

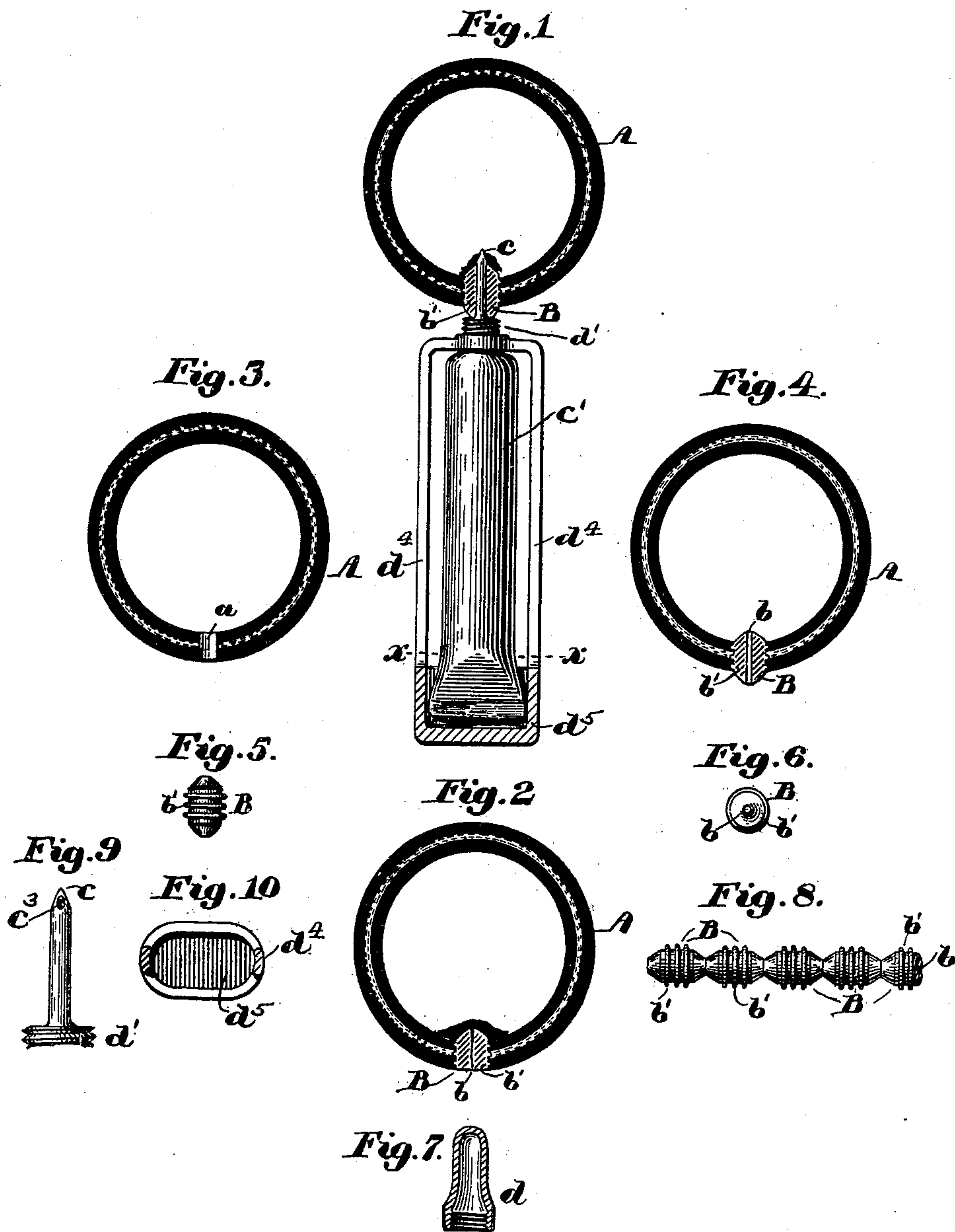
(No Model)

J. L. HATCH.

BICYCLE REPAIR PLUG AND MEANS FOR INSERTING SAME.

No. 583,438.

Patented May 25, 1897.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JAMES L. HATCH, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CHARLES H. PHINNEY, OF BROOKLINE, MASSACHUSETTS.

## BICYCLE-REPAIR PLUG AND MEANS FOR INSERTING SAME.

SPECIFICATION forming part of Letters Patent No. 583,438, dated May 25, 1897.

Application filed February 8, 1897. Serial No. 622,463. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES L. HATCH, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improve-  
5 ment in Bicycle-Repair Plugs and Means for Inserting the Same, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.  
10 In use bicycle-tires are frequently punctured, causing them to be deflated, and before the bicycle can be again used the puncture must be closed. These punctures are now  
15 commonly closed by means of a plug of india-rubber, the plug having at one end a large mushroom-shaped head or flange, and to use such a plug the puncture must usually be enlarged, and the head of the plug is folded and  
20 grasped by pincers, and the end of the pincers holding the bent or folded head is inserted through the said enlarged puncture, and then the pincers are withdrawn, releasing the head of the plug, so that it may expand, and the  
25 plug is then drawn outwardly until the under side of its head contacts with the inner side of the hollow tire, where it is kept sealed by the action of suitable india-rubber cement. I have devised a novel plug and have  
30 shown it as headless, but perforated centrally, it requiring a less quantity of india-rubber for its production, and consequently the cost of the plug is cheapened, and it is more easily handled when closing a puncture, and it takes up less room in the rider's  
35 kit. My improved hollow headless plug will preferably be corrugated or ribbed externally to thus provide a series of projections and spaces, the spaces serving to receive and hold the india-rubber cement applied to the other  
40 side of the plug to thus firmly secure the plug in the tire. The open hollow center of the plug may be put onto the point of a suitable hollow tube adapted to have forced through it into the tire liquid india-rubber cement,  
45 and when the plug on the tube has been forced into the hole or puncture the india-rubber cement, vimoid, or other equivalent material will be discharged through said plug and made to flow over the inner end thereof onto  
50 the inner side of the tire about the plug, thus

substantially covering the inner end of the plug, the liquid rubber cement so supplied thickening and forming a covering mass for the inner end of said plug. The cement having been discharged through the plug, the  
55 point is withdrawn, leaving some of the cement, however, in and so as to close or stop the hole in the plug.

Figure 1 shows in cross-section a tire with my plug in the act of being put in and secured, the cement being shown as issuing from the hollow point on which the plug is held. Fig. 2 shows the tire with the point removed and the plug secured in place and its  
60 hole closed. Fig. 3 shows a tire with a puncture to be closed. Fig. 4 shows a piece of tire with a plug in place, but not secured or stopped. Fig. 5 shows a plug in side elevation; Fig. 6, a plug in top view. Fig. 7 shows the covering-cap for the hollow point, and  
65 Fig. 8 shows several of my improved plugs as made in a strip. Fig. 9 shows the hollow point enlarged; Fig. 10, a cross-section in the line  $x$  of the handpiece.

The tire A, of india-rubber, is and may be  
75 of any usual or suitable shape.

The tire shown in Fig. 3 has been punctured and must be plugged and repaired before it can be again used.

My improved plug B (shown separately in  
80 Figs. 5 and 6) will be of a length substantially equal to the thickness of the tire, and the length may vary as desired. This plug has a longitudinal perforation  $b$ . The exterior of the plug is shown as corrugated, as at  $b'$ ,  
85 to thus present a series of enlargements and depressions or spaces, the latter when the plug is inserted in the puncture of the tire serving to retain india-rubber cement which is applied to the exterior of the plug before  
90 it is pushed through the puncture  $a$  of the tire to thus present holding means for the plug. This plug is put onto a hollow point  $c$  and is pushed through the puncture in the tire until its inner end stands substantially  
95 flush with the inner side of the tire, and then india-rubber cement held in a suitable collapsible or other tube  $c'$  is forced through said point and made to flow (see Fig. 1) onto the  
100 end of the plug, it then running off the plug



onto the interior of the tube about the end of the plug, (see Fig. 2,) and then the point is withdrawn from the plug, some of the india-rubber cement being left in the perforation 5 of the plug to close it air-tight. This cement soon becomes strong and tenacious and serves to hold the plug firmly and air-tight in the tire. The outer end of the plug will be cut off flush with the tread-surface of the tire, 10 leaving a tire plugged substantially as shown in Fig. 2. The hollow point when not being used in the plug will be covered and shielded by a suitable cap  $d$ , (shown detached in Fig. 7,) it being turned onto the threads  $d'$  of a 15 collar. This invention is not limited to the exact shape shown for these plugs in cross-section, nor to the precise corrugations shown, as the same may be more or less changed in shape and yet come within the scope of this 20 invention.

In another application, Serial No. 609,644, filed by me on the 22d day of October, 1896, I have shown a repair-plug having a head or flange and a corrugated shank, and the claims 25 are therein limited to the combination, with such a body, of a head or flange.

The hollow point  $c$  (shown enlarged and attached to the collar  $d'$ ) is provided with two discharge-openings  $c^3$  for the passage of the 30 liquid cement from the said point.

To insert the plug, the cap may be removed. The plug will be put on the point, the plug resting at one end on the top of the collar, and the upper end of the tube will be just 35 a little below said openings.

The point inside the tube and the collar at the end of the tube form a very simple device for inserting the tube. The collar has connected to it a handpiece  $d^4$ , with which to 40 operate the point when pushing the plug into place, the said handpiece having at its outer end a socket  $d^5$ , into which may enter the end of the tube  $c'$ .

Having described my invention, what I 45 claim, and desire to secure by Letters Patent, is—

1. A longitudinally-perforated bicycle-tire plug adapted to be inserted into a hole in a

tire and to have india-rubber cement discharged within the tire at the inner end of 50 said perforations, the said cement overlapping the inner end of said plug, and connecting the said inner end to the interior of the tire, and plugging said perforations, substantially as described. 55

2. An externally-corrugated longitudinally-perforated plug to stop a puncture in a bicycle-tire, substantially as described.

3. A headless, externally-corrugated longitudinally-perforated plug to stop a puncture 60 in a bicycle-tire, substantially as described.

4. The combination with a punctured bicycle-tire, of a perforated, headless plug held in place by india-rubber cement applied to the inner end of said plug, covering it and 65 adhering to the interior of the tire about the inner end of said plug, and stopping the perforations in the said plug, substantially as described.

5. The combination with a bicycle-tire, of 70 an externally-corrugated headless india-rubber plug secured in a puncture in said tire by means of india-rubber cement covering the inner end of said plug and adhering to it and to the interior of said tire about said inner end, substantially as described. 75

6. The combination with a punctured bicycle-tire, of an externally-corrugated longitudinally-perforated plug, said plug being inserted in said puncture and then secured by 80 means of india-rubber cement uniting the inner end of the plug to the interior of the tire about said plug, substantially as described.

7. The collar having a shoulder, and a hollow perforated point to receive on it a repair- 85 plug, combined with a handpiece to manipulate said collar in putting the plug into the tire, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of 90 two subscribing witnesses.

JAMES L. HATCH.

Witnesses:

GEO. W. GREGORY,  
LAURA MANIX.