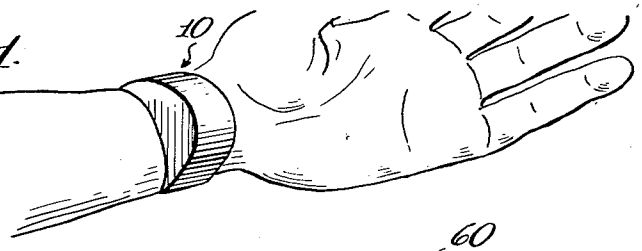
Aug. 16, 1955 G. A. GIARDINI 2,715,315

LOCALIZED APPLICATOR FOR COOLING BODY TEMPERATURES

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Fig. 1.



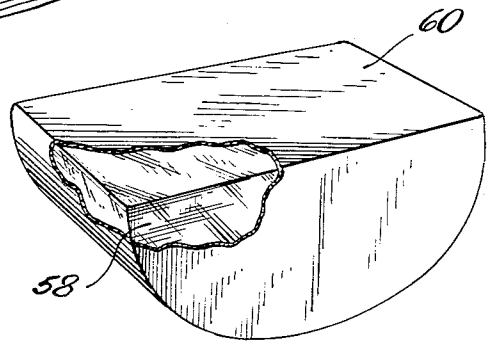
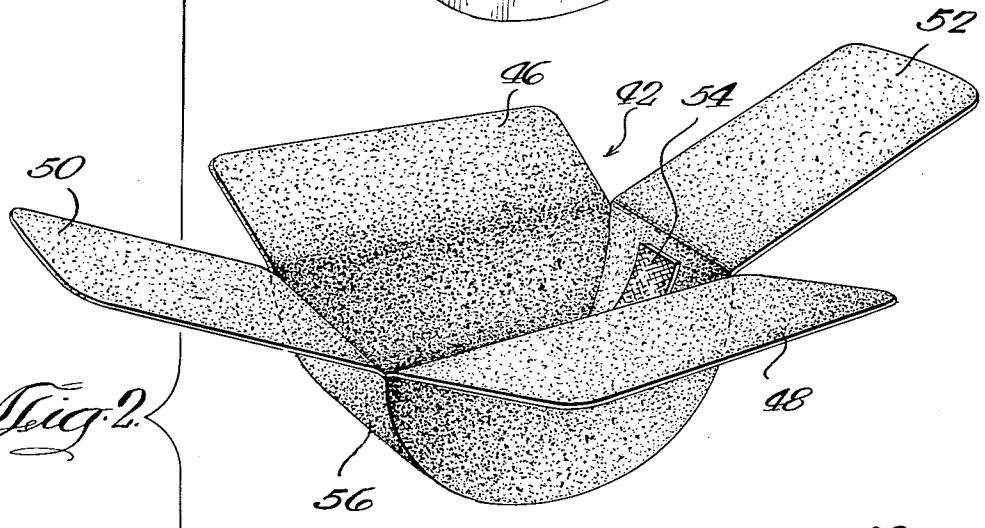
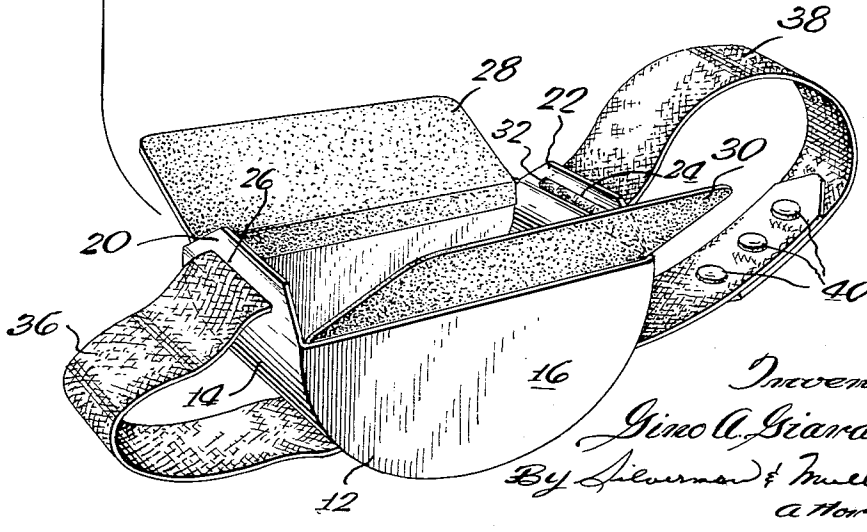


Fig. 2.





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Fig. 4.

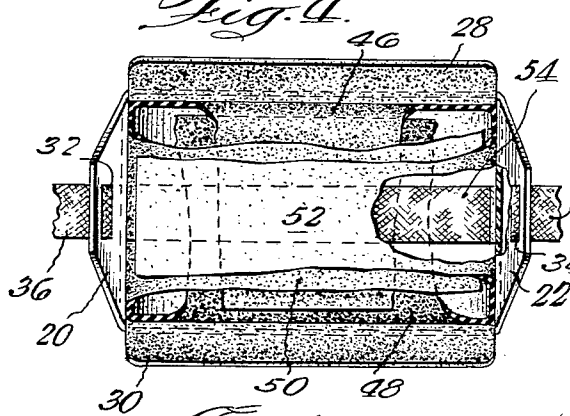


Fig. 5.

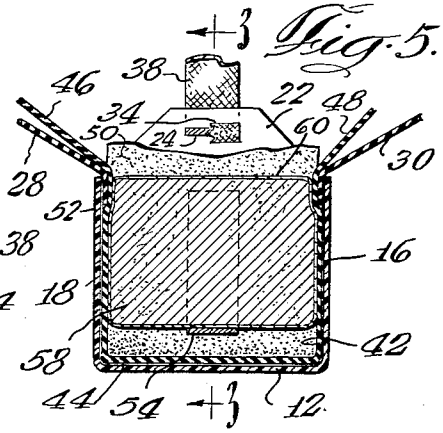


Fig. 3.

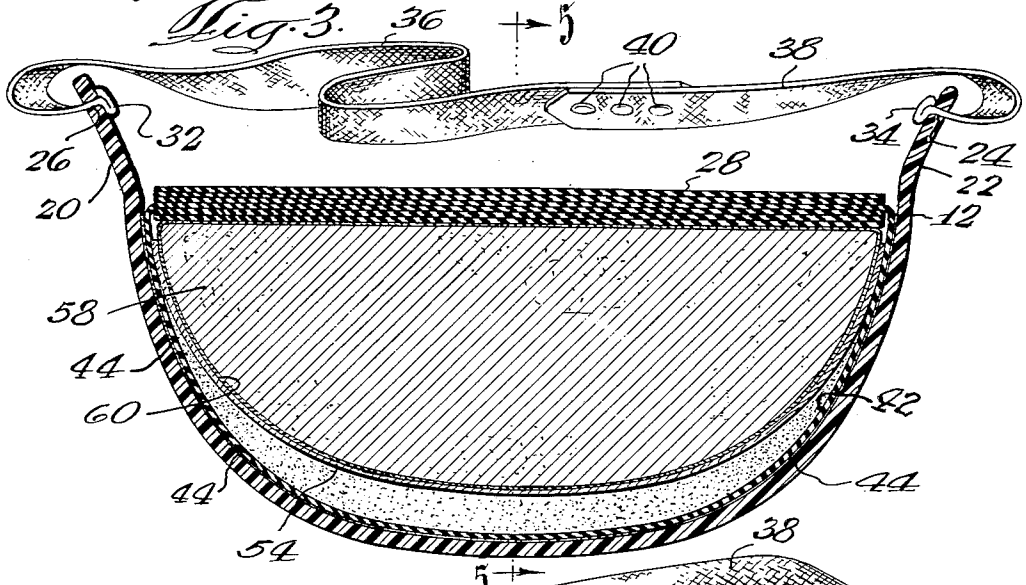
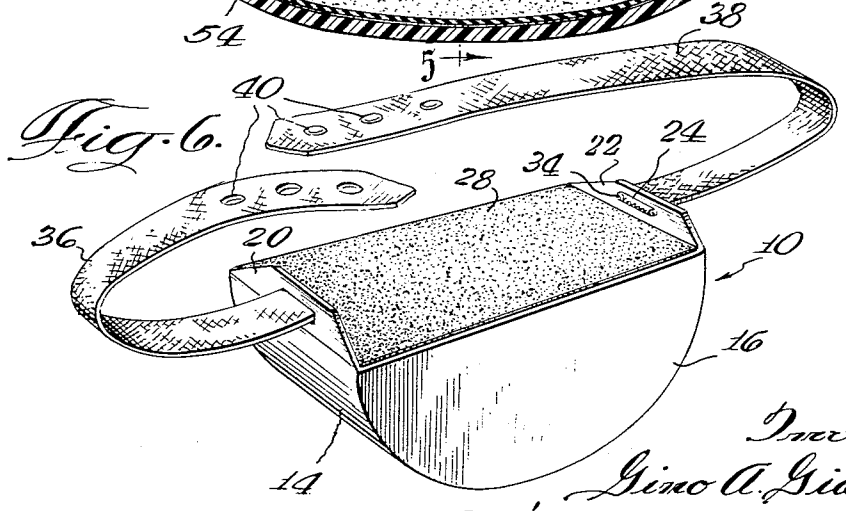


Fig. 6.



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LOCALIZED APPLICATOR FOR COOLING BODY TEMPERATURES

Gino A. Giardini, Chicago, Ill.

Application June 11, 1954, Serial No. 436,162

4 Claims. (Cl. 62—1)

This device relates to a device for applying a coolant to localized portions of the human body. More particularly, the invention comprises a container within which may be positioned a suitable coolant, such as solid carbon dioxide, more commonly known as "Dry Ice," or some similar cooling device. Specifically, the applicator is adapted for applying the coolant to localized portions of the body for either lowering the body temperature and preventing the ill effects which might otherwise accompany the same, or for therapeutic purposes in the case of swellings and the like.

The application of coolants such as ice or cold water to the human body for the prevention of heat prostration or for therapeutic purposes in the case of excessive body fever or swellings or other such body injuries, is well known. Heretofore such applications necessitated the use of ice packs or the like. However, ice packs are usually cumbersome, damp and messy, and for many other reasons, are not always suitable.

It is also well known that certain portions of the body, particularly those portions in which the blood vessels are positioned close to the surface, respond readily to coolants and effectively cool the body temperatures when so applied. For example, the application of coolants to the wrists or to the temples, is often prescribed in the case of heat prostration. The reason, of course, is the fact that at these points in the body, major blood vessels lie close to the surface.

It is therefore an important object of my invention to provide a practical coolant applicator which may effectively apply a highly desirable coolant to these parts of the body as well as other parts for the purpose of lowering the body temperature.

According to my invention, I provide a light-weight plastic receptacle in which may be positioned a coolant such as Dry Ice, which sublimes passing directly from the solid phase to the gaseous phase at such low temperatures that no liquid by-products result therefrom. The invention is further provided with suitable insulating means to prevent excessively rapid cooling of the portions of the body or skin to which the applicator is applied. My device is further designed so that it may be used effectively wherever necessary, including such body members as the wrist, eyes, forehead, nape of neck, or any other body areas where a coolant ordinarily may be effectively utilized.

I further provide a Dry-Ice pellet so designed and packaged that it may be handled and transported with minimum inconvenience and maximum utility.

A further object of the invention is to provide effective means within the container itself to maintain the coolant in the most effective position with respect to the skin or body portions.

Still another object is to afford an applicator device of non-metallic construction so as to minimize the danger from excessive cooling which would otherwise result in "burns."

Yet a further object is to provide a coolant applicator which may be worn on the body without excessively interfering with the actions or movements of the wearer.

Still a further object is to afford a coolant applicator of simple, inexpensive construction, yet attractive and most effective in performing the functions intended.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is a perspective view of the hand, wrist and arm portion of a human being with my applicator operationally positioned thereon;

Fig. 2 is an exploded view of the applicator showing the various members thereof including the pellet of Dry Ice;

Fig. 3 is an enlarged sectional view taken on the plane of line 3—3 of Fig. 5 of the drawings and viewed in the direction indicated;

Fig. 4 is a top plan view of the applicator with portions broken away to better illustrate the inside construction;

Fig. 5 is a transverse sectional view taken on the plane of line 5—5 in Fig. 3 of the drawings and viewed in the direction indicated; and

Fig. 6 is a perspective view of the assembled applicator with the Dry Ice pellet contained therein.

Turning now to the several figures of the drawings, reference numeral **10** indicates generally the applicator which comprises an outer plastic shell **12**, preferably of a fairly stiff construction. This shell may be of any suitable shape but in the embodiment chosen for illustration, is semi-circular with an arcuate wall **14** and flat side wall members **16** and **18**. Both ends of the arcuate wall project upwardly at the top to afford segments **20** and **22** within which may be formed slots such as **24** and **26**. The flat sides **12** and **14** project upwardly above the mouth of the case **12** thereby providing flaps such as **28** and **30**. These flaps are adapted to fold over, thereby covering the open mouth of the case.

The slots are adapted to accommodate therein the ends **32** and **34** of straps **36** and **38**. The ends **32** and **34** may be enlarged or folded over to prevent their being unintentionally or accidentally removed from the slots. The opposite ends of the straps **36** and **38** may be perforated or formed with suitable fastening devices such as shown as **40** in Figs. 3 and 6 of the drawings. These straps may be made of any suitable material and of any desired lengths so that they may be conveniently positioned to hold the device in position on any desired portion of the body.

To properly insulate the coolant from the body, a liner such as **42** is positioned within the outer casing **12** and may be permanently affixed as by a layer of cement **44** within the casing **12**. This liner may be made of rubber or rubberized cloth and is of essentially the same shape

but slightly smaller size than the outer casing **12**. It may be provided with a plurality of flaps such as **46**, **48**, **50** and **52**, which are designed to fold over the closed mouth of the liner. The liner is further provided with a rubber band **54** which is fastened at its ends to the arcuate wall portion **56** of the liner **42**, so that it is suspended between the upper sides of the arcuate wall **56** depending therein but spaced from the bottom of the liner, essentially as shown in Fig. 3 of the drawings. The purpose of this rubber band will become apparent as the description proceeds.

Within the liner **42** may be positioned the coolant pellet **58** which is shaped so that it may be readily inserted within the liner. This pellet may be wrapped in a suitable wrapper such as the paper wrapper **60** illustrated in Fig. 2 of the drawings. This wrapping not only retards the sublimation of the carbon dioxide, but, moreover, serves as an insulator, thereby enabling the convenient handling of the pellet.

In operation, after the pellet is positioned within the container so that it abuts the rubber band **54** within the liner **42**; the flaps **46**, **48**, **50** and **52** are then folded over the top of the pellet and the outer casing flaps **28** and **30** are likewise folded thereover. This, of course, is accomplished against the contracting tendency of the elastic rubber band **54** to return from its stretched position to its unstretched position. Thus the stretched rubber band tends to keep the pellet in its most effective position, namely against the flaps and thereby against the body portion of the wearer. Hence, despite the reduction in size of the pellet as it sublimes, it nevertheless at all times, is kept in its most effective and proximate position to the body of the wearer by the elastic band **54**.

After the pellet has been properly positioned and insulated within the various folds or flaps of the device, it is positioned properly and the bands **36** and **38** are positioned to encircle the arm or head or other member of the body so that it is able to perform the cooling functions intended.

It should further be noted that although the device has been especially designed for use in connection with a coolant such as solid carbon dioxide, other coolants may be utilized therein, including ice and even refrigerated metal pellets. It has been found that pre-cooled aluminum pellets are most effective and when properly positioned and insulated within the applicator, serve admirably in lowering the body temperature.

It will be apparent from the foregoing description that I have provided a most economical but effective device for applying coolants to strategic portions of the human body to cool the blood and thereby lower the body temperatures when necessary. This may be effectively utilized for preventing heat prostration and for treating prostration once it has occurred. It may also be effectively utilized in cases where excessive body fever is present. Likewise, it may be used therapeutically in the case of swellings and other body injuries. The device is so constructed that it minimizes, if not entirely eliminates, the danger of injury to the wearer by "burns" caused by excessive cooling when sharp coolants such as Dry Ice are employed. It is light in weight and provided with means for effectively mounting the applicator on any desired portion of the body and maintaining the same in position without interfering with normal body movements.

It is believed that my invention, its mode of constructions and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a

preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a coolant applicator of the character described, an insulated receptacle with foldable flaps adapted to accommodate therein a pellet of coolant, means for maintaining said pellet in its most effective cooling position, and adjustable means for maintaining said applicator on a localized portion of the human body, said first mentioned means comprising an elastic band suspended within said receptacle between a pair of opposed walls thereof, said elastic band positioned to bear against the outer surface of the pellet of coolant.

2. In a coolant applicator of the character described, an insulated receptacle with foldable flaps adapted to accommodate therein a pellet of coolant, means for maintaining said pellet in its most effective cooling position on a portion of the human body, and adjustable means for maintaining said applicator on a localized portion of the human body, said receptacle comprising an outer shell of stiff material having an open mouth providing ingress means for the pellet, said receptacle defined by a plurality of unitarily formed walls, the free edges of said walls comprising foldable flaps, a complementary-shaped liner of flexible heat-insulating material adhered within said outer shell.

3. A device for cooling the human body comprising a light-weight container; said container comprising a plastic outer shell defined by an arcuate wall and two integrally formed side walls, the upper edges of said side walls extending beyond the edges of said arcuate wall to provide cover flaps, straps affixed to said outer shell, fastening means provided on said straps and heat insulating means positioned within said outer shell said heat insulating means comprising an integrally-formed complementary-shaped flexible rubber liner, said liner having a plurality of flaps adapted to fold over for closing the mouth of said container and an elastic band suspended between a pair of opposed walls of said liner, said elastic band adapted to bear against the outer surface of a pellet of coolant to force the same toward said cover flaps thereby maintaining said pellet of coolant in close proximity to the body of the wearer.

4. A light weight coolant applicator comprising, a plastic outer shell defined by an arcuate wall and two integrally-formed side walls, the upper edges of said side walls extending beyond the edges of said arcuate wall to provide cover flaps, straps affixed to said outer shell, fastening means provided on said straps and heat insulating means positioned within said outer shell, said heat insulating means comprising an integrally-formed complementary-shaped flexible rubber liner, said liner having a plurality of flaps adapted to fold over for closing the mouth of said container and an elastic band suspended between a pair of opposed walls within said liner, said elastic band adapted to contract against the outer surface of said coolant thereby maintaining the same in close proximity to the body of the wearer.

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