Feb. 6, 1962 A. CALVARESI 3,020,183

PROTECTIVE INSULATING MAT

Filed May 13, 1959

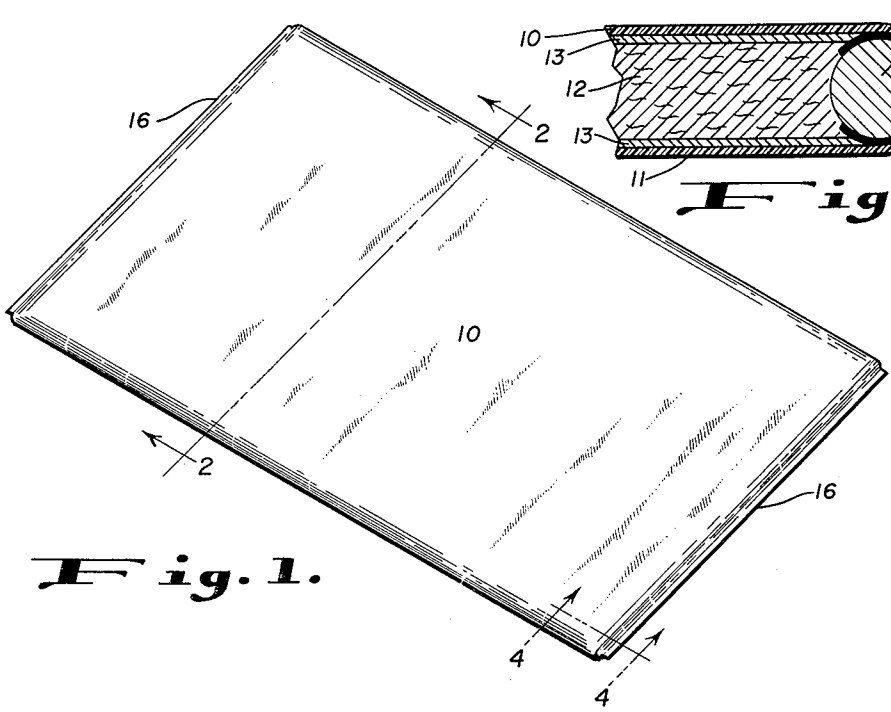

Fig. 1.

Fig. 3.

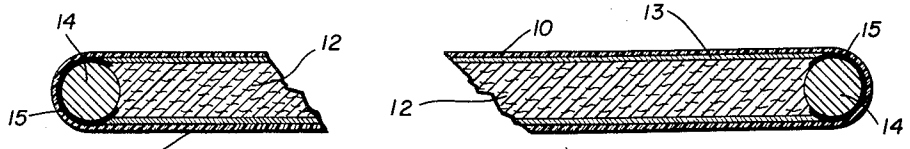

Fig. 2.

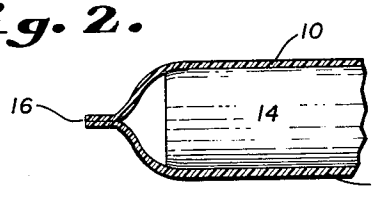

Fig. 4.

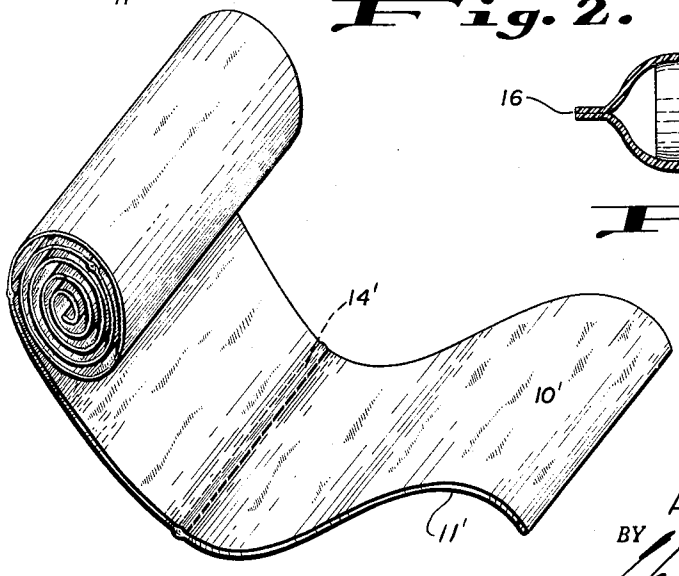

Fig. 5.

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United States Patent Office 3,020,183 Patented Feb. 6, 1962

3,020,183

PROTECTIVE INSULATING MAT

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Filed May 13, 1959, Ser. No. 812,879
1 Claim. (Cl. 154—44)

This invention relates to thermal insulating members selectively applicable to and removable from protective relation with areas of diverse particularity, and more especially to thermal insulating members formed as mats adapted for manual usage, and has an object to provide a novel and improved organization of elements constituting a practical and operatively-efficient protective insulating mat.

A further object of the invention is to provide a novel and improved protective insulating mat expedient of simple and economical production in diverse embodiments and desired sizes from readily-available materials.

A further object of the invention is to provide a novel and improved protective insulating mat of lightweight and convenient manipulability in relation to effective area and protective properties.

A further object of the invention is to provide a novel and improved construction and unitary correlation of elements constituting a protective insulating mat of pronounced use efficiency and wide practical adaptability.

A further object of the invention is to provide a novel and improved protective insulating mat particularly adapted for advantageous use by commercial gardeners and truck farmers.

A further object of the invention is to provide a novel and improved protective insulating mat that is durable under rigorous and adverse use conditions, that is amenable to quick and inexpensive repair, and that applies with practical advantage the properties of material products forms recently become available.

With the foregoing and other objects in view, my invention consists in the construction, arrangement, and operative combination of elements as hereinafter set forth, pointed out in my claim, and illustrated by the accompanying drawing, in which—

FIGURE 1 is an isometric view of a typical embodiment of the invention as organized and extended for practical use.

FIGURE 2 is a transverse section, on a relatively enlarged scale and with an intermediate portion broke away to conserve space, through and taken substantially on the indicated line 2—2 of FIGURE 1.

FIGURE 3 is a fragmentary, detail section, on a further enlarged scale, through the structural arrangement shown at the right-hand end of FIGURE 2

FIGURE 4 is a fragmentary, detail section, on the same scale as FIGURE 3, taken subsantially on the indicated line 4—4 of FIGURE 1.

FIGURE 5 is a somewhat diagrammatic representation of an alternative structural arrangement appropriate to give effect to the principles of the invention.

It is, in many and diverse activities, occasionally imperative to protect exposed surfaces and areas from the effect of temporary alterations in temperature. Incident to the techniques of raising vegetables for the commercial market it is economically essential that seedlings propagated in hot beds, and the equivalent, be protected from damaging reaction to lowered temperatures accompanying belated winter storms and from the chill frequently characterizing nights during the spring season. The exigencies of many other activities, such as the installation of cement and concrete walks, pavements, aprons, and foundations, are attended by the occasional necessity for protectively covering exposed surfaces to obviate or to minimize damaging effect thereon deriving from an inopportune change of temperature in either

direction. The conditions establishing occasion for the use of protective insulating covers have been long prevalent and have inspired the development and use of various expedients attended by variable practical success, and it is hence to the provision of a novel, improved, practical, efficient, and economical protective insulating mat adapted for production in desired sizes and particular embodiments suited to specific uses that the instant invention is directed.

As typified by FIGURES 1–4, inclusive, the principles of the invention may be applied to and given effect in a rectangular mat unit of substantial area adapted to be rolled and folded to compact form and expedient of manipulation by a single individual in consequence of the light weight in proportion to size resulting from its novel construction. Significant to attainment of its purposes and realization of its advantages, the mat unit of the invention is enclosed within and completely covered by strong, flexible, substantially non-extensible, air and water impermeable sheet material of expedient nature, such as the synthetic resins and so-called plastics commercially available, organized in any appropriate manner to constitute an envelope of a preferred area having coextensive, complementary, exposed surfaces **10** and **11**. The mat surfaces **10** and **11** may be initially separate and subsequently united at their corresponding long margins in any practical manner to complete a flat envelope open at its ends, or, alternatively, when suitable material is available in tubular form of acceptable size, the envelope may be constituted as an open-end length of tubular material flattened to develop the surfaces **10** and **11** in closely-spaced relationship, as is indicated by FIGURES 2 and 3 of the drawing. However particularly constituted, the envelope characterized by the surfaces **10** and **11** houses a filler unit **12** of uniform thickness and of an area adequate to substantially fill the envelope with the surfaces **10** and **11** thereby smoothly extended. As a feature of the invention, the filler **12** is a readily-flexible unit having a low coefficient of heat conductivity and hence advantageous insulating properties, and is resilient to a degree resistive of permanent deformation under compression, all of which properties are found to be evidenced by glass fiber webs of nominal cost and ready availability. Matted or felted glass fiber material having normally exposed surfaces tending to lacerate and damage non-rigid surfaces wherewith they are engaged, it is a further feature of the invention that the parallel exposed faces of the filler **12** coactable with the surfaces **10** and **11** wherebetween the filler is introduced be covered by protective sheets **13**, of tough, heavy paper, or the equivalent, functioning to separate the material of the filler **12** from direct lacerating contact with the surfaces **10** and **11** when the assembly of filler and envelope is completed.

The mat unit comprised from the envelope typified by the surfaces **10**, **11**, and the filler **12** therebetween, is organized for its intended use in a practical and convenient manner through the provision of stiff rods **14** of lightweight material disposed longitudinally of and within the envelope in engagement with and between the long side margins of the filler **12** and envelope, to which latter said rods are desirably secured by means of an adhesive coating **15** disposed to interbond contacting areas of each rod and the envelope portion embracing the same. As will be apparent, the rods **14** may be solid, as represented, tubular, or of any other appropriate structural form and particularity, the function of the rods **14** being to maintain length extension of the mat and to serve as spreaders useful in the placing and manipulation of the mat unit.

The filler **12** is inserted within the envelope and between the surfaces **10** and **11** thereof in association with rods **14** as shown and described in a length of filler and rods slightly less than that of the envelope, whereafter

the otherwise open ends of the envelope are closed and sealed, as at **16**, to complete the mat unit ready for its intended service; such sealing of the envelope ends being readily accomplished through the application of heat in a usual and well-known manner when the material of the envelope is of thermo-plastic nature.

Constituted as shown and described, the improved mat unit is a practical facility employable in multiple to temporarily cover and protect areas subject to transient or intermittent temperature variations. Conveniently foldable or rollable parallel to and by means of the rods **14**, the unit is compact for storage, transportation, and handling, and is marked by pronounced facility of use resulting from the presence of the rods **14** and their extending end stiffening effect upon the mat wherewith they serve as grips permitting a single individual to place and position the unit. The nature and properties of the glass fiber filler promote high insulating performance of the unit while preserving a desirable degree of flexibility therein, and such properties of the filler are preserved for use by the impermeable nature of the envelope confining the same; it being quite impossible for moisture to collect within the filler where it might adversely increase the weight of the unit, lessen the insulating properties of the filler, and be subject to freezing at low temperatures. Should the surfaces **10** and **11** of the envelope be torn or damaged, repair is a simple operation performable at the site of mat use through the agency of available patching means or facilities, and with ordinary care the mat units exemplifying the principles of the invention are characterized by long-enduring life of repetitious practical use.

As typified by FIGURE 5, the principles of the invention may be given effect in an elongated sheet unit appropriate for certain specific uses, such as the covering of freshly-laid cement or concrete. Instead of a single envelope comprised from the surfaces **10** and **11**, complementary sheets **10'** and **11'** of any preferred width and length and of material the same as that distinguishing the surfaces **10** and **11** may be marginally conjoined at their long sides in any suitable manner to envelope a succession of marginally-juxtaposed fillers **12** sandwiched between their protective sheets **13** and separated one from the other by means of rods **14'**, in all respects equivalent to the rods **14**, transverse of the resulting assembly in a preferably-uniform, spaced parallelism. Manifestly, the embodiment of the invention according to FIGURE 5 functions as a protective insulation cover exactly as explained in connection with the single unit mat as above set forth and is characterized by facility of handling and placement resulting from the provision of the rods **14'** and is amenable to rolling or folding on lines transverse of its length to develop the obvious and corresponding advantages.

Since changes, variations, and modifications in the form, construction, and arrangement of the elements shown and described may be had without departing from the spirit of my invention, I wish to be understood as being limited solely by the scope of the appended claim, rather than by any details of the illustrative showing and foregoing description.

I claim as my invention:

A protective insulating mat comprising a flat, rectangular, marginally-sealed envelope of tough wear- and water-resistant, flexible, air and water impermeable material, a flat, flexible, fibrous filler unit of high heat-insulating capacity coextensively within said envelope, means flexibly inhibiting lacerating contact of adjacent envelope and filler unit surfaces, and operatively-rigid rods secured in spaced parallelism interiorly along opposite outer edges of said envelope, wherein said rods are smoothly cylindrical in adhesively-bonded coaction with envelope edge zones thereby extended.

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