Aug. 17, 1943. W. W. DONELSON ET AL 2,327,029

FLOORING

Filed March 6, 1941

Fig. 1.

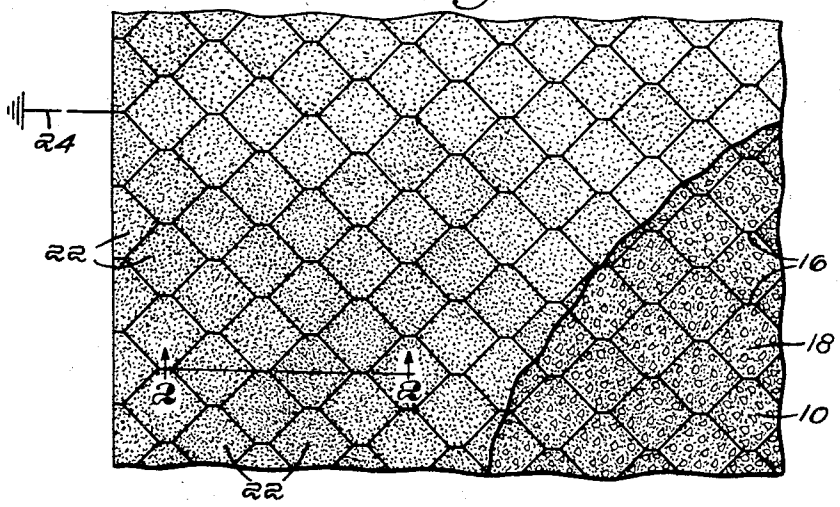


Fig. 2.

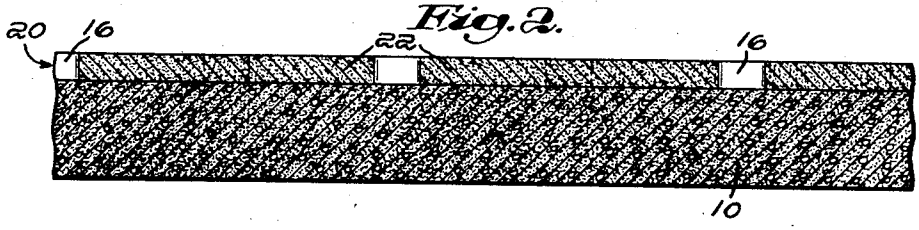
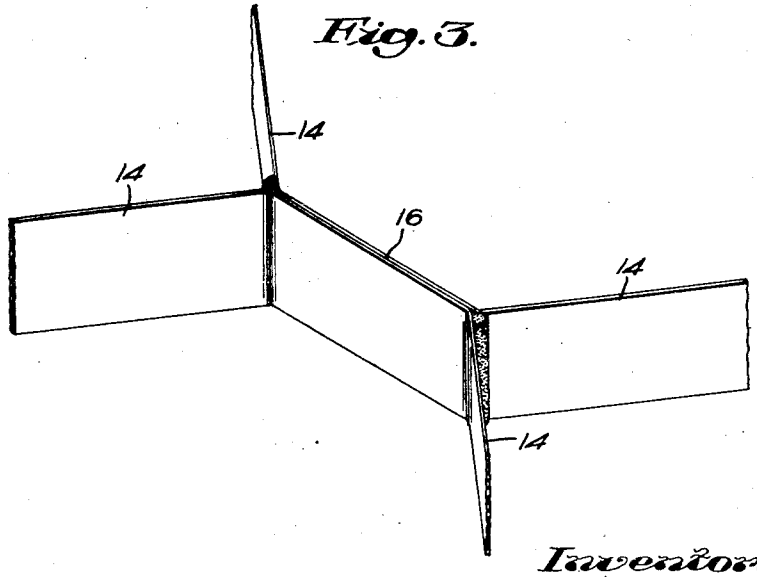


Fig. 3.



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FLOORING

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3 Claims. (Cl. 94—3)

This invention relates to flooring and more particularly to sparkproof flooring. It is known that heat sparks generated mechanically or electric sparks generated statically can and do cause serious explosions and damage when occurring in proximity to explosive compositions, and various constructions have been devised to combat this danger. Our invention is primarily concerned with this danger in munition plants and elsewhere where a static electric spark or a heat spark generated by the dropping of a tool or the like onto the floor can cause serious loss. It is appreciated that these two sources of sparks are largely responsible for such explosions and it is one object of our invention to produce a new and improved sparkproof flooring which will positively eliminate this danger.

Our improved flooring embodies two primary elements namely (1) a flooring material providing a flooring body and surface which meet the necessary requirements and which are non-productive of heat sparks due to impact of other materials therewith and (2) a thin grid or the like of non-ferrous metal, which is conductive of electricity and non-productive of heat sparks due to impact of other materials, associated with the flooring material and so distributed at its surface as to make contact with and draw off electric charges from persons, machines, equipment, or other elements in contact with the floor, the grid being suitably grounded whereby to dispose of static charges therefrom. It will be apparent that such combination produces a floor which eliminates the two dangers above recited.

The flooring material employed in our invention is preferably of a composition containing magnesite and a further feature of the invention resides in the novel application of this composition to a sub-floor of concrete or the like in a manner maintaining the flooring intact and preventing loosening and cracking thereof. Since magnesite flooring has considerable elasticity it is applied over wood surfaces without serious danger of cracking but, due to this elasticity, it will crack when applied over sub-floors of concrete or the like which are substantially rigid and have a different coefficient of expansion from the top flooring. The grid employed in our novel flooring serves to break the magnesite flooring up into a plurality of independent units which when bonded to a concrete subfloor remain intact without fracturing as would occur in an extensive continuous top flooring thereof bonded to concrete. In like manner asphaltic flooring, either of a hot or cold composition may be made of a harder consistency when used with this grid without danger of loosening or cracking.

The production of an improved flooring embodying novel features above and hereinafter described comprises the primary object of the invention. These features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof selected for purposes of illustration and shown in the accompanying drawing wherein,

Fig. 1 is a plan view, partially broken away, of our improved flooring,

Fig. 2 is an enlarged sectional view taken on line 2—2 of Fig. 1,

Fig. 3 is a fragmentary perspective view of a grid employed in the flooring.

The primary object of our invention is the production of a floor which will eliminate the danger of sparks produced either statically or percussively and to that end we construct a top floor of material which is non-productive of sparks due to percussive contact or impact of other materials therewith, and we combine with this floor a grid of material conductive of electricity and also non-productive of sparks due to percussive contact or impact of other materials therewith. The grid has portions thereof located in relatively close proximity to the top surface of the floor whereby to receive static charges of electricity from elements coming in contact with the top surface, the grid being suitably grounded to dispose of static electric charges therefrom. Both elements of the floor are sparkproof as far as impact of other materials therewith is concerned and the close proximity of the grid portions in the top floor is such as to contact and draw static charges from shoes of workmen, vehicles, machinery and other elements coming in contact with the floor whereby also eliminating sparks due to static charges.

In the drawing we have illustrated a sub-floor 10 of concrete on which rests a grid 12 comprising relatively thin strips 14 of non-ferrous metal such as copper, brass, aluminum, etc. The strips are joined together at spaced points 16 to form a self-supporting grid structure having relatively small and adjacent openings 18 therebetween to the sub-floor. The top floor 20 comprises substantially independent units 22 of material non-productive of sparks due to percussive contact or impact of other materials therewith, seated in the openings 18 and bonded to the sub-floor 10. While the units 22 can be of wood or wood composition, suitable asphalt or asphaltic composition which is sparkproof from percussion or impact, or other materials possessing this characteristic, we prefer to employ a hardening cementitious composition and preferably one embodying magnesite. In forming the top floor we spread this composition over the grid and completely fill the openings 18. The units 22 thus formed or otherwise used are bonded to the subfloor and, after the composition comprising the

top floor has set, its top surface is scraped or troweled to expose the grid 12. The grid is suitably grounded to a water pipe or the like as indicated at 24.

It will now be apparent that our improved flooring is sparkproof as far as electric and heat sparks are concerned. One particular object to be accomplished is the elimination of the danger of static sparks from workmen as they walk over the floor and attention is particularly called to the fact that the grid 12 is not only exposed at the top surface of the floor but the openings 18 are sufficiently small to assure that some portion of the grid must always be contacted by a shoe in contact with the floor, whereby to receive static charges from the workmen and keep them free of danger from this source. Furthermore, both elements of the top floor being of materials which will not produce a spark by impact, danger from this source is also eliminated. Attention is also called to the fact that the improved flooring is composed primarily of flooring compositions well known and in substantial and successful use.

Magnesite flooring composition contains magnesite, magnesium chloride, soft fillers, and coloring matter, and its use and application to subfloors is well known in the arts. It is of attractive appearance, dustless, easily cleaned, oil and grease proof and, due to a considerable amount of elasticity, it can be applied to wood sub-floors without danger of cracking. The application of magnesite composition to sub-floors of concrete, however, presents quite a different problem since concrete is substantially rigid and has a substantially different coefficient of expansion from the magnesite flooring and for this reason the magnesite flooring in a relatively short time becomes loose and cracks. A further feature of our invention resides in the successful application of magnesite composition top flooring to a sub-floor of concrete, whereby stresses in the top floor are so substantially eliminated that the floor remains intact and free of cracking. The breaking up of our top floor 20 into a plurality of relatively small units 22 accomplishes this result since each unit is free to expand and contract without setting up stress in the other units and such independent action is not dependent upon the character of the sub-floor. Thus, even though the concrete sub-floor is quite rigid and of a coefficient of expansion substantially differing from that of magnesite composition, the latter remains free of loosening or cracking since the independent units 22 can expand and contract normally without causing sufficient stress in adjacent units to damage the floor. In other words, the invention so distributes and reduces the destructive stresses in the flooring as to eliminate the objections heretofore present.

It will be apparent that the thickness of the top floor 10 is determined by the depth of the grid 12 and this is ordinarily from ¼" to ½". It should furthermore be particularly pointed out that the units 22 comprise the main floor body 20, the grid strips 14 serving only the functions of (1) separating the top floor into relatively small units 22 and (2) receiving and carrying off static charges of electricity. It is particularly pointed out that the strips 14 are preferably of very thin ribbon-like stock since such thin strips considerably reduce the cost of the flooring and yet serve these functions to the fullest extent. In practice we have employed sixteen ounce sheet copper and other light and non-ferrous metals. The strips 14 illustrated in the drawing are substantially heavier and thicker than we prefer to use, it being quite difficult to illustrate well such thin strips as we preferably employ. Grid flooring in present use employs a heavy grid together with a filler, the wear being taken almost solely by the grid, whereas our improved flooring employs a light and relatively inexpensive grid together with a filler adapted to take the wear, the grid not being depended upon for wear.

Having thus described our invention what we claim as new and desire to secure by Letters Patent of the United States is,

1. Sparkproof flooring, comprising the combination of a sub-floor, a composition top floor thereon comprising homogeneous material non-productive of sparks due to percussive impact of other materials therewith spread to uniform thickness over and bonded to the sub-floor, a grid of non-ferrous metal non-productive of sparks due to impact of other materials therewith resting on the sub-floor and extending upwardly through the top floor to a position approximating the top surface of the top floor whereby to receive static charges of electricity from elements coming in contact with said top surface, and means grounding the grid whereby to dispose of static electric charges therefrom, the grid being highly conductive of electricity and having little weight-supporting strength and wear-resisting capacity per se and being molded into and supported by the top floor composition.

2. Sparkproof flooring comprising the combination of a sub-floor, a relatively hard composition top floor thereon containing magnesite and non-productive of sparks due to percussive impact of other materials therewith spread to uniform thickness over and bonded to the sub-floor, a grid of non-ferrous metal non-productive of sparks due to impact of other materials therewith associated with the top floor and having portions thereof located in relatively close proximity to the top surface of the top floor whereby to receive static charges of electricity from elements coming in contact with said top surface, and means grounding the grid whereby to dispose of static electric charges therefrom, the grid being highly conductive of electricity and having little weight-supporting strength and wear-resisting capacity per se and being molded into and supported by the top floor composition.

3. Sparkproof flooring, comprising the combination of a sub-floor, a grid thereon of non-ferrous metal non-productive of sparks due to percussive impact of other materials therewith and comprising relatively thin ribbon-like strips joined together at spaced points and shaped to form relatively small and adjacent openings therebetween to the sub-floor, a composition top floor on the sub-floor comprising hardening cementitious material non-productive of sparks due to percussive impact of other materials therewith spread to uniform thickness over and bonded to the sub-floor, the top floor being formed into independent units filling said openings in the grid and being of a thickness exposing the grid at the top surface thereof, and means grounding the grid whereby to dispose of static electric charges therefrom, the grid being highly conductive of electricity and having little weight-supporting strength and wear-resisting capacity per se and being molded into and supported by the top floor composition.

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