

UNITED STATES PATENT OFFICE.

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GRINDING COMPOSITION.

No. 924,604.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD B. GALLAHER, a citizen of the United States, residing in the borough of Manhattan, city of New York, county and State of New York, have made a new and useful Invention in Grinding Compositions, of which the following is a specification.

My invention is directed to a novel composition or compound which has an especial utility in connection with the grinding of valves and valve seats, such as are used with explosive engines—particularly for driving automobiles or auto-boats—and it has for its objects, first, to produce a composition of matter for such use, the body or sustaining part of which is an oil, preferably a mineral oil, which will not run or melt at ordinary climatic temperatures or for such temperatures as are engendered frictionally in the act of using the same. Second, to produce a composition of matter for such use composed of a grinding powder and an oil which shall have such a consistency that the grinding powder shall always retain its intermixed relation with the oil for all climatic and all temperatures engendered in actual use. Third, to produce a composition of matter of a powdered grinding substance and an oil, the latter being of such consistency that for all climatic and other temperatures engendered in actual use the same may be packed in containing vessels without any possibility of the oil and the powder varying their relative intermixed proportions, either in use or during transportation. Fourth, to produce a composition of matter which may be utilized in such cases with a single application thereof and which may be quickly and easily removed from the valve and valve seat by the user without the possibility of the admission of any part thereof into the interior of the engine. Fifth, to produce a composition of matter of a grinding substance and an oil of such viscosity that it will not flow either for climatic temperatures or for temperatures such as are engendered by the use thereof. Sixth, to produce a composition of matter for grinding valves and valve seats which shall be of such a viscous nature that it may be carried in boxes or bottles in the tool-chests of vehicles of the type indicated without danger of soiling the tool-box and tools with grease and without any possibility of liberating the polishing or grinding powder.

In the use of explosive engines generally it is important that the valves shall be accurately adjusted in their seats so as to obtain the best possible results from the explosions of the gases utilized, and when engines of this type are neglected in respect to such proper relation of the valves and valve seats they soon become worthless and are relegated to the repair shops. It has been customary heretofore to effect the seating of such valves by the use of oils generally, combined with grinding powders by first smearing or rubbing a small quantity of oil, such as petroleum, upon the valve or valve seat; then sprinkling the powder, such as powdered carborundum, emery or the like upon the surface of the oil and afterward seating the valve and rapidly rotating it back and forth until the desired result was attained. As a matter of fact, however, this cannot be accomplished with one application of the material, and the operator is called upon to remove the valve and reapply the material, very often a number of times. Such oils, owing to their fluid condition, run freely, and in the application of the powders the latter are admitted to the interior of the engine in sufficient quantities to damage the piston and piston rings to such an extent as to make it necessary to send the engine to the repair shop. It sometimes happens in thus sprinkling the powder upon the oil, after it has been smeared over the bearing face of the valve, that small globules or volumes thereof will fall upon the surface of the oil and will not be fully absorbed, so that when the valve is being seated the unattached powder will fall directly into the cylinder and cause trouble as before. The accurate seating of the valves is also effected in other ways as, for instance, with solid grinding compounds reduced by the application of water or light oils to a fluid condition; but all such compounds or applications designed for the purpose sought are, so far as I am aware, open to some if not all of the objections that I have already pointed out.

My invention overcomes all of these serious objections in that I preferably utilize a non-fluid mineral oil known generally among oil refiners as "petroleum hard oil" as a base for my novel grinding and polishing composition of matter. I have ascertained that oils of the mineral type, such as petroleum, and particularly the non-fluid product thereof,

(which latter is well known in the art of oil refining as petroleum hard oil), is especially fitted for this purpose, in that it will not flow for climatic or frictional temperatures under
5 from 125 to 150 degrees. Petroleum hard oil is also known and sold by the trade as a "non flowing oil" which will not flow for climatic temperatures. With this oil I thoroughly mix or combine any well known
10 grinding substance in the nature of a fine powder, preferably fine carborundum, as carborundum is found to be one of the best grinding and polishing substances known. I thoroughly mix these ingredients in preferably the following proportions—2½ pounds
15 of coarse powdered carborundum to 10 pounds of non-fluid oil. For a finer composition I thoroughly mix 2 pounds of fine powdered carborundum to 10 pounds of non-fluid oil. In general I use the coarser product first for reducing the valves and valve seats to approximate accurate relation and finish the work with the finer product. Of
20 course, the proportions of the ingredients and relative quality or fineness of the powder may be varied to suit the conditions of the case, the essence of my invention lying in the production of a composition of matter for the purpose described which will not flow for
25 ordinary climatic temperatures during the heated season, or for such temperatures as are engendered by the usage due to friction in the act of applying the material.

I do not limit my invention to the especial
35 combination of materials hereinbefore described, nor to the specific proportions thereof, for that, obviously various non-fluid oils which would not flow at the temperatures in-

dicated might be substituted and various grinding powders or substances such as are
40 well known and in general use in the art of grinding and polishing might be substituted for carborundum, my invention embodying generically the combination of a powdered
45 polishing or grinding substance with a petroleum hard oil, also known as a "non-flowing oil", which will maintain its viscosity or non-tendency to run under the conditions named, although the identical substances named and the proportions thereof
50 used are preferred, as I have been enabled to obtain such results therewith as to make this composition of matter a very valuable product in the art of grinding and seating valves. Nor do I limit my invention to the
55 specific use to which it is herein referred to as being applied, as obviously the same may be utilized generally in the art of grinding and polishing surfaces where it is important that the results which I claim for this product
60 may be attained.

Having thus described my invention what I claim and desire to secure by Letters Patent of the United States is—

A composition of matter for grinding and
65 polishing surfaces composed of a grinding powder intermixed with petroleum hard oil, substantially as described.

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

EDWARD B. GALLAHER.

Witnesses:

C. J. KINTNER,

LEWIS B. FREEMAN.