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H. E. SIMMONS

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FILLER FOR CHEMICAL HEATING PADS

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Fig-1

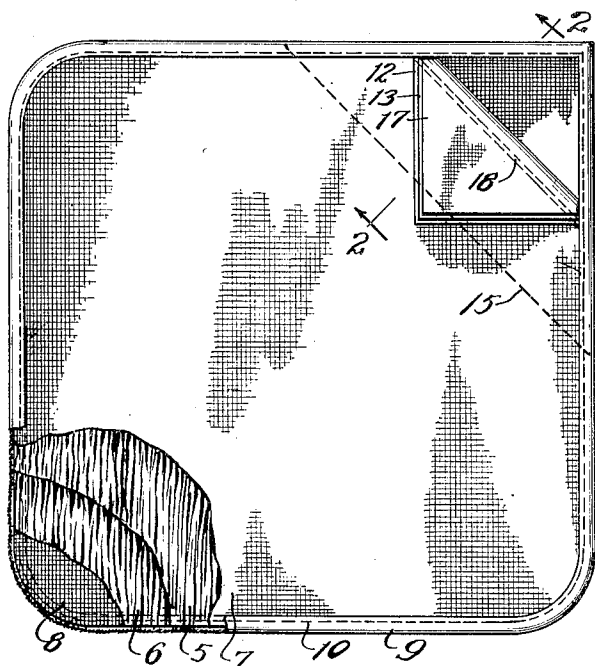
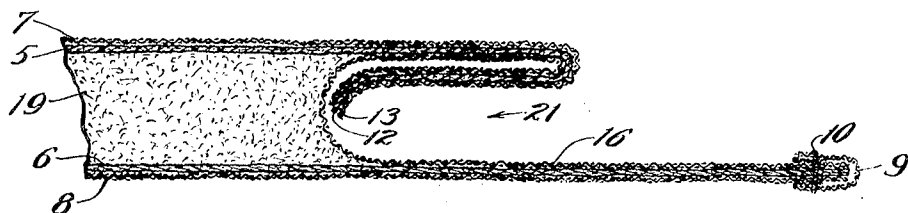


Fig-2



Fig-3



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FILLER FOR CHEMICAL HEATING PADS

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8 Claims. (Cl. 150—1)

This invention relates to an improved type of container or insert for use in a chemical heating pad.

In the use of chemical heating pads for therapeutic and like purposes, it is the usual practice to enclose the chemical heating mixture in a porous bag which is, in turn, enclosed in an outer envelope or casing, which is usually made of rubberized fabric or other waterproof material. The heat is produced by introducing water into the mixture in the inner bag, the entire unit being used much as in the manner of use of the ordinary hot water bottle or electric heating pad.

A filler bag suitable for use in a heating pad of this character must possess certain structural features which are essential to the successful generation of heat. It must be porous, so as to allow for free access of air to the chemical mixture, the generation of heat depending upon the oxygen in the air. While it must be sufficiently porous to allow for the free admission of air, it must be so constructed as to prevent passage of the heating mixture which ordinarily is in finely divided condition. The body of the bag must also have sufficient strength to withstand the weight of the materials which it contains, and also must not be injuriously affected by heat and any gases which may be evolved during the course of the reaction. A further requirement, not to be overlooked, is the cost of the materials used in the making of the bag, this being important, inasmuch as the bags have to be replaced by new units as soon as the heat generating capacity of the mixture has become exhausted.

One of the objects of the invention is to provide a container or filler bag which will satisfactorily meet the aforementioned requirements.

Another object of the invention is to provide in a bag of the character referred to a sealing device which may be folded in such a way as to first permit introduction of the heating mixture and afterwards the introduction of water without allowing opportunity for escape of the contents of the bag.

The invention is illustrated in the accompanying drawing in which:

Fig. 1 is a perspective view of a filler bag constructed according to the invention, a portion of the bag being broken away to show the internal structure;

Fig. 2 is a detail section taken on line 2—2 of Fig. 1, the sealing flap being shown in position to permit introduction of the heating mixture; and

Fig. 3 is a detail section corresponding to Fig. 2,

and showing the bag in filled condition, with the sealing flap positioned to prevent escape of the mixture from the interior of the bag.

The bag comprises an inner paper lining formed of a pair of matched pieces of paper 5 and 6; an outer cloth covering consisting of a pair of matched pieces of loosely woven fabric 7 and 8; and a cloth binder 9, extending completely around the matched inner and outer sections, and securing the adjacent edges thereof together by stitching 10.

The paper employed for the inner bag must be sufficiently porous to allow for the free passage of air to the reaction mixture. Kraft paper of high porosity has been found suitable for this purpose, the paper being preferably crimped, as shown, to augment the effective surface exposed to the air. A paper of this nature will allow the free passage of air but will effectively prevent passage of dust or finely divided portions of the heating mixture. The outer fabric covering is primarily used to give strength to the bag, paper alone not being sufficiently strong when moistened to withstand the weight of the materials in the bag. A 44—40 crinoline has been found suitable for use in making the outer fabric sections 7 and 8. Any inexpensive cloth may be used to form binder 9.

To provide for introducing the chemicals into the bag, I provide at one corner of the bag a filling opening 11 which is formed by leaving the corner edges of sections 5 and 7 free to form flaps 12 and 13, respectively. Opening 11 is sealed by a flap 14 which consists of a square piece of cloth having two of its edges held by stitching 10 in the corner of the bag adjacent section 6. The piece forming flap 14 is folded diagonally upon itself along line 15 to provide a triangular section 16 lying adjacent section 6, and a second triangular section 17 lying adjacent section 5. Section 17 is creased so as to fold along line 18, this also being the fold line for flaps 12 and 13.

The manner in which the sealing flap 14 is to be used will be understood from Figs. 2 and 3. In Fig. 2, the parts are positioned to permit introduction of the heating mixture through opening 11, it being noted that in this position flaps 12 and 13 are folded outwardly and triangular section 17 of sealing flap 14 is not folded along line 18. The mixture may be poured into the bag between lining section 5 and the adjacent section 17 of flap 14. After the desired amount of the mixture 19 has been introduced through the opening 11, the bag is sealed by folding flaps 12 and 13 and an equivalent portion of section 17

inwardly along line 18. The in-turned portion of section 17, which corresponds approximately in area to flaps 12 and 13, is covered by the latter to seal off opening 11.

5 It will be noted from Fig. 3 that after flaps 12 and 13 and a corresponding portion of section 17 have been thus folded or tucked inwardly, a pocket 21 is formed between flap 13 and the adjacent portion of section 16. The fabric from
10 which flap 14 is made is porous, so that after the filling opening has been sealed, water may be introduced through pocket 21 to start the generation of heat. If desired, sealing flap 14 may be made of a non-porous piece having a slit along
15 a portion of the diagonal fold line 15 to permit introduction of water through pocket 21 when the corner of the bag is held open. The slit formed in the creased portion of flap 14 acts as a valve for allowing passage of water into the
20 bag.

In practice the bag is made by first placing sections 5, 6, 7, and 8 together. Sealing flap 14, after being folded diagonally upon itself, is then placed in the corner between the two center
25 sheets 5 and 6, after which the several parts are stitched together, as shown.

By building up the bag from a paper lining and a loosely woven fabric covering, I am able to produce an inexpensive container which will prevent the passage of dust and finely divided materials through its sides and yet allow the free
30 passage of air. The design of the sealing means is particularly convenient, inasmuch as it allows the bag to be filled with the heating mixture and then sealed to allow for free handling, without
35 danger of loss of the chemicals by leakage. No further manipulation of the sealing means is necessary when the bag is to be used, it being merely necessary to grasp the corner of the
40 bag to spread the pocket 21, which then acts as a funnel for receiving the water.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood
45 therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

What I regard as new and desire to secure by Letters Patent is:

50 1. A flexible container for holding a finely divided chemical heating mixture adapted to evolve heat when moistened in the presence of air comprising an inner lining of porous paper, an outer covering of reinforcing material secured
55 along its edges to the edge portions of the lining, the adjoining edges of said paper lining and covering being open at one corner to provide an opening for admitting the heating mixture, and a sealing flap secured on the inner face of one of said
60 open corner sections, a portion of said flap being foldable inwardly with the other open corner section to form a seal for the filling opening.

2. A bag-like container for holding a finely divided chemical heating mixture comprising opposed flexible wall sections, the adjoining edges
65 of which are open at one corner to provide an opening for admitting the heating mixture, and a sealing flap inserted between said wall sections and secured to the inner face of one of said open
70 corner sections, said flap being folded upon itself, a portion of said folded-over section being foldable inwardly with the other open corner section to form a seal for the filling opening.

3. A bag-like container for holding a finely
75 divided chemical heating mixture adapted to

evolve heat when moistened in the presence of air comprising opposed flexible wall sections, the adjoining edges of which are open at one corner to provide an opening for admitting the heating mixture, and a sealing flap inserted between said
80 wall sections and secured to the inner face of one of said open corner sections, said flap being folded upon itself, a portion of said folded-over section being foldable inwardly with the other open corner section to form a seal for the filling opening,
85 said flap being formed of a porous material to permit introduction of water through the pocket formed thereby when folded to seal the filling opening.

4. A flexible container for holding a finely divided chemical heating mixture adapted to evolve heat when moistened in the pressure of air comprising an inner paper lining having sufficient porosity to allow free passage of air to the interior of the container, an outer fabric
90 covering enclosing said paper lining, one corner of the container having its adjoining edges free to provide an opening for admitting the heating mixture, and a sealing flap secured to the inner face of one of said open corner sections, said flap
95 being folded upon itself, the portion of the folded-over section of said flap lying adjacent the other open corner section being folded inwardly with the latter to form a seal for the filling opening.
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5. A flexible container for holding a finely divided chemical heating mixture adapted to evolve heat when moistened in the presence of air comprising an inner paper lining having sufficient porosity to allow free passage of air to the interior of the container, an outer fabric covering enclosing said paper lining, one corner
105 of the container having its adjoining edges free to provide an opening for admitting the heating mixture, and a sealing flap secured to the inner face of one of said open corner sections, said flap being folded upon itself, the portion of the folded-over section of said flap lying adjacent the other open corner section being folded inwardly
110 with the latter to form a seal for the filling opening, said flap being formed of a porous material to permit introduction of water through the pocket formed thereby when folded to seal the filling opening.
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6. A bag having walls forming a closed receptacle except for a filling opening, a portion of one of said walls adjacent said opening being free and forming a flexible flap, and a flexible closure member inserted between said wall sections and secured to a wall of the bag and
120 adapted to extend across the filling opening and to interfold with said flap to close the bag, said member being separable from said flap when not interfolded therewith to provide a passage through which solid contents may be inserted into
125 or removed from the bag.

7. A bag having walls forming a closed receptacle except for a filling opening, a portion of one of said walls adjacent said opening being free and forming a flexible flap, and a flexible closure member inserted between said wall sections and secured to a wall of the bag and adapted to extend across the filling opening and to interfold with said flap to close the bag, said member being
130 separable from said flap when not interfolded therewith to provide a passage through which solid contents may be inserted into or removed from the bag, said closure member being porous to permit the passage of liquid therethrough
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after the bag is closed by the interfolding of said member with said flap.

8. A flexible container for a finely divided chemical heating mixture adapted to evolve heat when moistened comprising, a bag having an opening between the opposite walls thereof, and a flexible member of porous material permanently attached to one of said walls and extending into the container, said member having a free end separably arrangeable upon the oppo-

site wall of the container to close said opening, in which position said member forms a distributing chamber through which water may be introduced into the mixture to set up a heat reaction when desired, the free end of said member when separated from said container wall leaving a passageway through said opening for insertion or removal of the contents of the container.

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