

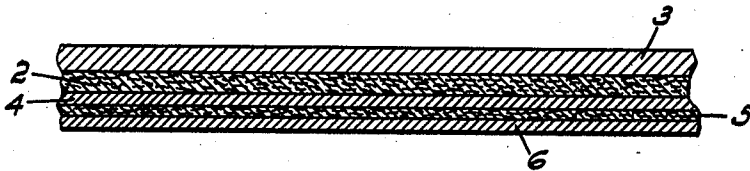
March 3, 1942.

B. F. ADAMS ET AL

2,274,642

HARD SURFACE COVERING

Filed June 23, 1937



Inventor

Benjamin F. Adams

Howard A. Johnson

by

Walter S. Kaufman

Attorneys

UNITED STATES PATENT OFFICE

2,274,642

HARD SURFACE COVERING

Benjamin F. Adams, Lancaster, and Howard A. Johnson, Manheim Township, Lancaster County, Pa., assignors to Armstrong Cork Company, Lancaster, Pa., a corporation of Pennsylvania

Application June 23, 1937, Serial No. 149,830

6 Claims. (Cl. 154-49)

Our invention relates to a hard surface covering adapted to be adhesively secured to a base. More particularly, our invention relates to a hard surface floor covering including a stratum of partible fibrous material, and having a thin, paper-like sheet of rupturable material secured to one side of the partible stratum which forms a stratum effective for securing the partible fibrous stratum to the base, the covering being characterized by the effective securing properties of the rupturable sheet being inferior to the partible qualities of the fibrous stratum, whereby the covering may be adhesively secured to a base and removed therefrom without rupturing the partible fibrous stratum.

In the installation of hard surface floor covering it has been customary to interpose a lining of heavy deadening felt between the floor and the covering, particularly when the installation is made over wooden floors. Such practice relieves the covering from the direct application of stresses caused by shrinkage and expansion of the floor boards, and smooths out surface irregularities. According to the usual method of installation, a suitable adhesive is applied to the floor, a solid sheet of deadening felt is laid thereon and the covering is bonded to the upper surface of the deadening felt by means of a second layer of adhesive. The deadening felt, being structurally weak and of generally laminar formation, permits the floor boards to expand and contract without transmitting rupturing stresses to the hard surface floor covering, by the yielding of the felted fibers or the slippage between the laminations thereof. This type of installation permits ready removal of the floor covering by rupturing the felt.

Hard surface floor covering embodying a stratum of partible material, such for example as felt or felted material to which a decoration has been applied superficially or incorporated by penetration, presents a problem different from that presented by linoleum, which embodies a strong burlap backing, in that, whereas the burlap is stronger than adhesives customarily employed for securing the linoleum to a supporting base, the fibrous or felted stratum embodied in the other types of hard surface floor covering does not possess such strength. It is not regarded as advantageous to employ deadening felt in the laying of the latter material, since the partible fibrous stratum is usually adequate to serve the purposes for which the deadening felt is employed. Accordingly, it is difficult, if not impossible, to remove such floor covering without destroying its value for reuse. If the partible stratum embodied in such floor covering is of a waterproof-type, it is important that it be removable as a whole, not only to preserve the value of the floor covering for reuse, but to

facilitate the cleaning of the supporting base after such removal to receive whatever replacement covering is intended. In the absence of our invention, large areas of the supporting base have heretofore been covered by the portions of such waterproof strata disrupted from the body of the removed floor covering, and the removal of these portions adhering to the supporting base is very difficult since they respond to no cheap, readily available solvent and due to their waterproof characteristics the fibers are tenaciously secured to one another and present a surface incapable of being rendered smooth by ordinary brushing. Mechanical methods of removing such undesirable portions left secured to the base are very undesirable and expensive.

Our invention has for its chief object to provide a hard surface covering which may be securely bonded to a base and which may be easily and efficiently removed therefrom when worn; and which removal will leave the base in satisfactory condition to receive a replacement covering. An object of our invention is to provide a rupturable stratum in hard surface coverings which may be easily ruptured by tensile forces, when the covering is adhesively secured to a base, in order that the covering may be removed from the base.

Our invention relates to a hard surface covering ready to lay in bonded relation to a base, comprising a stratum of partible fibrous material and a paper-like sheet of rupturable material secured to one side of said partible stratum, said sheet being less resistant to tensile forces than said stratum whereby the covering may be removed from a base without rupturing the partible stratum.

A section of our hard surface covering is illustrated in the attached drawing, the rupturable sheet being shown in a somewhat enlarged scale so as to clearly depict the same.

The hard surface covering useable in connection with our invention may comprise any of the available types of hard surface coverings in which a decorative layer is laminated with a strain resisting fibrous sheet, whether or not such sheet be saturated or waterproofed, or may comprise any of the available types of hard surface covering in which a waterproofed or saturated strain resisting sheet is coated with a decorative wear coating. Our invention may also be used in connection with hard surface coverings in which a sheeted fibrous web forms the whole of the covering. Specific examples of such hard surface coverings are linoleum or other drying oil compositions on saturated felt, printed felt base, industrial flooring comprising colored asphaltic coating on saturated felt sheets, floor covering made in accordance with

Jackson Patents Nos. 1,729,832; 1,729,833 and Finley Patent No. 1,802,009, and the like.

Referring to the drawing, there is shown a hard surface covering comprising a stratum of partible fibrous material 2, having a layer of wear resistant drying oil composition 3 integral with one side of the partible fibrous stratum. To the other side of the fibrous stratum 2, we apply a backing coating 4 which may advantageously be designed as a seal coating for the saturant within the foundation. A thin, paper-like sheet of rupturable fibrous material 5, which may be crepe paper or similar material, is then secured to the fibrous stratum 2. The rupturable sheet 5 may be applied to the fibrous stratum 2 in any desired manner, for example, it may be attached thereto by passing it with the latter between rolls while the seal coating is wet and tacky, or any suitable adhesive may be applied to secure the sheet 5 to the fibrous stratum 2. Our invention contemplates that the securing properties of the rupturable sheet 5 are inferior to the partible qualities of the fibrous stratum 2, that is, the partible fibrous stratum possesses greater resistance to tensile forces than such sheet.

Preferably, a second coating 6 is applied over and concealing the thin paper-like sheet 5. This coating is applied primarily for decorative purposes and may comprise any of the customary decorative backing paints which are ordinarily applied to hard surface coverings. These coatings 4 and 6 may be applied in any desired manner, as, for example, by coating rolls, doctor blades, or the like.

We have determined certain definite limits of cohesion, within which the required feature of ready removability is obtained. We have found that limits of cohesion of 6 to 30 pounds resistance are satisfactory. With tensile resistance greater than 30 pounds the thin, paper-like sheet of fibrous material resists rupturing to a degree to prevent ready removability; with tensile resistance less than 6 pounds, its securing properties are dangerously weak and the covering may be loosened from a base by severe traffic and excessive wear. The "pull" test hereafter referred to as the "Scott test" used to establish these limits may be carried on in the following manner:

To one side of a strip of wood 6" long by 2" wide a thin layer of linoleum cement or paste is applied, using a notched doctor blade to distribute the paste or cement evenly over the entire surface. To the paste or cement is immediately applied a strip of the covering to be tested 8" by 2" wide, one end of which is placed flush with one end of the strip of wood, the other end extending free beyond the wood strip. After rolling to obtain a satisfactory bond between the wood and the covering, the sample is maintained at normal room temperature for approximately four days to dry the paste or cement. The resistance of the rupturable sheet to tensile forces is determined by placing the sample in a Scott tensile strength machine at right angles to the direction of the forces to be exerted. The strength of the forces recorded as the covering is removed from the wood strip measures the resistance of the sheet to tensile forces.

A building structure embodying our invention is formed in the following manner: First, the base is prepared to receive the covering; that is, it is cleaned and leveled so that it presents a clean, dry, substantially smooth surface. A layer of adhesive is spread evenly over the base; the hard surface covering is laid thereon before the ad-

hesive is dry and firmly pressed thereagainst, as by rolling, placing heavy sand bags thereover, or the like. When the adhesive has dried, the covering is securely attached to the base.

When it is desired to remove the covering, the thin, paper-like sheet may be readily ruptured by exerting tensile forces on the structure. When the covering is removed, the base may be readily put in condition to receive a new covering by washing away any portions of the sheet and adhesive, remaining thereon and following the process described above. We have found, in many cases, that it is not necessary to wash off such portions remaining on the base since a good bond may be secured by merely placing another adhesive coating thereon and securing a covering thereto. Preferably, however, such portions are removed, since, in some cases, the surface thereof is not sufficiently smooth to permit the application of a replacement covering thereover.

The portions adhering to the base heretofore have been difficultly removable involving a great deal of labor and expense. By our invention, the covering is removed as a unit so that no excessive expenditures are necessary to prepare the base to receive another covering. A good bond between a base and the covering is consistently obtainable. An attractive appearance is obtainable in the finished material since a decorative coating may be placed over the rupturable sheet or the sheet may be decorated in any desired manner.

While we have described and illustrated a preferred embodiment of our invention, it will be understood that it is not limited to such form, since it may be otherwise embodied within the scope of the following claims.

We claim:

1. A hard surface covering comprising a body sheet of partible fibrous material saturated with a moisture resistant substance and having a wearing surface integral with the upper surface thereof, and a sheet of unsaturated fibrous material possessing low resistance to rupture along laminar lines bonded to the other surface thereof by an interposed stratum of bonding material, the relative strength of the two sheets being such that, when the covering material is cemented to a nonpartible base with the unsaturated sheet disposed between the base and the body sheet, the unsaturated sheet, possessing lower resistance to rupture than the body sheet, may be readily ruptured to effect removal of the covering material from the base without parting of the body sheet.

2. A hard surface covering in accordance with claim 1 in which the sheet of unsaturated material is crepe paper.

3. A hard surface covering in accordance with claim 1 in which the wearing surface comprises a drying oil composition.

4. A hard surface covering in accordance with claim 1 in which the wearing surface is a layer of linoleum composition.

5. A hard surface floor covering in accordance with claim 1 in which the sheet of unsaturated material is resistant to tensile forces in the range of six to thirty pounds as determined by the Scott test.

6. A hard surface floor covering in accordance with claim 1 in which the sheet of unsaturated material has applied thereto a decorative coating which conceals the same.

BENJAMIN F. ADAMS.
HOWARD A. JOHNSON.