

UNITED STATES PATENT OFFICE.

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COMPOSITION FOR FILLED BRAKE-SHOES AND PROCESS OF MANUFACTURE.

No. 820,705.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, WARNER R. CROWELL, a resident of Boston, county of Suffolk, and State of Massachusetts, and NICHOLAS B. VARINA, a resident of Aurora, county of Kane, and State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Compositions for Filled Brake-Shoes and Processes of Manu-
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facture, of which the following is a specification.
Our invention concerns compositions for filled brake-shoes and the processes employed in producing such compositions, and our new product has the advantages of economy of manufacture, durability in service, and great resistant or frictional properties, consequently necessitating only a moderate pressure applied to the brake-shoes with corresponding parts of light weight for effecting such pressure.

Our improved composition comprises the following constituents: mineral naphtha or coal-tar, five per cent.; india-rubber, three
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per cent.; tallow, two per cent.; powdered shellac, four per cent.; ground coke, five per cent.; sal-ammoniac, one per cent.; steel borings, forty per cent.; iron borings, forty per cent.
Although we have specified a certain percentage, by weight, for each part of the composition, it should be understood that the elements themselves may be replaced by others having similar properties and that the amounts of the various elements may be varied to a considerable extent. The mineral naphtha or coal-tar, india-rubber, and tallow are gently heated together, and afterward the remaining constituents are thoroughly mixed
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with the heated mass and the whole is poured upon a slab to cool. When the composition is to be applied to the brake-shoe shell, it is heated to approximately 250° Fahrenheit and pressed into a pocket or pockets in the brake-shoe at a considerable pressure—such, for example, as five thousand pounds to the square inch.
The coal-tar or mineral naphtha acts as a binder for the finely-divided particles of metal, the rubber performs the function of a friction material, while the tallow when heated is a solvent for the rubber and becomes mixed with the coal-tar or naphtha, the resulting product being a sticky or adhesive

mass. The powdered shellac performs the 55
function both of a binding material and a resistant material, while the ground coke acts somewhat as an abradant or grinding material to keep the car-wheels true, so that the latter do not require to be turned or ground
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down, to keep them in proper shape. We have found that a mixture of steel borings and iron borings, which forms the main portion of the composition, acts better than either one of these elements alone; but it should be noted that our invention is not limited to borings, since it includes finely-divided metal particles of any type. The sal-ammoniac is a rusting element which acts upon the finely-divided particles of steel and iron to rust and harden the mixture.

Although we have indicated a composition containing several ingredients, our invention is not limited to all of the described ingredients nor to the exact proportions stated, since other ingredients having similar properties might be substituted for some or all of the ingredients specified.

We claim—

1. A composition of the character described, containing comminuted iron and comminuted steel, substantially as described.

2. A composition of the character described, containing metal particles and a rusting material, substantially as described.

3. A composition of the character described, containing metal particles and sal-ammoniac, substantially as described.

4. A composition of the character described, containing comminuted iron, comminuted steel, and sal-ammoniac, substantially as described.

5. A composition of the character described, containing comminuted iron, comminuted steel, and a rusting material, substantially as described.

6. A composition of the character described, containing coke, substantially as described.

7. A composition of the character described, containing metal particles and coke, substantially as described.

8. A composition of the character described, containing rubber and tallow, substantially as described.

9. A composition of the character described, containing coal-tar, rubber, and tallow, substantially as described.

10. A composition of the character described, containing coal-tar, india-rubber, tallow, powdered shellac, ground coke, sal-ammoniac, steel particles and iron particles, substantially as described.

11. A composition of the character described, containing the following elements in approximately the percentage of weight indicated: coal-tar, five per cent., india-rubber three per cent., tallow two per cent., powdered shellac, four per cent., ground coke five per cent., sal-ammoniac one per cent., finely-divided particles of steel forty per cent., finely-divided particles of iron forty per cent., substantially as described.

12. The process of producing a composition for filled brake-shoes, which consists in gently heating together coal-tar, rubber, and tallow, then adding and mixing thoroughly powdered shellac, ground coke, sal-ammoniac, finely-divided steel particles, finely-divided iron particles; and pouring the same on a slab to cool, substantially as described.

13. The process of producing a composition for brake-shoes, which consists in gently heating together coal-tar, rubber, and tallow, then adding and thoroughly mixing powdered shellac, ground coke, sal-ammoniac, finely-divided particles of steel and finely-divided particles of iron, pouring the same upon

a slab to cool, heating the same after being cooled to a temperature of approximately 250° Fahrenheit and pressing the same into the pocket or pockets of a brake-shoe, substantially as described.

14. The process of producing a composition for filled brake-shoes, which consists in gently heating together the following elements with the percentages by weight indicated: coal-tar, five per cent., india-rubber three per cent., tallow two per cent., and then adding and thoroughly mixing powdered shellac four per cent., ground coke five per cent., sal-ammoniac one per cent., steel particles forty per cent., iron particles forty per cent., pouring the same upon a slab to cool, and when cooled heating the same to approximately 250° Fahrenheit and pressing the composition into the pocket or pockets of a brake-shoe, substantially as described.

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