This invention relates to a base for floor coverings and the like, and particularly to a base or "underlay" forming a suitable surface for the application of linoleum, rubber or composition tile, and similar floor coverings.

An object of the invention is to provide a simple, inexpensive, and satisfactory base, especially adapted for use where dampness is present, and one which is sufficiently strong and rigid so that cracks, ridges, or other irregularities in the floor will not show through the linoleum or other covering.

Another object of the invention is the provision of a base having surfaces of different character upon opposite sides, both surfaces being adapted to have floor covering secured thereto, so that either one surface or the other may be used as preferred.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully disclosed, the novel features being pointed out in the claims at the end of the specification.

In the drawing:

Fig. 1 is a diagrammatic cross section through a base constructed in accordance with one embodiment of the invention;

Fig. 2 is a similar view of another embodiment of the invention;

Fig. 3 is a similar view of still another embodiment;

Fig. 4 is a similar view of a fourth embodiment of the invention, and

Fig. 5 is a similar view of another possible embodiment.

Similar reference numerals throughout the several views indicate the same parts.

It has herefore been customary to lay linoleum, rubber tile, composition tile, and similar floor coverings either directly upon the wooden or concrete floor, or upon a layer of plain felt paper spread over the floor. In many instances, this is not wholly satisfactory. Where the floor is at all rough or uneven, having ridges or cracks therein, such unevenness is apt to show through the linoleum or other floor covering. Furthermore, where dampness is present, as for example in basement floors, the dampness is apt to pass through the felt and the floor covering.

The present invention provides an improved base for floor coverings which can be used not only on rough floors, but also in places where dampness or even excessive dampness is present. The preferred form of construction according to the present invention is waterproofed to an unusually high degree and effectively prevents the passage of moisture therethrough.

Referring now to Fig. 1 of the drawing, one possible embodiment of the invention is made up of what may be termed a structural unit of one or more layers of relatively hard, strong, and rigid fiber board thoroughly impregnated with a waterproofing agent during the process of formation of the fiber board. For example, a dispersion or emulsion or other suitable form of waterproofing agent such as asphaltum or other bituminous material, may be added in the beater or in the flow box or at any other point in the fiber board making machine prior to the complete formation of the board. In this way, the waterproofing agent thoroughly impregnates all parts of the fiber board so that the board, in spite of its relatively hard character, is waterproofed to an unusually high degree which cannot be attained simply by coating a finished hard fiber board with waterproofing material.

In the present instance, three layers of such thoroughly impregnated and waterproofed fiber board are shown in Fig. 1, designated by the numerals 11, 12, and 13, though obviously a greater or lesser number of layers may be used if desired, or a single relatively thick layer of homogeneous waterproofed board may be employed. These three layers are secured to each other by means of any suitable waterproof adhesive such as asphaltum or other bituminous material, the layers of adhesive being designated by the numerals 14 and 15.

To the top of this composite structural unit there is secured a layer 16 of relatively soft material such as felt paper, which is affixed to the top layer 13 of fiber board as by means of cement or adhesive 17, which may be of the same character as the adhesive layers 14 and 15 if desired.

When a base is constructed in the manner above described, the layers of fiber board provide a structural unit which not only is sufficiently strong and rigid to bridge any cranks or unevenness in the floor, but also the thoroughly waterproofed character of the fiber board, which has been impregnated with waterproofing agent during the formation of the board, makes this structural unit water-resistant to an unusually high degree so that even when it is laid on basement floors or elsewhere where excessive dampness is encountered, dampness will not pass upwardly through the base, and will not affect the cement used to affix the covering to the base.

The layer 16 of felt paper or other relatively soft material on the top of the base provides a surface well adapted to receive and hold tenaciously the cement or adhesive used in applying the linoleum, rubber tile, or other floor covering laid upon this base. Furthermore, this layer 16 has some resilience so that it may give or deform to some extent in response to stresses caused by different coefficients of expansion of the structural unit of the base and the linoleum or other covering laid on the base. Thus this somewhat...
resilient layer 16 in many cases prevents buckling of the floor covering which might be caused if the covering were cemented directly to hard and unyielding fiber board which had a different coefficient of expansion from that of the covering.

Furthermore, the use of the soft layer 16 has the additional advantage that if it is desired to nail the base in place, the nail heads may easily be countersunk into this layer 16 so that they will not project above it and will not show through the linoleum or other covering.

Another embodiment of the invention is illustrated in Fig. 2. Here again the structural unit of the base is formed of one or more layers of relatively hard and strong fiber board which has been thoroughly impregnated with waterproofing agent during the process of manufacture of the board. Three layers of such fiber board are illustrated in Fig. 2, and are designated by the numerals 21, 22, and 23, these layers being secured to each other by layers 24 and 25 of adhesive, which may be of asphaltum or other bituminous material.

To the top of this structural unit is secured a relatively soft layer 26 which may be of felt paper or the like, and it may be affixed to the structural unit by means of a layer 27 of adhesive similar to that constituting the layers 24 and 25. This layer 26 differs from the layer 16 of Fig. 1 in that instead of being plain felt paper or the like, it is lightly impregnated with asphaltum or other suitable bituminous material. It is to be emphasized that the felt paper is preferably not heated saturated with bituminous material but is only lightly impregnated therewith to an extent which does not seriously alter the soft and yielding character of the felt paper or destroy its ability to act somewhat as a cushion between the structural unit of fiber board and the floor covering of linoleum and the like. If desired, a layer 28 of felt paper or other suitable relatively soft material may be secured to the bottom of the structural unit by means of a layer 29 of adhesive which may be similar to that employed in the layers 24 and 25. Such a bottom layer 28 of felt paper or other soft material is advantageous especially where the floor on which the base is laid is unusually rough. In such cases, the roughness or unevenness of the floor will simply indent or deform the soft layer 28 without substantially affecting the shape of the structural unit of fiber board. A layer such as this may be used if desired on any of the other embodiments of the invention herein disclosed.

The product illustrated in Fig. 2 is preferred in many instances because of its usefulness under varying conditions. Manufacturers or installers of various types of floor coverings, such as linoleum, rubber tile, and the like, often have different preferences as to the character of the material or base on which the coverings are to be laid. Those who prefer to cement the floor covering to a layer of felt paper which has been lightly impregnated with bituminous material, will find the embodiment illustrated in Fig. 2 satisfactory when using the lightly impregnated layer 26 uppermost. On the other hand, those who prefer to cement the floor covering to a plain or unimpregnated layer of felt paper, may likewise use the embodiment illustrated in Fig. 2 simply by turning it upside down and placing the unimpregnated layer 26 uppermost.

This embodiment is especially adapted for use on unusually rough floors, as above pointed out, because of the layer of felt paper or similar soft material on the bottom, which compensates to a large extent for the roughness of the floor. At the same time, such a soft layer on the bottom is no detriment when the floor is smooth, so that this embodiment of the invention is applicable equally well to rough or smooth floors. The thoroughly water-proofed character of the fiber board structural unit makes this embodiment satisfactory when used in damp places such as cellar floors, while at the same time the waterproofness of the structural unit is not a detriment when it is desired to use the base in relatively dry locations. Thus it will be seen that this embodiment of the invention is useful under many widely varying conditions.

In Fig. 3 there is illustrated still another embodiment of the invention in which the structural unit is built up of one layer 30 of relatively hard and strong fiber board thoroughly impregnated with waterproofing material during the formation of the board, and one or more layers of relatively hard and strong fiber board which has not been impregnated. Two such layers 32 and 33 of unimpregnated board are illustrated. The various layers are secured to each other by adhesive 34 and 35, preferably of a bituminous waterproof character. A layer of felt paper is indicated at 36, and is affixed to the structural unit by a layer 37 of adhesive.

This embodiment of the invention is in general similar to those previously described, except that it is somewhat cheaper to construct since part of the structural unit is made of less expensive unwaterproofed fiber board and only one layer of the more expensive fiber board which has been thoroughly waterproofed during the process of manufacture, is used. Such a base as that here illustrated is not moisture resistant to quite such a high degree as that illustrated in Figs. 1 and 2, but it nevertheless does have a substantial amount of moisture resistance, considerably more than that obtainable without the use of fiber board which has been thoroughly impregnated with waterproofing material prior to the complete formation of the board. The layer 36 of felt paper may be either unimpregnated, like the layer 16, or lightly impregnated with asphaltum or other bituminous material, like the layer 26.

Another embodiment, illustrated in Fig. 4, has a structural unit built up of one or more layers of relatively hard and rigid fiber board thoroughly impregnated with a waterproofing agent during the manufacture of the board, two such layers 41 and 42 being illustrated, secured to each other by a layer 43 of adhesive. To the top of this structural unit is affixed a layer 44 of felt paper or the like, by means of a layer 45 of adhesive. On top of the felt paper is a layer 46 of textile fabric such as burlap, canvas, or the like, affixed by a layer of adhesive 47. Thus there is provided a textile fabric surface for receiving the floor covering, which in some instances is preferred to a surface of felt paper or similar material.

The embodiment illustrated in Fig. 5 is in general similar to that of Fig. 4, having layers 51 and 52 of fiber board thoroughly impregnated with waterproofing agent during the formation of the board, affixed to each other by adhesive 53. Here also a layer 54 of felt paper or the like is employed, secured to the fiber board by adhesive 55. This felt paper may be plain and
unimpregnated or may be lightly impregnated with bituminous material or other waterproofing agent as desired. On the top of the felt paper, and corresponding to the textile fabric 46 of the embodiment shown in Fig. 4, is a layer 56 of paper, preferably of a strong variety such as kraft paper, which may be secured to the felt paper by means of adhesive 51. Some manufacturers or installers of floor coverings prefer to cement their products to a layer of paper, and the embodiment illustrated in Fig. 5 may be utilized where such preference exists. It will be seen that one main and underlying feature is present in all of the various embodiments illustrated, namely, the utilization of one or more layers of relatively strong and hard fiber board which has been thoroughly impregnated with waterproofing material during the formation of the board, as for example, by the addition of an emulsion or dispersion of bituminous material to the beater or flow box. So far as I am aware, fiber board thoroughly waterproofed in this way during the formation of the board has never before been employed in a base for floor coverings. This novel feature of the present invention results in an extremely satisfactory base underlay for floor coverings which has unusually high water-resistant qualities, so that it may be used satisfactorily in unusually damp places and will not permit appreciable amounts of moisture to pass through the base. Thus the moisture tending to rise from beneath is prevented from attacking or affecting the cement or adhesive used to keep the floor covering in place, and the floor covering itself is kept dry and free from dampness. The term fiber board as used in this specification and the accompanying claims is intended in a broad and generic sense, and includes products usually known as cardboard, chipboard, pasteboard, binders board, and the like, many forms of which are sufficiently hard and rigid so that they may be used satisfactorily according to the present invention. While certain embodiments of the invention have been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is therefore not to be limited to the precise details described, but intended to cover all variations and modifications thereof falling within the spirit of the invention or the scope of the appended claims.

I claim:

1. A base for floor coverings and the like comprising one or more layers of relatively strong and hard fiber board having a waterproofing agent thoroughly incorporated therein during the formation of the board, and a layer of felt paper associated with said fiber board, said felt paper being lightly impregnated with bituminous material.

2. A base for floor coverings and the like comprising one or more layers of relatively strong and hard fiber board having a waterproofing agent thoroughly incorporated therein during the formation of the board, a layer of felt paper associated with said fiber board, and a layer of paper secured to said felt paper to provide a surface to which floor coverings and the like may be secured.

3. A base for floor coverings and the like comprising one or more layers of relatively strong and hard fiber board having a waterproofing agent thoroughly incorporated therein during the formation of the board, and a layer of felt paper associated with said fiber board, and a layer of paper secured to said felt paper to provide a surface to which floor coverings and the like may be secured.

4. A base for floor coverings and the like comprising one or more layers of relatively strong and hard fiber board having a waterproofing agent thoroughly incorporated therein during the formation of the board, a layer of felt paper associated with said fiber board, and a layer of paper secured to said felt paper to provide a surface to which floor coverings and the like may be secured.

5. A base for floor coverings and the like comprising one or more layers of relatively strong and hard fiber board having a waterproofing agent thoroughly incorporated therein during the formation of the board, a layer of felt paper associated with said fiber board, and a layer of textile fabric secured to said felt paper to provide a surface to which floor coverings and the like may be secured.

6. A base for floor coverings and the like comprising a relatively stiff structural unit including one or more layers of relatively strong and hard fiber board having bituminous material thoroughly incorporated therein during the formation of the board, a layer of felt paper on one side of said structural unit, and a layer of relatively soft material on the opposite side of said structural unit.

7. A base for floor coverings and the like comprising a relatively stiff structural unit including one or more layers of relatively strong and hard fiber board having bituminous material thoroughly incorporated therein during the formation of the board, a layer of felt paper on one side of said structural unit, and a second layer of felt paper on the opposite side of said structural unit, one of said layers of felt paper being lightly impregnated with bituminous material.

8. A base for floor coverings and the like comprising a relatively stiff structural unit including one or more layers of relatively strong and hard fiber board having bituminous material thoroughly incorporated therein during the formation of the board, a layer of felt paper on one side of said structural unit, and a layer of relatively soft material permanently secured to said fiber board.

9. A base for floor coverings and the like comprising one or more layers of relatively strong and hard fiber board having a waterproofing agent thoroughly incorporated therein during the formation of the board, a layer of felt paper associated with said fiber board, and a layer of felt paper being lightly impregnated with bituminous material, and adhesive or other suitable securing means for fastening said felt paper to said fiber board throughout substantially their entire common areas.

CHARLES A. UPSON.