ABSTRACT

A needle, a jaw slidably mounted adjacent the needle, and a handle for pivoting the jaw to secure and stretch a plug connected between the jaw and the needle.

3 Claims, 9 Drawing Figures
This invention relates to a tool for inserting rubber tire repair plugs into an injury or hole of a vehicle tire. The primary object of this invention is to prestretch the plug in order to make it smaller for easier insertion and minimization of plug breakage.

Another object of this invention is obtaining a tighter fit in the hole accomplished by contraction of the plug when released from its stretched position. A further object of this invention is the prevention of plug loss inside the tire by automatically stopping the plug insertion at the correct depth.

An additional object of this invention is the provision of a tool which is simple, effective, and efficient. The above and other objects of this invention will become apparent to those skilled in the art after a consideration of a detailed description of a preferred embodiment of this invention taken together with the accompanying drawing wherein:

FIG. 1 is a plan view of the device; FIG. 2 is a side elevational view thereof; FIG. 3 is a sectional view taken on the line 3-3 of FIG. 1; FIG. 4 is a front end elevational view thereof; FIG. 5 is a sectional view taken on line 5-5 of FIG. 3; FIG. 6 is a rear end elevational view thereof; FIG. 7 is a side elevational view of the housing; FIG. 8 is a sectional view taken on the line 8-8 of FIG. 7; and FIG. 9 is a bottom view of the housing.

Referring in detail to the drawing, there is shown a shaft 20, a handle bar 22 secured transverse therewith at one end thereof, a notch 24 in the top surface of shaft 20 having a longitudinal axis transverse with that of shaft 20 and having a parallelogram cross section, a needle 26 extending outward from the other end of shaft 20 parallel with longitudinal axis thereof, and a setscrew 28 inserted in the bottom of shaft 20 to secure needle 26 in place. A tubular housing 30 with a square cross section, a longitudinal slot 32 in the bottom side thereof for slidable movement about said screw 28, a pair of tabs 34 partially punched out of the vertical sides of housing 30 and bent 180° for extension above the top side of housing 30, and a support projection 36 extending downward from the top side of housing 30 at the rear end thereof and having a hole therein through which needle 36 is inserted for support and proper alignment is slidably mounted over shaft 20 near the rear end thereof. A three sided jaw 40 with an adjusting crew 42 inserted in the top side thereof and a tooth 44 extending downward from and transverse with the top side of jaw 40 at the rear end thereof is pivotally mounted partially above housing 30 by means of a pin 46 mounted between tabs 34 and inserted in the vertical sides of jaw 40. A spring 50 mounted on pin 46 physically contacts the top side of housing 30 and the bottom surface of the top side of jaw 40 biasing jaw 40 upward at the rear end thereof. A handle 52 has a pair of legs 54 with a hole in each and each vertical side of jaw 40 has a longitudinal slot 56 therein aligned with the holes of legs 54 through which a pin 58 is inserted and mounted. At the front end of legs 54 roller means 60 is mounted between legs 54 and physically contacts the top side of housing 30.

As clearly shown in FIG. 3, a longitudinal rubber plug 62 is inserted and centered in the head of needle 26 with both ends of plug 62 placed between jaw 40 and the top wall of housing 30. When handle 52 is pushed forward and downward toward the front of shaft 20, handle 52 pivots about roller means 60 which rolls toward the rear of housing 30 and handle 52 also pivots about pin 58. As roller means 60 rolls toward the rear, legs 54 move upward and pin 58 exerts force against adjusting screw 42 lifting it and the front end of jaw 40 upward against the biasing force exerted by spring 50 at the rear end of jaw 40 which moves downward toward housing 30 as jaw 40 pivots about pin 46. It should be noted that adjusting screw 42 determines how low tooth 44 approaches the surface of the top side of housing 30 when handle 52 is fully pivoted downward. Tooth 44 tightly clamps the ends of rubber plug 62 against the surface of the top side of housing 30 when handle 52 is pivoted downward. Handle 52 is now manually pulled toward the front of shaft 20 thereby stretching plug 62 as shown in FIGS. 1 and 2. The top or front end of handle 52 has a projection 70 extending therefrom at an angle so that the bottom surface of projection 70 is pressed only against the abutment of the top surface of shaft 20 and the rear side of the parallelogram formed by notch 24 forming a slip free lock at which time plug 62 is in its fully stretched position for insertion in the hole.

While the preferred embodiment of this invention has been illustrated and described, it should be understood by those skilled in the art that many changes and modifications may be resorted to without departing from the spirit and scope of this invention.

1. A resilient tire repair plug inserter comprising an elongate shaft, a handle bar secured to one end of said shaft, a needle including an eye rigidly secured in the end of said shaft opposite said handle bar and extending longitudinally outwardly therefrom, a housing longitudinally slidably mounted on said shaft and said needle, means on said housing for clamping against said housing the ends of a resilient tire plug centrally mounted in said needle eye, a handle on said last named means for moving said housing toward said hand bar for stretching said plug and cooperating means on said shaft and said handle for releasably securing said housing in plug stretching position.

2. A device as claimed in claim 1 wherein screw means releasably secures said needle in a socket formed in said shaft.

3. A device as claimed in claim 1 wherein resilient means normally urges said means on said housing to a non-clamping position.

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