TIRE-REPAIRING TOOL.


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To all whom it may concern:

Be it known that I, JOHN I. WHITE, residing at Piedmont, in the county of Mineral and State of West Virginia, have invented a new and Improved Tire-Repairing Tool, of which the following is a specification.

This invention seeks to provide a simple and easily-manipulated tool for repairing bicycle-tires, and particularly adapted for giving the puncture the necessary shape to properly receive the common type of "umbrella" plug in such manner that the said plug can be quickly applied to the punctured part of the tire to effectively close the same.

My invention comprehends, essentially, a combination tool having adjustable parts whereby it can be arranged to first cut the puncture to a proper shape to receive the plug and then adjust in a manner to conveniently force the plug through the prepared puncture.

My invention in its complete make-up embodies a spindel having an exteriorly-threaded body portion, a non-threaded portion that terminates in a reduced threaded end adapted to receive the conical plunger having a smooth penetrating portion and a base portion that terminates in a hollow cutting-tool, said tool also including a tubular plug-presser adapted to fit upon the reduced spindle end, an anvil being also provided which is slidably mounted upon the non-threaded end of the spindle to coact with the non-cutting plug and form an adjustable abutment against which the anvil is adapted to seat.

In its more subordinate features my invention consists in certain details of construction and peculiar combinations of parts, all of which will hereinafter be described, and particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a view illustrating the manner in which the combined conical cutter-head and plunger is inserted through the rupture in the tire. Fig. 2 is a vertical section of the tool and illustrates the manner in which it is manipulated to effect a cutting action. Fig. 3 is a view illustrating the manner in which the tool is used to push the rubber plug through the prepared opening in the tire.

Fig. 4 is a perspective view of the various parts which constitute my improved tire-repairing tool. Fig. 5 is a perspective view of the repair-plug.

Referring to the drawings, in which like numerals indicate like parts in all the figures, 1 designates a T-shaped body, the shank 1a of which has an enlarged exteriorly-threaded portion 1b, that terminates at a shoulder 1c, which forms the base or inner end of a smooth spindle portion 1d of a reduced diameter, the outer end of which is threaded, as at 1e, the purpose of which will presently appear.

2 designates a winged nut, the hub portion of which has a flat outer bearing-surface 2a, 65 which coacts with and forms an abutment for the inner end of the anvil 3, the body 3a of which is made tubular and of a diameter sufficient to permit of said body portion 3b moving freely over the large threaded portion of the shank. The outer end of the anvil is made solid, as at 3c, and the said solid portion on its inner face has a beveled seat 3d to engage the shoulder 1c of the shank, which shoulder 1c limits the outward movement of the anvil.

4 designates a combined plunger and cutter member having a conical shape whose outer surface is smooth and whose front edge terminates in a penetrating-point 4a. The inner or base portion of the member 4 is made tubular, and its rear edge terminates in an annular cutting-rim 4b, which has a diameter slightly less than that of the anvil 3, with which said rim coacts, as will presently be 85 fully explained. The plunger 4 also has a longitudinally extending central threaded socket 4c, whereby it can be detachably fitted upon the reduced threaded end 1d of the spindle 1.

In the practical arrangement of my repair kit or tool different sizes of plungers 4 are used to provide for conveniently, quickly, and effectively cutting different-sized openings, in accordance with the character of the puncture, and to provide for the insertion of larger or smaller closing-plugs, as the character of the puncture may necessitate.

5 designates a tubular pusher internally threaded and adapted to fit upon the thread-
ed end 1" of the reduced spindle portion 1" of the member 1, and 6 designates an umbrella plug such as is commonly used for closing symmetrically-formed holes in the tire.

The manner in which my improved repairing-tool is used is explained as follows: The puncture is located and a conical plunger of a proper size is fitted upon the spindle of the main or body part of the tool, and the said conical plunger is then pushed through the punctured part of the tire, the inner movement of the spindle end through the tire being limited by the anvil by reason of its greater diameter than the cutting-rim of the plunger, and again by reason of the free movement of the anvil on the shank or spindle 1 the tool can be conveniently used for reaming or cutting out the ruptured part of tires of different thicknesses. The conical plunger having been pushed through, the anvil is forced toward its cutting-rim by turning the winged nut 2, which causes the cutting-rim of the plunger to cut the circular or other symmetrically-shaped opening beginning on the inner side of the tire, that part of the tire being removed, seating itself in the tubular socket of the conical cutter and plunger. The tire part thus cut out, together with the conical plunger, is then withdrawn and the conical plunger removed and the pusher member 5 substituted therefor. The rubber plug 6 is then properly cemented and its bottom end inserted into the opening made in the tire, care being taken to retain hold of the string 6", which is connected with the said plug 6, and the annular rim part of the said plug 6 is then forced through the tire-opening by pressing the pusher member 5 thereagainst. The entire rubber plug having been pushed into the tire, pull on the string will draw the button part 6" out through the said tire-opening, which it fits snugly and with the rim member 6" held firmly seated against the inside of the tire in the usual manner. The projecting button portion is then cut off flush with the tread face of the tire.

I am aware that repair-tools including a plunger adapted to be inserted through the puncture and cutting members for making a symmetrical hole to receive the button-head plugs have heretofore been provided. My invention differentiates, so far as I know, from such devices in the peculiar correlation of the conical plunger and cutter, the anvil, the winged nut, and the threaded shank or spindle.

The pusher member 5 when not in use is held in a socket 5" in the handle 1, as clearly shown in Figs. 1 and 2.

I therefore claim and desire to secure by Letters Patent in the United States—

1. A repair-tool for the purpose specified, comprising a shank having a handhold, said handhold being formed with a socket, a nut threaded on the shank, an anvil slidable on the shank, a plunger removably fitted to the shank, and a pusher member normally held in said socket, and adapted to be removably connected to the shank.

2. A repair-tool for the purpose described, comprising a shank having a handhold provided with a socket, said shank having threaded portions of different diameters and an intermediate smooth surface, a plunger having a cutting edge, and internally threaded to fit the threads of the less diameter on the shank, an anvil slidable on the smooth surface, and having an internal diameter greater than that of the threaded portion of larger diameter, and a pusher member detachably held in said socket, internally threaded to fit the lesser threaded portion of the shank.

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Witnesses:

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