

UNITED STATES PATENT OFFICE.

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METHOD OF COMPOUNDING VULCANIZABLE COMPOUNDS AND VULCANIZING AND APPLYING SAME.

SPECIFICATION forming part of Letters Patent No. 529,905, dated November 27, 1894.

Application filed March 11, 1891. Serial No. 384,645. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM GRISCOM, Jr., of Bound Brook, in the county of Somerset and State of New Jersey, have invented a certain
5 new and useful Method of Compounding Certain Vulcanizable Compounds and Vulcanizing and Applying the Same in Permanent Adhesion or Union with Fabricated Materials; and I do hereby declare that the following
10 specification is a clear, true, and complete description of my invention.

My said novel method of working vulcanizable compounds specially relates to a line of comparatively inexpensive vulcanizable,
15 and vulcanized compounds, invented by me, and adapted for various uses, as substitutes in the same connections, for the more expensive compounds, containing vegetable gums, such as caoutchouc or rubber.

20 So far as my knowledge extends, all vulcanizing methods heretofore practiced, involve the preliminary working of sulphur in its solid form, but finely powdered, into or with the mass of gum, and other constituents,
25 and thereafter fusing the sulphur with the mass, during the process of vulcanization.

A novel feature in my method, involves the preliminary melting of the sulphur, and then mixing it with the other constituents, the latter then being also in a fused and more or
30 less highly heated condition, and then developing the mass into a vulcanized condition, by the continued application of heat to a comparatively high degree.

35 In prior methods of combining vulcanized compounds to such fabrics, as cloth, or to other materials in permanent adherence, the vulcanizable compound, has always been first applied, and then the goods have been exposed to vulcanizable conditions, as to time,
40 and temperature. Another novel feature in my novel method, consists in first vulcanizing a mass of compound, and then while it is in a plastic condition, applying it to such
45 goods or fabrics, as are to be charged, or coated therewith.

In my applications for patent, filed March 11, 1891, Serial Nos. 384,643 and 384,644, I have disclosed and claimed certain vulcanizable compounds which may be and are, com-
50 pounded, vulcanized and applied in a prac-

tical way in accordance with my present invention. For the purposes of this specification, it will be only necessary to state, that the prime elements in said compounds, are
55 candle tar and sulphur.

Although my present invention is not restricted to any particular type of candle tar, I deem it proper to state, that valuable and satisfactory results, will depend upon the use
60 of the soft ropy candle tar, derived as a residual product from the distillation of animal fats and oils, as practiced by candle makers, and if other varieties of the residual products of candle makers' stills are employed, they
65 should be combined with the soft and ropy candle tar in various proportions, according to the uses to which the compound is to be applied; as for instance, if the intended use should call for specially durable flexibility,
70 then more candle tar should be used than if the intended use required only water excluding capacities.

Whatever may be used with the candle tar and sulphur, as additional plastic elements,
75 are first mixed with the candle tar, under a temperature sufficiently high to secure a thoroughly liquefied condition of the mass, and then the sulphur in suitable proportions (say in weight from two to eight per cent. of the
80 mass) is first melted and then mixed with the other ingredients, under a temperature of about 245° Fahrenheit, and then slowly raised to about 380° or 390° Fahrenheit. While the heat is thus being applied, the mass will foam
85 freely, during which mechanical agitation is desirable, and when the foaming ceases, and the mass has become practically quiescent, it will have been vulcanized, and is, in accordance with my invention, applied to any arti-
90 cles or materials to which the vulcanized material is to be permanently attached, as by charging textile goods, or paper, either to saturation or coating, or both, or to the surfaces of articles composed of non absorbent,
95 or imperfectly absorbent materials, as with metal and wood.

Preparatory to the charging of heavy fibrous matter, with the vulcanized compound, it is sometimes desirable to dampen the fabric
100 with light oil of coal tar or other suitable solvent of the compound, and as a rule solid

bodies should be well warmed, prior to the application of the compound. The period of time within which the application of the vulcanized compound can be effected, is quite 5 limited, seldom exceeding thirty minutes, the mass then rapidly losing its plasticity, even though the temperature be not materially lowered. Sheeted, or linear fabrics, such as cloth, paper, cord, &c., are passed rapidly 10 through the plastic mass, well stripped as to excessive adherence, and as a rule, it will be desirable to dust them, as with powdered well dried soapstone, clay, or chalk, after which, and while still warm, the surfaces may be 15 smoothly finished, as by the use of cold rolls for the sheeted fabrics, and well rounded or tapered tubular dies for finishing the surfaces of cord, or other similar linear goods.

It is sometimes desirable, after compound- 20 ing the vulcanizable compound, in accordance with the first stated portion of my invention, to at once apply the compound to the articles to be permanently saturated or coated therewith, and to then subject the so 25 treated goods to a vulcanizable temperature for vulcanizing or hardening the applied compound, and this mode of procedure constitutes another feature of my invention; and still another feature of that portion of my inven- 30 tion which relates to compounding and applying vulcanizable compounds containing candle tar to fabricated materials, consists in the melting of the candle tar, then mixing powdered sulphur therewith, then vulcaniz- 35 ing the mass, and then applying the same, while in a plastic condition, to fabricated materials.

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

1. The method of compounding vulcaniz- 40 able compounds containing such plastic matter as candle tar, which consists in heating the plastic matter to a melted or well liquefied condition, and separately melting sul- 45 phur in appropriate quantity, and then combining and mixing the melted masses.

2. The method of compounding vulcaniz- 50 able compounds containing such plastic matter as candle tar, and applying the same to various fabricated materials, which consists in first separately heating the plastic matter and sulphur to a melted or well liquefied condition, then combining and mixing the same, 55 and then applying the compound in permanent adherence to the fabricated materials.

3. The method of compounding vulcaniz- 60 able compounds, vulcanizing the same and applying them in permanent adherence to fabricated materials, which consists in separately melting the plastic elements, and the sulphur, to a well liquefied condition; then 65 uniting and mixing the melted materials; then developing the same into a vulcanized condition, by appropriately subjecting the same to suitable temperature, and then after vulcanization, and while still in a plastic condition, applying said compound to fabricated materials, and in permanent adherence there- with.

WILLIAM GRISCOM, JR.

Witnesses:

PHILIP F. LARNER,
HOWELL BARTLE.