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B. W. BARR

3,171,493

FIRE PROTECTION DEVICES FOR CHRISTMAS TREES

Filed Dec. 31, 1962

2 Sheets-Sheet 1

FIG. 1

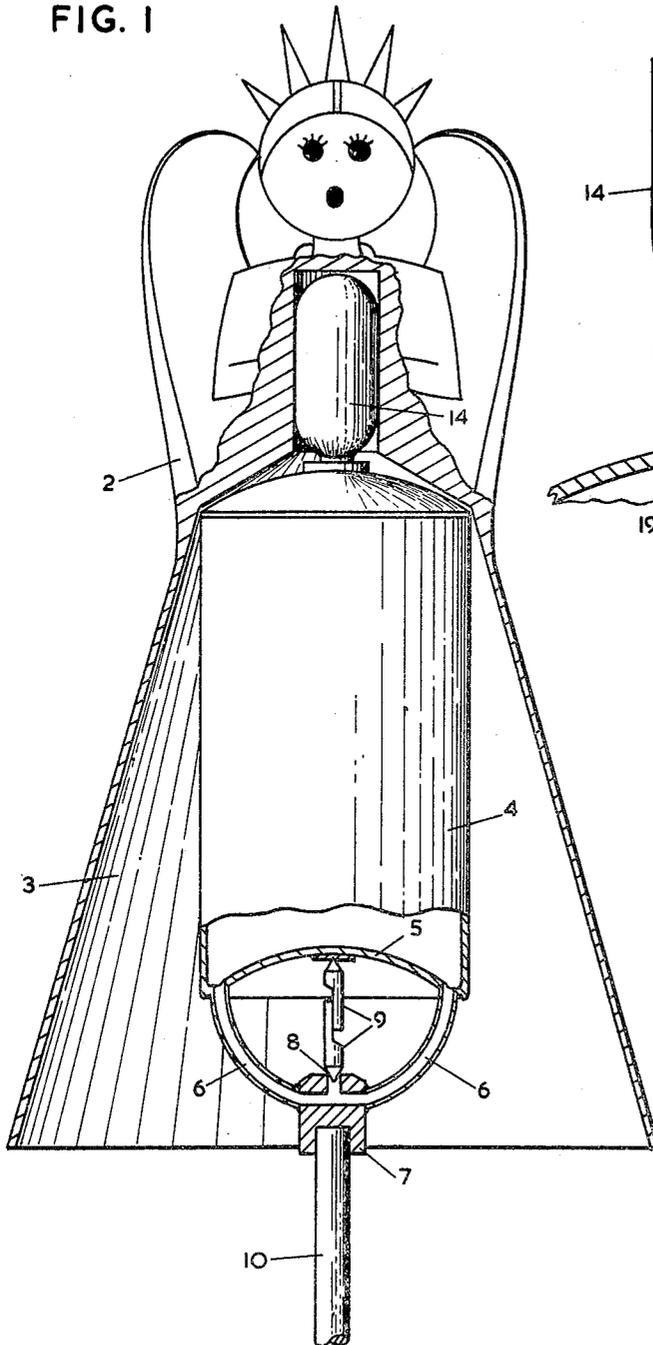


FIG. 2

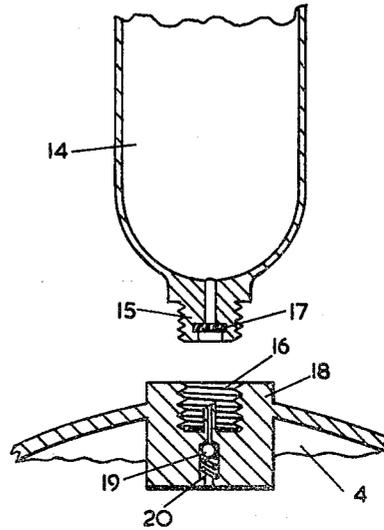
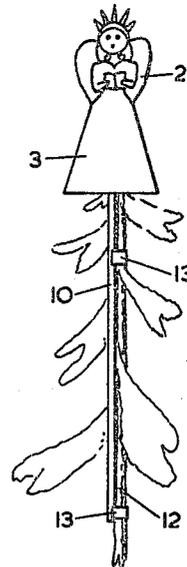


FIG. 3



INVENTOR
BRIAN W. BARR
BY: Featherstonhaugh & Co.
ATTORNEYS

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FIG. 4

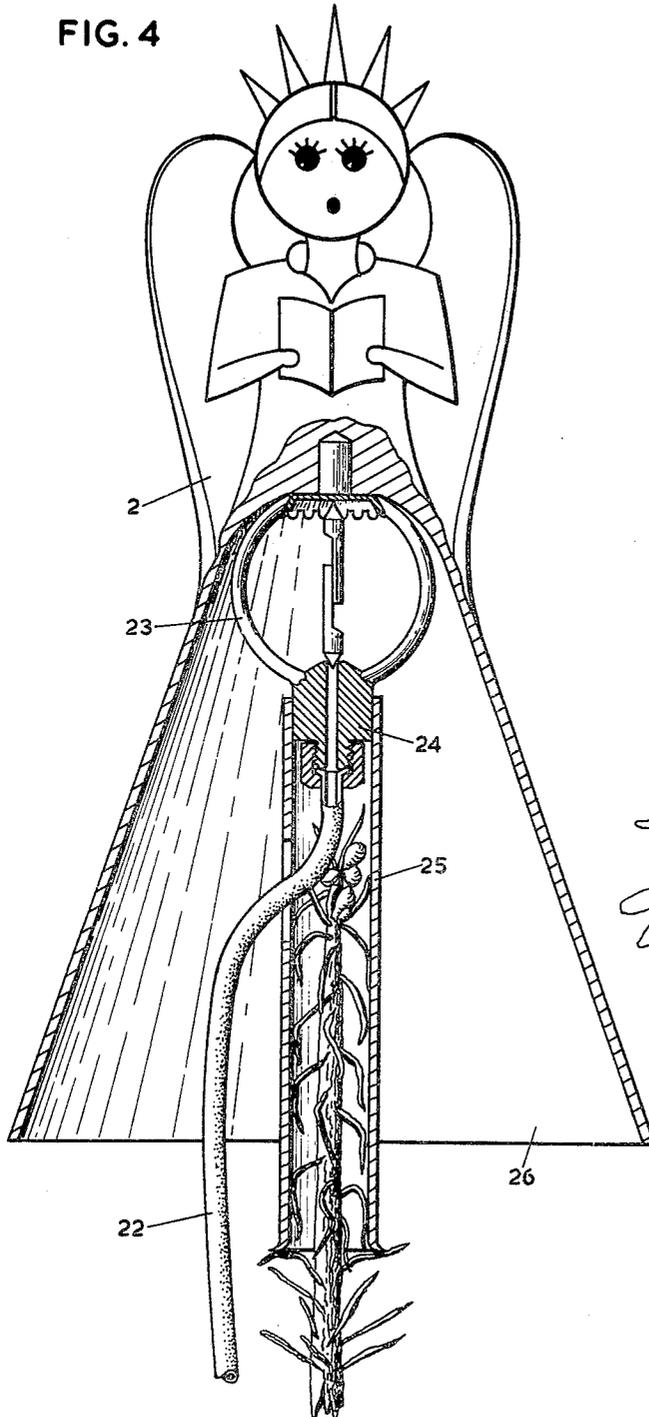
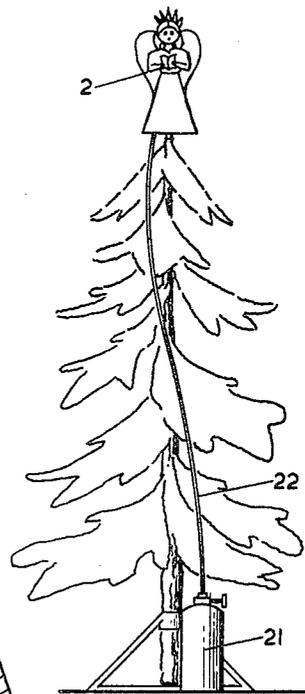


FIG. 5



INVENTOR
BRIAN W. BARR
BY: *Fetherstonhaugh & Co.*
ATTORNEYS

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3,171,493

FIRE PROTECTION DEVICES FOR CHRISTMAS TREES

Brian W. Barr, 7 Galbraith Drive, Stoney Creek, Ontario, Canada

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2 Claims. (Cl. 169-2)

My invention relates to a fire protection device of ornamental appearance to be mounted upon the apex of a Christmas tree for the purpose of preventing the average readily combustible tree from possible creation of fire hazard, and the object of the invention is to so form and arrange the device that it houses an automatic sprinkler disposed to release a downward spray of fire extinguishing fluid or foam directed to cover the branches of the tree should the tree temperature rise above a predetermined danger point.

A further object of the invention is to provide a flask containing fire extinguishing fluid under pressure and which is connected to the automatic sprinkler, the flask being either contained within the ornament and directly connected to the sprinkler or positioned below the ornament and connected to the sprinkler by a length of tubing.

As liquid and pressure gas in a dormant or unagitated pressure spray flask tend to separate, ejection of fluid spray from such a container generally leaves a substantial residue of fluid in the flask after the gas pressure is exhausted. To meet such a contingency a particular object of the invention is to provide an auxiliary high pressure gas cartridge arranged for connection to the fire extinguishing fluid and gas containing flask at the end of the flask opposite to its fluid outlet, and whereby gas pressure in the cartridge opens a needle valve and feeds into the flask as the gas pressure in the flask drops below the gas pressure in the cartridge and thus provides sufficient gas under pressure in the flask to completely evacuate the fluid therefrom.

With the foregoing and other objects in view, as shall appear, my invention consists of a fire extinguishing device primarily for attachment to a Christmas tree, all as hereinafter more particularly described and illustrated in the accompanying drawings, in which:

FIG. 1 is an elevational view of the device, partly in section, and showing a fire extinguishing fluid containing flask, sprinkler head and auxiliary gas pressure cartridge contained within an ornament.

FIG. 2 is an enlarged sectional fragmentary exploded view of the complementary portions of the flask and cartridge.

FIG. 3 is a reduced elevational view showing the attachment of the ornament to the upper portion of a Christmas tree.

FIG. 4 is a similar view to FIG. 1 and illustrating a modification of the invention wherein the sprinkler head is solely contained within the ornament, the extinguishing fluid containing flask being preferably located at the base of the tree and connected to the sprinkler head by a length of non-combustible tubing, and

FIG. 5 is a reduced elevational view of the assembled Christmas tree, ornament, flask and tubing.

Referring to the drawings, the ornaments 2 are merely exemplary, it being apparent that any suitable decorative housing for the invention could be employed.

In the arrangement shown in FIGS. 1 to 3 the skirt 3 of the ornament surrounds a flask 4 charged with a fire extinguishing medium, such as a foam producing fluid under pressure of carbon dioxide, and formed with a concave base 5. A plurality of tubes 6 extend downwardly from the flask to provide fluid passage from the

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flask to a needle valve seat fixture 7 embodied in the usual sprinkler head arrangement and positioned below and centrally of the concave base 5.

The upper face of the fixture 7 contains a needle valve seat 8 for closure reception of the conical lower end of the usual automatic sprinkler arrangement comprising a pair of aligned rods 9 attached together by fusible metal and extending from the apex of the flask base 5 to the valve seat 8. The fixture 7 is mounted upon the upper end of a supporting rod 10 attachable to the upper portion 12 of the trunk of a Christmas tree, as by suitable clamps 13.

Should the tree catch fire, rise in temperature melts the fusible metal attaching the rods 9 together to permit pressure in the flask to blow the lower rod 9 out of the valve seat 8, thus allowing the fire extinguishing foam to be ejected through the valve seat and impinge against the concave flask base 5 with resultant deflected downward flow embracing and smothering the tree.

To ensure complete exhaustion of foam forming liquid from the flask in the case of fire, it is very advantageous to provide an auxiliary cartridge 14 containing gas at higher pressure than the gas pressure in the flask and having a pressure actuated valve connection to the end of the flask opposite to its fluid outlet end. Referring to FIG. 2, the outlet end of the cartridge is formed with a neck 15 to be threaded into a socket 16 in the flask. The cartridge neck 15, before attachment to the flask, is closed against gas escape by a pierceable diaphragm 17. A tube 18 extends into the socket 16, and when the cartridge neck is threaded into the socket the end of the tube 18 pierces the diaphragm 17 to establish communication between the cartridge and the flask. A ball valve 19 under the urge of a spring 20, in addition to pressure within the flask, retains gas pressure within the cartridge from entering the flask prior to actuation of the sprinkler. Should fire occur and open the sprinkler valve, the pressure in the flask decreases as foam is ejected. As flask pressure decreases to a point where in conjunction with the urge of the spring 20 it is insufficient to retain the ball valve 19 closed, the valve will open, permitting gas pressure from the cartridge to enter the flask and completely evacuate the flask.

FIGS. 4 and 5 illustrate a modification of the invention wherein the fire extinguishing fluid containing flask 21 is not positioned within the ornament but is preferably located at the base of the tree and connected by a length of non-combustible tubing 22 to a heat actuated sprinkler head 23, of the same type as that shown in FIG. 1, and located within the ornament. The head supports the ornament and includes a needle valve seat fixture 24 to which the tubing 23 is connected, the fixture being carried upon the upper end of a sleeve 25 arranged to be slipped over the peak of the tree. In this arrangement it is preferable that the skirt 26 of the ornament be formed of combustible material, so that in case of fire it will burn away and not hinder tree enveloping flow or foam. In this arrangement an auxiliary gas pressure cartridge 14 may be attached to the flask 21 in the same manner as to the flask 4.

What I claim as my invention is:

1. A fire extinguishing device for mounting upon a Christmas tree and comprising a heat releasable sprinkler head contained within and supporting a substantially hollow open bottom ornament, means for attaching the sprinkler head and ornament to the apex portion of a tree, a flask containing fire extinguishing liquid under gas pressure, the bottom portion of the flask being connected to the sprinkler head to feed liquid thereto, an auxiliary cartridge containing gas under pressure and connected to the top portion of the flask to feed gas

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thereinto, and a valve normally restricting passage of gas from the cartridge to the flask under pressure of a retaining spring in combination with the gas pressure in the flask, the pressure of the retaining spring being so graduated that upon release of the sprinkler head with consequent reduction of gas pressure in the flask the spring permits opening of the valve and entrance of gas from the cartridge into the flask.

2. A fire extinguishing device for mounting upon a Christmas tree and comprising a substantially hollow open bottom ornament, a vertically positioned cylindrical flask containing fire extinguishing liquid under gas pressure and housed within the ornament, a heat releasable sprinkler head arranged for vertical ejection of fire extinguishing liquid and positioned underneath and spaced away from the bottom of the flask, the flask having a concave bottom face for downward deflection of liquid ejected upwardly from the sprinkler head, a plurality of flask supporting tubes extending upwardly from the sprinkler head to the peripheral portion of the concave bottom face of the flask and constituting liquid passages between the flask and the sprinkler head, and auxiliary cartridge containing gas under pressure and mounted upon and connected to the top portion of the flask, and

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a valve normally restricting passage of gas from the cartridge to the flask under pressure of a retaining spring in combination with the gas pressure in the flask, the pressure of the retaining spring being so graduated that upon heat release of the sprinkler head with consequent reduction of gas pressure in the flask the spring permits opening of the valve and entrance of gas from the cartridge into the flask.

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