

United States Patent

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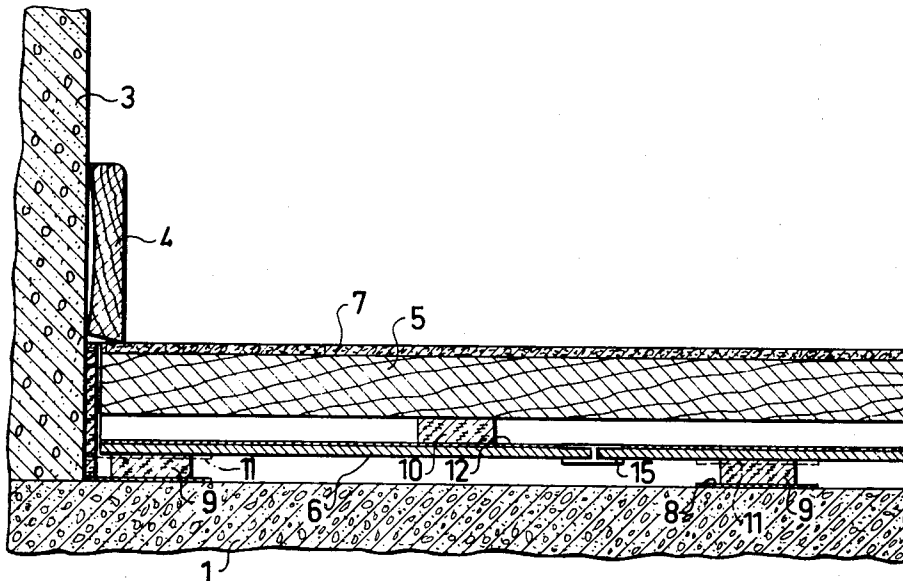
[54] **RESILIENT FLOOR**
6 Claims, 2 Drawing Figs.

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52/346, 52/480
[51] Int. Cl..... **E04f 15/22**
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ABSTRACT: The invention relates to resilient or elastic floors comprising an upper floor supported on a resilient means lying on a support. Said resilient means is built up from a lower layer of resilient elements positioned on the support, an intermediate floor positioned on said lower layer, and an upper layer of resilient elements positioned on the intermediate floor and supporting said upper floor.



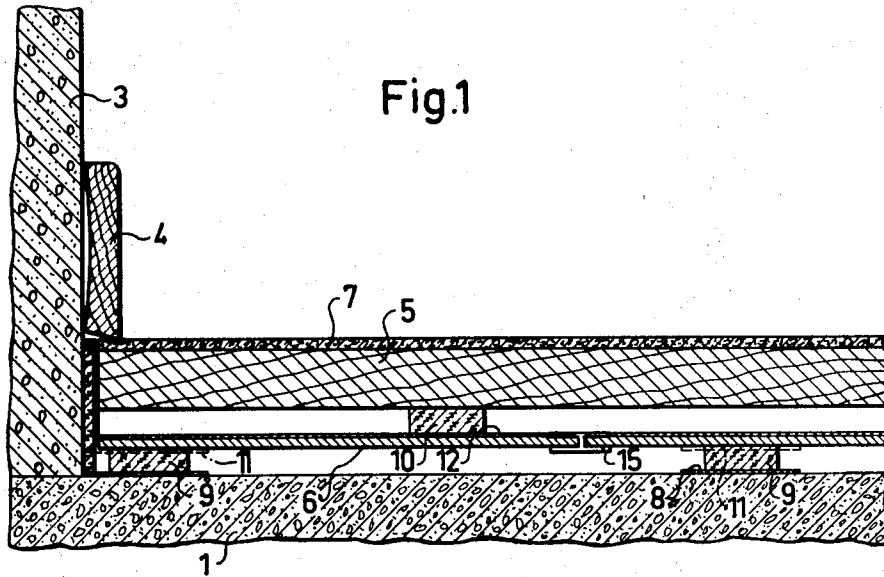
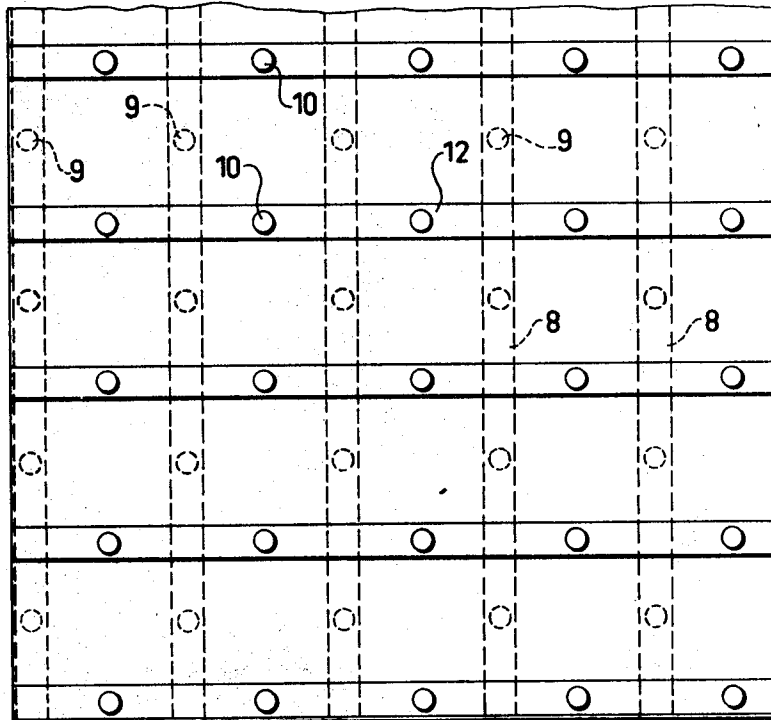


Fig.2



RESILIENT FLOOR

The present invention relates to resilient or elastically yielding floors, for instance for gymnastic establishments and the like.

In gymnastic and athletic establishments and similar buildings the floor covering is subject to certain requirements, as concerns its ability to yield elastically under load. Even if the problem of providing floors having the necessary resilience may seem simple at a cursory glance the experience shows, however, that the constructions will be expensive, time-consuming in erection and, moreover, to a great extent require a large space. Several designs are known and, usually, the floor is erected on a resilient structure consisting in a complicated system of wooden crossbars arranged on a non-resilient support, for instance on a concrete arch. Such a resilient structure is time-consuming in erection, requires excessive amounts of material and, moreover, requires an unnecessarily large vertical space, often even up to 20 cm. It is easily understood that the high cost in combination with the excessive space requirement of the structure causes an essential rise in price as compared to a conventional, nonresilient floor.

Moreover, it is subject to quite great difficulties to provide a uniform resilience and an acceptable elasticity irrespective of the point of action on the floor with a resilient floor based on a system of wooden crossbars as described above. Thus, there is a great demand for a cheap resilient floor that can be manufactured at a low price and in a short period of time and, moreover, requires a vertical space comparable to the requirement of conventional, nonresilient floors.

According to the present invention it has now surprisingly been found that a floor with resilience or elasticity comprising an upper floor supported on a resilient means, said resilient means being in turn supported on a support, for instance a concrete arch, can be obtained by making the resilient means from a lower layer of resilient elements supported on the support and evenly distributed thereon, an intermediate floor or diaphragm arranged on said lower layer and an upper layer of resilient elements arranged on the intermediate floor and evenly distributed thereon, the upper floor resting on said upper layer. Particular advantages are gained when the resilient elements in said lower layer are arranged in square formation on the support and the resilient elements in said upper layer are arranged in square formation on the intermediate floor and so displaced relative to the elements of the lower layer that each element of the upper layer lies in the center of the square, at the angles or corners of which the adjacent elements of the upper layer are positioned.

In order to facilitate the positioning of the elements on the support and the intermediate floor the resilient elements may be attached to bands, for instance of plastic or textile.

The present invention will now be described more closely to an exemplifying embodiment thereof diagrammatically shown in the appended drawing.

FIG. 1 shows a vertical section through the embodiment of the floor of the invention.

FIG. 2 shows a plane view from above of the embodiment of FIG. 1 having the upper floor removed.

In the embodiment shown in Fig. 1 the floor of the invention is arranged on a nonresilient support 1, for instance a concrete arch or a concrete floor. FIG. 1 shows part of the floor in a vertical section adjacent to a wall 3 having a kick ledge 4.

The floor structure proper consists in an upper floor consisting of a lower floor 5 of for instance wood fiber board or a particle board preferably tongued and grooved, and a floor covering 7 consisting of a linoleum mat, milled or textured vinyl plates or the like. The resilient part of the floor structure is based on two layers of resilient elements 9 and 10, respectively, separately by an intermediate floor or diaphragm 6. Resilient elements 9 are, in the embodiment shown, attached to plastic or textile bands 8, 12 and consist of cork plates or discs.

In FIG. 2 there is shown a plan view of the floor of FIG. 1, the upper floor being removed. The resilient elements 9 of the lower layer are indicated with dotted circles in FIG. 2 and said elements 9 of the lower layer are arranged in a square formation by positioning bands 8 regularly spaced and parallel to each other. The resilient elements 10 of the upper layer in FIG. 2 indicated with full circles are also arranged in a square formation but displaced relative to the lower layer half a pitch lengthwise and half a pitch crosswise. By this arrangement every element 10 of the upper layer will be positioned at an equal distance from each of the adjacent four elements 9 of the lower layer.

The described embodiment of the floor of the invention is shown in FIG. 1 in scale 1:2 and, thus, it is obvious that, in spite of the resilient characteristics of the floor, the structural height thereof does not essentially exceed that of a conventional, nonresilient floor. In view of the nonexpensive and simple design of the embodiment described above it may very well be used in floors in ordinary living houses, business and office apartments etc. Thanks to its resilience the floor will substantially reduce the tiredness in the legs of the persons staying on the floors in question. Of course, this is of a particular importance in such applications, where the persons in view of their profession walk over large distances, for instance in hospitals, shops and the like.

The intermediate floor 6 can consist of particle board or plywood sheets, and the joints between the sheets may be suitably fixed with joint profiles 15, for instance of rigid plastic (FIG. 1).

The embodiment of the floor of the invention shown in FIGS. 1 and 2 has excellent resilience characteristics in view of the fact that the resilience will be the same irrespective of the point of action on the floor thanks to the positioning of the elements 9, 10. Thus, the structure is particularly useful in gymnastic, athletic, and similar establishments and causes, in view of its simple design, a very small rise in price as compared to conventional, nonresilient floors. As shown in FIG. 1, where the floor is illustrated in scale 1:2, the building height is surprisingly small, in the example shown merely about 45 mm. The distance between the resilient elements in each layer may vary within wide limits depending on the particular materials used in the floor. However, in most cases a distance of about 15-20 cm. has been found suitable.

The resilient elements 9, 10 of the embodiments described above may, of course, be made of any suitable resilient material. Thus, capsules of plastic similar to those used for closing certain wine bottles may be used with advantage. Such plastic capsules may advantageously be welded with heat on plastic bands, the capsule suitably in the side wall thereof being provided with holes for increasing the resilience thereof.

The bands carrying the resilient elements 9, 10 may, in the factory, preferably be attached to both sides of the intermediate floor 6, whereby the time of work at the site can be substantially reduced. (Bands 11 indicated with broken lines in FIG. 1 and band 12 with full lines).

Thus, a surprisingly good resilience is obtained with the floor of the present invention, which resilience well fulfills the requirements on floors of gymnastic and athletic establishments etc. Moreover, a very good sound insulation is obtained with the floor, which essentially reduces the transmission of walk noise when using the floor in tenement houses or the like. In view of its sound-insulating ability the floor of the invention may, of course, also advantageously be used as a support for certain machinery, preferably light machines, so as to avoid transmission of machine vibrations and other machine noises to spaces lying below.

I claim:

1. A resilient floor, for use in gymnastic and athletic establishments, comprising an upper floor, a resilient structure for supporting said floor and a rigid support beneath said resilient structure for supporting same, said resilient structure comprising at least one lower layer of a plurality of resilient, independent, studlike elements supported by said rigid sup-

port and spaced from each other and distributed thereon in a spaced square formation, a diaphragm arranged on said lower layer of resilient elements and spaced uniformly from said rigid support, at least one upper layer of a plurality of resilient, independent, studlike elements arranged on said diaphragm and spaced from each other and distributed thereon in spaced squared formation and displaced relative to said resilient elements of the lower layer so that each upper element lies in the center of the square formed by the lower resilient elements when viewed in plan and a plurality of planar means, said resilient elements being attached thereto in the desired spaced relation to facilitate the positioning of the elements when erecting the floor, said upper floor resting on said upper layer of resilient elements.

2. A resilient floor according to claim 1, wherein said planar

means to which said resilient elements are attached are in turn attached to opposite sides of said diaphragm with the resilient elements extending outwardly therefrom.

3. A resilient floor according to claim 1 wherein said resilient studlike elements are composed of cork.

4. A resilient floor according to claim 1, wherein said resilient studlike elements are composed of resilient plastic.

5. A resilient floor according to claim 1 wherein said diaphragm is composed of a composite wood sheet.

6. A resilient floor according to claim 5 wherein said diaphragm is composed of a plurality of coplanar sheets and further comprising means attaching the sheets in coplanar relation.

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