

UNITED STATES PATENT OFFICE.

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COMPOSITION OF MATTER.

SPECIFICATION forming part of Letters Patent No. 681,484, dated August 27, 1901.

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To all whom it may concern:

Be it known that I, NELSON B. MAYER, a citizen of the United States, residing at Newark, New Jersey, have invented certain new and useful Improvements in Compositions of Matter, of which the following is a specification.

It is desirable that various articles should be of such construction or formed of such material as to be compressible and elastic, so that they will in use yield more or less readily under pressure, and quickly re-assume their normal set upon the removal of the pressure.

Types of articles of this character are vehicle tires, bicycle saddles, horse collars, and pads of various kinds all of which articles, with others not herein mentioned, I designate under the generic title of elastic cushions.

Hitherto in the manufacture of such elastic cushions, resort has been had to the expedient of forming them as hollow shells of rubber or kindred material, frequently molded or otherwise fashioned of the desired configuration, and forcing into their interiors air under pressure.

This expedient has been found unsatisfactory, by reason of the gradual escape of the air in the use of the articles and the consequent necessity for re-charging them from time to time, and by reason of the liability of the articles to become deflated through accidental puncture.

Elastic cushions have, moreover, been formed of solid rubber, but this expedient is, apart from the fundamental objection of its relatively great expense, open to the further objections that for many uses articles so formed are not sufficiently compressible or yielding, and for many purposes are too heavy.

It is the object of my invention to provide a normally solid but meltable, light and elastic, composition of matter adapted to be employed in masses as cores, so to speak, within suitable exterior shells or casings, to form, with such shells or casings, elastic cushions which are more compressible and light and much less expensive than corresponding articles formed of solid rubber, on the one hand,

and which do not require the attention, and are not subject to the liability of being rendered temporarily useless by puncture, incident to the employment of the air filled or so-called pneumatic articles, on the other hand.

In forming my new improved composition of matter I prefer to proceed as follows:—

Thirty parts by weight of ground glue, and ten parts by weight of water at ordinary or atmospheric temperature, are placed together in a suitable vessel, and there kept for from six to twelve hours, being preferably stirred continuously during such period.

The glue and water are thereupon heated, the temperature to which the mass is brought being preferably within the extremes of one hundred and fifty degrees Fah. and two hundred and twenty-five degrees Fah.,—and combined with fifty parts by weight of glycerin.

Glue as a commercial article varies somewhat in strength. In the practice of my invention I have secured good results by making up the required thirty parts by weight in part of glue of about average strength or concentration and the remainder of glue of considerably higher degree of concentration.

Preferably the glycerin is added to the glue and water immediately after the latter have been heated as described, although with my present knowledge of the subject I would not regard this as essential, as good results might be obtained were the glycerin added to the glue while all the materials are in a cold condition, and all be thereupon heated together.

The heat is maintained and the combined mass agitated or stirred until a completely homogeneous mixture is formed, in which the particles of glue are in solution in the glycerin. Ordinarily this result will have been brought about when the heating and stirring have continued for two hours.

To secure the best results I add to the mass during this period of heating and agitation, ten parts, by weight, of dextrine, which becomes, of course, solved in the fluid mass.

To the mass preferably thus composed, I add a suitable quantity of the product resulting from the vulcanization of a vegetable oil,

such for example as linseed, rapeseed, cottonseed, corn, or mustard seed, oil.

The precise amount of the vulcanized product added may vary according to the character of the particular oil from which the vulcanized product is manufactured.

The product resulting from the vulcanization of vegetable oil, which with my present knowledge of the subject I believe best adapted for my purpose, is the article well known in the arts and trades as white rubber substitute, and when such white rubber substitute is employed I prefer to employ it in my composition of matter in the proportion of twenty parts by weight, and while I may employ it in any desired proportion, it would be of doubtful utility if less than five or more than twenty-five parts by weight should be employed, with the specified proportions of other ingredients.

In the foregoing process of manufacture of my composition of matter, I find it convenient to place the glue and water together in a vat or tank provided with mechanical stirrers, and when the mass is in readiness to be heated and combined with the glycerin I find it convenient to draw it off from said tank or vessel to a steam jacketed kettle provided with mechanical stirrers.

The water is added to the glue more especially to render the glue readily soluble in the glycerin as the glycerin has great affinity for the water.

The vulcanized vegetable oil, in powdered form, is added to the mass, and the mass thoroughly stirred or agitated, until the vulcanized product is uniformly distributed through it.

The vulcanized vegetable oil imparts to the mass increased elasticity, and increases its usefulness as a core backing or filling for elastic cushions.

The composition of matter, formed as described or otherwise, may be drawn off and charged as a fluid directly to the cushions to form the cores, backings, or fillings, of which it is to be employed, or, if not required, for immediate use, run into a suitable receptacle and allowed to set.

In the subsequent use of this set material it may be remelted by bringing it to a suit-

able temperature of from one hundred and fifty degrees to two hundred and twenty-five degrees Fah.

The fact that the composition is a solid capable of melting (although not at atmospheric temperatures) constitutes a feature of great utility in the employment of my invention, inasmuch as after the formation of the shaped hollow shell of the cushion, the composition of matter in a melted condition introduced within the same, of itself fills every part thereof as a mold and conforms thereto, so that, when it sets within said shell, it forms, with said shell, a solid article of uniform compressibility and elasticity.

The article so formed becomes in effect a solid cushion the protecting exterior face of which may or may not be inherently elastic, and the core of which, filling every portion of the original hollow interior, possesses a compressibility, elasticity, and resilience, almost equal to that of compressed air, but which being a solid instead of a fluid, obviates the disadvantages incident to the use of such air.

In running the composition of matter within the interior of the cushion, the composition may, if found desirable, be subjected to slight compression within such interior.

I may in some cases shape manually from masses of my composition of matters, instead of melting the same, cores for some kinds of elastic cushions.

The proportions and temperatures herein set forth may, of course, be varied if desired.

Having thus described my invention, I claim—

A composition of matter for forming the cores or backings of elastic cushions, consisting of thirty parts by weight of glue, fifty parts by weight of glycerin, ten parts by weight of dextrine, and a quantity of vulcanized vegetable oil, as specified.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 5th day of July, A. D. 1900.

NELSON B. MAYER.

In presence of—

H. D. VAN WAI,

P. A. RITTWEGER.