

(No Model.)

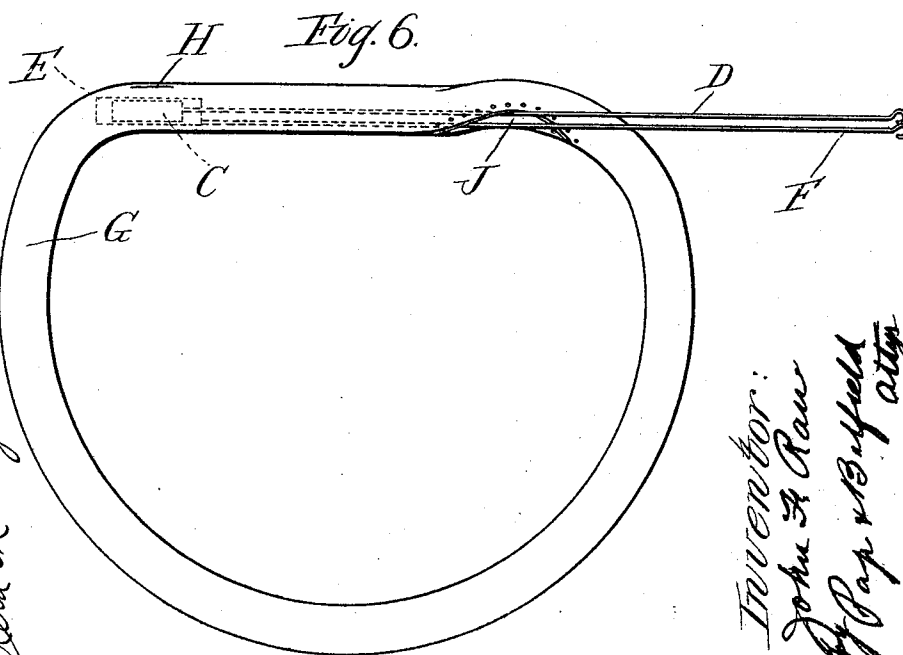
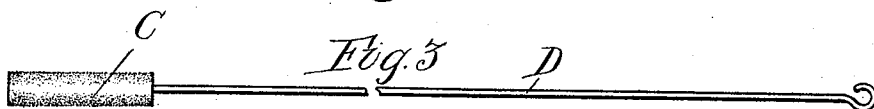
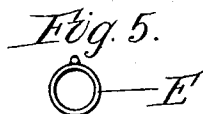
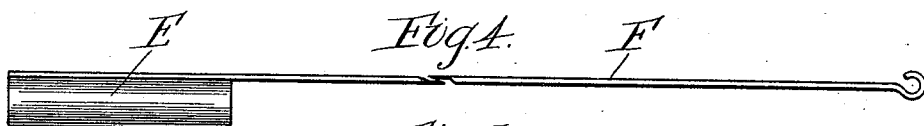
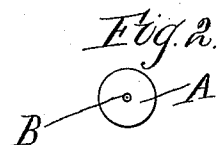
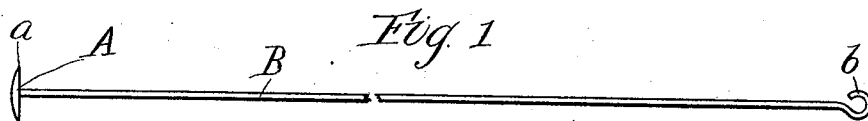
2 Sheets—Sheet 1.

J. F. RAU.

APPARATUS FOR PATCHING PNEUMATIC TIRES.

No. 582,374.

Patented May 11, 1897.



Witnesses:
A. F. Surand.
R. M. Wagner.

Inventor:
John F. Rau
By Pap & Buford attys

(No Model.)

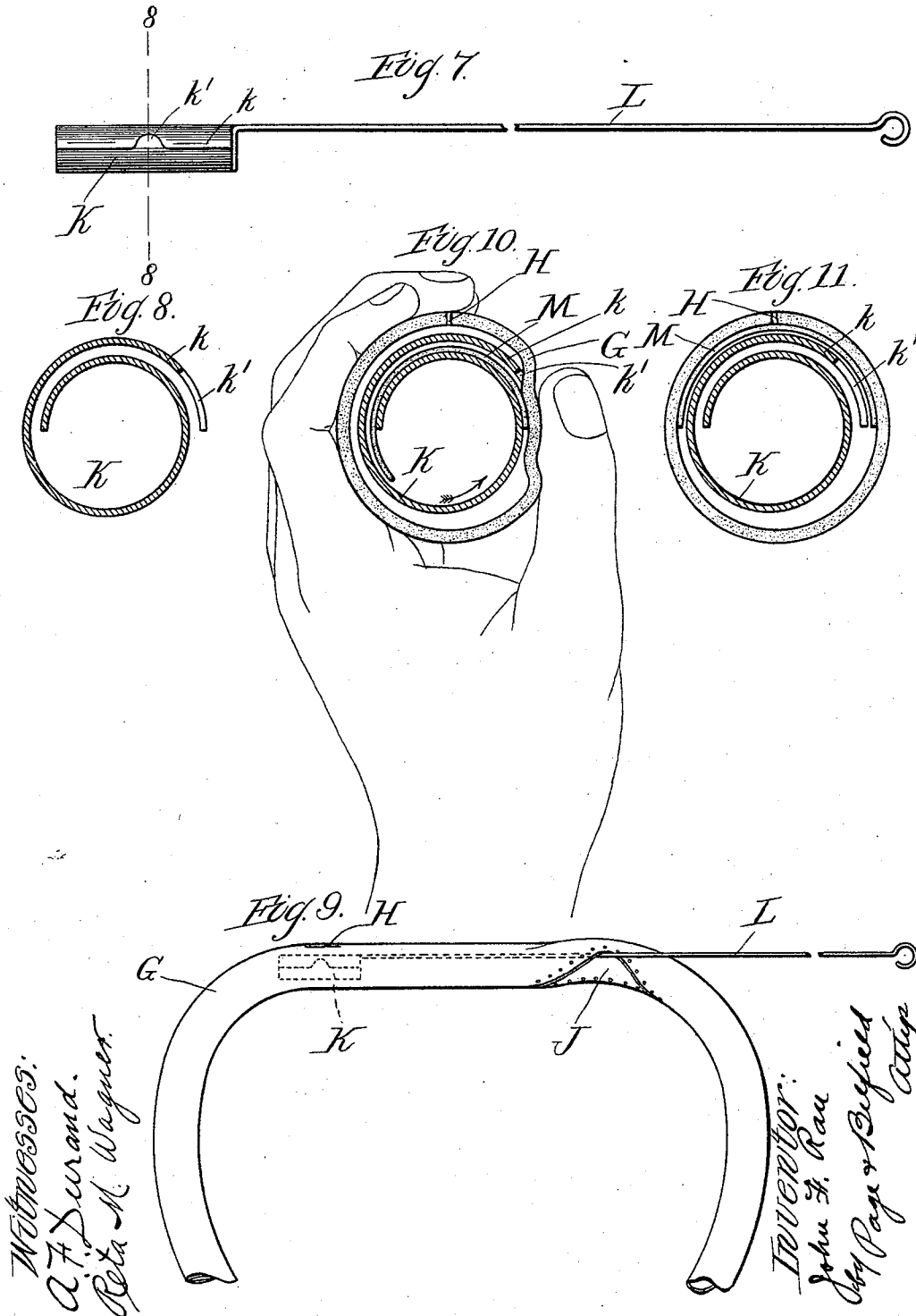
2 Sheets—Sheet 2.

J. F. RAU.

APPARATUS FOR PATCHING PNEUMATIC TIRES.

No. 582,374.

Patented May 11, 1897.



UNITED STATES PATENT OFFICE.

JOHN F. RAU, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO THE MORGAN & WRIGHT, OF SAME PLACE.

APPARATUS FOR PATCHING PNEUMATIC TIRES.

SPECIFICATION forming part of Letters Patent No. 582,374, dated May 11, 1897.

Application filed June 8, 1896. Serial No. 594,753. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. RAU, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Patching Pneumatic Tires, of which the following is a specification.

My invention relates to apparatus for repairing apertures or cuts in pneumatic tires by securing a patch over the same by means of cement or analogous adhesive material.

The modern construction of pneumatic tire usually involves a tubular sheath or casing having a short longitudinal slit or opening and an inner air-tube adapted for insertion within the sheath or casing by means of such short longitudinal slit.

It frequently happens that the tire becomes punctured or cut to such an extent that it is necessary to apply a patch to the injured locality in order to render the tire fit for further service. In some instances both the sheath and inner air-tube are affected, while in others only the outer sheath or casing is damaged. In the former case the inner tube may be withdrawn from the sheath and a patch applied to its exterior, since when replaced in the sheath such patch will not be visible; but the disadvantages and undesirability of applying a permanent patch to the exterior of the sheath or casing are clearly apparent. It is therefore desirable in patching the sheath to apply the patch to its interior.

The principal object of my invention then is to provide an apparatus by which such patches may be internally applied without cutting or opening the sheath to gain access to its interior.

The most satisfactory mode of operation I find in applying such a patch is, first, to clean the surface which is to receive it, as by scraping away any foreign substance; second, to coat the surface thus cleaned with cement or similar sticky material, and, third, to place the patch over the coated surface and press the same firmly into contact therewith. My invention consequently contemplates providing a number of implements adapted to perform such operations and provided with

long handles, whereby the implements may be inserted within the sheath through its short longitudinal slit until the region of the puncture is reached and may be manipulated, when thus inserted within the sheath, by means of the long handles which protrude from said longitudinal slit of the latter.

As a means of cleaning the interior I have shown a suitable cutting device attached to such a rod or handle. For coating the same with adhesive material a sponge or pad of absorbent material or brush having a similar handle is provided, and in order to prevent the adhesive material from undesirably coating the interior of the tire at intermediate points a suitable cover is arranged over the sponge or brush and is likewise provided with a handle, so that it may be removed from the sponge or brush when the latter is properly adjusted for operation.

The invention further contemplates providing a holder in which the patch may be placed and from which it may be easily removed, and attaching to such holder a similar handle whereby the patch may be inserted in the holder, the holder introduced within the sheath, and the patch then removed from the former when the region of the puncture has been reached. The patch may then be pressed against the spot previously cleaned and coated with adhesive material.

In the accompanying drawings, Figure 1 shows in elevation one form of cleaning device. Fig. 2 is an end view of the same. Fig. 3 represents one form of the sponge or brush. Fig. 4 shows a shell or casing adapted to form a cover for such sponge or brush. Fig. 5 is an end view of the same. Fig. 6 shows a sheath of a pneumatic tire and the sponge or brush, with its cover, inserted within the sheath through the slit therein. Fig. 7 shows a holder for the patch. Fig. 8 is a section on line 8 8 in Fig. 7 on a larger scale. Fig. 9 shows such a holder inserted within the tire-sheath. Fig. 10 shows in transverse section a tire-sheath and a holder containing a patch inserted within the sheath. Fig. 11 is a similar section, the patch having been removed from the holder and caused to adhere to the interior of the sheath.

It is understood that in Figs. 1, 3, 4, and 7 portions of the handles have been broken away for convenience of illustration.

The form of device for cleaning the interior of the sheath (shown in Figs. 1 and 2) comprises a circular disk A, having its marginal portion *a* ground to form a cutting edge, and the long rod B, forming a handle, attached thereto. The rod B is desirably provided with a transversely-extending end portion, as the loop *b*, by which it may be drawn in and out of the tire-sheath and manipulated while within the same.

As a means for coating the interior with cement I have shown the sponge or brush C of substantially cylindrical shape and the rod D, forming a handle, attached thereto. As a cover for such sponge or brush I have chosen the cylindrical shell or casing E, which is open at one or both ends and adapted to fit over the sponge or brush and which is likewise provided with a long handle F.

In Fig. 6 is illustrated the manner in which the sponge or brush C and cover E are inserted within the tire-sheath G until the cut H to be repaired is reached. The cover is then removed from the sponge or brush, as by drawing the former toward the slit J in the sheath, and the sponge or brush is manipulated, by means of its handle, to coat the interior of the sheath preparatory to receiving a patch of suitable fabric. The holder for this patch comprises the box K, having an overlapping edge portion *k*, and the handle L. The box K is desirably cylindrical in shape and may be formed by bending a piece of sheet metal about a circular mandrel or the like, allowing one edge portion to overlap the other and form the portion *k*, as shown in Fig. 8. This overlapping edge is desirably provided with a recess or indentation, as *k'*. The patch M, Fig. 10, is introduced within the holder by passing it under the overlapping portion *k* until its edge is flush with the edge of the portion *k*, it being evident that after such insertion a portion of the patch will be exposed by reason of the recess *k'* in said lid. The holder containing the patch is then passed through the slit J into the sheath until the cut H is reached, as shown in Fig. 9. While in this position the sheath is grasped by the hand, the thumb pressing inwardly against the portion of the patch exposed by recess *k'*, thereby causing the adherence of the sheath to this portion of the patch, as in Fig. 10. The holder is then turned by its handle in the direction indicated by the arrow, the re-

sult being that the patch leaves the holder and is brought into contact with the interior of the sheath. A few additional turns of the holder will serve to press the patch firmly into position, as shown in Fig. 11.

Although I have described the use of my invention in connection with the outer casing or sheath of a double-tube pneumatic tire, it is obvious that I may repair single-tube or "hose-pipe" tires and various similar articles where the injured part is inaccessible with equal facility.

I may, if desired, coat the patch with adhesive material before inserting it within the holder, in which case the brush will be unnecessary; but I prefer the method as described.

What I claim is—

1. An apparatus for patching pneumatic tires comprising a holder for the patch having an overlapping edge portion, and provided with a handle, substantially as set forth.
2. An apparatus for patching pneumatic tires, comprising a shell or casing for the patch having a recessed overlapping edge portion, and provided with a handle, substantially as described.
3. The combination with a pneumatic tire having an opening, of a tool for applying cement or the like to the interior wall of the tire in the region of a puncture therein removed from said opening, said tool comprising an absorbent pad provided with a handle of sufficient length to permit said pad to reach the puncture in the tire when the tool is inserted through said opening therein; and a removable cover for said pad having a handle of substantially the same length as the handle of the pad, substantially as set forth.
4. The combination with a pneumatic tire having an opening, of a tool for applying cement or the like to the interior wall of the tire in the region of a puncture therein removed from said opening, said tool comprising a brush or sponge provided with a handle having a length sufficient to permit the brush or sponge to reach the puncture in the tire when the tool is inserted through said opening therein; and an open-ended shell or casing adapted to fit over the brush or sponge, and having a handle of substantially the same length as the handle of the brush or sponge, substantially as set forth.

JOHN F. RAU.

Witnesses:

A. F. DURAND,
RETA M. WAGNER.