March 1, 1949. J. DALY 2,462,847

ELECTRICALLY HEATED FABRIC

Filed July 28, 1947 4 Sheets-Sheet 1

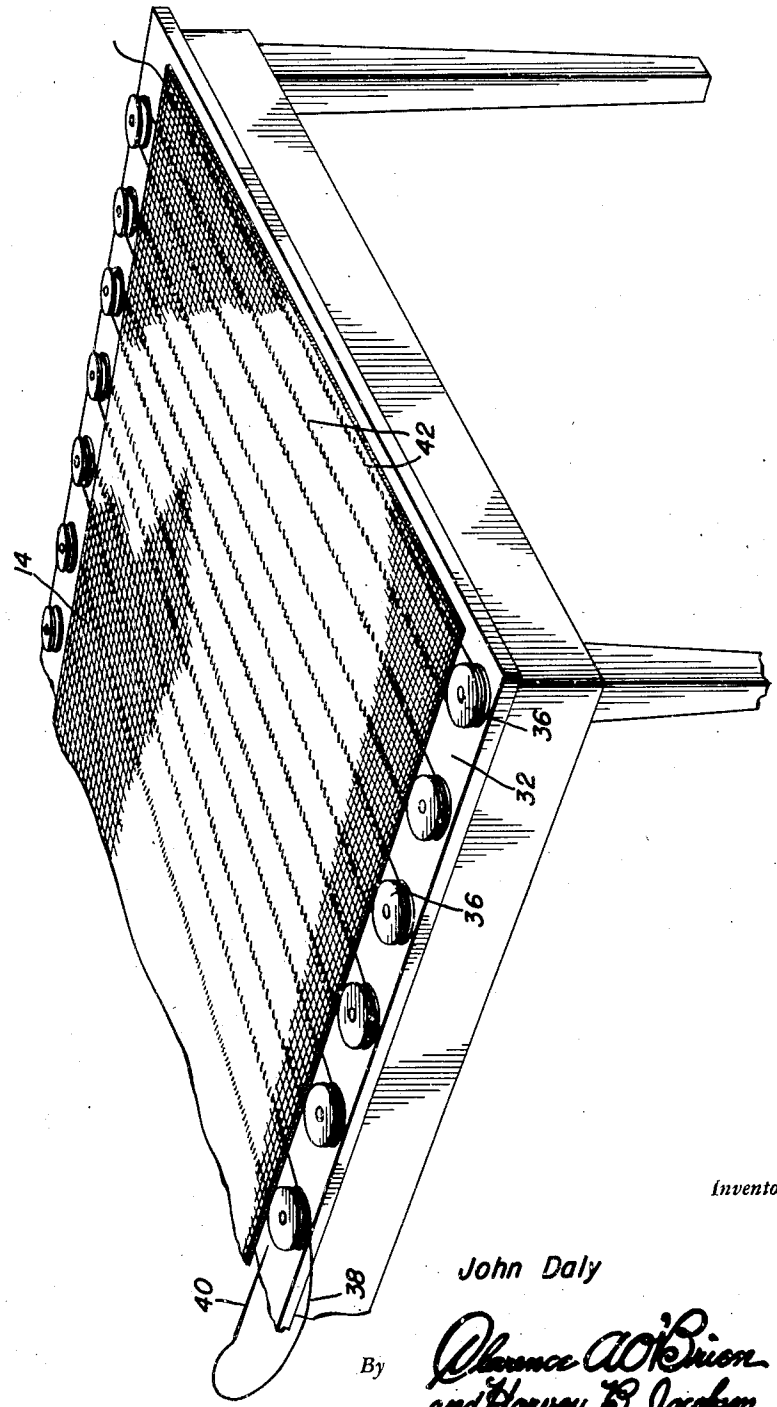


Fig. 1.

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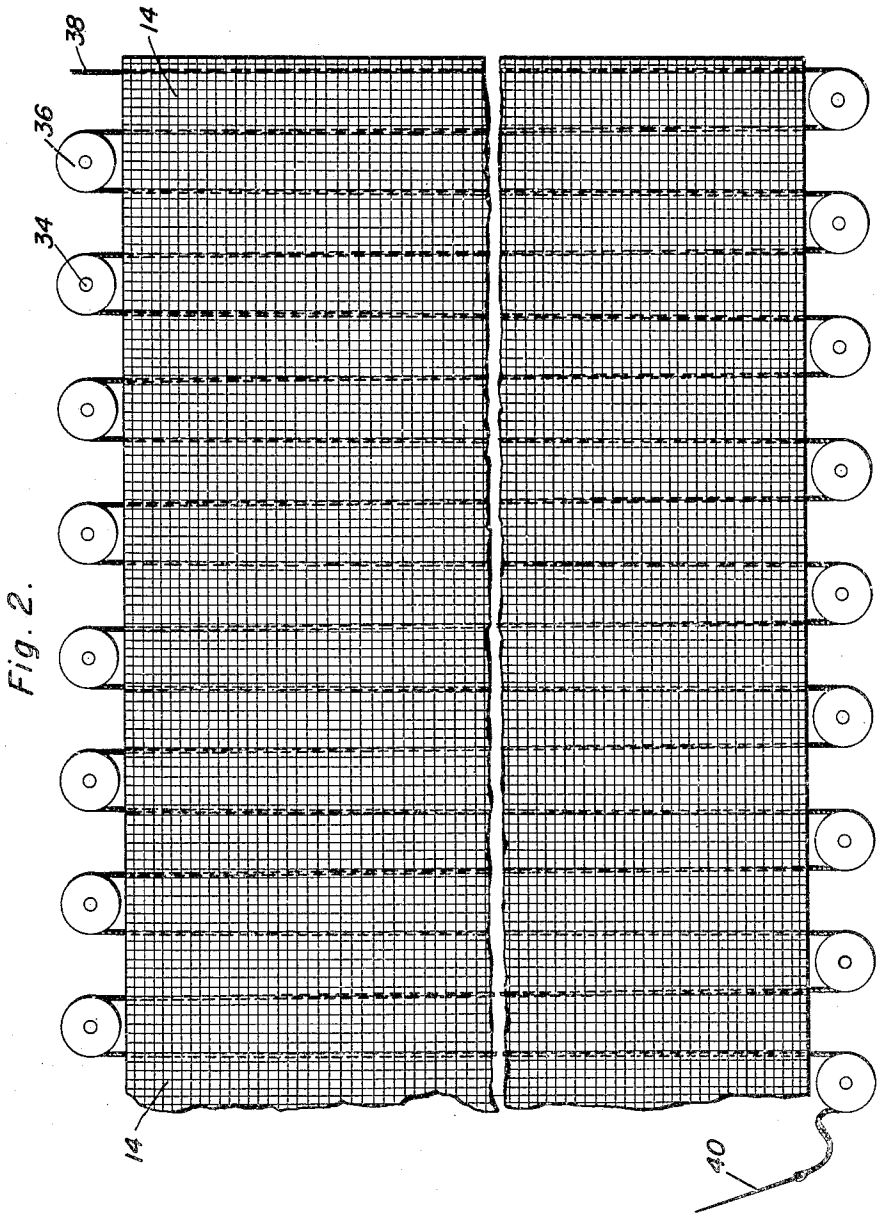


Fig. 2.

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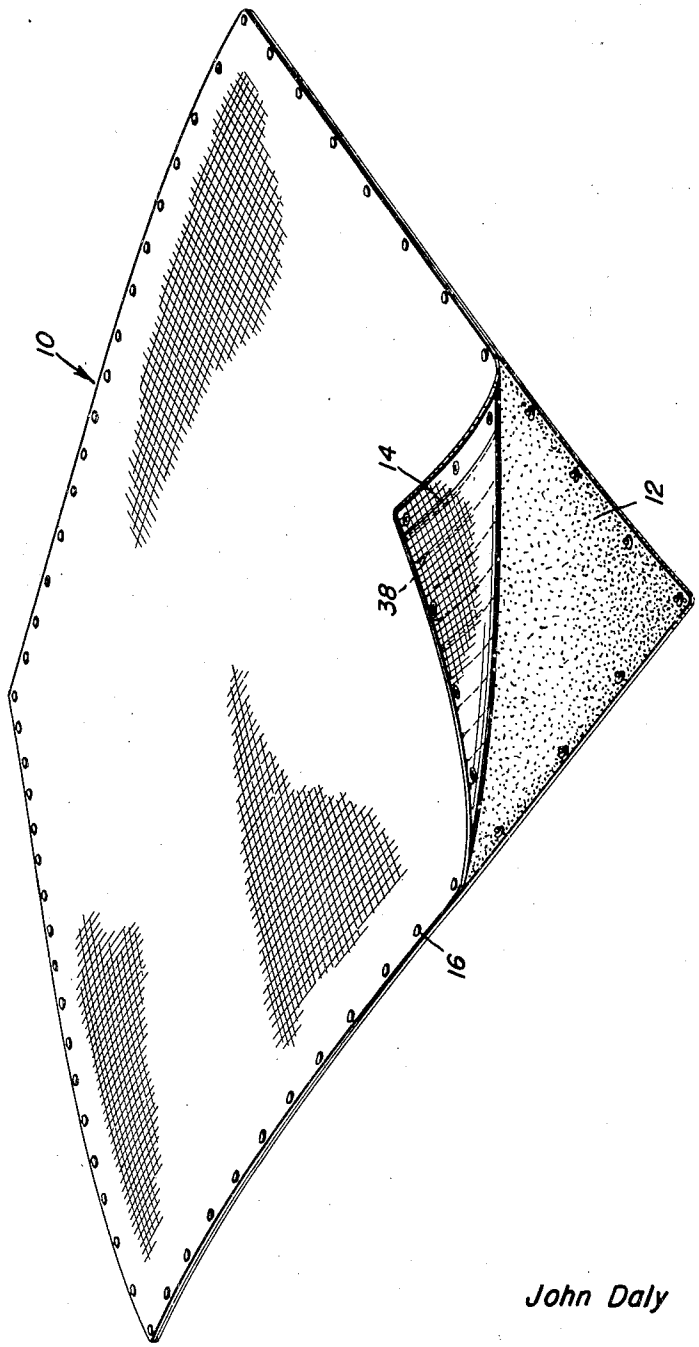


Fig. 3.

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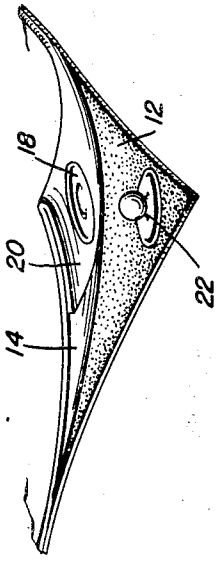


Fig. 6.

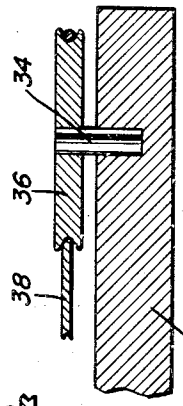


Fig. 7.

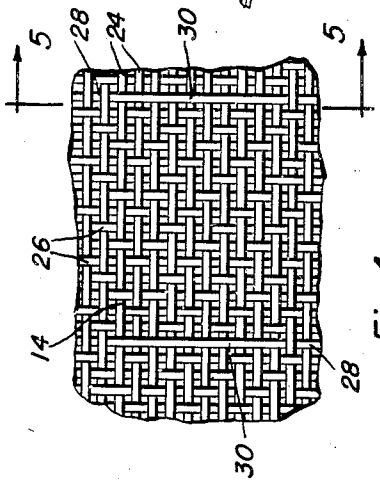


Fig. 4.

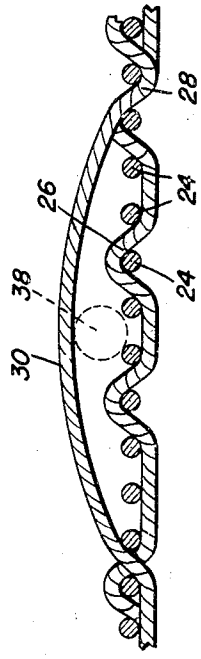


Fig. 5.

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Patented Mar. 1, 1949

2,462,847

UNITED STATES PATENT OFFICE

2,462,847

ELECTRICALLY HEATED FABRIC

John Daly, Asheville, N. C., assignor, by mesne assignments, to Valdale Company, Inc., Hendersonville, N. C., a corporation of North Carolina

Application July 28, 1947, Serial No. 764,071

2 Claims. (Cl. 219—46)

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This invention pertains to novel and useful improvements in an electrically heated fabric and more specifically comprises a fabric composition suitable for use in making electrically heated articles such as blankets, clothing, heating pads or the like together with a novel and improved method of making the same.

The principal object of this invention resides in providing a fabric having a detachable woven element secured thereto, which woven element has conveniently attached thereto a flexible electric element.

A further element of the invention resides in providing an improved method of inserting and securing a flexible electrical heating element in a woven fabric; and in providing such a fabric as a detachable component for an electrically heated article.

These, together with various ancillary objects of the invention which will later become apparent as the following description proceeds, are attained by this device, a preferred embodiment of which has been illustrated, by way of example only, in the accompanying drawings, wherein:

Figure 1 is a perspective view showing the manner of applying a leader thread to a woven fabric in accordance with this invention;

Figure 2 is a top plan view of the arrangement of Figure 1;

Figure 3 is a perspective view showing a composite fabric with the invention applied thereto, one corner of the same being shown as separated to illustrate the fastening construction thereof;

Figure 4 is a fragmentary plan view of a portion of the fabric;

Figure 5 is an enlarged transverse sectional view taken substantially upon the plane of the section line 5—5 of Figure 4 and illustrating the manner of attaching the flexible heating element to the fabric;

Figure 6 is an enlarged fragmentary perspective view showing a suitable form of fastening means for the composite fabric articles; and,

Figure 7 is a fragmentary vertical sectional view showing a detail of the invention.

Referring now more specifically to the accompanying drawings, wherein like numerals designate similar parts throughout the various views, attention is directed first to Figure 3 wherein the numeral 10 designates in its entirety any suitable electrically heated fabric article to which the invention may be applied, such as a heating pad, an electrically heated blanket, an electrically heated material for garments or the like, and which consists of a suitable base

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material 12 which may be any suitable fabric preferably of a heat insulating nature to which is attached a woven fabric 14 having electrical heating elements embedded therein as set forth hereinafter, which base and cover members are detachably connected by any suitable means such as the well known snap-on fasteners indicated at 16.

Preferably, the electrical heating elements are secured to the surface of the cover member 14 which is adjacent to the base fabric 12, and may be readily removed with the cover member 14, in order to launder or otherwise service the base member 12, or to service or repair the heating elements in the cover member 14.

Obviously, any suitable sewing, zippers, eyelets or other fastening means may be used for removably uniting the base and cover, and as shown in Figure 6, this fastening means 16 may conveniently comprise eyelets 18 extending through and formed in marginal seams in the edges 20 of the cover 14 and cooperating with buttons 22 similarly positioned upon the marginal edges of the base 12.

Attention is next directed to Figures 4 and 5 for a better understanding of the construction of the woven fabric forming the cover member 14. This fabric preferably consists of a plurality of loosely woven warp threads 24 and weft threads 26. Certain predetermined of these weft threads as indicated at 28 are floated above the corresponding warps 24 in order to provide loops 30 which as indicated clearly in Figure 1 are arranged in evenly spaced rows throughout the area of the fabric.

In order to facilitate insertion of the flexible heating material in the woven fabric 14, the arrangement illustrated in Figures 1 and 2 is provided. For this purpose, a suitable supporting surface such as the top of a table 32 has the above mentioned fabric 14 suitably fastened thereon in any convenient manner, and is provided as shown in Figure 7 with a plurality of upwardly extending pegs 34 upon which are rotatably journaled a series of pulleys 36, a pair of which are disposed in opposite sides of the fabric in staggered relation with one pulley to each of the rows of loops.

A flexible heating element 38 of any suitable and known construction is formed with a leader thread and is attached to a needle or bobbin indicated at 40, which is then entrained through each of the rows 42 of loops 30, around the pulleys 36 and so woven into the fabric 14.

By means of this construction the thin flexible heating element may be readily woven into and secured to the cover fabric 14 and as shown in Figure 5 is carried upon and secured to the side of the cover member which is adjacent to the base member 12.

By means of the spools or pulleys 36, the thin heating element 38 may be easily and quickly applied to the fabric from a spool or the like, without danger of breakage of the heating element throughout its many turns as it is woven into the fabric.

From the foregoing the construction of the article and the mehod of manufacturing the same will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and annexed drawings, it is not desired to limit the invention to the exact construction and method shown and described, but all suitable modifications and equivalents may be resorted to falling within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. The method of manufacturing an electrically heated fabric comprising forming a fabric of warp and weft threads, floating predetermined weft threads to form rows of loops, providing pulleys at opposite ends of each of said rows and entraining a resistance element over said pulleys and through said loops.

2. The method of claim 1 including detachably connecting said fabric to a base with the resistance element facing said base.

JOHN DALY.

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