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INSULATING PAD AND THE LIKE AND METHOD OF MAKING SAME

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8 Claims. (Cl. 154—28)

This invention relates to cushioned pads which may be used for a variety of purposes, one of which is as an insulating pad for use in the walls and roofs of buildings, and it further relates to the method of making the same.

The main object of the invention is the production of a cushioned pad, the elements of which are united by a plurality of lock stitches so constructed that the said pad may be greatly increased in thickness when the filling material expands while permitting the opposite faces of the pad to remain flat and parallel.

This object is attained by the means illustrated in the accompanying drawing.

For the purpose of illustrating the invention, one preferred form thereof is illustrated in the drawing, this form having been found to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized, and the invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described except as required by the scope of the appended claims.

Of the drawings—

Figure 1 represents a plan of a pad embodying the principles of the present invention, the stitches uniting the various elements thereof being shown drawn out and elongated.

Figure 2 represents a portion of the same on line 2, 2 on Fig. 1, the elongated loops of the stitches being shown extending upwardly although in practice they never would assume this position but would lie flat on the upper side of the pad.

Figure 3 represents an inverted plan of the pad and showing the lock stitches.

Figure 4 represents a plan of the pad after the layer of wool between the upper and lower sheets has expanded to its fullest extent.

Figure 5 represents an elevation of the same.

Figure 6 represents an enlarged detail of one of the stitches uniting the various elements of the pad when it has expanded to its fullest extent, and

Figure 7 represents a detail showing the lock stitch on the bottom of the pad.

Similar characters indicate like parts throughout the several figures of the drawing.

In the drawing, 10, 11 represent two sheets of fibrous covering material between which is interposed a layer 12 of fluffy expansible filling material such as wool the sheets 10, 11 being of such a character as will prevent the tearing of the same during the construction of the pad or subsequently thereto.

The upper and lower sheets of material 10, 11 and the layer of filling material 12 interposed between them are united by a plurality of stitches 13, the locking portions of these stitches being beneath the lower sheet of material 11.

When the elements of the pad are being stitched together the pad is somewhat compressed, as shown in Fig. 2.

This pad in its compressed condition is fed into a sewing machine by which the lock stitches 13 are formed by suitable stitching mechanism.

During this operation as each loop is formed by the stitching mechanism, it is seized and drawn out into elongated condition and extended above the upper sheet 10 as indicated at 14 in Figs. 1 and 2.

The elongated loop 14 of each stitch is retained in its extended position until the next stitch 15 is formed and then released.

By this means each stitch 13 is very loosely formed making it possible for the upper and lower sheets 10, 11 to further separate from each other when the pad is released from the sewing machine and the filling layer 12 begins to expand.

While the stitches 13 are being formed the pad is about two inches in thickness as indicated in Fig. 2, but when the filling material expands the sheets 10, 11 may be separated to such an extent that the pad will be four or five inches thick as shown in Fig. 5, thus making a very soft and compressible cushion which may be used for a variety of purposes, such as car seats and cushions for the backs of the seats.

Obviously, many kinds of filling material may be used in the layer 12 according to the purpose the pad is to be used.

One of the prime objects of the invention is to provide a pad in which the layer 12 will be made of glass or mineral wool and a pad thus made is particularly desirable for insulating material in the walls and roofs of buildings.

By making the layer 12 of glass or mineral wool it will be fireproof and also proof against vermin, which is of great advantage.

When the stitches 13 have been formed uniting the various elements 10, 11 and 12 of the pad, the under side of the lower sheet 11 has applied thereto an adhesive 15 extending over the lock stitches which holds the stitches in position relatively to said sheet 11, thus preventing any displacement of the thread forming the stitches 13.
while the pad is expanding to take up a part of the slack in the loops 14 of the stitches. In forming the pad the sheets of covering material 10, 11 are flat and in parallelism, and when the pad expands from the condition shown in Fig. 2 to the condition shown in Fig. 5, showing the best expansion of the pad, these sheets 10, 11 remain in parallelism.

If a layer of filling material such as wool between two sheets was sewn together by tight stitches and then the layers expanded, the sheets 10, 11 between the odd rows of stitches would bulge out and the pad would have what is known as a biscuit effect and obviously this would be objectionable, particularly where the pad is to be used in the walls or roofs of buildings as an insulating device.

In shipping the pads they may be compressed to a considerable extent with the surplus thread in loops 14 laying flat on the upper surface of the pad and when unpacked at their destination and placed in the cavities they are to fill the filling material will immediately begin to expand and greatly increase the thickness of the pad without permitting the opposite faces of the pad to get out of parallelism. The loops 14 are of such a length as to permit the greatest expansion of the material between the two sheets without bending either sheet inwardly at any point.

The covering sheets 10, 11 are preferably made of fibrous material having two sets of fibers crossing each other.

The covering sheets 10, 11 could be made either of paper or cloth and in some high temperature insulation work these sheets might be made of woven asbestos or cloth made of glass wool thread to resist extremely high steam temperatures up to a top limit of approximately 900°.

Ordinarily the sheets are made of paper having fibers embedded in asphalt between two sheets or paper and calederened into a single sheet. However, the formation of such sheets 10, 11 forms no part of the present invention as the material used in these sheets is a patented product and purchased in the open market.

While throughout the specification the word "wool" is referred to as the filling material, this wool may be of glass wool, mineral wool, natural wool, or of any loose, soft fibrous material, or even formed of asbestos or kapok.

In Fig. 3 of the drawing is shown an adhesive 15 which extends over the lock stitches 13, this being a ready means of preventing the lock stitches from movement relatively to the under sheet 11.

It is obvious that other means might be employed to produce this same result. For instance, it is only necessary that the adhesive be put on to the thread so that when it hardens the thread is sized stiffly and has the effect of a kinked wire preventing the loops from drawing through each other. It is also possible to do this with a thread that is sized before sewing and applying moisture to it after sewing, the moisture giving the thread a permanent set in the loop position. In constructing the pad it is intended that there shall always be some slackness in the loops 14, even when the pad has fully expanded.

It is believed that the operation and many advantages of the invention will be readily understood without further description.

Having thus described our invention, we claim:

1. The method of forming cushioned pads consisting of feeding to a sewing machine two sheets of tough material between which is interposed a thick layer of compressed expansible wool, uniting said sheets and layer by a plurality of lock stitches, and drawing out the loop of each stitch above the upper sheet during the formation of the next stitch to a length sufficient to permit the extreme expansion of said wool.

2. The method of forming cushioned pads consisting of feeding to a sewing machine two sheets of tough material between which is interposed a thick layer of compressed expansible wool, uniting said sheets and layer by a plurality of lock stitches, drawing out the loop of each stitch above the upper sheet during the formation of the next stitch to a length sufficient to permit the extreme expansion of said wool, and subsequently releasing the drawn out loop after the formation of the next stitch.

3. As a new article of manufacture, a cushioned pad consisting of two separated parallel sheets of covering material having between them a thick layer of compressed expansible mineral wool, said sheets being flat and connected together by threads loosely stitched through said layer of material with elongated loops of surplus thread above the upper sheet thereby permitting further separation of said sheets upon the expansion of said filling material, said sheets remaining flat and parallel during and after the expansion of said filling material.

4. As a new article of manufacture, an insulating pad consisting of two separated parallel sheets of covering material having between them a thick layer of compressed expansible mineral wool, said sheets being flat and connected together by threads loosely stitched through said layer of wool with elongated loops of surplus thread above the upper sheet thereby permitting further separation of said sheets upon the expansion of said wool, said sheets remaining flat and parallel during and after the expansion of said wool.

5. As a new article of manufacture, a cushioned pad consisting of two separated parallel sheets of covering material having between them a thick layer of compressed expansible filling material, said sheets being flat and connected together by threads loosely stitched through said filling material with elongated loops of surplus thread above the upper sheet thereby permitting further separation of said sheets upon the expansion of said filling material, said sheets being locked together beneath the lower sheet and having above the upper sheet loops of sufficient length to permit the extreme expansion of said filling material without bending said sheets.

6. As a new article of manufacture, a cushioned pad consisting of two separated parallel sheets of covering material, a layer of compressed expansible filling material between said sheets, and a plurality of stitches extending through said filling material and sheets with loose elongated loops of surplus thread permitting a greatly increased separation of said sheets, the length of said loops being sufficient to permit said filling material to expand to a thickness over twice as great as its thickness when compressed without bending either sheet from its normal flat plane.

7. As a new article of manufacture, a cushioned pad consisting of two flat sheets of fibrous covering material in parallelism with a layer of compressed expansible filling material between them all connected together by stitches, each stitch having an elongated loop of surplus thread extending over twice as great a thickness as its thickness when compressed without bending either sheet from its normal flat plane.
tending above the upper sheet, said loops of surplus thread being adapted to permit a much greater separation of said sheets upon expansion of said filling material while permitting said sheets to remain in parallelism during and after such expansion.

8. As a new article of manufacture, a cushioned pad consisting of two separated parallel sheets of covering material having between them a thick layer of compressed expandible filling material, said sheets being connected together by threads loosely stitched through said layer of filling material with loops of thread extending above the upper sheet thereby permitting a greatly increased separation of said sheets upon the expansion of said filling material without affecting the parallelism of said sheets, said stitches being locked together beneath the lower sheet and secured to said lower sheet by an adhesive substance.

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