

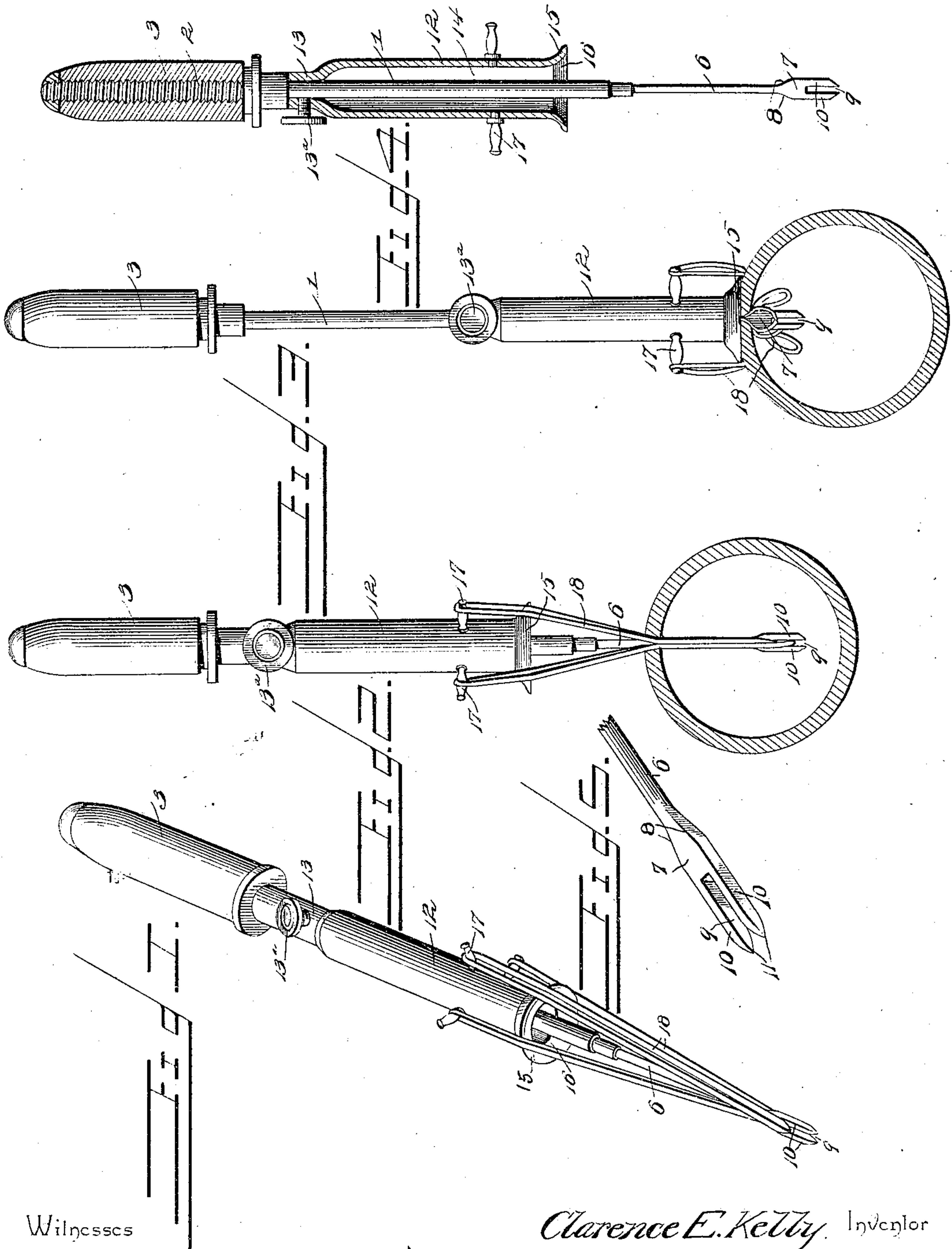
No. 617,810.

Patented Jan. 17, 1899.

C. E. KELLY.
BICYCLE TIRE REPAIR TOOL.

(Application filed June 8, 1898.)

(No Model.)



Witnesses

A. Shepard
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By *His* Attorneys.

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UNITED STATES PATENT OFFICE.

CLARENCE E. KELLY, OF GREENTOWN, INDIANA, ASSIGNOR OF ONE-HALF
TO AMANDA J. HAWORTH, OF SAME PLACE.

BICYCLE-TIRE REPAIR-TOOL.

SPECIFICATION forming part of Letters Patent No. 617,810, dated January 17, 1899.

Application filed June 8, 1898. Serial No. 682,902. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. KELLY, a citizen of the United States, residing at Greentown, in the county of Howard and State of Indiana, have invented a new and useful Bicycle-Tire Repair-Tool, of which the following is a specification.

This invention relates to tools for repairing punctures in rubber or other elastic tubing—such as bicycle-tires, hose, &c.—its object being to provide a simple device by means of which a strip or a series of strips of elastic material may be inserted into the puncture or opening in the tube and the tool be withdrawn, leaving the material in the puncture, and thereby closing it and preventing leakage of air or other fluid.

With this object in view the invention consists in the several details of construction and combinations of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of my improved tube-repairing tool ready for use. Fig. 2 is a sectional view of a tube, showing the elastic material inserted in the puncture and the tool ready for withdrawal. Fig. 3 is a similar view showing the needle disengaging itself from the elastic strips. Fig. 4 is a longitudinal section of the tool. Fig. 5 is an enlarged detail view of the slotted and pointed end of the needle.

Similar reference-numerals indicate similar parts in all the figures of the drawings.

The numeral 1 designates a shaft, one end of which is preferably threaded, as at 2, and has removably fitted thereon a handle 3, which is grasped by the operator when manipulating the tool.

6 indicates the needle secured in any suitable manner to the lower end of the shaft either permanently or detachably. The body of the needle is cylindrical and its lower end flattened, as indicated at 7, and the shoulders at the junction of the flattened end portion with the cylindrical portion of the body will be inclined, as indicated at 8. The flattened portion of the needle is provided with an open-ended slot 9, extending longitudinally thereof and midway between its side edges,

and the arms 10 on each side of the slot are pointed at their ends, as indicated at 11.

12 indicates a sleeve the bore of which is reduced at its upper end, as indicated at 13, to fit snugly on the shaft 1 to permit free sliding movement. The reduced portion of the bore is of sufficient length to support the sleeve on the shaft concentric therewith, and the sleeve will be locked on the shaft in its adjusted position by a set-screw 13^a. The other portion of the bore (indicated by 14) is of greater diameter than the shaft.

15 indicates a plate or disk centrally perforated and secured on the lower end of the sleeve, and the lower face 16 of this plate is dished or concaved to make the entrance into the lower end of the sleeve bell-shaped or flaring.

17 indicates pins, preferably four, although there may be more or less, as preferred, which are secured to the sleeve and radiate therefrom a short distance from its lower end.

18 indicates elastic strips which are preferably in the form of rubber bands detachably secured in the open-ended slot 9 and on the pins 17. If long bands are used, they will preferably be inserted midway their length in the slot 9 and have their ends secured over the respective pins 17. I do not, however, limit my invention to the use of rubber bands, as other elastic material may be used and detachably supported in the slot 9 and by the pins 17 in any manner preferred.

In operation the strips of elastic material will be detachably secured in position on the tool and the needle be forced through the puncture or opening, which may be previously enlarged, if necessary, by the awl which is provided for this purpose, and the strips of elastic material will be drawn through the opening with the needle. The needle should be pushed into the interior of the tube a considerable distance and the strips of elastic material will become more or less stretched in the tube. When the strips have been inserted in the tube a sufficient distance, the set-screw 13^a will be loosened and the sleeve moved down over the shaft and the strips of elastic material disengaged from the pins 17. The concaved plate is then forced against the tube and the shaft and needle moved out-

wardly from the tube, and as the elastic strips begin to contract within the tube they will bunch up around the puncture and offer sufficient resistance to permit the slotted end of the needle to disengage itself from them, and when the needle is withdrawn the opening will contract and the strips will expand and thereby effectually close the opening or puncture and prevent leakage. The inclined shoulders 8 will greatly facilitate the withdrawal of the flattened end of the needle without dragging the strips with it, and the concaved face of the disk 15 will also aid in the withdrawal, as it permits the tube to stretch outwardly to a limited extent around the puncture or opening, which has the effect of slightly stretching such opening.

Preferably the strips of elastic material will be wet with a suitable rubber solution or cement; but this is not at all times absolutely essential.

My invention will be particularly useful to stop up punctures in pneumatic tires used on bicycles or other vehicles, and it will also be useful to stop small punctures or openings in elastic hose used for conveying water or other fluid.

It is to be understood that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a tool for repairing inflatable tubes, the combination with a shaft carrying a needle having an open-ended slot in its pointed end, of a winged sleeve slidably supported on the shaft.

2. In a tool for repairing elastic tubing, the combination with a shaft carrying a needle having an open-ended slot in its pointed end, of a sleeve slidably supported on the shaft and provided with a series of radiating pins, substantially as and for the purpose specified.

3. In a tool for repairing elastic tubing, the combination with a shaft carrying a needle having a cylindrical body and a flattened pointed end portion provided with an open-ended slot extending longitudinally thereof, of a sleeve slidably supported on the shaft and provided with a series of radiating pins, substantially as described.

4. In a tool for repairing elastic tubing, the combination with a shaft carrying a needle having a cylindrical body and a flattened pointed end portion provided with an open-ended slot extending longitudinally thereof, and inclined shoulders at the junction of the cylindrical body and flattened end portion, of a sleeve slidably supported on the shaft and provided with a series of radiating pins, substantially as and for the purpose specified.

5. In a tool for repairing elastic tubing, the combination with a shaft carrying a needle having an open-ended slot in its pointed end, of a sleeve slidably supported on the shaft and provided with a series of radiating pins, and a plate or disk fitted over the lower end of the sleeve and having its lower end concaved or dished, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CLARENCE E. KELLY.

Witnesses:

JESSE A. GIBSON,
ALBERT WHISLER.