

O. C. REICH.
REPAIR DEVICE FOR TIRES.
APPLICATION FILED SEPT. 30, 1908.

928,069.

Patented July 13, 1909.

Fig. 1.

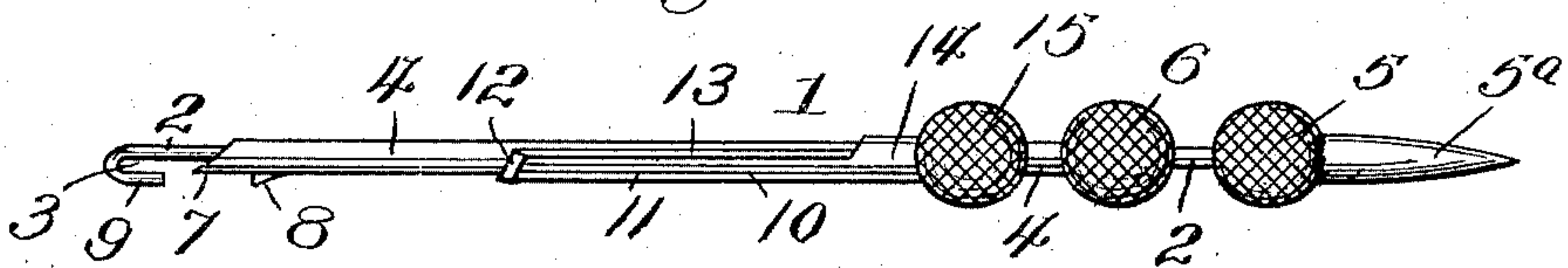


Fig. 2.

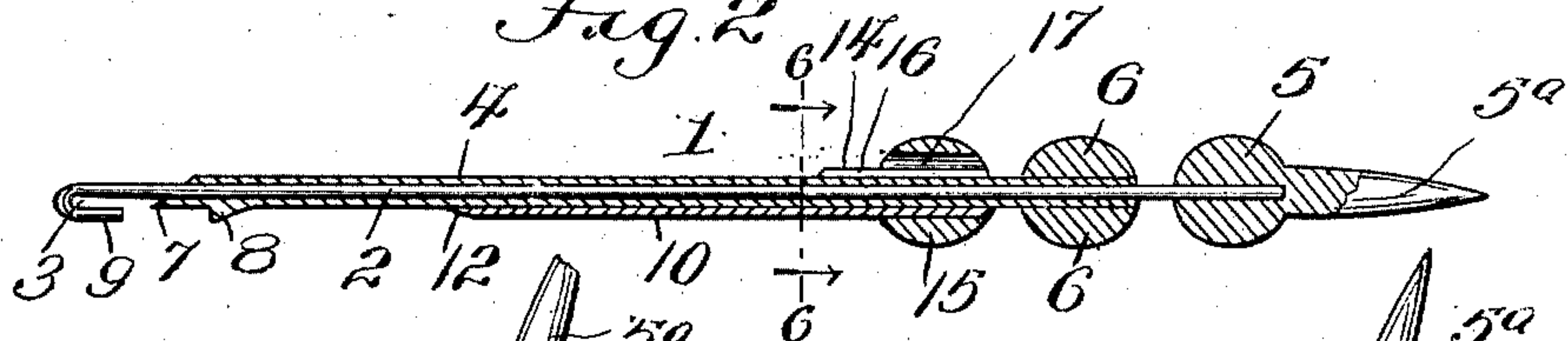


Fig. 5.

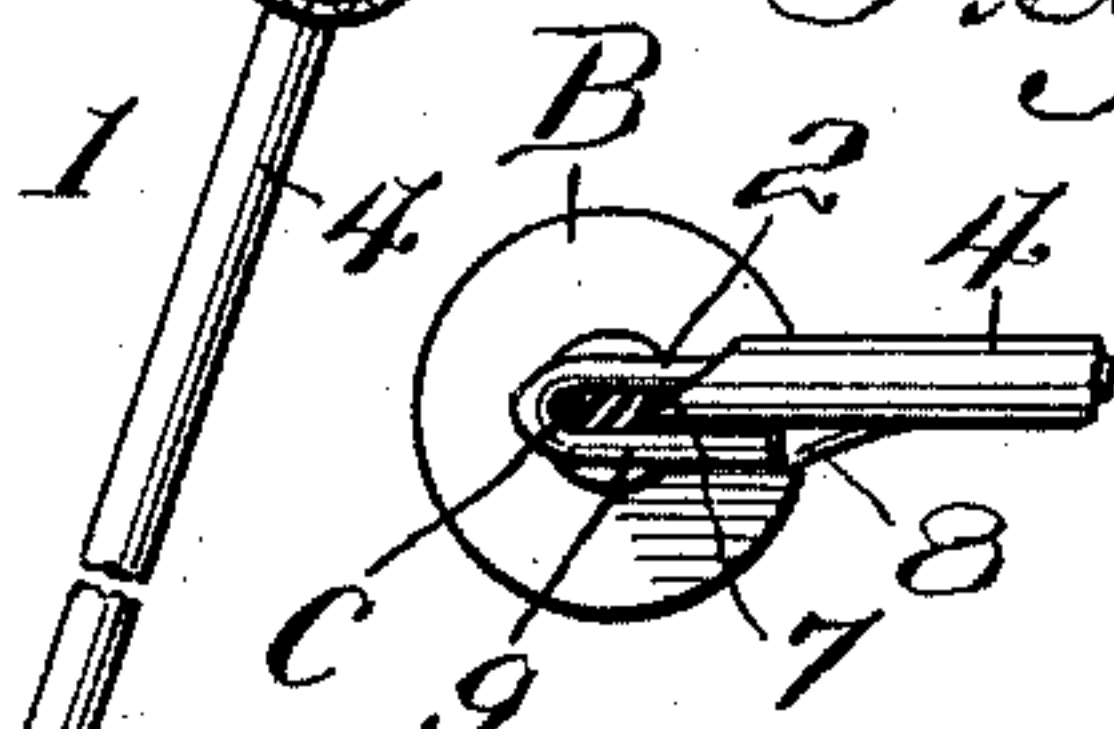


Fig. 3.

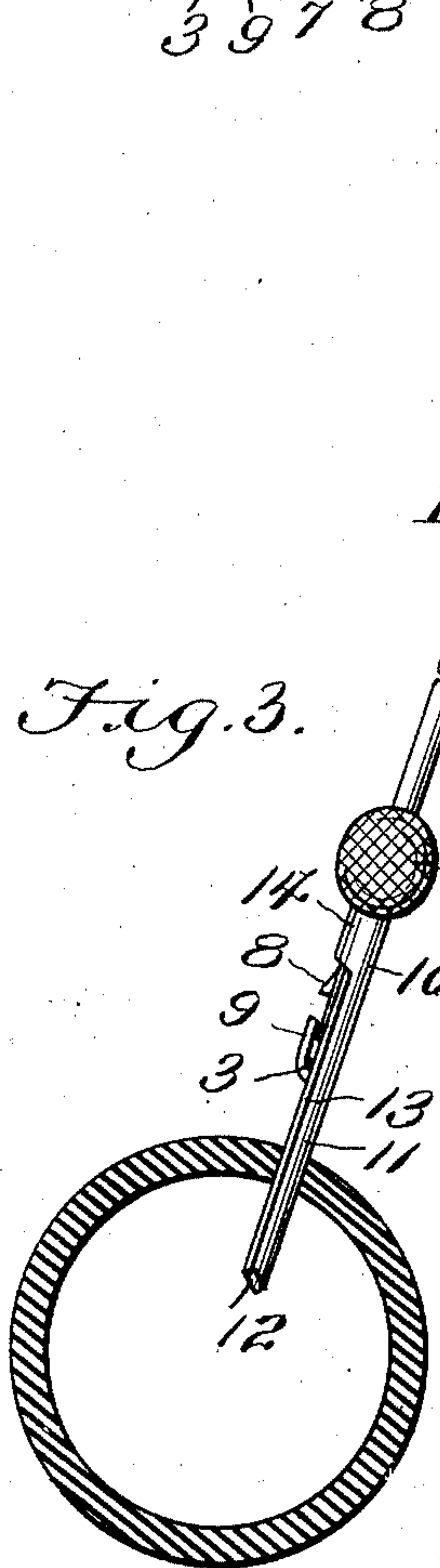


Fig. 6.

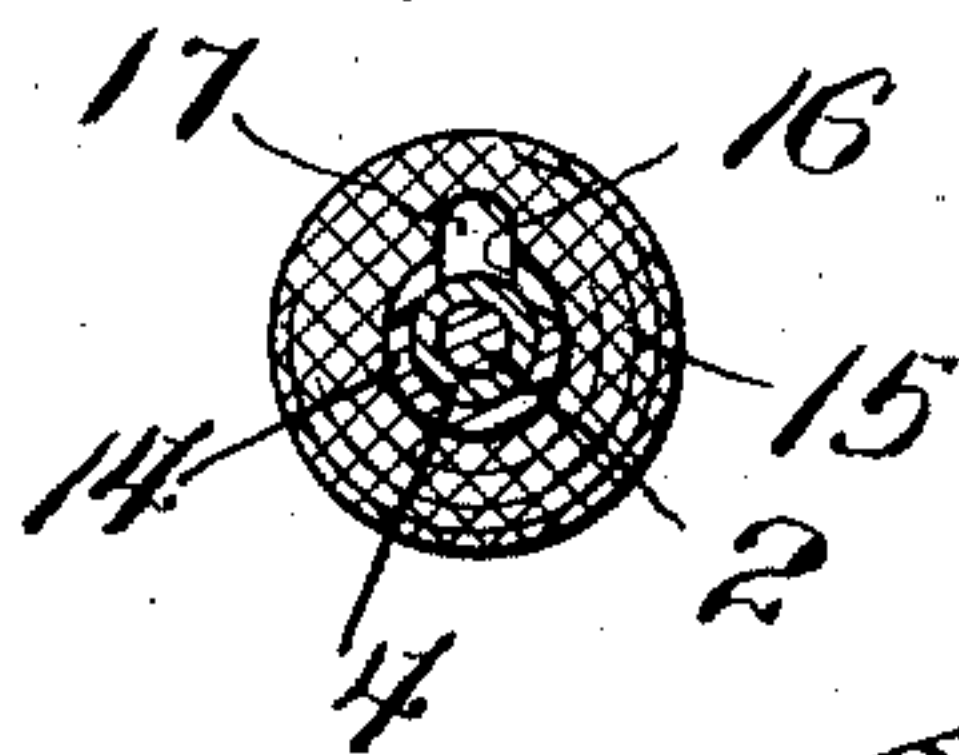
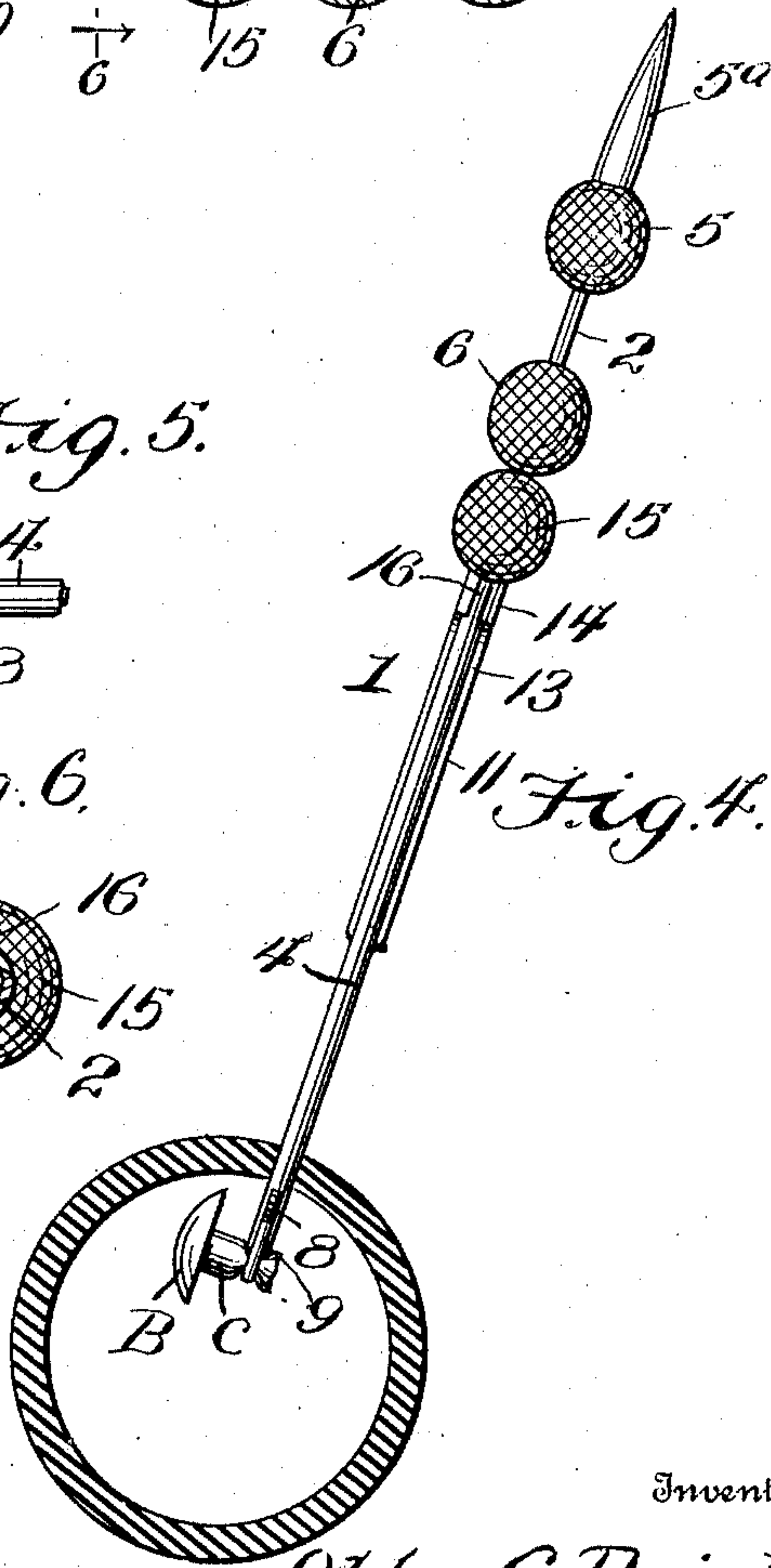


Fig. 4.



Witnesses

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REPAIR DEVICE FOR TIRES.

No. 928,069.

Specification of Letters Patent.

Patented July 13, 1909.

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To all whom it may concern:

Be it known that I, OTTO C. REICH, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented new and useful Improvements in Repair Devices for Tires, of which the following is a specification.

This invention relates to a repair device for bicycle or like tires, and has for an object to provide a device of this character which will be simple in construction and will be so arranged that it may be used effectively in the inserting of a plug through an aperture previously cut by the same instrument, and to further provide means for effectively withdrawing a plug to close the puncture.

Other objects and advantages will be apparent as the nature of the invention is better disclosed, and it will be understood that changes may be made within the scope of the claims without departing from the spirit of the invention.

In the drawing, forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views,—Figure 1 is a side view of the repair device, Fig. 2 is a sectional view therethrough, Fig. 3 is a sectional view through a bicycle tire showing the application of the repair device thereto, its cutting instrument being in use. Fig. 4 is a view similar to Fig. 3, showing the device in use during the insertion of a plug. Fig. 5 is a detail view of the hook and needle, Fig. 6 is a transverse sectional view on the line 6—6 of Fig. 2.

Referring now more particularly to the drawing, there is shown a repair device 1 comprising a stem 2 having a hooked outer end 3, and as shown, this stem 2 is mounted slidably in an elongated needle 4. The stem carries at its outer end a suitable knob or handle 5, and the needle is provided with a similar knob or handle 6 disposed adjacent to the handle 5, as shown. The needle 4 is beveled at its outer end to provide a prong 7, and adjacent to said prong, said needle has formed thereon a stop 8 for receiving one end of the bill 9 of the hook 3.

Slidably mounted upon the needle there is shown a cutter 10 having a semicircular portion 11 which is beveled at its outer end as shown at 12 and which is also beveled at its side edges as shown at 13. Inwardly of the portion 11, the cutter is provided with

a body portion which partly surrounds the needle and has mounted thereon a knob or handle 15 similar to the knob and handles previously described. The construction of the body portion 14 of the cutter is such that a short channel or passage 16 is formed and is located in line with a passage or channel 17 formed in the handle or knob 15.

In use, the needle is revolved to bring the stop 8 in alinement with the channels or passages formed in the body portion of the cutter and in the handle carried thereby, as shown. The stem is also revolved to bring its hooked end in alinement with said passages or channels, and it will thus be seen that by pushing the handle or knob 15 in an outward direction the cutter will be extended beyond the outer ends of the stem and needle respectively, whereupon said cutter may be effectively used for boring the desired hole in the tire as shown in Fig. 3 of the drawing. By revolving the cutter it is obvious that a perfect hole is formed and the elements of the device after the forming of said hole may be restored to the position shown in Figs. 1 and 2 of the drawing. A plug B is shown in Figs. 4 and 5 of the drawing and by stretching the neck or stem C of the plug it may be effectively engaged in the hooked end of the stem 2. After the plug has been engaged with the hooked end of the stem as just described, the knob or handle 6 may be moved in an outward direction to embed the prong 7 slightly in the neck C of the plug and to also bring into engagement the stop 8 with the bill of said stem. The device is now in a position to be driven through the hole previously formed in the tire. After a plug has been inserted through the hole formed in the tire as shown in Fig. 4 of the drawing, a suitable liquid cement may be ejected around and through the hole and by withdrawing the plug to bring its stem through the hole and by partly revolving said plug it is obvious that it may be effectively engaged with said tire. The neck C which may project beyond the surface of the tire may be cut off in the usual manner to provide a perfectly flush surface.

In many instances heretofore in the repairing of tire punctures, a hot iron has been driven through the proper point of the tire to form a passage through which the plug may be inserted, but from experience, it has been found that cement or like adhesives have failed to adhere to the charred

portion of the tire incident to the burning thereof with the iron, and the plug is thus liable to become casually displaced within a short time after its insertion. A device as
 5 constructed on the lines of my invention is such that it may be effectively used without the use of heat in the application of a plug, may be conveniently operated, and a plug inserted with my instrument, it has been
 10 found from experience, will remain or will last as long as the tire remains good. If desired the cutter 10 may be entirely removed from the remaining portions of the device, to be used separately therefrom.

15 In fabric tires, or in other words, in tires formed from a composition of rubber and fabric, I provide upon the knob 5 an awl 5^a or similar tool which may be effectively manipulated through the tread portion of
 20 the tire to form the desired hole for the reception of the stem of a plug and in this form of tire I do not use the cutter as heretofore described.

I do not desire to limit myself to the use of
 25 the hook hereinbefore described for holding a plug that is to be inserted in a tire, as it will be understood that I may use any suitable contrivance for accomplishing this purpose, nor do I desire to limit myself to the
 30 sole use of a needle slidably engaged with the hook, as will be readily appreciated, the needle is broadly a piercing means for engaging a plug, and I therefor, may use any suitable piercing means.

I claim:—

1. A repair device comprising a slidably mounted needle, a slidably mounted hook, and a stop carried by the needle for co-
 operation with the hook. 35

2. A repair device comprising a slidably mounted needle, a hook carried by the
 40 needle, a spur carried by the needle adapted for movement between the arms of the hook, and a stop carried by the needle for engagement with said hook. 45

3. A tire repairing device comprising a plug retaining hook, a plug piercing needle movable toward or away from said hook, and a tire cutter slidably engaged with the
 50 needle. 55

4. A repair device of the class described comprising a plug holding means, a plug piercing needle slidably engaged with the
 holding means, and a cutter slidably engaged with the needle. 55

5. A device of the class described comprising plug holding means, plug piercing means having a stop for coöperation with the holding means, and a slidably mounted
 60 cutter removably engaged with the plug piercing means.

In testimony whereof I affix my signature in presence of two witnesses.

OTTO C. REICH.

Witnesses:

R. H. SHINKLE,
 ROBERT C. GROUT.