Feb. 27, 1945. W. C. MAGILL 2,370,365

HEAT INSULATING BATT

Filed July 25, 1942

Fig. 1

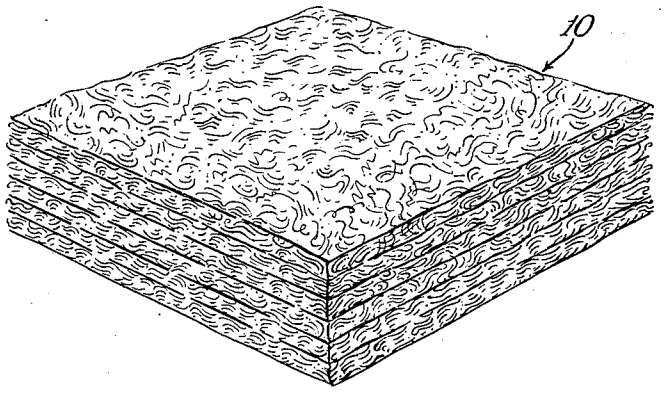
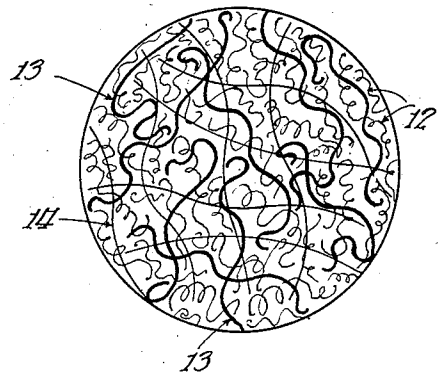


Fig. 2



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UNITED STATES PATENT OFFICE

2,370,365

HEAT INSULATING BATT

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Application July 25, 1942, Serial No. 452,331

1 Claim. (Cl. 19—146)

My invention relates to a fiber batt for heat insulating purposes and is especially useful for comforters and the like, although not necessarily restricted to such use.

A special object of my invention is to provide a batt which is especially suitable for bed clothing and which will have high efficiency as a heat insulator while at the same time being relatively inexpensive to manufacture.

Another object is to provide an article of the class described which will retain its efficiency for long periods of time. My improved batt is highly resilient or springy in character, so that after pressure has been applied thereto it will tend to resume its normal volume.

As is well known, the heat insulating property of an article of this character depends on the presence of innumerable "dead air spaces" which inhibit the passage of heat. Other factors being equal, the greater the number of air spaces, the greater the insulating quality. My improved batt has an especially large number of dead air spaces by reason of the character and proportions of the fibers employed, and to this quality is added a certain degree of heat reflectivity, whereby heat is reflected back to the warm body, and also a high degree of resilience, thus inhibiting any tendency toward compacting of the fibers which would result in reduction of the volume of dead air spaces and consequent loss of thermal insulating efficiency.

I have found after extensive experimentation that a batt formed of a major percentage of Oriental type cotton and a minor percentage of wool and of either a natural silk or a synthetic fiber produces the desired result. These various types of fibers are intermixed as by a garnetting machine and felted in a manner well known in the art, or in any other suitable manner, in the percentages mentioned below.

Oriental cotton is employed in a proportion of about 75 to 80%, my preferred embodiment employing 80% of this fiber. This material is a rather short, kinky staple of about ½" maximum length. (In contradistinction American spinning cotton is of about ⅞" and relatively straight, and consequently is not desirable for my purposes.) It will be understood, of course, that when I refer to Oriental cotton I intend to include India cotton, or China cotton or any other fiber which has similar properties. This type of fiber, by reason of its kinkiness, will fill a substantially greater volume per pound of fiber and, hence, will provide more dead air spaces and will thus have greater insulating quality than the silky straight fibers of American cotton or the like. The kinky and wiry quality of the Oriental type cotton or the like also gives it a high degree of resilience so that it will spring back to normal volume rather than tend to pack down, as would a straighter or silkier fiber.

I preferably employ from 7 to 10% of wool, the preferred proportion being about 10%. The wool which I employ may be high quality new wool, but is preferably of medium to low grade, not only because of its lower cost, but because the cheaper grades of wool have the same wiry or springy quality which I desire. Reworked wool or "shoddy" is entirely satisfactory for my purposes. The wool, while not indispensable, increases the resilience of the batt. The fiber length of the wool may average in the neighborhood of ¾".

I also employ approximately 5 to 12% of a relatively straight cut fiber which also preferably has a heat reflective surface and which may be natural silk or an artificial fiber, such as "rayon," "nylon," "Vinyon" or casein, or a mixture of several of these fibers. The synthetic fibers which are herein referred to by the quoted names are well known to the trade and their chemical composition need not be described; the ones mentioned are given by way of example, and are not intended to be exclusive. These fibers as employed by me are preferably in the neighborhood of 1 to 1½" in length and are preferably of a diameter smaller than the cotton and wool fibers described above. This material is employed for the dual purpose of serving as a binder for the cotton and wool fibers and for its heat reflecting properties, inasmuch as it has a more or less smooth or shiny surface, the degree of this quality depending on the character of the specific fiber employed.

In the drawing:

Fig. 1 is a fragmentary perspective view of a portion of a batt made in accordance with my invention; and

Fig. 2 is an enlarged microscopic view showing the various fibers interlaced in accordance with my invention.

In the drawing forming a part of this specification, the numeral 10 indicates generally a batt embodying my invention, the numeral 12 representing the cotton fibers, 13 the wool, and 14 the silk or artificial fibers. It will be understood that for the last mentioned class of fibers I may employ one or a mixture of several of the kinds mentioned in that class. The batt may have any desired thickness to meet the specific require-

ments, say one inch, for example. This thickness may, of course, vary according to the climate in which the material is to be employed, etc.

Tests show that batts embodying my invention have superior insulating quality to a goose down batt of the same weight, costing four or five times as much to manufacture, and is also superior to an all wool batt of high quality, costing two to three times as much as mine.

Various modifications coming within the spirit of my invention may suggest themselves to those skilled in the art, and hence I do not wish to be limited to the specific form shown or uses mentioned, except to the extent indicated in the appended claim.

I claim:

A mixed fiber insulating batt, comprising a major proportion consisting of from 75% to 80% by volume of Oriental kinky staple cotton fiber and a minor proportion of wool and of silk fiber each varying from between 7% to 12% by volume, intermixed by carding or garnetting and felted into flat resilient batts of even thickness whereby the kinky cotton fiber provides insulating interstices, the wool fiber a binder and resilience element, and the silk fiber a heat reflective and lustrifying component.

WARREN C. MAGILL.