igniting an oxygen candle in the closed can, said holding means being retractable, and means for lifting said supporting means upon retraction of said holding means to thereby raise the cover and permit the top of the can to be swung out of the frame.

2. An oxygen candle burner according to claim 1, including removable means for holding said can in said inclined position, removal of said removable means permitting the open end of the can to be swung down to a lower level than its opposite end.

3. An oxygen candle burner according to claim 1, including a filter supported by the frame, and a flexible conduit connecting said outlet conduit with the filter.

4. An oxygen candle burner comprising a frame, a normally upright open-top can in the frame spaced from the bottom thereof, means pivotally supporting the bottom of the can on a horizontal axis, means for swinging the top of the can out of the frame into an inclined position to receive an oxygen candle, a cover in the frame for the top of the can, cover-supporting means above the

cover movable vertically with and also relative to the cover between raised and lowered positions, rotatable cam means engaging said supporting means and normally holding the latter in a lowered position, resilient means between said supporting means and cover pressing the cover down tightly on the can, the cover being provided with an opening therethrough, an oxygen outlet conduit connected with said opening, means for igniting an oxygen candle in the closed can, means for turning said cam means to a retracted position, and means for lifting said supporting means upon retraction of said cam means to thereby raise the cover and permit the top of the can to be swung out of the frame.

5. An oxygen candle burner comprising a frame, a normally upright open-top can in the frame spaced from the bottom thereof, means pivotally supporting the bottom of the can on a horizontal axis, means for swinging the top of the can out of the frame into an inclined position to receive an oxygen candle, a cover in the frame for the top of the can, a vertically movable horizontal bar above the cover provided with vertical passages through its ends, said bar being movable between raised and lowered positions, vertical studs secured to the cover and slidably mounted in said passages to permit limited relative movement between the cover and bar, coil springs on said studs compressed between the bar and cover, manually operable means normally holding said bar in a lowered position with the cover pressed down tightly on the can, the cover being provided with an opening therethrough, an oxygen outlet conduit connected with said opening, means for igniting an oxygen candle in the closed can, said holding means being retractable, and means for lifting said bar upon retraction of said holding means to thereby raise the cover and permit the top of the can to be swung out of the frame.

6. An oxygen candle burner comprising a frame, a normally upright open-top can in the frame spaced from the bottom thereof, means pivotally supporting the bottom of the can on a horizontal axis, means for swinging the top of the can out of the frame into an inclined position to receive an oxygen candle, a cover in the frame for the top of the can, a vertically movable horizontal bar above the cover provided with vertical passages through its ends, said bar being movable between raised and lowered positions, vertical studs secured to the cover and slidably mounted in said passages to permit limited relative movement between the cover and bar, coil springs on said studs compressed between the bar and cover, a rotatable cam mounted in the frame above said bar and normally holding it in a lowered position with the cover pressed down tightly on the can, the cover being provided with an opening therethrough, an oxygen outlet conduit connected with said opening, means for igniting an oxygen candle in the closed can, means for turning said cam to a retracted position, and means connecting said bar with said cam-turning means to raise the cover and permit the top of the can to be swung out of the frame.

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