Aug. 20, 1935. C. F. SLATER 2,011,832

COLD PACK

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Fig. 1

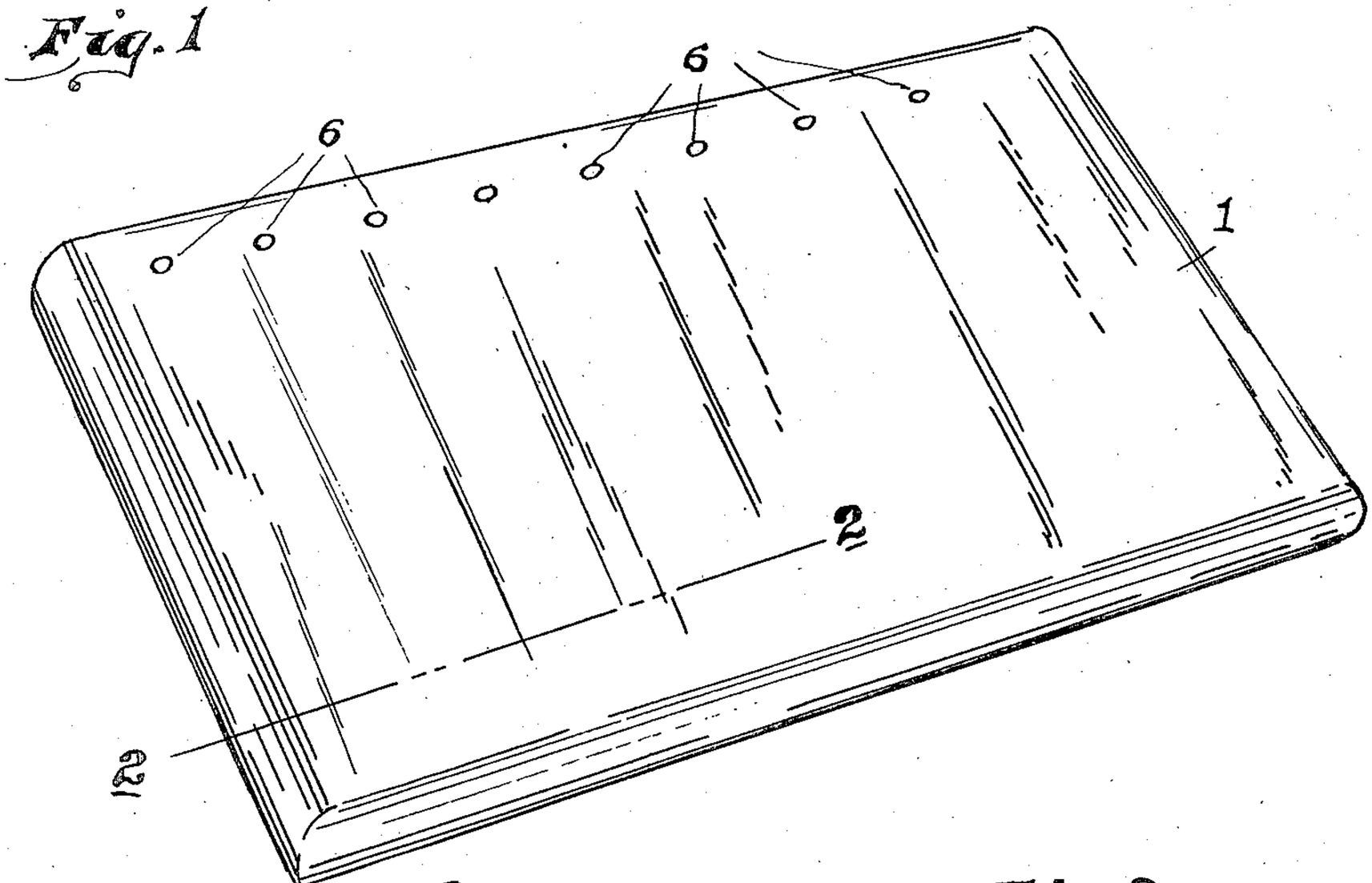
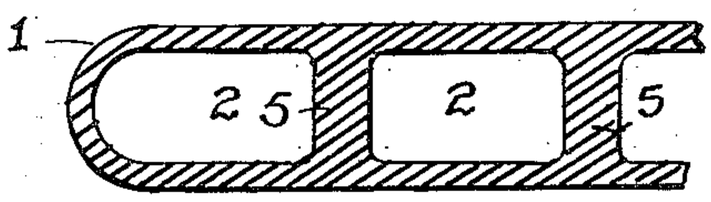


Fig. 2.

Fig. 3



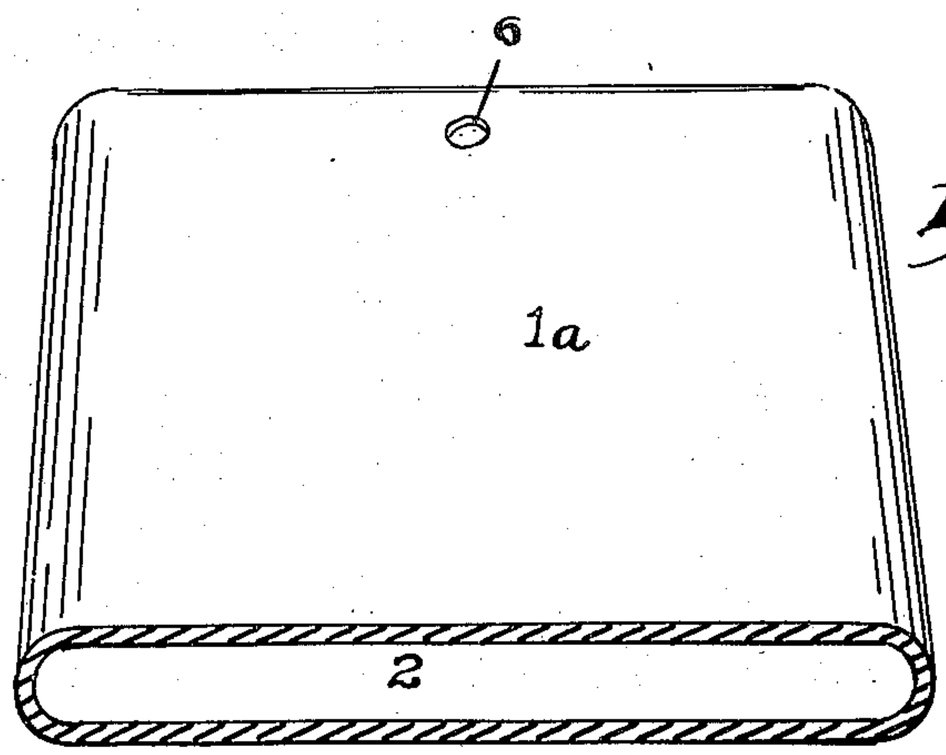


Fig. 4.

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COLD PACK

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2 Claims. (Cl. 128—258)

Cold packs are laid on or adjacent to portions of the human body for medicinal or curative purposes, as for instance to relieve pain or to reduce or prevent inflammation.

In the present practice hot water bottles or ice bags, provided with removable caps, are filled with broken ice or ice and water and applied as cold packs.

The intention, of course, is to renew the application as soon as the ice melts and the temperature of the water rises to approximate that of the body, but the renewal of the application is attained with considerable labor and inconvenience. Thus ice must be cracked and the bag emptied and refilled.

There is also danger of leakage, wetting the bedclothes and sometimes causing serious results to the patient.

The leakage usually occurs about the cap, the threads being necessarily coarse and insufficient care being frequently exercised in tightening the cap after refilling.

The object which I have in view is the provision of a cold pack having a moistureproof and flexible outer envelope within which is permanently entrapped a body of refrigerant such, for instance, as water, brine or other suitable liquid, and which preferably when subjected to suitable temperatures will assume a solid or semi-solid state and which may then be applied as a cold pack.

After an application long enough to raise the temperature of the refrigerant so that the cooling effect is no longer such as desired the cold pack is removed and a freshly refrigerated cold pack is substituted.

In case the chilling temperature to which the cold pack is submitted is not sufficient or the refrigerant is such that it does not assume a solidly frozen state, the internal cavity of the envelope may extend for its full capacity, but where the refrigerant employed is such as to be frozen solid, the flexibility of the cold pack would be destroyed if the envelope be provided with an uninterrupted internal cavity.

Thus, for instance, if the refrigerant be water and in preparing the cold pack the water be frozen into a solid sheet occupying substantially the entire internal area of the envelope, it would be impossible for the cold pack to accommodate itself to the contour of the human body.

Therefore in the preferred form of my improved cold pack the interior of the same is divided into a plurality of chambers separated by flexible partitions which act as hinges and thus enable the cold pack to accommodate itself to the contour of the body.

Other novel features of construction and arrangement of parts will appear from the following description.

In the accompanying drawing wherein I have illustrated a practical embodiment of the principles of my invention, Fig. 1 is a view in perspective of the preferred form of my improved cold pack.

Fig. 2 is an incomplete cross section of the same taken along the line 2—2 in Fig. 1.

Fig. 3 is a similar view showing a modification.

Fig. 4 is a sectional view showing the cold pack provided with a continuous internal cavity.

Referring first to Figs. 1, 2 and 3, 1 represents a flexible envelope which is preferably formed of rubber with fabric embedded therein. Said envelope is provided with a plurality of internal chambers 2, which chambers are preferably run transversely of the cold pack from side to side, and which chambers are connected by moistureproof partitions. In Fig. 2 I have shown the partitions at 3 formed in pairs and separated from each other by air spaces 4. In Fig. 3 I have shown the partitions made of much greater width as at 5. The partitions are formed of the same material as the envelope, to wit, preferably rubber reinforced with fabric.

Entrapped in each of the chambers 2 is a suitable liquid refrigerant. This may be of any desired character, such as water or brine, or any other liquid which may be found suitable for the purpose. The liquid is loaded into the chambers and the orifices are then permanently plugged as at 6 in Fig. 1. These plugs may be vulcanized so as to prevent the escape of the liquid from the chambers. Where the partitions are duplex, as at 3, in Fig. 2, the spaces 4 are preferably not filled with liquid but are dead air spaces.

It is evident that in case the liquid in the chambers 2 is frozen solid the cold pack will still be flexible owing to the partitions which act as hinges.

The thicker partitions 5, illustrated in Fig. 3, give the same hinge action without the use of the air spaces 4.

In Fig. 4 I have shown the envelope 1*a* provided with a single chamber 2 for substantially the entire area of the envelope. In this case if the liquid be frozen solid the cold pack will not accommodate itself to the contour of the body, but if the liquid be simply chilled to a low temperature or be refrigerated to a semi-solid or slushy condi-

tion there will be sufficient flexibility to accommodate the cold pack to the body.

In the case of Fig. 4 the liquid is loaded into the container and then permanently sealed therein, as by means of the plug 6 which may be vulcanized any shape.

In the use of my improved cold pack two may be employed, one being applied to the patient while the other is placed in a suitable refrigerating apparatus, for instance a domestic refrigerator or ice box.

It is apparent that my improved cold pack has marked advantages over the ice bags or water bags now in use. There is no danger of leakage and the inconvenience of cracking ice and refilling the ice bags at intervals is thus avoided.

I have shown my cold pack as a relatively flat oblong bag, but it will be understood that it may be made in various shapes to suit various purposes. Thus it may be contoured to fit around the throat or other portions of the body.

In Fig. 2 I show a flexible cover 7 in which my cold pack is inclosed before it is refrigerated to prevent the condensation of moisture on the exterior surfaces of the cold pack. Such a cover should be formed of moistureproof material and not likely to freeze to or adhere to the cold pack so that the cover could be removed when the cold pack has been refrigerated and is to be used. The cover may be made of any suitable moistureproof material, such for instance as sheet rubber or any suitable rubberized material.

I claim:—

1. A flexible therapeutical device arranged to permanently contain a refrigerant fluid, comprising a rubber container made up of a series of permanently isolated and independent substantially rectangular fluid containing compartments having double side walls separated by substantial air spaces and extending from the lower to the upper wall of the container and integral therewith thereby providing a flat continuous exterior surface, said side walls being sufficiently thick and resilient to permit the container to conform to irregular surfaces to which it is applied when the refrigerant is frozen.

2. A flexible therapeutical device arranged to permanently contain a refrigerant fluid, comprising a rubber container made up of a series of permanently isolated and independent substantially rectangular fluid containing compartments having double side walls separated by substantial air spaces and extending from the lower to the upper wall of the container and integral therewith thereby providing a flat continuous exterior surface, said side walls being provided with an aperture to assist the container to conform to irregularities in the surface of application when the refrigerant is frozen and to allow for lateral expansion of said frozen refrigerant.

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