

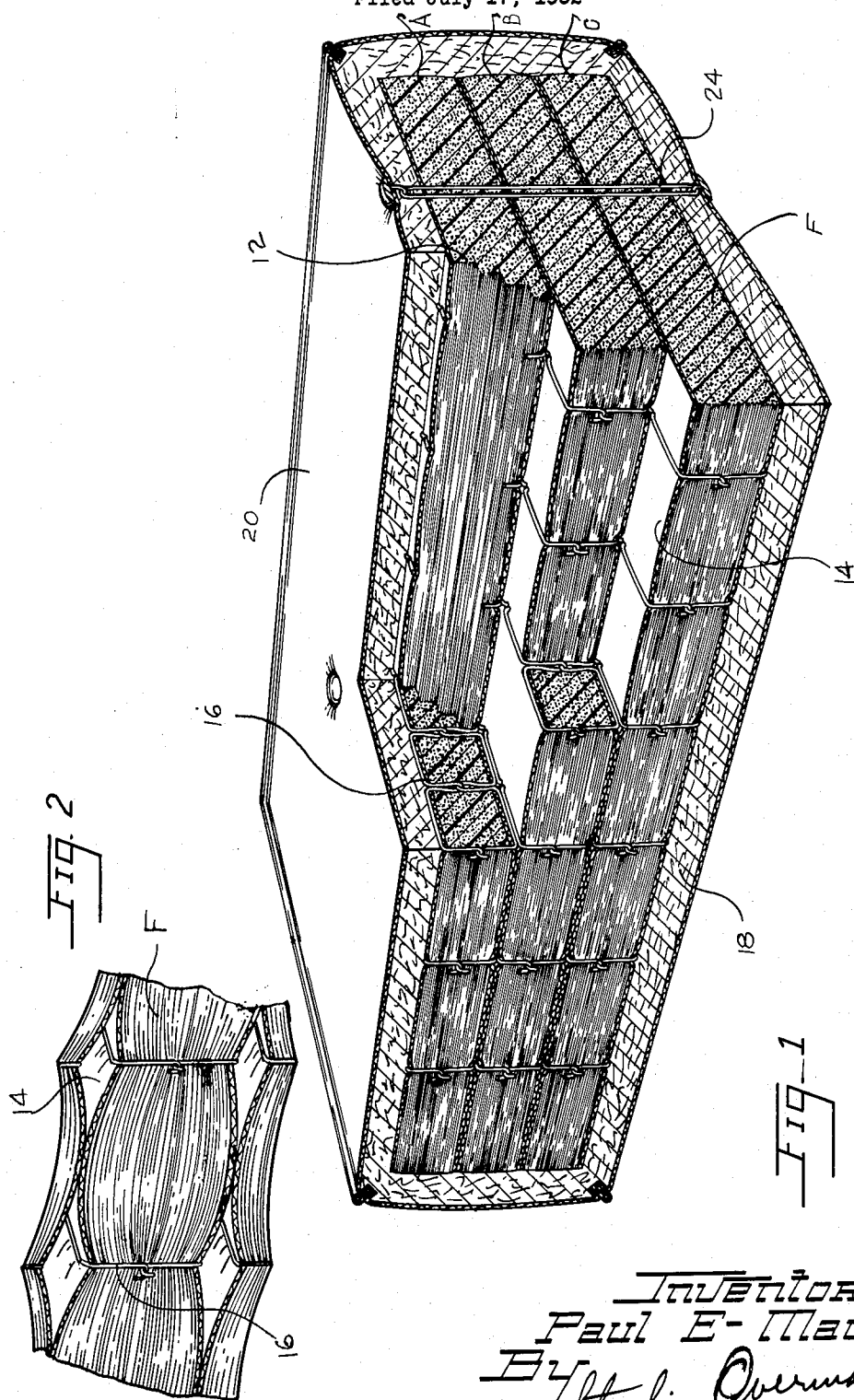
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CUSHIONS AND CUSHIONING MATERIAL

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CUSHIONS AND CUSHIONING MATERIAL

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This invention relates to cushion or padding construction particularly of the type used for mattresses, seat cushions and other upholstered products.

In the past, fibrous glass material has been used in the construction of pillows, cushions, and padding. The material was extremely useful where its non-allergenic characteristics were of primary consideration. For general use however, improved wearing properties were required. To achieve this and, militate against any attrition effect, fibrous glass has been coated with lubricating or binding materials and impregnants, for instance rubber latex and the like.

It was found in attempting to increase the life of the fibrous glass cushioning material that coarse fibers were short-lived and by using a finer and finer fiber, the life of the material was extended. However, it was found that the utilization of fibers sufficiently fine to decrease brittleness and self attrition resulted in cushioning that was too fluffy, soft and compressible.

An object of this invention is to obviate the above disadvantages and produce a fibrous glass cushion or padding material which is highly durable and satisfactory for the purpose.

Another object is to produce a fibrous glass cushion or padding which can be readily and economically manufactured on a commercial basis.

A further object is to produce a process for manufacturing cushions and the like of a fibrous glass material which militates against the breaking down of the fibers when in use.

Other objects and advantages will hereinafter appear and for the purposes of illustration, but not of limitation, an embodiment of the invention is shown in the accompanying drawing in which:

Figure 1 is a fragmentary sectional view in perspective of a cushion showing the invention; and

Figure 2 is an enlarged fragmentary sectional view showing in exaggerated fashion the bulged portions of the pads intermediate the rows of stitches.

The present invention is based on the discovery that if the fibrous glass is built up in a plurality of laminates and each lamination is individually quilted, the attrition effect is substantially eliminated and the life of the cushion or padding material is prolonged to such an extent that a seat cushion or pad made from the material is highly practicable in addition to having the other attributes hereinbelow set forth.

The illustrated embodiment comprises a cushion made up of a plurality of superposed pads A, B, and C of fibrous glass. For best results, the fibers are of a diameter of the order of fifteen hundred thousandths of an inch, and should not be less than ten nor more than twenty hundred thousandths of an inch.

Each pad comprises a plurality of laminates or mats 12 which are composed of a mass of glass fibers. The fibers, generally indicated at F, are arranged in generally helter-skelter relation to each other and are bonded together into the mat 12.

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The separate mats are preferably made by depositing by means of a blast of air or gas, long, fine glass fibers onto a suitable collecting surface. The fine fibers double back and forth on the surface to be haphazardly arranged in horizontal planes but, because of their length, they are predominately parallel with the collecting surface and with the major faces of the mat. The fibers of the mat 12 are bonded together by means of a suitable adhesive such as a resin, for example phenol or urea formaldehyde, and apparently because of the small diameters of the fibers the mat may be of very low density, ordinarily weighing approximately one half to one pound per cubic foot. The rectangular or other desired shapes to correspond to the shape of the cushion are cut from the mat. The mats 12 are then superposed on each other to build up a laminated pad of three to four inches in thickness.

The built-up layer of superposed mats or the pad is then enclosed between sheets 14 of muslin or similar fabric or other flexible and preferably porous sheet material. The pad is then quilted by stitches extending across or transversely of the fibers. As shown, a line of quilting stitches 16 compacts the mass and thereby increases its density to approximately three to five pounds preferably four pounds, per cubic foot measured at the location of the stitch passing through the pad. The thickness of the pad is preferably reduced to about one inch measured at the points where the stitches 16 extend through the pad. Other forms of quilting means may be used to advantage, such for example as a line of tacking stitches or other devices which are effective in achieving the desired compacting action.

The number of pads employed depends upon the thickness required in the mattress or cushion, ordinarily three, four, or up to six or more of the pads being superposed to build up into a cushion of about three to six inches thick. It has been found advantageous to arrange the pads in such manner that the rows of quilting stitches 16 of one pad are disposed directly over the row of the pad below. Stacks of three to six pads ordinarily are adequate.

The quilted pads prior to being superposed may have an adhesive or friction-increasing coating applied to the meeting faces of the muslin or other covering on the pads to militate against undue lateral shifting of the layers with respect to each other during the use of the cushion.

The assemblage is then inserted into or otherwise enclosed within the usual upholstery covering 20 after first being encased in cotton batting 18 or the like. In the case of a mattress, it may be enclosed in an envelope of ordinary ticking. Upholstery fasteners 24 may be employed for aiding in holding the structure together.

In large measure the practicability of the cushion depends on the combination of the plurality of mats used in making up a pad, the plurality of pads used in making up a cushion, and the quilting procedure. This combination has been found to be critical with respect to the wearing properties possessed by the finished product. It has been found that where the rows of stitches or the stitches in the rows or both are spaced substantially more than two inches from each other e. g., three or four inches, the finished cushion is inclined to be too springy and soft. On the other hand when the row of stitches or the stitches in the rows are substantially closer than two inches e. g., one inch apart, the cushion becomes too hard and unyielding.

The desired cushioning effect obtained with the stack of pads when the stitches or rows of stitches are on two inch centers, is apparently due to the fact that the bulges between the stitches form points of contact between the superposed pads. This is shown in exaggerated fashion in Figure 2. The density of the fibrous glass at the bulges defines the "feel" of the cushion or mattress particularly when lightly loaded.

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From the foregoing it will be manifest that a cushion or padding material which is highly durable and practical has been produced. The products described find many fields of usefulness due to their resilience, light weight, resistance to mildew and rot, and durability. The method described for the production of the cushion material is simple and economical.

I claim:

1. An intermediate article of manufacture to be used in the making of cushions comprising a pad of glass fibers of the order of 0.00015 of an inch, the pad being made up of a plurality of mats of fibers interbonded in haphazard relation, the fibers of all the mats being of the same diameter and the same kind and the mats being all of the same density, and a plurality of equispaced rows of quilting stitches in the order of two inches apart extending through the pad compressing the mats to such an extent that the density of the mats is increased to a predetermined value several times its original value.

2. An intermediate article of manufacture to be used in the making of cushions comprising a pad of glass fibers of the order 0.00015 of an inch, the pad being made up of a plurality of mats of the fibers, a thermosetting resin used to bond the fibers together in haphazard relation, the fibers of all the mats being of the same diameter and same kind and the mats being all of the same density, and a plurality of equispaced rows of quilting stitches in the order of two inches apart extending through the pad compressing the mats in the region of the stitches to the order of four times its original value.

3. An intermediate article of manufacture to be used in the making of cushions comprising a pad of glass fibers of the order of 0.00015 inch in diameter, the pad being made up of a plurality of mats of the fibers interbonded in haphazard relation, the mats being of the order of one inch thick and of the density of the order of one pound per cubic foot, the fibers of all the mats being of the same diameter and same kind and the mats being all of the same density, a sheet of flexible fabric on opposite sides of said pads, a plurality of equispaced rows of quilting stitches spaced in the order of two inches apart and extending through the pad compressing the mats to the density of the order of four pounds per cubic foot.

4. A resilient cushion comprising a plurality of pads in superposed relation, each of said pads being composed of a stack of mats of glass fibers of the order of 0.00015 to 0.00020 inch in diameter, a flexible sheet material on opposite sides of each of the pads, a plurality of parallel rows of constricting stitches through each pad spaced at two inch intervals to increase the density of the pad in the region of the stitches to approximately four times its

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original density, the portion of the pads interjacent the rows of stitches being in alignment and contact with such portions of juxtaposed pads whereby the pads and the cushion yield elastically, and an envelope of cotton batting and an outer covering of upholstery.

5. An intermediate article of manufacture to be used in the making of cushions comprising a pad of glass fibers of the order of 0.00015 inch in diameter, the pad being made up of a plurality of mats of the fibers interbonded in haphazard relation, the mats being of the order of one inch thick and of the density of the order of one pound per cubic foot, the fibers of all the mats being of the same diameter and same kind and the mats being all of the same density, and a plurality of equispaced rows of quilting stitches extending through the pad compressing the mats in the region of the stitches to approximately four pounds per cubic foot, spacing the rows of stitches a distance apart sufficient to enable the portion of the mats interjacent the rows to yield elastically to a density somewhat less than four pounds per cubic foot yet close enough to retain the mats against general motion relative to each other.

6. A resilient cushion comprising a plurality of pads in superposed relation, each of said pads being composed of a stack of mats of glass fibers interbonded in haphazard relation with a predominance of the fibers lying in a direction substantially parallel to the major surfaces of the respective mats into which they are incorporated, a flexible sheet material on opposite sides of each of the pads, a plurality of parallel rows of constricting stitches through each pad spaced at two inch intervals to increase the density of the pad in the region of the stitches and the portions of each pad interadjacent the stitches being in direct alignment with corresponding stitches and portions of adjacent superposed pads, the interadjacent portions of immediately adjacent pads being in contact with each other whereby the pads and the cushion yield elastically under load, an envelope of cotton batting overlying the exterior surfaces of the superposed pads, and an outer covering of upholstery over said batting.

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