

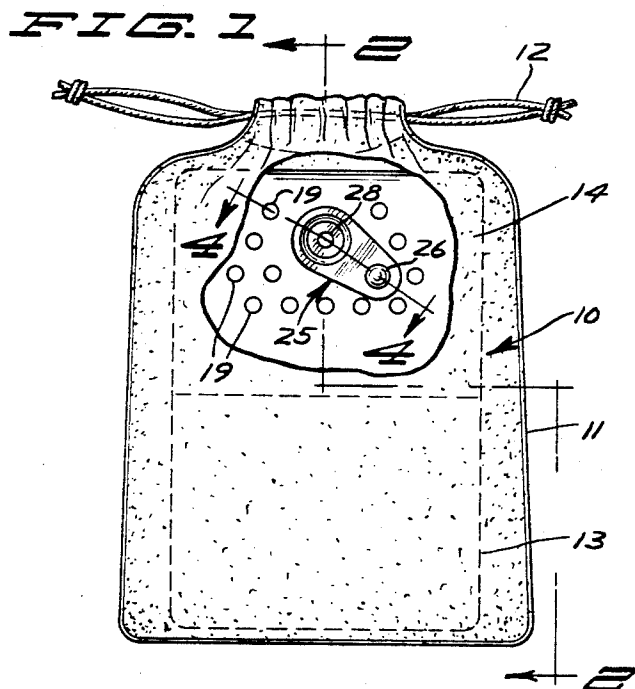
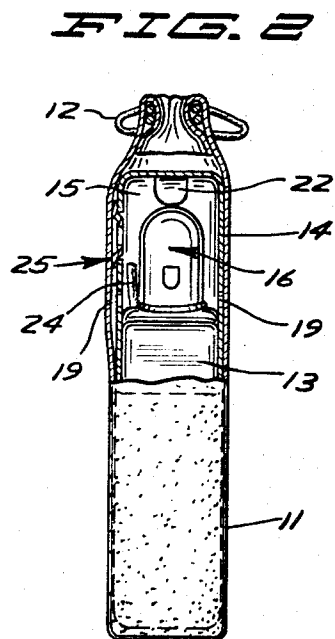
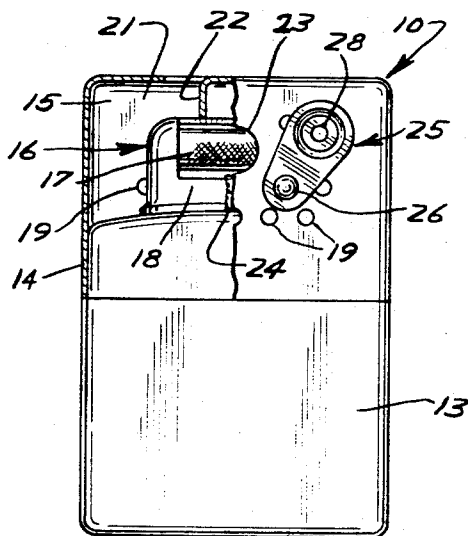
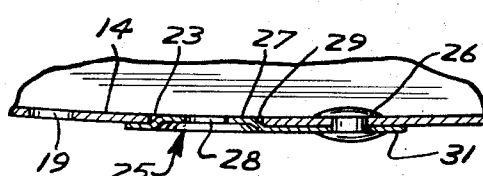
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3,420,221

HAND WARMER COVER

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HAND WARMER COVER

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ABSTRACT OF THE DISCLOSURE

A catalytic hand warmer having a cover enclosing a burner releasably attached to a body storing liquid fuel. The burner has a catalytic combustion promoting element which on being heated will sustain flameless combustion. The cover has a plurality of holes for controlling the movement of air and the temperature in the chamber surrounding the burner. One of the holes aligned with the combustion promoting element is enlarged to receive an end of a cigarette. A spring biased closure member having a hole is pivotally mounted on the cover to restrict the opening of the large cigarette lighting hole.

Background of invention

Catalytic hand warmers flameless burners have been adapted to be used as a lighter for cigarettes. This is accomplished by incorporating a special enlarged hole in the cover of the hand warmer in alignment with the combustion promoting element of the burner. The cigarette is lit by placing the end of the cigarette through the special hole into contact with the combustion promoting element. The cigarette lighting hole being directly opposite the combustion promoting element reduces the effectiveness and efficiency of the flameless combustion by allowing an excess of air flow around the combustion promoting element. This lowers the temperature of the combustion promoting element below the point necessary to sustain flameless combustion. The enlarged hole also exposes the combustion promoting element to physical damage from outside objects. The combined cover and closure member for the cigarette lighting hole of the present invention provides a controlled and even ingress of air and temperature in the chamber about the combustion promoting element to produce effective, efficient, and continuous flameless combustion. The closure member protects the combustion promoting element from physical damage and promotes flameless combustion at an optimum cigarette lighting temperature. The closure member is locked in the closed position over the cigarette lighting hole to prevent accidental opening of the closure member.

Summary of invention

This invention relates to a cover for a hand warmer having a plurality of air holes including an enlarged cigarette lighting hole aligned with the combustion promoting element of the burner. Movable mounted on the cover is a closure member to restrict the size of the cigarette lighting hole providing for effective and efficient flameless combustion of the fuel in the burner. The closure member is a self-locking member which will remain in a closed position until it is intentionally moved to an open position by the user of the hand warmer.

In the drawings:

FIGURE 1 is an elevational view of a hand warmer located within a bag with portions of the bag broken away to show the movable closure member for the cigarette lighting hole located in the cover of the hand warmer;

FIGURE 2 is a sectional view taken along the line 2-2 of FIGURE 1;

FIGURE 3 is a plan view partly in section of the hand warmer of FIGURE 1 showing the closure member in the open position; and

FIGURE 4 is an enlarged sectional view taken along the line 4-4 of FIGURE 1.

Referring to the drawing there is shown in FIGURE 1 a catalytic hand warmer indicated generally at 10 located in a bag 11, as a felt cloth bag, having a drawstring 12 hemmed into the open end of the bag. Warmer 10 has a body or container 13 for storing absorbent material used to hold the liquid fuel of the warmer. Removably and frictionally mounted on the top portion of body 13 is a cap or cover 14 defining a chamber 15 around a burner 16. As shown in FIGURE 3, burner 16 has an elongated combustion promoting element 17 located within a housing 18 mounted on the top of the body 13. Projected upwardly adjacent the burner 16 is a wick 24 used to heat the combustion promoting element to ignite the fuel. Burner 16 is a typical burner for a hand warmer. For example, the burner shown in the patent to Smith No. 2,670,728 can be used with body 13.

Cover 14 is a generally oblong cup-shaped one-piece housing having a plurality of holes 19 in the opposite walls and holes 21 in the top. Projected downwardly from the top wall are tabs 22 aligned with the top of the burner. An enlarged cigarette lighting hole 23 is located in the upper mid-section of one side of the cover in alignment with the combustion promoting element 17 so that when an end of a cigarette is inserted through hole 23 it will contact the combustion promoting element. With the cigarette in contact with the burning combustion promoting element a slight draw of air through the cigarette is sufficient to ignite the cigarette. The cigarette lighting hole 23 being about three times larger in diameter than air holes 19 allows a considerable amount of air to enter the chamber 15 adjacent combustion promoting element 17. This air will cool the burner below the ignition point of the fuel so that the burner will burn at a very slow and erratic rate and may even go out. In one example of the cover, the holes 19 are one eighth inch diameter holes placed in generally U-shaped patterns on opposite sides of the burner. The cigarette lighting hole is centrally aligned with one side of the combustion promoting element 17.

To control the temperature in the chamber 15 and limit the amount of outside air which comes in contact with the combustion promoting element 17 the cigarette lighting hole 23 is partially closed with a movable closure member indicated generally at 25. Closure member 25 is a generally flat spring clip pivoted to the side of the cover with a pivot member 26, as a rivet. The rivet extends through one of the holes 19 adjacent the hole 23. As shown in FIGURE 4, when the closure member 25 is aligned with the cigarette lighting hole 23 it lies flat against the outside of cover 14 and is locked with the cover wall forming the hole 23, so that the closure member cannot be accidentally opened. Closure member 25 has a recessed head 27 having a central hole 28 providing for the normal flow of air into the chamber 15 surrounding the burner 16. Hole 28 has the same diameter as the hole 19 so as to maintain an even and regulated ingress of air flow into the chamber 15 surrounding the burner. The use of hole 28 in conjunction with holes 19 promotes optimum efficiency of non-flame combustion of the fuel at element 17.

The recessed portion of head 27 has an annular shoulder 29 which fits into the cigarette lighting hole 23 to lock the closure member in the closed position as shown in FIGURE 4. The recessed head 27 and shoulder 29 coact with the walls of cover 14 forming hole 28 to releas-

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ably lock the closure means in a position to close hole 28. The head 27 is joined with a flat neck 31 which receives the pivot member 26 thereby movably mounting the entire closure member 25 for arcuate movement on the cover 14. The head and neck are formed from a one-piece spring member so that the recessed portion of the head is biased into the cigarette lighting hole 23. The closure member is preferably made of stainless spring tempered steel and attached to cover 14 by a single rivet 26.

In use, the closure member 25 is normally in the closed position as shown in FIGURES 1, 2 and 4 with the head 27 located in the cigarette lighting hole 23. This aligns the smaller hole 28 with the combustion promoting element 17. Hole 28 allows a sufficient amount of air to flow into chamber 15 to maintain a substantially even temperature above the ignition point of the fuel at the combustion promoting element.

To light a cigarette the closure member 25 is pivoted to an open position, shown in FIGURE 3, by applying a lateral force to the head 27 of the closure member. The shoulder 29 acting on cover 14 forces outwardly against the biasing force of the flat neck 31 held against the cover by pivot member 26. The end of the cigarette is then inserted through cigarette lighting hole 23 and gently pressed against the combustion promoting element 17. Upon application of a slight draw or vacuum to the opposite end of the cigarette the cigarette is lit. The closure member 25 is then rotated back to the closed position with the head 27 in a lock position in hole 23.

While there have been shown and described a combination cover and closure member for a hand warmer it is to be understood that various changes and modifications in the movement and the mounting of the closure member on the cover as well as the size and shape of the closure member may be made by those skilled in the art without departing from the spirit of the invention. The invention is defined in the following claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A cover for a hand warmer having a body carrying a burner with a combustion promoting element comprising: housing means having side walls mountable on the body to enclose the burner in a chamber, at least one of said side walls having a plurality of first holes to allow air to flow into the chamber, one of said side walls having a second hole of at least a size to receive the end of a cigarette, and closure means for selectively opening and closing said second hole, said closure means having a third hole smaller than said second hole providing an opening into the chamber when the closure means is in position to close the second hole.

2. A cover for a hand warmer having a body carrying a burner with a combustion promoting element comprising: housing means having side walls mountable on the body to enclose the burner in a chamber, both of said side walls have a plurality of first holes to allow air to flow into the chamber, one of said side walls having a second hole of at least a size to receive an end of a cigarette, said first holes being smaller than said second hole and said second hole is aligned with the combustion

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promoting element when the housing means is mounted on the body, and closure means for selectively opening and closing said second hole, said closure means having a third hole smaller than said second hole providing an opening into the chamber when the closure means is in position to close the second hole.

3. The cover of claim 2 including means to pivotally mount the closure means on the housing.

4. The cover of claim 2 wherein said closure means has a recessed head which fits into the second hole when the closure means is in the position to close the second hole, said head having the third hole.

5. The cover of claim 2 wherein the first holes and third hole are substantially the same size.

6. The cover of claim 5 wherein the first holes are about one eighth inch in diameter and said second hole has a diameter of about three times the diameter of the first holes.

7. The cover of claim 2 wherein said closure means is a flat tab having a recessed head which fits into the second hole, said head having the third hole, and including a pivot member rotatably connecting one end of the tab to the housing means to hold the recessed head in the second hole when the closure means is in the position to close the second hole.

8. The cover of claim 2 wherein said closure means and cover have coacting lock means to hold the closure means in the position to close the second hole.

9. The cover of claim 1 including means to pivotally mount the closure means on the housing.

10. The cover of claim 1 wherein said closure means has a recessed head which fits into the second hole when the closure means is in the position to close the second hole.

11. A cover for a hand warmer having a body carrying a burner with a combustion promoting element comprising: housing means having side walls mountable on the body to enclose the burner in a chamber, at least one of said side walls having a plurality of first holes to allow air to flow into the chamber, one of said side walls having a second hole of at least a size to receive the end of a cigarette, closure means for selectively opening and closing said second hole, and means to pivotally mount the closure means on one side wall for movement generally parallel to said one side wall, said closure means having a recessed head spaced from the pivot means which fits into the second hole when the closure means is in a position to close the second hole.

12. The cover of claim 11 wherein said head has a third hole smaller than the second hole providing an opening into the chamber when the closure means is in the position to close the second hole.

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