

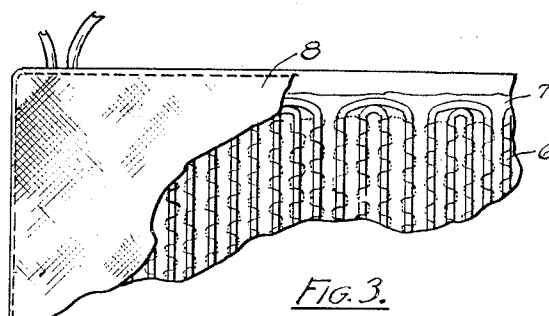
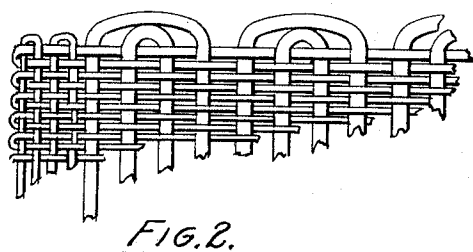
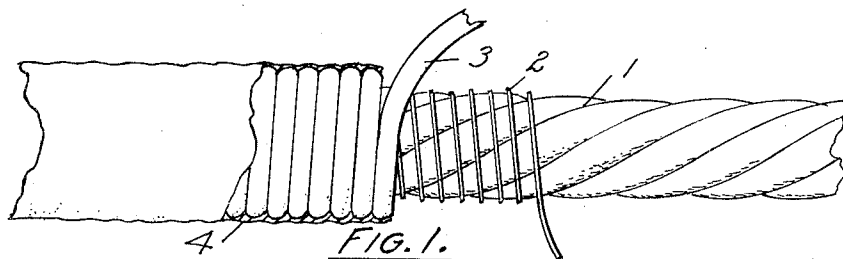
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HEATING PAD AND A PROCESS FOR MAKING SAME

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HEATING PAD AND A PROCESS FOR MAKING SAME

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This invention relates generally to electrical heating elements and more particularly to electric heating pads.

In the manufacture of electrically heated pads, it is customary to wind the resistance wire helically around a core and finish it with a rowing or yarn outer cover or insulation. This resistance element is affixed to a heat resistant cloth or webbing which in turn is enclosed in an outer woolen or fabric cover. In order to make these pads water and moistureproof, it is customary to enclose these pads in a rubber bag. These rubber bags are very stiff and do not stand any hard usage thereby making them very short lived. These rubber bags are likewise not repairable and they are easily punctured by pins and the like. The yarn which is used to insulate and cover the resistance wire in the pad becomes distorted and unraveled and the fibers of the yarn are dismembered and torn loose from the close weaving of the insulated wire when it is woven into a pad. In covering the resistance wire itself, great tensional force is necessary in order that the wire may be insulated and this results in the breaking of the fibers of the yarn used for covering. The resultant heating pad produced by the old method had many weak spots as well as a number of spots which had the insulation torn off. The appearance of the pad was likewise unsightly because of the fringe or projecting fibers apparent on all portions of the pad. These prior pads were not waterproof. The use of glass yarn in these prior pads was impractical because there are at least 200 fibers in one strand of glass yarn and these would unravel or break upon close weaving or winding of the yarn. Glass yarns will not withstand the heavy tensional forces placed upon them during the winding and weaving of the yarn and the friction resulting from the winding and weaving operations necessary breaks the fibers and leaves a pad which is weak, unsightly in appearance because of the projecting frizzled fibers, and poorly insulated. A pin or any sharp instrument may be injected into these clothes or yarns causing electrical shock to the patient using it and thereby making these prior pads a danger when used with sick patients. These prior pads were not safe because of the fire hazard created when a resistance wire broke. Body perspiration and uric acid very quickly deteriorated these prior pads.

It is, accordingly, an object of our invention to overcome the above and other defects in heating pads and more particularly to provide a heating pad which is efficient and safe in operation,

cheap in cost, water and airproof, easy to repair, and maximum in life.

Another object of our invention is to provide a heating pad which has a smooth exterior surface.

Another object of our invention is to provide a means permitting the use of glass or other non-inflammable yarns in the manufacture of heating pads.

Another object of our invention is to provide a heating pad which prevents injection of a pin or sharp instrument thereby preventing electrical shocks to the person using the pad.

Another object of our invention is to provide a heating pad which will automatically extinguish arcs produced by the resistance wires thereby eliminating a fire hazard.

Another object of our invention is to provide a heating pad which is water and airproof without the use of a rubber bag.

Another object of our invention is to provide a process whereby glass or other non-inflammable yarns may be used in the manufacture of heating pads and the like.

Other objects of our invention will become evident from the following detailed description, taken in conjunction with the accompanying drawing, in which

Fig. 1 is a side elevational view with parts broken away of our insulated resistance wire made according to our process.

Fig. 2 is a fragmentary view of a heating pad wherein the insulated resistance wire is woven in with other non-inflammable yarn.

Fig. 3 is a fragmentary view of a heating pad in which the resistance wire is disposed between fabric cloths or the like of glass or other non-inflammable material.

Fig. 4 is a fragmentary view of a heating pad having resistance wires secured to a fabric cover or the like.

In the manufacture of an insulated resistance wire for use in heating pads and the like using glass or other non-inflammable yarn of a fibrous nature for the insulating covering according to our invention, one form of which is shown in Fig. 1, a core 1 has a resistance wire 2 wound therearound over which glass or other non-inflammable fibrous yarn 3 is wrapped or wound. The whole insulated wire has applied thereto a viscid material 4 which hardens upon exposure to air. This viscid material combines with the fibers of the yarns 3 and binds them together to make the whole insulated wire strong and durable enough to use for any purpose. It is intended to weave the whole insulated wire with

other glass or non-inflammable fibrous yarn as shown in Fig. 2 although this insulated wire may be used in many other combinations. In Fig. 3 the insulated wire 6 is secured between two fabric cloths 7 and 8 of glass or other non-inflammable material. Fig. 4 shows a resistance wire 10 secured to a fabric cloth or pad 9 made of glass or other non-inflammable material.

When the yarn 3 is wound or wrapped over the core 1, it is evident that a great tensional force is necessary to perform this operation and much friction exists. It has been found that glass or other non-inflammable fibrous material cannot be used for the yarn covering to produce a practical and workable bag since a bag made from this yarn is weak, unsightly in appearance, and the fibers of yarns are frayed from the weaving and winding. By applying the viscid material 4, the yarn may be closely woven or wound without a single fiber of the yarn becoming frayed, broken, or dismembered. The application of this material also renders the insulated wire fireproof, waterproof, and shockproof. When glass yarn is used, which is the usual case, no pin can be injected into it as in the pads now on the market and therefore no shock can be transmitted to the patient using the pad. Another important item in the use of glass yarn for heating pads is the safety from fire upon breaking of the resistance wire. With the use of glass yarn, the wires will not cause an arc because the glass will melt and smother the arc immediately. After the resistance wire is woven into a webbed pad with other glass or non-inflammable yarn, the whole pad is again subjected to an application of the viscid material which hardens upon exposure to air. It will be understood that the core 1 may be dipped into the viscid material before or after the resistance wire is wound thereon if this is desired without departing from the spirit of the invention. It will be further understood that any form of resistance wire may be used and it is not necessary that a core be used.

It will be evident from the above that any of the different constructions of heating pads may be utilized with the resistance wire as shown in Fig. 1. In all of these constructions, the resistance wire with the glass or other non-inflammable fibrous yarn wound therearound is first combined with a material of a viscid nature which hardens upon exposure to air and when this insulated resistance wire is woven or other-

wise secured to a pad or fabric, the whole pad is again dipped into the viscid material. The pad is thereby rendered waterproof, acidproof, airproof, and shockproof.

The material which has been found most desirable for binding and otherwise strengthening the fibers of the glass or other non-inflammable fibrous yarn in our heating pads is a specially processed rubber latex, or artificial rubber latex, which is a viscid liquid and attains a certain hardness upon exposure to air. A viscid varnish which hardens upon exposure to air has also been used for this purpose.

It will be apparent from the foregoing description that we have produced a heating pad which is fireproof, waterproof, shockproof, airproof, and otherwise durable besides being resistant to uric acid and body perspiration. It is the only method by which glass or other non-inflammable fibrous yarn may be used in a heating pad with any degree of safety, comfort, and practicability.

Various changes may be made in the specific embodiment of the present invention without departing from the spirit thereof, or from the scope of the appended claims.

What we claim is:

1. A flexible, water-proof, acid-proof, fire-proof, shock-proof electrical heating pad resistant to puncture by sharp or pointed instruments comprising a core, resistance wires wound around said core, a fibrous glass yarn wound around said core for covering said resistance wires, a fibrous yarn into which said fibrous yarn covered resistance wires are woven, a latex compound covering the fibrous yarn covered resistance wires, and a second coating of latex compound covering the whole heating pad, the said latex compound being hardened upon exposure to air.
2. A method of manufacturing a flexible, water-proof, fire-proof, acid-proof, shock-proof electrical heating pad comprising the winding of a resistance wire on a core, covering said core and resistance wire by winding a fibrous glass yarn therearound, coating said core, wire, and yarn with a latex compound which hardens upon exposure to air, weaving said resistance wire into a yarn pad and combining said woven pad with a latex compound which hardens upon exposure to air.

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