UNITED STATES PATENT OFFICE.

WARREN B. BUCKLEY, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO AIR-EASE TIRE FILLER COMPANY, A CORPORATION OF DELAWARE.

TIRE-FILLER.

1,042,884. Specification of Letters Patent. Patented Oct. 29, 1912.

No Drawing. Application filed April 11, 1912. Serial No. 690,209.

To all whom it may concern:

Be it known that I, WARREN B. BUCKLEY, a citizen of the United States, residing at Washington city, in the District of Columbia, have invented certain new and useful Improvements in Tire-Fillers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in compositions designed as fillers for automobile and similar tires and as a substitute for pneumatic tubes.

Since the invention and adoption of pneumatic tires efforts have been made by many inventors to provide a substitute for the inflatable pneumatic tube which would overcome the disadvantages of "punctures," "blow outs" and "rim cuts" involved in the use of such tubes. A large number of patents have been granted as a result of these efforts, including spring wheels, tire fillers of various compositions, &c. Solid tires have also been suggested, but have been found to be not only undesirable, but impractical, owing to their excessive weight and cost, and lack of responsive resiliency in movement, especially over rough or uneven roads.

As before stated and as a result of the conditions stated, many attempts have been made to produce a filler for tires which would have all the desirable qualities and characteristics of the pneumatic tire, and at the same time be devoid of the many disadvantages, accidents, &c., of such tires. In such endeavors cork in various forms has been the principal ingredient generally suggested by inventors, but experience has demonstrated that in any form it is deficient in required resiliency, and, moreover, if the shoe of the tire should be punctured and moisture admitted to the body of cork the condition of the latter would be materially changed and to such extent as to render it ineffective. Likewise for a number of years, and by many inventors, it has been suggested to employ the materials used in making the well known printers' rolls, consisting principally of gelatin, glue, etc., but experience has proved that such compositions have little or no resilient properties and are subject to climatic changes, and have the further disadvantage of drying out, shrinking and becoming very hard with age. For these and other reasons, fillers containing gelatin, glue, etc., have never entered into universal use. In more recent years inventors have resorted to various oils as a base for fillers in lieu of the undesirable base of gelatin. Among the various oils experimented with heretofore, the oil known to the trade as "corn oil" has been found to more nearly approach the desired results than other suggested and tried oils. In the use of corn oil as a base, when combined with sulfur, it has been found that vulcanization with greater or less success may be attained when cooked a proper length of time and at a proper temperature, but, owing to the fact that "corn oil" is usually marketed in its crude state, it cannot be relied upon to be always free from sedimentation or what is known as "foots," and, therefore, it is found to be impossible to always produce a uniformly resilient product by the use of this unreliable crude oil, which is often found to be a dark or heavily clouded oil containing properties which render it unfit for making what I designate good, resilient, artificial rubber.

I have found after long experiment and practical demonstration that a satisfactory filler can be produced by the employment of the highly refined corn-oil (which is a well known product marketed under the trade name of "Argo cooking oil"), and "flowers of sulfur" in proper proportions carefully mixed and treated to constitute a base, and adding thereto a measured quantity of finely comminuted cork, and treating the several constituents all as hereinafter more fully set forth. I have found that the oil employed in the base must be absolutely free from all sediment and what is known as "foots" and that ordinary sulfur cannot be successfully employed, but on the contrary the "flowers of sulfur" must be used, and I further have discovered that it is not only necessary that these particular ingredients should be employed but that they must be mixed in a given proportion and treated in a particular manner; they must be subjected to a heat of about 320 degrees Fahrenheit, while the two ingredients are commingled, for if heated separately and subsequently mixed satisfactory and uniform results cannot be obtained.

To produce the desired results I use for each batch of ten pounds (10 lbs.), seven pounds (7 lbs.), and ten ounces (10 oz.), of highly refined oil; two pounds (2 lbs.), and two ounces (2 oz.), of the "flowers of sulfur," and four ounces (4 oz.), of comminuted cork. The comminuted cork should be of about thirty two mesh. I first mix the oil and flowers of sulfur thoroughly together and then subject the two ingredients simultaneously to about 320 degrees heat for a period of about fifty minutes at which time what I denominate "vulcanization" takes place, and about from two to three minutes before complete vulcanization I introduce into the mass the stated quantity of comminuted cork; the complete compound is then in condition to be injected or forced into an inner tube in substantially the same manner that air is commonly introduced in pneumatic tires.

With the ingredients named and in the proportions stated, it is all important that the process described should be accurately followed. For instance if the oil and the flowers of sulfur should be heated separately and then brought together and mixed, neither good nor uniform results would follow, hence the importance of subjecting the two bodies while in mixed condition, to the same degree of heat.

I am, and for a long time have been familiar with all of the so called rubber substitute products, and have compared the same with the product constituting my invention and have found that none of the substitutes with the exception of that produced by me, has all of the necessary properties and characteristics to render them efficient and lasting as tire fillers.

What I claim as new and desire to secure by Letters Patent is:

1. The process herein described for producing a filler for automobile tire which consists in first mixing together the highly refined vegetable oil, known in the trade as "Argo cooking oil", and the "flowers of sulfur" in substantially the proportions named; then subjecting the mixture to about three hundred and twenty degrees Fahrenheit for a period of about fifty minutes and finally, about from two to three minutes before completion of the heating, adding the stated quantity of comminuted cork.

2. A new compound for automobile tire filler consisting of highly refined vegetable oil, known as Argo cooking oil, flowers of sulfur and comminuted cork in the proportions and subjected to the treatment hereinbefore set forth.

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

WARREN B. BUCKLEY.

Witnesses:
JOHN COOK,
ELLEN GOODWIN.