May 4, 1943. J. A. SCHULTZ 2,318,109

HEATING PAD

Filed Aug. 2, 1941

Fig. 1.

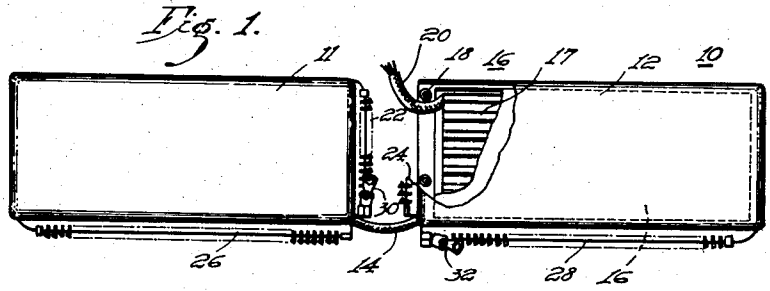


Fig. 2.

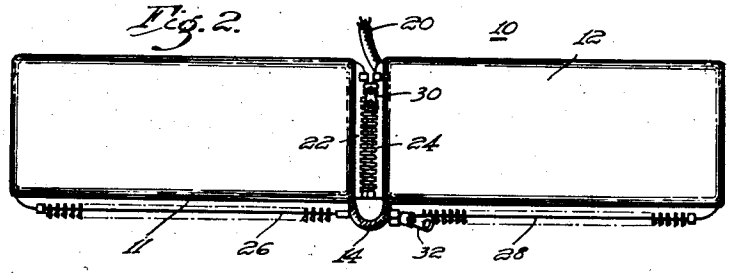


Fig. 3.

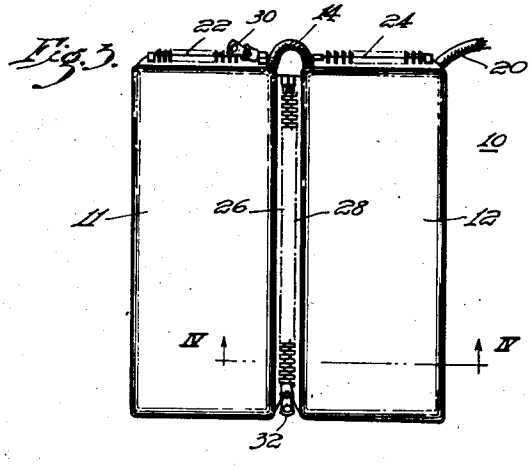
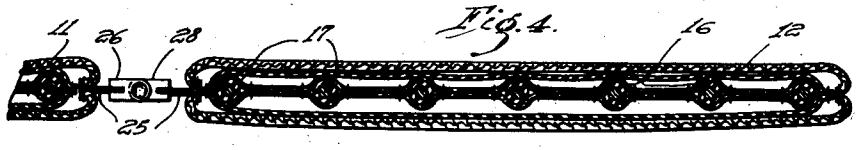


Fig. 4.



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Patented May 4, 1943

2,318,109

UNITED STATES PATENT OFFICE

2,318,109

HEATING PAD

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Application August 2, 1941, Serial No. 405,127

5 Claims. (Cl. 219—46)

My invention relates to heating or warming pads and, more particularly, to the provision of good heat conduction between sections of plural-sectioned heating pads.

Plural-sectioned heating pads which may be arranged into various suitable shapes or combinations have been heretofore used and are highly desirable from the standpoint of effective and efficient use by the public. However, such heating pads must of a necessity have portions thereof which do not have a heating source or supply immediately adjacent thereto. These portions are specifically along the edges which are used to join the various sections of the heating pad together. In other words, such sectional heating pads, without my present improvement, will have uneven surface temperatures when attached together. This fact is highly undesirable in that a heating pad is primarily used for therapeutic reasons, at which time it is necessary, from the standpoint of comfort and effectiveness, to have as uniform a temperature as possible over the area of the patient to which the heating pad is applied. Various fastening methods, which to an ineffectively small degree, if any, overcome this objection, have been used heretofore. Some of these methods are as follows:

(1) Using cooperating snap fasteners disposed along the edges of the sections. However, heating pads, the sections of which are attached in this manner, have a portion of their contiguous edges not firmly in contact with each other. In other words, there are spaced portions of the adjacent edges of the heating pad sections which are not in contact with each other so as to readily conduct heat therebetween. Moreover, the good heat-conducting (metal-to-metal) portions in such a construction are, of course, very minute.

Various attempts have been made to eliminate the portion of the adjacent edges of the sections of the heating pad which are not in contact with each other, so as to provide better heat conduction therebetween. Should it be desired to provide a greater number of snap fasteners along the edges of the sections, it is possible to improve the heat conduction between the various sections. However, even by increasing the number of snap fasteners placed along the edges of the heating pad sections, there would still remain space between such fasteners which would not provide a path of good heat conduction between the sections. The spaces between the fasteners and along the edges could not, therefore, be eliminated. Accordingly, the temperature along the joined edges would not be uniform and would be materially below that of the pad proper. Moreover, the amount of labor and time required in using a large number of such fasteners is detrimental from the standpoint of the user.

(2) Another method of fastening the sections of a heating pad together which has heretofore been used embodies the use of stitching means which passes through, say, for example, grommets or eyelets located along the edges of the sections. However, this method of attaching the sections, by reason of the almost entire absence of metal parts, likewise fails to provide as good a bond between the two sections as is necessary to ensure the proper heat conduction between the two sections and the resultant substantially uniform heat distribution. Moreover, again the big disadvantage of expenditure of a relatively large amount of time and labor in such stitching operations obtains.

To overcome the objectionable lack of heat conduction between the sections of the heating pad and to provide a substantially uniform temperature of the pad, and at the same time to render the pads quickly attachable and detachable, I have, after considerable thought and expenditure of money, provided means for selectively joining sections of a heating pad which, while not having a heating element immediately associated therewith, provides a temperature that is substantially equal to that of the adjacent portions of the pad proper, so that no relatively cold areas are present in my pad, contrary to the sectional pads of the prior art.

To provide this good-heat-conduction fastening means for attaching the sections together, I have positioned metallic heat-conducting structures along the edges of the heating pad sections which are to be joined together. To provide, at the same time, quick and easy fastening means, these metallic heat-conducting structures are primarily metallic strips forming parts of what are commonly known as zippers which, when fastened together in the usual manner, join the adjacent edges of the heating pad sections in a close, continuous metallic bond or band which readily conveys or conducts heat between the sections of the pad. Applicant's continuous band of metal, constituting closely joined edges of the heating pad sections, being a good heat conductor, has, therefore, a temperature that is substantially equal to that of the adjacent surfaces of the heating pad sections proper during the normal operation of the heating pad. Applicant's heating pad may, therefore, be used for

any desirable therapeutic purpose, and will result in substantially uniform temperatures throughout the entire pad. At the same time, the ease and quickness of fastening and unfastening the sections, as desired, is obvious.

It is, therefore, an object of my invention to provide a plural-sectioned heating pad with metallic heat-conducting structures along at least one side of each section for closely joining the edges of said sections in a continuous band for good heat conduction between each section.

A further object of my invention is to provide a heating pad having two or more sections, each section of which has a metallic heat-conducting fastening means along at least two sides thereof for joining said sections together to form different predetermined configurations of the heating pad.

Still another object of my invention is to provide an electric heating pad which includes two rectangular sections, each section having a metallic heat-conducting connecting means attached thereto along at least two edges and having means associated therewith for selectively attaching either edge of one section to the complementary edge of the other section.

A further object of my invention is to provide good heat conduction between the sections and, at the same time, ease and quickness of attaching and detaching the sections.

Other objects of my invention will either be pointed out specifically in the course of the following description of a device embodying my invention or will be apparent from such description.

In the accompanying drawing:

Figure 1 is a plan view of a plural-section heating pad, the sections of which are unattached;

Figs. 2 and 3 are plan views illustrating the plural-sectioned heating pad joined so as to form two different heating pad arrangements; and

Fig. 4 is an enlarged sectional view taken along the line IV—IV of Fig. 3.

Referring to the accompanying drawing, I show a heating pad 10 having a plurality of sections 11 and 12 mechanically joined by a connecting or hinging means 14, heating elements 16 located within said sections, which are connected to a suitable power supply, not shown, by a flexible cord 20, and which may be selectively joined together by metallic heat-conducting structures 22 and 24, or 26 and 28.

The heating pad sections 11 and 12 comprise, in this instance, elongated bag-like structures, of say cotton flannel, with open ends to receive the heating elements 16. Suitable snap fasteners 18 are located along the open ends of the sections 11 and 12 to hold the ends in a closed position to prevent the heating element from being inadvertently removed from the sections 11 and 12.

The sections 11 and 12 are formed into elongated bag-like structures by folding over a flat piece of cloth. The long open side and one end of said bag are then sewed together with an inside seam. The metallic heat-conducting structures 22, 24, 26 and 28 are fastened to their respective sections at this time, by having the cotton retaining tape 25, or the like, which carries said structures, positioned within the folded over portions of the sections prior to sewing, whereby as the sides and ends of said sections are sewed the fastening structures are attached thereto.

The heating elements 16 embody a suitable exterior envelope of heat-conducting electrically insulating material, such as rubber, within which is wound or positioned the electrical resistors 17 for providing the heat to the heating pad.

The resistors 17 of elements 16 are wound back and forth in a serpentive or other suitable manner upon an insulating structure, for example cotton ducking, in keeping with established practice. This structure is then positioned within the enclosing envelope and sealed so as to be waterproof. The various loops of the resistors 17 are spaced approximately three-fourths of an inch apart so as to provide an even heat distribution over the surface of the heating pad. The outer portions of the resistor 17 are, however, only approximately three-eighths of an inch from the outer edge of the heating pad sections so that the fastening means such as 22 adjacent thereto is provided with a continuous supply of heat and thus reaches a temperature substantially equal to that of the adjacent portions or edges of the corresponding pad section proper.

The electrical heating element 16 of the respective sections 11 and 12 are electrically and mechanically connected together by means of the flexible mechanical connecting means 14, said mechanical means 14 being, in this instance, an insulated electrical cord or cable.

The connecting means 14, in addition to providing means for conveying electric current from one pad section to the other, acts as a hinging device which permits the sections of the pad to be easily and freely moved from one position to another.

The sections 11 and 12 of the pad 10 are substantially rectangular in shape with one dimension thereof being approximately twice that of the other. Said sections may be selectively attached together to provide either an elongated heating pad, by joining the ends of the sections together, or a substantially square heating pad, by attaching the sides of the sections together.

The attaching means comprises, in this instance, a metallic heat-conducting structure, such as the mechanical intermeshing device or zipper sections 22 and 24 suitably fastened on the respective tapes 25, along the respective short sides of the sections of the pad, and the sections 26 and 28 along the respective long sides of the pad sections. The zipper section 22 which is attached to the short side of section 11 has a fastening member or slide 30 of a familiar character positioned thereon. Said fastener is adapted to slide along section 22 and cooperate with the zipper section 24 which is attached to the section 12 of the heating pad 10 to mechanically mesh the two zipper sections 22 and 24 together so as to form a solid metallic connection between the two pad sections 11 and 12. This solid metallic connection between the heating pad sections 11 and 12 thus provides a ready path for heat conduction between the two sections during the use thereof. When the sections 22 and 24 are thus joined together, the heating pad is of substantial length and may be used for therapeutic purposes where it is desired to have a relatively long and narrow heat application. In addition, by having said sections joined together in a manner hereinbefore described, the surface temperature of the entire heating pad, including the fastening means, is substantially uniform.

The metallic fastening means 26 and 28 are respectively attached by means of the tapes 25 to the long sides of the sections 11 and 12 of the pad 10 so as to join the sections 11 and 12 into a substantially square pad. These zipper sections may be joined together by a fastening mem-

ber or slide 32, which is similar to the fastening member 30 and which is positioned upon the section 28, for mechanically intermeshing or jointly bonding the two zipper sections 26 and 28 together into a uniform metallic bond. This cooperation likewise insures ready conduction of heat between the two heating pad sections in a manner hereinbefore described. The fastening member 32 joins or metallically bonds the two sections 26 and 28 together into substantially a square heating pad. The heating pad when arranged in such a manner may then be used in a normal manner to supply heat for therapeutic purposes in keeping with established practice.

It is to be noted that the heating units 16 located within the sections 11 and 12 are positioned slightly back from the edges of said sections, the nearest portion of the resistor 17 being approximately three-eighths of an inch from the edges. Accordingly, it is obvious that, if it were not for the continuous bonding of the metallic heat-conducting fastening members 22, 24, 26 and 28 being used as fastening means for connecting the sections 11 and 12 together, the temperature along the joined edges of said sections would be substantially below that of the main portion of the sections. However, by having the fastening devices bonded together in a continuous manner, as shown, it has been found that the temperature along such joined edges is substantially equal to that of the adjacent portions of the heating pad proper.

It is, therefore, obvious that applicant has provided a heating pad having fastening means which enables the sections of said pad to be quickly and easily joined together to form either of two heating pad configurations, while enabling heat to readily pass between said sections so as to provide a substantial uniform temperature throughout the heating pad.

Various modifications may be made in the device embodying my invention without departing from the spirit and scope thereof, and I desire, therefore, that only such limitations shall be placed thereon as are embodied in the prior art and the appended claims.

I claim as my invention:

1. A heating pad having a plurality of separate sections, a metallic heat-conducting structure on each of two adjacent sides of each of the sections, and means for selectively joining the metallic heat-conducting structures on the respective pairs of adjacent sides to provide a path of good heat conduction between said sections in each position.

2. A heating pad having a plurality of separate sections, a metallic heat-conducting structure on each of two adjacent sides of each of the sections, and means for selectively joining said metallic structures in close contact to provide a plurality of paths of good heat conduction between said sections.

3. A heating pad having a plurality of separate sections, a metallic heat-conducting structure on each of two adjacent sides of each of the sections, and means for selectively interlocking said metallic structure on either pair of said adjacent two sides to provide a path of good heat conduction between the sections.

4. A heating pad having a plurality of separate sections and a portion of a metallic zipper on one side of each section, and means for joining said zipper portions to provide a path of good heat conduction between the sections.

5. A heating pad having a plurality of separate sections, a portion of a metallic zipper on each of two adjacent sides of each of the sections, and means for selectively joining said zippers on either pair of said adjacent two sides to provide a plurality of paths of good heat conduction between the sections.

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