

[54] **COMPRESSION PAD OF KNITTED ELASTIC**

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[51] Int. Cl. **D06f 71/36**

[58] Field of Search **38/66, 140**

[56] **References Cited**

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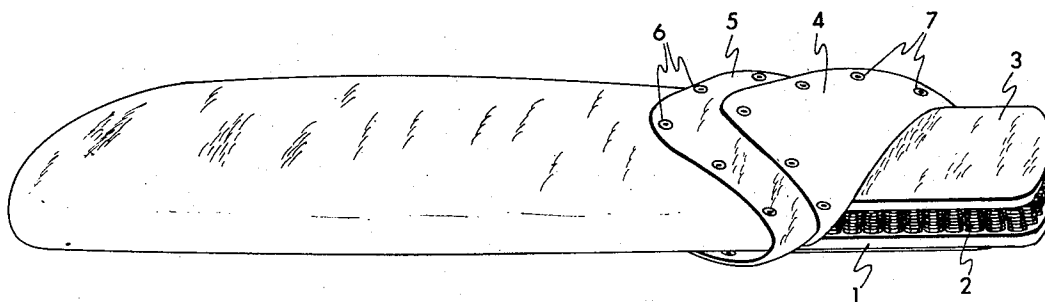
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[57]

ABSTRACT

A resilient body for use under compressive conditions comprising knitted material knit from rubber (or other elastic material) thread-like strands, the said body being of sufficient thickness to permit considerable travel of compressing objects into the resilient body. The said resilient body is used as a laundry pad on commercial presses in laundry and cleaning establishments; as a shock mount, vibration damper, vibration isolator, or a cushion or packaging pad, and as a component of automobile or other tires.

26 Claims, 9 Drawing Figures



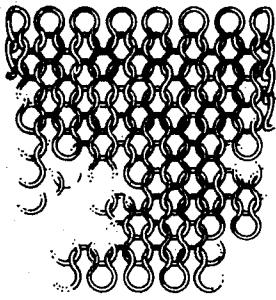


Fig. 1

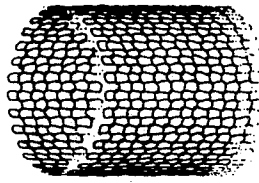


Fig. 2a

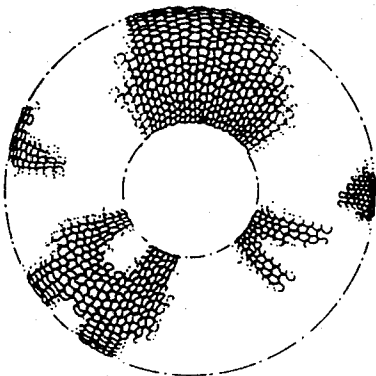


Fig. 2b



Fig. 2c



Fig. 3



Fig. 4a



Fig. 4b

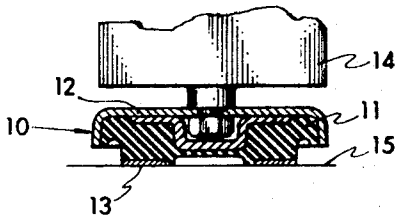


Fig. 5

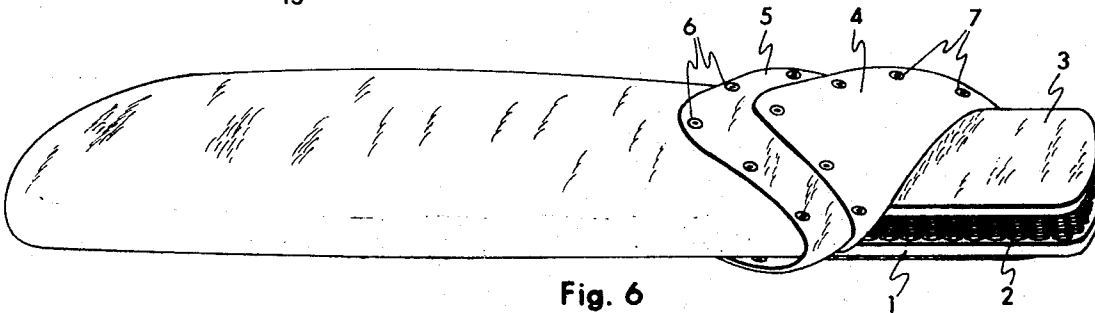


Fig. 6

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COMPRESSION PAD OF KNITTED ELASTIC

The present invention relates to an improved resilient body for use under compressive conditions and to assemblies utilizing said resilient body under compressive conditions. More particularly, this invention relates to such a body comprising knitted material knit from thread-like strands of rubber or other elastic material, the said body preferably being of sufficient thickness to permit considerable travel of compressing objects into the resilient body. In another embodiment, this invention relates to an interconnected assembly comprising the above described resilient body disposed between two objects, the said objects being movable toward each other to compress the said resilient body.

Prior to the present various compressible pads have been known. Among these have been knitted wire mesh which although somewhat resilient and compressible will not return to its original thickness and shape after compression. With the present invention material considerable resilience is provided by the rubber and in an embodiment where wire covered by a rubber coating is knit, the rubber upon release of the deforming stress acts to pull the wire back into its original position, i.e. take the kinks out of it.

It is also well known in the art that solid or foam rubber can be used under compressive conditions. With respect to solid rubber, this is not nearly as compressible as the present material due to the fact that solid rubber under compression is inelastic if it has no space to deform into, e.g. if it is confined in a channel. Similarly, even if it is not so confined any compressive inward deformation must be transferred through the elastic material a considerable distance to a free surface where a corresponding outward deformation can occur. This requires considerable pressure. By comparison, with the present material, the rubber threads in pressing against each other have room to flatten into the free spaces between the threads. Thus, the distance over which the deformation must be transferred is much less and the pressure required for a corresponding deformation is also less.

An additional advantage of the present resilient body is that the openings in the knit fabric provide space for air or other gases to pass through the body from one side to the other. This provides ventilation and cooling and is true even when two or more thicknesses of the knitted material are stacked one upon the other to provide the desired thickness. This free flow through the resilient body is necessary in laundry pressing pads to permit steam to pass through the clothing being pressed into the pad.

In use of the present resilient body in vibration isolators, shock absorbers and especially in isolation dampers this free flow of gases through the body is highly desirable to provide cooling. Thus, when solid rubber is used it becomes heated due to the energy converted to heat by the vibrations and this heat causes deterioration of the rubber. With the present resilient body not only is cooling provided by convection flow of air through the openings but also by the vibrations themselves acting through each deformation and relaxation to suck air through the openings. It is noted that although means have been used to dissipate heat in solid rubber such as producing slits or slots or perforations in the rubber to provide ventilation and cooling, such means have been relatively expensive and are not nearly as effective as the present material which provides large interconnected openings and require lower pressures for a corresponding deformation.

As to foam rubber, this material of course, does not provide ventilation and/or cooling except where special expensive procedures are used to obtain open pore sponge rubber and additionally is not nearly as strong, e.g. against tearing as in the present material. This is due to the extreme weakening of the elastomer structure which occurs during the simultaneous foaming curing operation. It is noted also that certain types of rubber cannot be foamed because of the chemical compositions involved.

As compared to woven material, the present knitted material having large openings knit from small strand thread is stable

in holding its width and maintaining the opening size. A corresponding large opening loosely woven material would be unstable since the warp and woof threads are not interlocked. However, despite this disadvantage some of the advantages of the knitted material are obtained with woven material. Therefore, in a less preferred embodiment hereafter whenever knitted material is referred to, it is contemplated that woven material may also be used as within the scope of this invention.

The present invention will be more clearly understood from a consideration of the attached drawings wherein:

FIG. 1 is a face view of a single ply of one type of knitted rubber mesh which may be used as a base material for the present resilient bodies.

FIG. 2a is a side view of tubular knitted mesh.

FIG. 2b is an end view of the tubular knitted mesh of FIG. 2a rolled upon itself (as one rolls a stocking on the leg) into a doughnut, the said doughnut being suitable for use as a vibration mount pad.

FIG. 2c is a perpendicular section through the doughnut of FIG. 2b.

FIG. 3 is a side view of tubular knitted rubber mesh flattened to form a resilient pad of this invention.

FIG. 4a is a side view of a rectangular piece of knitted rubber mesh which has been folded upon itself so that two edges are adjacent to each other.

FIG. 4b is the article of FIG. 4a which has been additionally folded upon itself along the line of the adjacent edges with the said edges being interior to such fold.

FIG. 5 is a mechanical assembly comprising a vibration isolator utilizing the knitted rubber mesh of this invention and two objects subject to vibration separated by said isolator, the said objects being in contact with the vibration isolator at least at the time of maximum displacement of the objects towards each other from their equilibrium position.

FIG. 6 is a laundry press assembly utilizing the laundry pads of this invention.

The resilient bodies of this invention are produced from base material which may be any type of knit mesh knit from "rubber" strands. Thus, it may be of a tubular knit type (knit on circular machines), a flat knit type (knit on flat bed machines) or various other types. Referring to FIG. 1, there is represented a length of weft knit (also known as plain knit) single ply fabric. This fabric may be knit as a single ply material on a flat knit machine or as a double ply material on a tubular knit machine. With respect to the latter material it may be slit to form a single ply material as represented in FIG. 1 or used as double ply material. Alternatively, warp knit fabric knit from "rubber" strands (not shown) may be used as the base material for the resilient bodies of this invention. Such material can be knit on flat or tubular knit machines as above described and used as a single ply or double ply material also as above described.

Particularly preferred knits are rib stitch and purl knits as described in "Introduction to Fibers and Fabrics Their Manufacture and Production," E. Kornreich, Elsevier (1966). With respect to the former this is widely used in decorative fabrics to produce thicker material, i.e. yarn is knit several layers thick with the stitches interlocked between the layers. This provides a thicker, denser, more unitary material for the present pads than does building up the pads from multiple plies of knitted material not interlocked. With respect to purl knit material, this is preferred because it in general also provides a thicker, denser, more resilient material than does plain garter stitch material. It should be noted with respect to knit fabric generally that because of the interlocking of each stitch, fabrics can be knit with large openings while retaining a stable width and opening size structure. This can be seen in FIG. 1. By comparison a woven fabric with similar size openings would be extremely unstable. Relatively large size openings are desirable to obtain optimum resiliency characteristics. With respect to all the above described knit type preferred stitch densities are 2 to 30, preferably 4 to 18 needles per inch and 2 to 30, preferably 5 to 15 courses per inch. In general,

high course per inch densities will be used with high needle per inch densities and low with low. However, high needle per inch densities can be used with low course per inch densities but preferably not the reverse. Also, stitch densities will vary with the thickness of the strands being woven, the lower stitch densities being used with the larger strands. With respect to shock pads, fine knits are in general preferred for high frequency damping and course knits and hard rubbers for low frequency damping.

The base material of this invention is knit at least partially from rubber or other resilient material thread-like strands. The said strands may be of any thickness capable of being handled by knitting machines. Preferred thicknesses (diameters) of strands are 1 to 200 mils, preferably 10 to 100 mils and for the laundry pad application, preferably 15 to 30 mils. In addition, circular strands or other shapes can be used, e.g. square, rectangular, flat strands, etc. It is noted that the average diameter of these is also preferably in the above ranges.

The elastic material in the thread-like strands may be any elastic material. Among these are natural rubber and synthetic rubbers including SBR rubber (copolymer of butadiene and styrene), Nitrile rubber (copolymer of butadiene and acrylonitrile), Butyl rubber (copolymer of isobutylene with a small amount of isoprene), Neoprene rubber (polymer of 2-chlorobutadiene), Thiokol polysulfide rubbers, e.g. Thiokol A (compound of ethylene dichloride and an alkali polysulfide, Thiokol B (compound of dichloroethyl ether with a sodium polysulfide). Stereospecific rubbers produced with stereospecific catalysts, e.g. Ziegler catalysts such as polyisoprene rubber, cis-1,4-polybutadiene rubber and ethylene propylene rubber, and specialty rubbers e.g. capable of withstanding high temperatures such as silicone rubber (e.g. elastomer made by hydrolyzing pure dimethyldichlorosilane and condensing to form a high molecular weight solid polymer. Other elastic materials which can be used are synthetic elastomer fibers such as Spandex (synthetic polymer comprised of at least 85 percent of a segmented (alternating segments of different stretch resistance characteristics) polyurethane). Of these materials, particularly preferred for laundry pads are silicone rubber and any other material able to withstand high temperatures, steam and chemical, e.g. chlorine cleaning solutions. Particularly preferred for shock mounts, vibration dampers, vibration isolators, cushion pads, etc. (hereinafter referred to as shock pads) are neoprene rubber (excellent for shock mount) and butyl rubber (excellent for absorbing energy which is converted to heat).

In one preferred embodiment the base material for the present invention resilient bodies is knit entirely from the above described elastic thread-like strands. However, in another preferred embodiment in addition to the elastic strands a strand of a generally non-elastic, non-metallic material may also be incorporated in the knit either by being knit in with the elastic thread as a double thread or by being knit into the fabric separately as one of the threads. Such non-elastic non-metallic strand may have a thickness (average diameter) of 10 to 100,000 denier, preferably for laundry pads 10 to 10,000 denier, more preferably for laundry pads 100 to 1,000 denier. For shock pads such non-elastic, non-metallic thread may preferably have a thickness (average diameter) of 100 to 100,000 denier, more preferably 1,000 to 10,000 denier. An advantage of using such additional non-elastic strand is to prevent excessive stretching of the elastic thread during knitting. An additional advantage in the shock pad application is to act as a filler and in the laundry pad application to thus provide a smooth surface of the non-elastic, non-metallic strand which as is well known in the elastic garment art, can be caused to "plate" over and cover the elastic material e.g. as described in U.S. Pat. No. 2,009,361. Alternatively, it is possible to provide such a smooth surface for laundry pads by winding the elastic strand with a non-elastic, non-metallic strand to cover it, e.g. "Lastex" yarn. The thickness of such non-elastic, non-metallic strand wound on the elastic strand is the same as

described above where the strand is woven into the fabric. Suitable non-elastic, non-metallic strands either to be knit in with or to cover the elastic strands may be any natural or synthetic fiber material with cotton, rayon, nylon, wool and silk being particularly preferred. Particularly preferred for the laundry pad embodiment is "Nomex" fluorocarbon polymer. The ratio of volume of elastic thread to volume of non-elastic, non-metallic thread in the knit is preferably 10 to 1 to 1 to 10.

In addition to or in place of the non-elastic, non-metallic strand knit in with the elastic strand, metal wire may also be used. Suitable metals may be any metal or metal alloys suitable for forming into wire or strips, e.g. stainless steel, inconel, monel, aluminum, copper and steel. Preferred metals for use in laundry pads and for above pads are stainless steel, inconel or monel. It is noted that regardless of the application, where small size wire is used metals having high tensile strength and corrosion resistance are preferred. The thickness (average diameter) of such wire is preferably 0.5 to 30 mil, preferably for shock pads 2 to 15 mil and preferably for laundry pads 3 to 8 mil. The ratio of volume of elastic thread to volume of wire in the knit in general preferably is 1,000:1 to 1:2, preferably for the laundry pad embodiment 10:1 to 1:1, more preferably 5:1 to 1:1, and preferably for the shock pad embodiment 1,000:1 to 1:2, more preferably 10:1 to 1:1. **The presence of such wire in the knit is advantageous in providing a semi-rigid material which will in general hold its desired size and shape for the final resilient bodies of this invention. Alternatively to incorporating the wire in the knit, the wire may be coated (or less preferably beaded along the edge of the wire) with the resilient material. This is desirable to minimize metal to metal contact which results in loss of resiliency and increased noise. In such case the thickness of the wire is as above described and the thickness of the coating is such that ratio of the average diameter of the coated wire to the average diameter of the uncoated wire is 2:1 to 50:1, preferably 10:1 to 20:1. The ratio of volume of elastic material to metal in the knit where coated wire is used is also in general the same as above described where the metal is present as wire knit into the fabric with the elastic material. It is noted that combinations of coated wire with elastic strands and/or with uncoated wire are contemplated as well as combinations of the above described wound elastic strands with inelastic strands and/or with elastic strands.**

To increase the thickness and resilience of the base material, this material after knitting may be crimped. In the embodiments incorporating metal wire the crimp will in general be caused to be retained by the wire. Similarly, but to a lesser extent, this will also occur where the knit incorporates the non-elastic, non-metallic strands above referred to (larger sizes thereof particularly). Retention of the crimp can also be obtained or aided by setting the crimp by heating or preferably by completing vulcanization of knits prepared utilizing partially vulcanized or unvulcanized strands. In any event, the crimp may be applied in any direction on the knit material with the distance between crimps (i.e. distance from top of one pleat to bottom of adjacent pleat) being preferably 0.1 to 1, more preferably 0.2 to 0.5 inches and with the height of crimp (distance from peak above to peak below perpendicular to the plane of the crimped sheet being preferably 20 mil to 1 inch, more preferably 100 mils to 300 mils. In another embodiment the base material may be crimped a second time usually perpendicular to the first crimp. Such second crimp will be applied as described above in connection with the first crimp.

The above described elastic strands can be fully vulcanized prior to knitting or can be unvulcanized or partially vulcanized strands prior to knitting. In the latter embodiment the knit material is formed or positioned into the desired shapes of resilient bodies as by crimping, piling several plys of knit material on top of each other, shaping, etc. and then heating to vulcanize. Such vulcanization after knitting fixes the knit material in the position desired and thus avoids the elastic material being under stress and fighting the non-elastic non-

metallic material. A non-stressed rest position for the elastic material permits the material to stretch and deform better. Also, in certain applications such vulcanization can be used to bond the plys of knit material together to form a unitary mass of good shape stability. This is desirable to reduce or avoid sliding friction under stress deformation. Varying amounts of pressure can be applied during such vulcanization to increase the density of the final knit to the desired extent. Thus, such pressure will progressively deform the elastic strands to fill more and more of the void spaces in the knit. Maximum deformation would produce a solid elastic article. Another method for controlling density (i.e. reducing it) is to crimp the material after knitting as previously described. This also increases interlocking and stability of the final product.

For the products of this invention generally and for shock pads particularly the final density of the body (whether formed with compression or without it) is preferably in the range of 100 percent to 2 percent, more preferably 60 percent to 10 percent (i.e. percent of total volume that is solid material).

Referring now to FIGS. 2a, 2b and 2c there is there presented in sequence the preparation of one preferred type of vibration mount pad. FIG. 2a presents a side view of tubular knitted mesh as described above. This material is preferably of a width of ½ inch to 6 feet, preferably 6 inches to 2 feet.

Referring next to FIGS. 2b and 2c the tubular knitted rubber mesh can be then rolled upon itself (as one rolls a stocking on the leg) into a doughnut represented in end view by FIG. 2b and in perpendicular section through the doughnut by FIG. 2c. The diameter of the circular sections of the doughnut represented in FIG. 2c are preferably 0.1 to 2 inches, preferably 0.5 to 1 inch. As previously discussed in one preferred embodiment the doughnuts are prepared from unvulcanized or partially vulcanized strands. The doughnuts are then completely vulcanized while pressure is applied perpendicularly to the axis of the doughnut to flatten and adhere the rolled material together. This produces more unitary and structurally stable resilient pads suitable as vibration or shock isolation or control pads. Preferably, the circular sections of the doughnut are flattened to a thickness still remaining within the ranges given above for the diameter of the circular sections.

Referring to FIG. 3, this is a side view of tubular knitted rubber mesh flattened to form a resilient pad of this invention. Such a pad can also be prepared by stacking one piece of flat knit material on top of another piece. In addition, more than two pieces of flat knit material or more than one piece of tubular material can be stacked on top of each other to build up a pad of any desired thickness. The edges of such pads either the edges at the ends of the tubes or all four edges of either tubular or flat knit pads can be loosely sewn to add structural stability to the pads. Alternately, or additionally as previously mentioned, the pads can be formed from unvulcanized or partially vulcanized strands with vulcanization being completed under a regulated amount of pressure to cause the plys of the pad to adhere and/or to compress to become more dense to add structural stability and obtain the desired amount of resilience for the particular purpose. Such pads can have a thickness whether produced with compressive final vulcanization or without it of preferably 0.03 to 6 inches, more preferably 0.1 to 2 inches, most preferably 0.5 to 1 inch. Preferred thicknesses for tire pads, e.g. the cushion layer between the carcass and the breaker strip for tires are 0.03 to 6 inches, preferably one-eighth to three-fourths inches, more preferably three-sixteenths to one-half inch.

Referring to FIGS. 4a and 4b there is there represented another way of preparing the resilient pads of this invention. FIG. 4a is a side view of a rectangular piece of knitted base material which has been folded upon itself so that two edges are adjacent to each other. The base material can be flat knit material or tubular knit material which has been slit to open the tube. After folding the material as shown in FIG. 4a the material is folded along the line of the adjacent edges with the

said edges interior to such fold as shown in FIG. 4b to prepare the resilient pad. The said pad can also be prepared starting with unslit tubular material which is folded to produce a pad of eight plys of knitted material rather than the four shown in the drawing. Also, in addition to folding the knit base material to build up the desired thickness final pad the base material can be merely randomly bunched up to produce the desired thickness. It is noted that the dimensional stability of the final article may be held by the use of wire or other non-elastic material in preparing the knit or by vulcanization after forming, etc. The thicknesses of the final resilient pads are the same as above described in connection with the dimensions of FIG. 3. This applies as to thicknesses before any pressure vulcanization and after such vulcanization. It is noted that the final resilient pads can be produced directly in the desired dimensions or in larger dimensions and then cut to the desired dimensions or shapes.

Referring to FIG. 5 there is there presented a front view of a mechanical assembly incorporating a resilient pad of this invention. Referring to the Figure the vibration or shock pad 10 is made up of the resilient material of this invention 11 separating a steel support for the machine 12 from the steel feet for the pad 13. A leg or other part of a machine or other object subject to vibration or shock 14 sits within the indentation (or on) the steel support 12 and the feet for the pad 13 sit on the object 15 which it is desired to isolate from the vibration or shock. The resilient material in such vibration or shock pad has the thicknesses and other characteristics described above and can be prepared also as described above. The shock pads may also be used as large continuous thick sheets placed under equipment to isolate vibration.

It is noted that in addition to usefulness as above described the shock pads of this invention can also be used as resilient pads for packaging to prevent damage in shipping, etc. Also, they may be used preferably in the rolled up sleeve (doughnut) embodiment for packing sealing against water and other liquids, gases, temperature isolation, etc.

Referring to FIG. 6 there is there presented a laundry press buck utilizing the knitted base materials of this invention in various ways. For ease of illustration, the drawing represents the most complex arrangement from which various elements can be eliminated or substituted to thus illustrate the various embodiments and uses of this invention. Referring to the drawing from the bare buck of the laundry press 1 there is built up first a layer of coil springs or other resilient body 2, then an overspring pad 3 which may be the knitted material of this invention of a thickness of 0.05 to 4 inches, preferably 0.1 to 2 inches, next a thin overlay pad 4 of the knitted material of this invention of a thickness of preferably 0.005 to 1 inch, more preferably 0.01 to 0.5 inch, most preferably 10 mils to 100 mils, and finally a thin cover 5 e.g. made of asbestos to provide a smooth surface for contact with the materials being pressed. In various embodiments of this invention the coil springs can be replaced with the various shock pad embodiments of this invention, e.g. the doughnut, the randomly bunched, etc. embodiments described above, etc. In such embodiments the thickness of this pad is incorporated into the thickness of the overspring pad so that only one pad is used and the overall thickness is within the range described above for the overspring pad. Alternately, in another embodiment this layer 2, can be eliminated entirely. With respect to the overspring pad 3 this can in other embodiments be eliminated entirely. With respect to the thin cloth cover 5, this also in various embodiments can be eliminated entirely. Such cover 5 may have snaps 6 to snap on to the underside of the buck 1. This cover then acts as an attachment means for maintaining the knitted pad(s) of this invention in place on the buck. Alternately, such attachment means, e.g. snaps 7 may be affixed in the overlay pad 4 to act as attachment means for such pad to snap onto the underside of the buck. Particularly preferred embodiments of this invention consist of (a) bare buck and overlay pad, (b) bare buck, overspring pad, overlay pad, (c) bare buck, overspring pad of thickness equivalent to

spring plus overspring pad and overlay pad, (d) bare buck, overspring pad, overlay pad and cover. It is noted that the various pads may be held in place by fastening the top pad to the buck with snaps or other fasteners or by knitting the top pad as a sleeve and stretching the sleeve over the buck.

What is claimed is:

1. A resilient pad comprising at least two plies of a knitted material knit at least partially from elastic comprising strands, in which the elastic component of such strands is an elastomer, the said pad being of a thickness of 0.03 to 6 inches.
2. The resilient pad of claim 1 in which the thickness of the pad is 0.1 to 6 inches.
3. The resilient pad of claim 1 in which the knitted material is knit at least partially from all elastic strands.
4. The resilient pad of claim 1 in which the knitted material is knit solely from elastic comprising strands.
5. The resilient pad of claim 1 in which the knitted material is knit at least partially from wire coated with an elastic material.
6. The resilient pad of claim 1 in which the knitted material is knit from elastic strands and wire strands.
7. The resilient pad of claim 1 in which the knitted material has a permanent surface crimp.
8. The resilient pad of claim 1 in which the pad consists of randomly bunched permanently compressively deformed knitted material.
9. A laundry pad comprising a knitted material knit at least partially from elastic comprising strands, in which the elastic component of such strands is an elastomer, the said pad being of a thickness of 0.005 to 4 inches and having attachment means on at least two sides for attaching said pad to a laundry press.
10. The laundry pad of claim 9 in which the knitted material is knit from elastic strands and from non-elastic non-metallic strands and in which the thickness of the pad is 0.01 to 0.5 inches.
11. A laundry press buck assembly comprising a laundry press buck and a laundry pad assembled on such buck, the laundry pad comprising a knitted material knit at least partially from elastic comprising strands, in which the elastic component of such strands is an elastomer, the said pad being of a thickness of 0.005 to 4 inches.
12. A shock mount assembly comprising a resilient pad separating an object subject to movement from an object to be isolated from such movement, the said objects being in con-

tact with the resilient pad at least at the time of maximum displacement of the objects toward each other from an equilibrium position, the said resilient pad comprising at least two plies of a knitted material knit at least partially from elastic comprising strands in which the elastic component of such strands is an elastomer, and being of a thickness of 0.03 to 6 inches.

13. The resilient pad of claim 1 in which the knitted material has a stitch density of 4 to 18 needles per inch, a course density of 5 to 15 courses per inch and the thickness of the strands is 10 to 100 mils.

14. The resilient pad of claim 1 in which the elastic in the elastic comprising strands is natural rubber.

15. The resilient pad of claim 1 in which the elastic in the elastic comprising strands is SBR rubber.

16. The resilient pad of claim 1 in which the elastic in the elastic comprising strands is butyl rubber.

17. The resilient pad of claim 1 in which the elastic in the elastic comprising strands is neoprene rubber.

18. The resilient pad of claim 1 in which the knitted material is knit entirely from elastic strands.

19. The resilient pad of claim 1 in which the knitted material is knit from elastic strands and fibers.

20. The resilient pad of claim 1 in which the knitted material is knit from elastic strands and wire strands and in which the ratio of the volume of the elastic strands to the volume of the wire strands is 10:1 to 1:1.

21. The resilient pad of claim 1 in which the knitted material is knit at least partially from wire coated with an elastic material and in which the ratio of the average diameter of the coated wire to the average diameter of the uncoated wire is 2:1 to 50:1.

22. The resilient pad of claim 1 in which the elastic comprising strands in the pad are vulcanized rubber comprising strands and are in a non-stressed rest position.

23. The resilient pad of claim 1 in which the elastic comprising strands are rubber comprising strands and in which the plies of knitted material are vulcanization bonded.

24. The resilient pad of claim 1 in which the knitted material is knit at least partially from wire coated with a rubber material and in which the plies of the knitted material are vulcanization bonded.

25. The resilient pad of claim 1 in which the knitted material is knit from rubber strands and wire strands and in which the plies of the knitted material are vulcanization bonded.

26. The resilient pad of claim 1 in which the edges of the pad are loosely sewn through the plies.

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