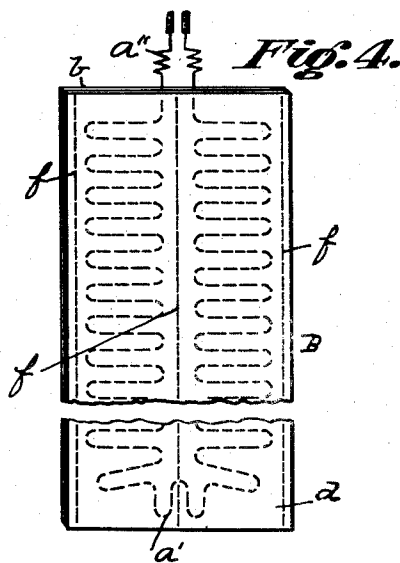
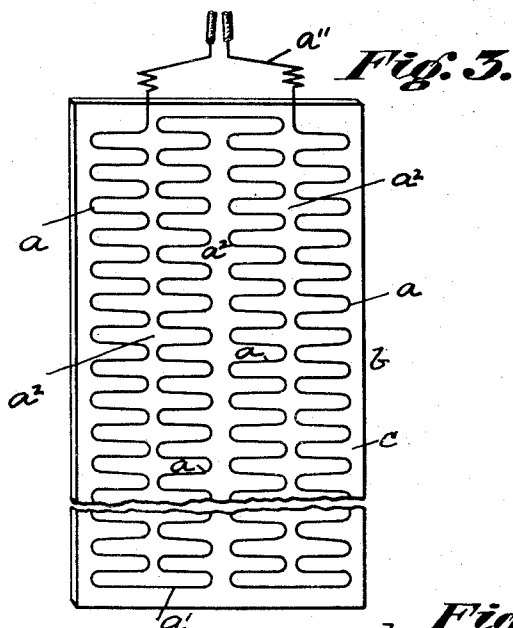
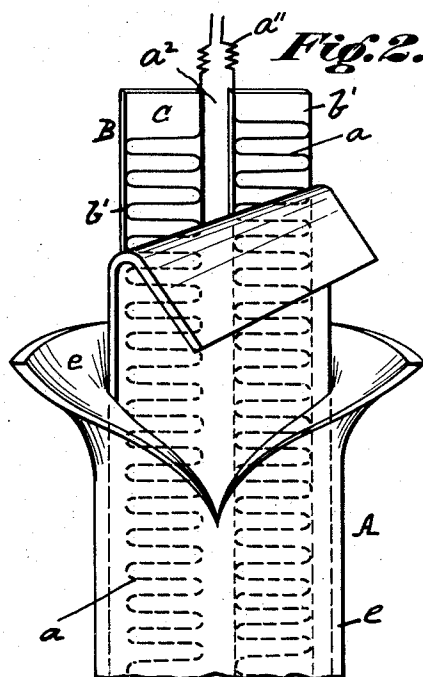
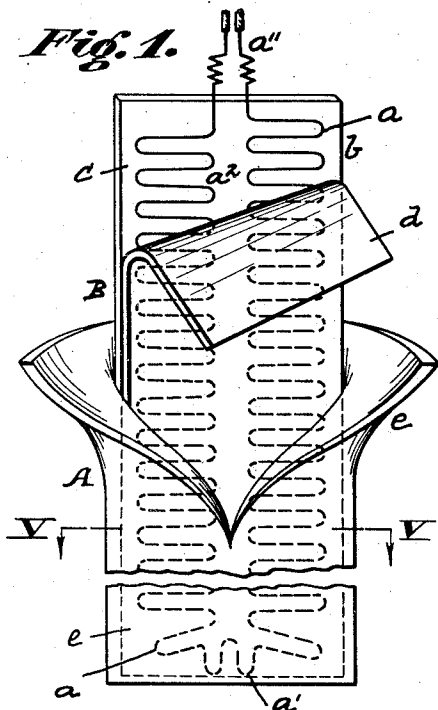


1,384,467.

Patented July 12, 1921.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

JOHN G. HOMAN, OF STEUBENVILLE, OHIO, ASSIGNOR TO ELECTROTHERMAL COMPANY, OF STEUBENVILLE, OHIO, A FIRM COMPOSED OF JOHN G. HOMAN AND WILLIAM J. KIRK.

BANDAGE.

1,384,467.

Specification of Letters Patent. Patented July 12, 1921.

Application filed January 27, 1920. Serial No. 354,350.

To all whom it may concern:

Be it known that I, JOHN G. HOMAN, a citizen of the United States, and a resident of Steubenville, in the county of Jefferson and State of Ohio, have invented a new and useful Improvement in Bandages; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an improvement in bandages, and has special reference to such bandages as are applied in the treatment of ills and diseases, to the human body or elsewhere.

The object of my invention is to provide a cheap, simple and efficient form of a bandage which will carry its own heat, such as by means of an electric current generated within the same, and will also enable the same to possess the flexibility and adaptability to convenient form for the purposes desired.

To these ends my invention consists, generally stated, in the novel arrangement, construction and combination of parts, as hereinafter more specifically set forth and described and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved bandage, I will describe the same more fully, referring to the accompanying sheet of drawings, in which:

Figure 1 shows a side view of one form of bandage employing my invention and showing portions of the same opened up;

Fig. 2 is a like view showing another form;

Fig. 3 is a side elevation showing a portion of the bandage with another form of the heating element;

Fig. 4 is a like view of the heating element shown in Fig. 1; and

Fig. 5 is a cross-section of the bandage shown in Fig. 1.

Like symbols of reference herein indicate like parts in each of the figures of the drawings.

Referring to the construction shown in Fig. 1, my improved bandage A is shown provided with an electric heating element B, such as is formed by the wire conductor *a*, which is preferably of some material having a rather large positive temperature resistance coefficient and at the same time resistant to corrosion, etc., although my invention

is not confined to a conductor of such nature, but, as will readily be seen by one skilled in the art, is adaptable to such materials as chromium-nickel, copper-nickel, nickel-iron and other alloys and metals commonly available in wire form for such purposes.

As shown in Fig. 1, the conductor *a* is arranged in two parallel rows of such wires connected together at one end in the element B in any suitable manner, as at *a'*, and the opposite ends *a''* of each row of such wires are extended through the element for the attachment of any suitable connector thereto for supplying the electric current to such element. These two rows of wires forming the conductor are placed upon an adhesive coated surface *c* of a tape *b* or other flexible supporting member, such as the ordinary adhesive coated cloth tape, known as surgical tape, so that such conductor adheres to such coated surface, and the rows spaced apart to form the space *A²* between the same, thereby enabling the element B to be folded or bent without any great bending of the wires, such tape forming the covering for one side of the element B. The adhesive coated surface *C* of the tape *b* serves to retain the conductor *a* in place and for the placing of the flexible covering *d* for the other side of the heating element B, which covering can be a similar form of tape, so that its coated surface will be next to such conductor, and allow such conductor to adhere to such surface, as well as be conducive to relieving the strain on the conductor, thereby tending to produce a waterproof, sealed in heating element B by the coated surfaces adhering to each other, with the conductor secured to both surfaces. However, it will be evident that such covering may be of such material as asbestos-cloth, which provides a good fabric for the distribution of heat, and can be cemented over the conductor *a*, or a fabric or other non-conducting material of any nature may be used which is best suited for adapting the invention to the purposes desired.

In carrying out my invention, an outer flexible casing or covering *e*, such as a fabric known as eider down, may be placed around the heating element B for inclosing the same and the ends of such casing stitched or secured together so that it can be slipped on and off said element. The casing *e* can also be secured to the heating element B by

stretching or in any other suitable manner, such as by having the outer side of either or both of the tapes *b* and *d* provided also with an adhesive coating, thereby enabling the cementing of such casing to the heating element all around, if desired, which will also permit such casing to be removed from said element. However, it will be evident that my improved bandage A will thus be made moisture proof by sealing the heating element between the two adhesive tapes *b* and *d*, yet such tapes may or may not carry an adhesive coating on both sides of each tape or even on both sides of one of the tapes.

If desired, each of the two rows of wires forming the conductor *a* can each be placed upon the adhesive coated sides of separate narrower tapes, such as shown at *b'* in Fig. 2, and such wires connected together at one end in any suitable manner, in which case only a single covering tape *b* need be employed over such conductor and narrow tape.

Where still greater flexibility of the bandage A is desired, the coiled rows of wires or conductors *a* of the heating element B can be made narrower, as shown in Fig. 3, which rows when in spaced relation with each other will form the several spaces *a'* between same in case of any folding or bending of the bandage, and in case it is desired to reinforce or secure the tapes and coverings of the heating element together seams *f*, as shown in Fig. 4, can be sewed through such tapes and coverings at whatever places deemed advisable, depending upon the size of the article produced.

It will be obvious that the wires of the conductor *a* may also be provided with an adhesive coating instead of the tapes or coverings, or both wires and tapes or coverings may be provided with such coatings, while any adhesive used may be subsequently vulcanized or similarly treated if desired, and both sides of the tapes may or may not be required to carry an adhesive compound or material, or even on both sides of one of the tapes.

Various other modifications and changes in the design and construction of my improved bandage, other than those shown and described may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

It will thus be seen that my improved bandage will provide a waterproof, sealed in heating element, ready for use at all times, either with or without the use of the casing over the same, and with the arrangement of the conductor within the same can be bent or folded longitudinally or horizontally without injury to the conductor, while at the same time the heating element will be durable and capable of easy repair when necessary.

What I claim as my invention and desire to secure by Letters Patent is:

1. A device of the class described comprising a flexible supporting member of non-conducting material having an adhesive surface, an electrical conductor secured by said surface, and a flexible covering over said conductor.

2. A device of the class described, comprising a flexible supporting member of non-conducting material having an adhesive surface, an electrical conductor secured by said surface, and a flexible covering having an adhesive surface secured to said conductor.

3. A bandage comprising a flexible resistance element, a flexible non-conducting supporting member within which the resistance element is entirely inclosed and which holds said resistance element in position, and a second covering entirely inclosing the supporting member and fitting thereabout.

4. A device of the class described, comprising a heating element formed of a flexible supporting member of non-electrically conducting tape having an adhesive surface, an electrical conductor formed of parallel rows of wires secured to said surface, a flexible covering formed of a non-electrically conducting tape having an adhesive surface for fitting against said conductor, and a flexible inclosing casing around said element.

5. A device of the class described, comprising a heating element formed of a flexible supporting member of non-electrically conducting tape having an adhesive surface, an electrical conductor formed of parallel rows of wires secured to said surface, a flexible covering formed of non-electrically conducting tape having an adhesive surface for fitting against said conductor, and a casing formed of a flexible fabric extending around said element and secured thereto.

6. As a new article of manufacture, a bandage formed of flexible non-electrically conducting adhesive surfaced tapes, and a flexible electric heating conductor within said tapes and secured to said adhesive surfaces.

7. A bandage comprising superposed strips of adhesive tape having a flexible resistance element disposed between them.

8. A bandage comprising superposed strips having adjacent adhesive surfaces and a flexible resistance element disposed between said adhesive surfaces.

9. A bandage comprising superposed strips having adjacent adhesive surfaces, a flexible resistance element disposed between said strips, and a fabric covering surrounding said superposed strips.

10. A bandage comprising a strip having an adhesive surface, and a flexible resistance element disposed on said adhesive surface.

11. As a new article of manufacture, a

bandage formed of flexible non-electrically conducting adhesive surfaced tapes, a flexible electric conductor within said tapes and secured to said adhesive surfaces, and a flexible inclosing casing of flexible material around said tapes and conductor.

12. As an article of manufacture, a bandage comprising a flexible strip of material capable of being wrapped about a portion of the body and having its length greatly in excess of its width, and which strip has a flexible resistance element thereon.

13. A bandage comprising a strip of tape

having a resistance element disposed thereon, and adhesive material for securing the resistance element in place. 15

14. A heating device comprising a flexible fabric supporting member having a flexible electric heating resistance secured thereto by a plastic material. 20

In testimony whereof I, the said JOHN G. HOMAN, have hereunto set my hand.

JOHN G. HOMAN.

Witnesses:

F. W. GRADY,
FRIEDA J. PLESSE.