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A. THOMA.

SHOE FILLER PACKAGE AND PROCESS OF MAKING THE SAME.

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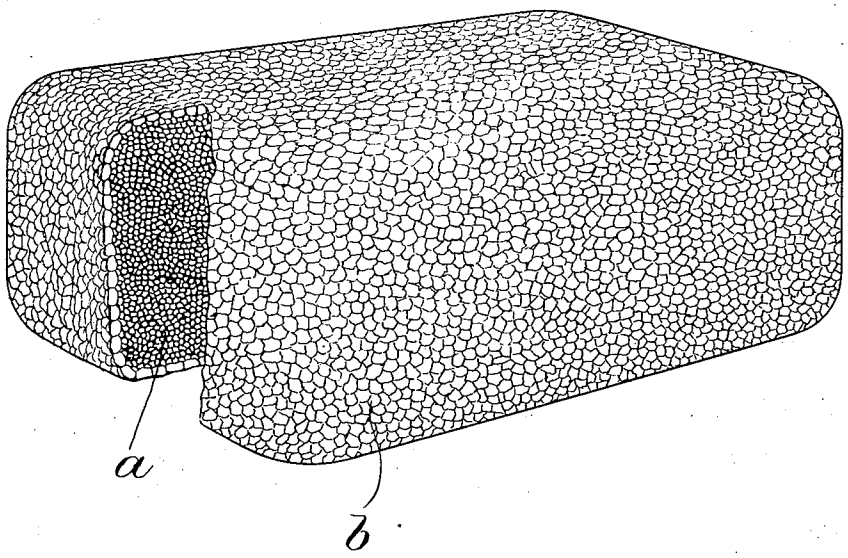


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# UNITED STATES PATENT OFFICE.

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## SHOE-FILLER PACKAGE AND PROCESS OF MAKING THE SAME.

No. 832,002. Specification of Letters Patent. Patented Sept. 25, 1906.

Application filed August 28, 1905. Serial No. 276,003.

*To all whom it may concern:*

Be it known that I, ANDREW THOMA, a citizen of the United States, residing at Cambridge, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Shoe-Filler Packages and Process of Making the Same, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

My invention relates to what is known as "shoe-filler," for filling the cavity of the inner sole level with the welt to place it in condition for receiving the outsole, my object being to advance the cleanliness, economy, safety, and speed of shoe manufacture in this particular and afford means for improving the shoe in permanent pliability, durability, and its waterproof qualities.

The almost-universally-used filler at the present time is made of comminuted filler material, usually cork mixed with a large quantity of rubber-cement, (rubber dissolved in naphtha,) and on account of the exceedingly volatile nature of the naphtha, as stated in United States Patent No. 458,421 of August 25, 1891, each shoe factory is obliged to make its own filler each day and even then the loss from evaporation is very large, while the inconvenience and difficulty of handling and keeping the cement and adjacent articles clean is a serious disadvantage, and perhaps the greatest disadvantage is due to the danger of fire on account of evaporating naphtha. Moreover, in use this filler is very slow in drying, particularly in humid weather, so that it retards the progress of the entire factory, and in the shoe soon becomes dry and brittle, so that the desired support to the shoe is thereby withdrawn, causing the latter to wear unevenly and inviting the entrance of moisture, &c. Accordingly I have succeeded in devising a filler which cannot evaporate or change its pliable and elastic, viscous, and waterproof character by use or age, but remains resilient, properly soft or workable, adherent to the leather, and permanently durable for an indefinite period until used, and thereafter continues in proper condition until the shoe is worn out. In order to reach success, from a practical standpoint, I have found that the greatest difficulty has been to produce a filler in such form that, notwithstanding the fact that it is not hard or solid, it is self-sustaining, and hence can be made into convenient package shape for cheap crating and storing in factories until required for use, thereby rendering it feasible for general use. The conditions of use are peculiarly exacting, as the leather is usually damp, due to the soaking thereof for facilitating turning up the channel-lip, and yet the filler material must penetrate and stick to the leather sufficiently to prevent shifting and bunching. The oily repellant nature of leather must also be considered. Besides meeting all these exacting conditions my filler has the predominating characteristics of being unchangeable in the sense that it does not keep on drying and oxidizing, as does the naphtha-rubber-cement filler, but maintains permanently its elastic, moldable, tenacious character, even when exposed, as in an ordinary box or packing-case, and is capable of being heated and cooled repeatedly without losing these characteristics, it has a low melting or softening point, so that there is never any danger of charring or injuring the cork or destroying its efficiency, and it rapidly cools or sets when spread thin on the damp shoe-bottom. Also this filler meets the long unsatisfied demands of the shoe trade for a portable ground-cork filler which can be provided ready made as an article of merchandise. To this end I have at length succeeded in devising a filler-loaf which retains its characteristics of pliability, internal stickiness, elasticity, durability, &c., without deteriorating and which can be transported and handled with impunity and will be neatly available for instant use whenever wanted.

In the accompanying drawing I have represented graphically, in broken perspective, the preferred embodiment of my filler.

I have mentioned above most of the requirements of a shoe-filler, the main object being to secure permanent elasticity, unchangeableness, (when cold,) and capacity for quick-setting without destroying the lightness, pliability, and resiliency of support afforded thereby to the sole of the shoe. Accordingly my object is to do away with the delay of the slow-setting rubber-cement filler and with the objectionable features thereof due to the use of, and the evaporating of, the naphtha solvent.

While I have found a number of means of attaining my object, I have obtained the best results as follows: I first prepare a mixture of about five parts gutta-percha to three parts of resin and two parts of paraffin-oil and subject this mass to a melting heat, which disintegrates the gutta-percha and causes it to unite with the resinous part, the oil helping the assimilation of both ingredients and giving a temper or smoothness and pliability to the product. This operation takes from two to four hours, according to the kind and amount of heat used, and as complete disintegration sets in the resulting seething mass becomes smooth and thin and capable of forming a binding agent for the granular fibrous mass of ground cork or the like with which it is then thoroughly mixed, this binder possessing strong adhesive qualities and when cooled affording an excellent elastic union between the small chunks of cork.

While I prefer to employ cork, it is essential merely that the base with which the binder is united shall be a substance adapted to give body to the mass and likewise shall be either in such a condition or of such a composition or material as to be capable of yielding in all directions—*i. e.*, when subjected to pressure or to bending or the like the filler does not prevent the movement and the compounded mass then tends to recover its former position. The base either in and of itself is elastic, unchangeable, &c., or else when united with the other components of the filler affords a resultant body or mass which is permanently elastic, unchangeable as a filler, quick-setting, &c.

Instead of the gutta-percha I may use other vegetable gums, such as balata, pontianac, almadeina, chicle, tuna. Low-grade rubbers may also be mixed in to some extent. As the quality of vegetable gums is often unstable, so that their decomposition produces either a harder (less elastic) or a softer (more pliable) mass, I accordingly vary the amount of oil added, so as to give satisfactory results. The softening-oil may be of mineral or vegetable origin and thick or thin, the quantity used being wholly controlled by its body or quality. Then the above binder and ground cork are thoroughly mixed together, so that each granule of the filler is entirely enveloped or coated with the binder. The binder and filler are maintained hot while the mixing is being done, and I use as small a quantity of the binder as is possible, while yet making certain that each granule will be thoroughly coated, as explained. Then the mixture is spread out in thin layers and permitted to partially cool. When partially but not fully cooled, the filler is gathered together in small quantities and compacted into a loaf form, being maintained under pressure until more or less permanently stuck together in a mass *a*. Preferably it is then allowed to cool slightly further and is then subjected again to compression, when the loaf is provided with an external coating *b* of ground cork or other filler material, which because of the said condition of the main body of the filler will not sink into the mass and yet will adhere thereto, so that the loaf can be readily handled without sticking to or soiling the hands.

As thus made a loaf of my prepared filler is "self-sustaining," by which I mean that it will not flow or break down under normal conditions, although it will not bear external weight, and hence must be crated for transportation. It is semiplastic in its nature and yet sufficiently solid to maintain its shape and dry exterior.

It is impracticable to use this filler with expedition if shipped in large masses—as, for instance, in mass in a barrel—because its extreme tenacity, combined with its elasticity and non-shifting, character renders it difficult to get out a segregated portion for use. Also its extreme stickiness prevents wrapping it in packages. The way I have solved the problem as herein disclosed is simply to wait until the formed loaf of a size suited to the needs and convenient handling of the shoe operative has cooled and then to apply to the toughened sticky loaf a covering of the same sort of material of which the filler-body itself is made, such as ground cork or other fragmentary light and preferably non-absorbent dry substance. The result is that the loaf may be freely and carelessly handled without any danger of soiling the hands, and yet it can be thrown just as it is into the melting-pot for instant use, and the enveloping covering will simply then become a part of the filler itself. I do not mean that when the filler-body is cork the adherent covering layer must also be cork or that when the filler-body is ground leather or the like the outside covering must be ground leather, but merely that the outside dry coating may be such that it may be stuck directly to the loaf and become a part of the loaf without disadvantage thereto as shoe-bottom filler.

The binder is mixed in such proportions that it has a fluid consistency when hot and yet retains a considerable body, so that although only sufficient of the binder is used simply to completely coat each granule yet there is enough of the binder to maintain both the semiplastic condition and the loaf structure. I have found that when thus made the proportions are just right for practical factory use.

It is to be borne in mind that a shoe factory has usually no facilities or available employees capable of compounding and preparing from a formula, and accordingly I wish it understood that I regard as one of the most important results secured by my invention the provision of this portable ever-ready

filler having the permanent characteristics mentioned.

Instead of being obliged to maintain in an isolated fireproof tank or vault a large supply of dangerous naphtha rubber-cement for mixing the day's supply of filler each morning there is no fire risk, no loss by evaporation, no mixing, waste, and annoying detail, but the filler loaves are simply laid in the same as other durable supplies and stacked up in their boxes or shipping-cases wherever convenient until wanted to be taken out and used one loaf at a time neatly, economically, and always ready and uniform.

In use the operator slowly melts a loaf of the filler with a low heat and then applies the same under vertical pressure to the cavity of the shoe in the presence of heat for the best results. No knowledge or skill in compounding is required, but the operator simply applies the filler, which he has received as a portable article of manufacture. The external layer of cork is incorporated into the body of the filler when the latter is melted, so that by the use of said dry outside layer there is no danger of incorporating foreign substances into the shoe, as would be the case if a different exterior layer were employed.

In my Patent No. 808,224 I have set forth the best way of using the filler. The filler is perfectly plastic and fluid when hot, cools or sets almost immediately, and becomes moldable or compressible when cold, so that it will retain its laid shape, but not rigidly so, being responsive to pressure—*i. e.*, being elastic or tending to resume its original shape when momentarily distorted. Because of these characteristics and its inherent tenacity and its adhesion to the adjacent leather it does not shift under the subsequent bottom-leveling process. It is non-shifting in that it does not break up, separate, or disintegrate, but yet is compressible, thereby facilitating the laying of the sole. It is applied hot, because more tractable in that condition, and also the heat aids the binder to get a better or more penetrating hold on the damp leather.

I wish to emphasize the two most important and distinguishing features of my invention, which are especially important to it as an article of manufacture—viz., first, it is unchangeable in character, not continuing to oxidize, as does the rubber-cement filler until finally becoming brittle and non-sticky, but a loaf of my filler remains permanently workable and permanently viscous or elastic in the sense that when pressed it does not freely and permanently separate, but tends to recover its original shape—*i. e.*, when a mass thereof is distorted it tends to resume its original shape—and, second, it is quick-setting without becoming hard—*i. e.*, its low melting-point gives it a quick cooling character, and when cold it at once holds tenaciously together in a permanently plastic, moldable, and elastic body, as above explained. It is quick-setting in the sense of stiffening at once upon cooling, because of the toughening of the binder when cold, although free-flowing when hot. Its particles when cold hold or adhere to each other throughout the loaf as distinguished from the two extremes of being fluid and being brittle. It is normally in its ultimate plastic non-oxidizable condition.

My filler is also non-inflammable and permanently waterproof.

I regard my invention as broadly novel in certain particulars, as pointed out in the claims, and therefore wish it understood that in those particulars I am not limited to the preferred binder herein described, and also, as already intimated, many other variations may be resorted to within the spirit and scope of my invention.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A shoe-bottom filler, consisting of a base united with a binder into a permanently-tenacious, quick-setting, permanently-elastic mass, capable of being molded into a thin pliable layer filling the shoe-bottom.

2. A shoe-bottom filler, consisting of a normally unchangeable, permanently-elastic, quick-setting mass, composed of a base capable of yielding in all directions to pressure, united with a permanently-sticky component.

3. A shoe-bottom filler, consisting of a normally unchangeable, permanently-elastic, quick-setting mass, composed of a base capable of yielding in all directions to pressure, united with a permanently-sticky component having a low melting-point.

4. A shoe-bottom filler, consisting of a normally unchangeable, permanently-elastic, quick-setting mass, composed of a base capable of yielding in all directions to pressure, united with a permanently-sticky component having a low melting-point and serving to render said mass waterproof.

5. A shoe-bottom filler, consisting of a base united with a binder into a permanently-tenacious, non-inflammable, quick-setting, permanently-elastic mass, capable of being secured to the bottom cavity of a shoe in a permanently-pliable filler layer.

6. A shoe-bottom filler, consisting of a resilient base united with a viscous binder into a permanently-tenacious, quick-setting, permanently-elastic and water-repellant mass, capable of being molded into a thin pliable layer filling the shoe-bottom.

7. A shoe-bottom filler consisting of a normally unchangeable, permanently-elastic, quick-setting mass, composed of finely-comminuted filler material having each granule thinly coated with a permanently-sticky binder capable of being rendered highly fluid by moderate heat.

8. A shoe-bottom filler, consisting of a filler-body in a fragmentary condition, thoroughly mixed with a binder into a permanently-tenacious, quick-setting, permanently-elastic and moldable mass of a non-shifting consistency when cold.

9. A shoe-bottom filler, consisting of a permanently-plastic, quick-setting, waterproof mass adherent to leather, and composed of finely-comminuted filler material whose granules are thinly coated with a tenacious, tough binder which is rendered temporarily highly fluid by moderate heat.

10. A shoe-bottom filler, consisting of filler material in a fragmentary condition, and a binder which is permanently elastic, quick-setting, and permanently sticky, said fragmentary filler material and binder being thoroughly mixed together in the presence of heat for use in filling the shoe.

11. A shoe-bottom filler consisting of a permanently-plastic, quick-setting, non-inflammable mass adherent to leather, and composed of finely-comminuted filler material whose granules are thinly coated with a tenacious, tough binder which is rendered temporarily highly fluid by moderate heat.

12. A shoe-bottom filler consisting of a permanently-plastic, quick-setting, waterproof and non-inflammable mass adherent to leather, and composed of finely-comminuted filler material whose granules are thinly coated with a tenacious, tough binder which is rendered temporarily highly fluid by moderate heat.

13. A shoe-bottom filler consisting of comminuted filler material and a permanently-pliable, non-inflammable gummy binder, thoroughly mixed together into a homogeneous, normally unchangeable, tenacious mass, semisolid when cold and freely plastic when hot, and having a low melting-point.

14. A shoe-bottom filler consisting of comminuted filler material held compactly together by a permanently-flexible, viscous binder, in a permanently-elastic mass of a consistency suitable for filling in the cavity between the inner sole and outsole of a shoe, said mass having a low melting-point and being compressible and resilient when cold.

15. As an article of manufacture, shoe-bottom filler in the form of a self-contained permanently-elastic loaf composed of comminuted filler material whose individual granules are thinly coated with a non-volatile, permanently-resilient and viscous binder, said loaf being normally semiplastic and rendered sluggishly fluid by heat.

16. As an article of manufacture, shoe-bottom filler in the form of a self-contained permanently-elastic loaf, normally semiplastic, of permanently-sticky material, having a low melting-point and being quick-setting, said loaf having an externally-adherent covering of dry material suitable to enter into the composition of the filler when used.

17. As an article of manufacture, a self-contained loaf of shoe-bottom filler having an adherent covering of dry material suitable to enter into the composition of the filler when thereafter used, the interior of the loaf consisting of a permanently-elastic, quick-setting, normally unchangeable mass.

18. As an article of manufacture, a self-contained loaf of shoe-bottom filler having an adherent covering of dry material suitable to enter into the composition of the filler when thereafter used, the interior of the loaf consisting of a permanently-elastic, quick-setting, normally unchangeable, waterproof mass.

19. As an article of manufacture, shoe-bottom filler in the form of a self-contained permanently-elastic loaf, normally semiplastic, of permanently-sticky material, having a low melting-point and being quick-setting, and adherent to leather, said loaf having an externally-adherent covering of dry material suitable to enter into the composition of the filler when used.

20. As an article of manufacture, shoe-bottom filler in the form of a self-contained permanently-elastic loaf composed of comminuted filler material whose individual granules are thinly coated with a non-volatile, permanently resilient and viscous binder, said loaf being normally semiplastic and rendered sluggishly fluid by heat, and having a dry external, adherent coating of filler material.

21. As an article of manufacture, shoe-bottom filler in the form of a self-contained permanently-elastic loaf composed of comminuted filler material whose individual granules are tightly compacted together and yieldingly retained by a permanently-viscous binder, said loaf having an external adherent covering of dry material suitable to enter into the composition of the filler when used.

22. As an article of manufacture, shoe-bottom filler in the form of a self-contained loaf having an adherent covering of dry material suitable to enter into the composition of the filler when thereafter used, the internal body of the loaf consisting of a normally unchangeable, permanently-elastic, quick-setting mass, composed of finely-comminuted filler material having each granule thinly coated with a permanently-sticky binder capable of being rendered highly fluid by moderate heat.

23. As an article of manufacture, a self-contained loaf of shoe-bottom filler having an adherent covering of dry material suitable to enter into the composition of the filler when thereafter used, the interior of the loaf consisting of fragmentary filler material thoroughly mixed with a binder into a permanently-tenacious, quick-setting, perma-

nently-elastic and moldable mass of a non-shifting consistency.

24. As an article of manufacture, a self-contained loaf of shoe-bottom filler having an adherent covering of dry material suitable to enter into the composition of the filler when thereafter used, the interior of the loaf consisting of a permanently-plastic, quick-setting, waterproof mass adherent to leather, and composed of finely-comminuted filler material whose granules are thinly coated with a tenacious, tough binder which is rendered temporarily highly fluid by moderate heat.

25. As an article of manufacture, a self-contained loaf of shoe-bottom filler having an adherent covering of dry material suitable to enter into the composition of the filler when thereafter used, the interior of the loaf consisting of a permanently-plastic, quick-setting, non-inflammable mass adherent to leather, and composed of finely-comminuted filler material whose granules are thinly coated with a tenacious, tough binder which is rendered temporarily highly fluid by moderate heat.

26. As an article of manufacture, a self-contained loaf of shoe-bottom filler having an adherent covering of dry material suitable to enter into the composition of the filler when thereafter used, the interior of the loaf consisting of a permanently-plastic, quick-setting, waterproof and non-inflammable mass adherent to leather, and composed of finely-comminuted filler material whose granules are thinly coated with a tenacious, tough binder which is rendered temporarily highly fluid by moderate heat.

27. As an article of manufacture, a self-contained loaf of shoe-bottom filler having an adherent covering of dry material suitable to enter into the composition of the filler when thereafter used, the interior of the loaf consisting of comminuted filler material and a permanently-pliable, non-inflammable gummy binder, thoroughly mixed together into a homogeneous, normally unchangeable, tenacious mass, semisolid when cold and freely plastic when hot, and having a low melting-point.

28. As an article of manufacture, a self-contained loaf of shoe-bottom filler having an adherent covering of dry material suitable to enter into the composition of the filler when thereafter used, the interior of the loaf consisting of comminuted filler material held compactly together by a permanently flexible, viscous binder, in a permanently-elastic mass of a consistency suitable for filling in the cavity between the inner sole and outsole of a shoe, said mass having a low melting-point and being compressible and resilient when cold.

29. As an article of manufacture, shoe-bottom filler in the form of a self-contained loaf having an adherent covering of comminuted cork, the rest of the loaf consisting of a normally unchangeable, permanently-elastic, quick-setting mass, composed of finely-comminuted filler material having each granule thinly coated with a permanently-sticky binder capable of being rendered highly fluid by moderate heat.

30. As an article of manufacture, a shoe-bottom filler composed of comminuted filler material mixed with a binder composed of approximately five parts of gutta-percha, three parts of resin and two parts of paraffin-oil, in proportion to the filler material sufficient simply to completely coat each granule thereof.

31. As an article of manufacture, a shoe-bottom filler compressed into the form of a self-contained loaf composed of comminuted cork whose individual granules are thinly coated with a binder composed of approximately five parts of gutta-percha to three parts of resin and two parts of oil, said cork and binder being in such proportion as to maintain said loaf normally in a semiplastic condition.

32. As an article of manufacture, a shoe-bottom filler in the form of a tightly-compacted self-contained loaf, said loaf being permanently elastic when cold and becoming fluid under a low heat, and being permanently pliable, waterproof, and non-inflammable, composed of granular filler material and a quick-setting, permanently-viscous binder.

33. The process of making a self-contained loaf of shoe-filler, consisting of providing comminuted filler material, and a permanently-elastic, viscous, quick-setting binder, having a low melting-point, heating said binder until fluid, putting together said comminuted material and fluid binder in proportions sufficient simply to completely coat each granule of the filler material with the binder and to form when cold a permanently-elastic, readily-yielding mass, then thoroughly mixing the two until each particle of the filler material is enveloped with said hot binder, permitting the mixed mass to cool, and then segregating portions thereof and compacting said individual portions under pressure until set sufficiently to be self-sustaining in loaf form.

34. The process of making a self-contained loaf of shoe-filler, consisting of providing comminuted filler material and a permanently-viscous, quick-setting binder having a low melting-point, heating said binder until fluid, putting together said comminuted material and fluid binder in proportions sufficient simply to completely coat each granule of the filler material with the binder, then thoroughly mixing the two until each particle of the filler material is enveloped with said hot binder, spreading said mixed mass

in a thin layer until partially cooled, then gathering portions of the cooled mass into loaves and compacting them under pressure.

35. The process of making a self-contained loaf of shoe-filler, consisting of providing comminuted filler material and a permanently-viscous, quick-setting binder having a low melting-point, heating said binder until fluid, putting together said comminuted material and fluid binder in proportions sufficient simply to completely coat each granule of the filler material with the binder, then thoroughly mixing the two until each particle of the filler material is enveloped with said hot binder, spreading said mixed mass in a thin layer until partially cooled, then gathering portions of the cooled mass into loaves and compacting them under pressure until nearly cold, and then applying to the exterior of each loaf a layer of dry filler material.

36. The process of making a self-contained loaf of shoe-filler, consisting of providing comminuted filler material and a plastic binder containing gutta-percha, resin and oil, heating said binder until fluid, putting together said comminuted material and fluid binder in proportions sufficient simply to completely coat each granule of the filler material with the binder, then thoroughly mixing the two until each particle of the filler material is enveloped with said hot binder, permitting the mixed mass to cool, and then segregating portions thereof and compacting said individual portions under pressure until set sufficiently to be self-sustaining in loaf form.

37. The process of making a self-contained loaf of shoe-filler, consisting of providing ground cork and a plastic binder containing gutta-percha, resin and paraffin-oil, heating said binder until fluid, putting together said ground cork and fluid binder in proportions sufficient simply to completely coat each granule of the cork with the binder, then thoroughly mixing the two until each particle of the cork is enveloped with said hot binder, permitting the mixed mass to cool, and then segregating portions thereof and compacting said individual portions under pressure until set sufficiently to be self-sustaining in loaf form.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANDREW THOMA.

Witnesses:
GEO. H. MAXWELL,
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