July 24, 1934. A. S. KNAPP 1,967,674

HEATING PAD

Filed Jan. 18, 1932

Fig. 1.

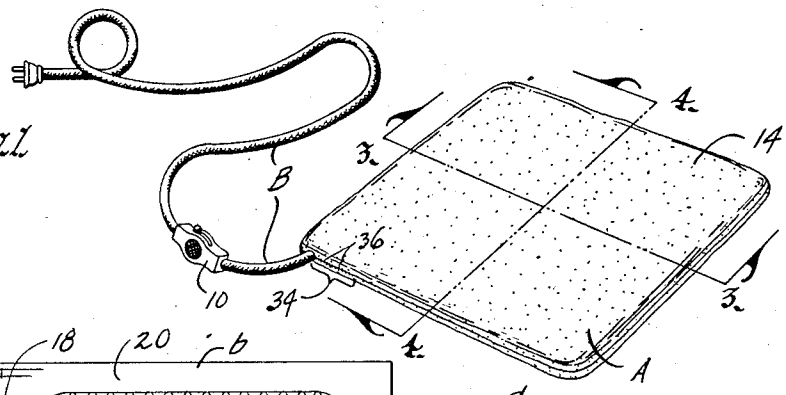


Fig. 2.

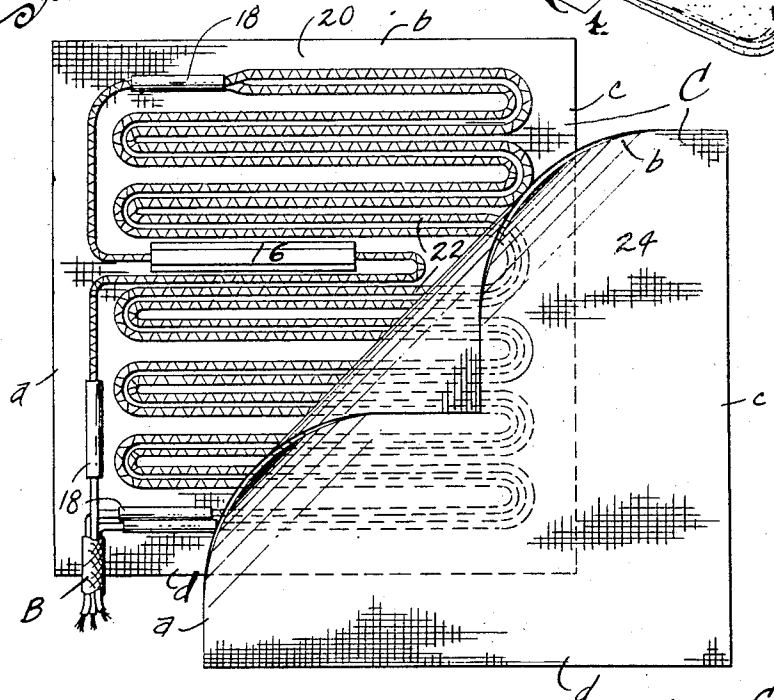


Fig. 3.

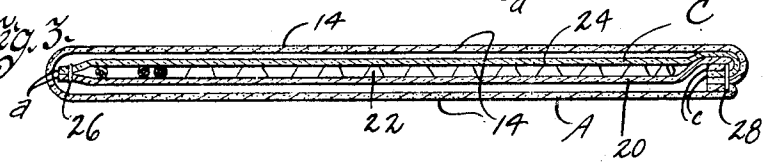


Fig. 4.

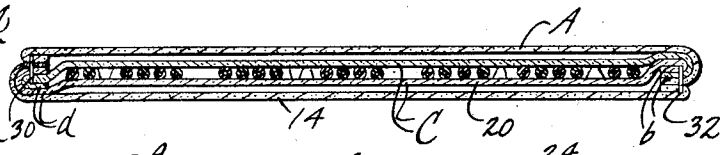
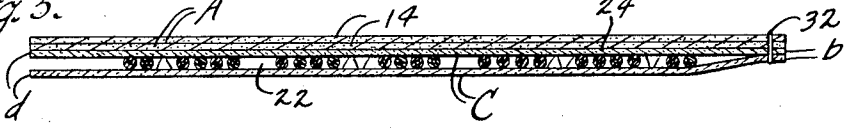


Fig. 5.



Witness
Edw. Seeley

Inventor
Andrew S. Knapp
By Bair, Freeman & Sinclair
Attorneys

Patented July 24, 1934 1,967,674

UNITED STATES PATENT OFFICE

1,967,674

HEATING PAD

Andrew S. Knapp, Belleville, Ill., assignor to Knapp-Monarch Company, Belleville, Ill., a corporation of Missouri

Application January 18, 1932, Serial No. 587,297

3 Claims. (Cl. 219—46)

An object of my present invention is to provide a heating pad so constructed that all danger of fire as caused by contact between different portions of the heating element, or twisting of the heating element, is entirely eliminated and yet the pad is of simple, durable and inexpensive construction.

More particularly, it is my object to provide insulation between the heating element and the cover of a heating pad, which consists of an envelope of asbestos having sufficient flexibility to withstand the ordinary usage to which a heating pad is put without breaking the fibres thereof completely enclosing or housing the heating element so that any short circuit between different portions of the heating element and the resultant arc caused thereby will not burn the cover of the heating pad and the user thereof, but will be confined within the asbestos envelope and cannot cause any damage because both the envelope and the heating element itself are non-inflammable.

A further object is to provide a heating pad construction consisting of a flexible cloth cover formed of blanket material or the like whereby to give the heating pad a desirable outer surface and a heating element which is entirely and completely inclosed in an insulating envelope such as one formed of asbestos cloth arranged to eliminate all openings through which the heating element might mechanically and/or electrically contact with the cover for the pad.

Still a further object is to provide the envelope in the form of two sheets of asbestos, the edges of which are sewed or otherwise secured together to completely enclose the heating element and thus prevent contact between it and the cover for the pad.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a perspective view of a heating pad embodying my invention.

Figure 2 is a separated perspective view of the sides of the asbestos envelope for the heating element and the heating element secured to one of the sides.

Figures 3 and 4 are sectional views on lines 3—3 and 4—4, respectively, of Figure 1 showing the construction of the heating pad; and

Figure 5 shows the parts of Figure 4 in partially assembled position.

On the accompanying drawing, I have used the reference character A to indicate generally a heating pad and the character B to indicate a current supply cord therefor. A switch is shown at 10 for controlling the flow of current to the heating pad A.

The heating pad A comprises a pair of heating elements 12, an asbestos envelope C and a flexible cloth covering 14 together with associated parts such as a control thermostat 16 and connectors 18. The heating element 12 is usually made in the form of a cord of asbestos around which a resistance wire is wrapped with an asbestos covering over the resistance wire, or the resistance wire embedded in the asbestos cord-like core. A heating element of this character is usually secured to a cloth backing in the ordinary type of heating pad and then covered with cloth which is usually of inflammable character. In my heating pad construction, however, the heating element 12 is secured to a sheet of asbestos 20 by sewing it thereon with threads 22. The sheet of asbestos 20 is a woven asbestos cloth so as to make it entirely flexible and thereby suitable for use in heating pad constructions. The asbestos sheet 20 together with a similar asbestos sheet 24 forms the envelope hereinbefore referred to as C.

The thermostat 16 and the connectors 18 provide for automatic control of the heating of the heating pad and for connection with the supply cord B, respectively. The edges of the sheets 20 and 24 are indicated as *a*, *b*, *c* and *d*. As shown in Figure 3, the edges *a* are sewed together by stitches 26. The edges *c* are sewed together by stitches 28. As shown in Figure 4, the edges *d* are sewed together by stitches 30 and the edges *b* are sewed together by stitches 32. The stitches 28, 30 and 32 also sew the edges of the cloth covering 14 together. Instead of the stitches 26, the sheets 20 and 24 may be combined or made in one sheet folded at this point.

The entire heating pad construction is sewed together inside-out as indicated in Figure 5, the right hand side of which is sewed together and the left hand side of which is not yet sewed. After being sewed together with the exception of a part indicated at 34 in Figure 1, the pad of Figure 5 is turned inside-out to appear as shown in Figures 3 and 4, the opening indicated at 34 being provided for the parts to be reversed through. Stitches 36 are then used to close the opening 34.

By the foregoing construction it will be obvious that the heating element 22 is completely enclosed in the non-inflammable envelope C, this being best illustrated in Figures 3 and 4 in which all four edges, *a*, *b*, *c* and *d*, are illustrated as being sewed together. There is no chance for a fire occurring on account of different portions of the heating element contacting with each other and then being separated and forming an arc. Even though such arc is formed it cannot burn the cloth cover 14 because of the asbestos sheets 20 and 24 interposed between the element and the cloth. There is not even any possibility of contact between the heating element and the cloth at the edges of the asbestos sheets 20 and 24 because they are sewed together to completely house the heating element as already described.

Although throughout the specification I have used the term "asbestos" to define the sheets 20 and 24, it is obvious that other insulating materials which are sufficiently flexible but which are non-inflammable and non-conductive of electricity could be used instead. I have used asbestos because it is a good insulator and in woven form is sufficiently flexible for use as described.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In an electric heating pad, the combination of an electric heating element, an outside cover therefor formed of flexible cloth and means for insulating said heating element from said cover to prevent contact of the heating element with the cover, yet allowing free conformation of the heating pad to any shape desired, said means comprising a fire resisting envelope of cloth-like formation having sufficient flexibility to permit ordinary use without the materials thereof being broken, said fire resisting envelope completely enclosing said heating element and positioned within said cover and having said heating element secured thereto whereby the different parts of the heating element are maintained in spaced position relative to each other, said fire resisting envelope preventing an arc caused by a short circuit of said heating element burning said cover.

2. In an electric heating pad, the combination of an electric heating element, an outside cover therefor formed of flexible cloth and means for insulating said heating element from said cover to prevent contact of the heating element with the cover, yet allowing free conformation of the heating pad to any shape desired, said means comprising a fire resisting envelope of cloth-like formation having sufficient flexibility to permit ordinary use without the materials thereof being broken and preventing any fire caused by a short circuit of said heating element burning said cover.

3. In an electric heating pad, the combination of an electric heating element, an outside cover therefor formed of flexible cloth and means for insulating said heating element from said cover to prevent contact of the heating element with the cover, yet allowing free conformation of the heating pad to any shape desired, said means comprising a fire resisting envelope of cloth-like formation having sufficient flexibility to permit ordinary use without the materials thereof being broken and permitting ready escape of heat within the envelope to come in contact with said outside cover.

ANDREW S. KNAPP.