

UNITED STATES PATENT OFFICE.

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COMPOSITION OF MATTER.

SPECIFICATION forming part of Letters Patent No. 676,095, dated June 11, 1901.

Application filed July 11, 1900. Serial No. 23,180. (No specimens.)

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 punctures.

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 ren-

dered 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.

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 a considerably higher degree of concentration.

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 Fahrenheit and two hundred and twenty-five degrees Fahrenheit,—and combined with fifty parts by weight of glycerin.

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.

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

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 with mechanical stirrers.

5 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.

10 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.

15 In the subsequent use of this set material it may be remelted by bringing it to a suitable temperature of from one hundred and fifty degrees to two hundred and twenty-five degrees Fahrenheit.

20 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 25 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, 30 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, 35 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 40 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.

45 I may in some cases shape manually from

masses of my composition of matter, instead of melting the same, cores for some kinds of elastic cushions.

In a separate application Serial No. 23,181, filed by me contemporaneously herewith I 50 have described in detail and claimed a vehicle tire provided with a core or body formed of the composition herein set forth.

I am aware that it is not broadly novel 55 with me to provide a solid yielding filling for a tire; such fillings as heretofore composed, however, so far as my knowledge of them extends, have been unsuccessful, by reason of the fact that after use for a short period they become flattened, and, as it were, inert, 60 lacking the "life" or resilience necessary to a practical spring tire.

The substantial proportions of ingredients hereinbefore specified, namely, thirty parts 65 by weight of ground glue, fifty parts by weight of glycerin, and ten parts by weight of dextrine, are highly important, as the usefulness of my improved composition of matter, and its possession in the highest degree 70 of the qualifications vital in a filling employed for the purposes hereinbefore indicated, depend not only upon the use of the ingredients specified, but upon the substantial proportions of the same set forth.

Having thus described my invention, I 75 claim—

A composition of matter for forming the cores or packings of elastic cushions, consisting of thirty parts by weight of glue, fifty 80 parts by weight of glycerin, and ten parts by weight of dextrine, the glue and dextrine being dissolved in the glycerin, substantially as set forth.

In testimony that I claim the foregoing as my invention I have hereunto signed my 85 name this 27th day of June, A. D. 1900.

NELSON B. MAYER.

In presence of—

F. NORMAN DIXON,
THOS. K. LANCASTER.