Dec. 12, 1933. E. EGER 1,938,816

METHOD AND APPARATUS FOR UNITING MATERIALS

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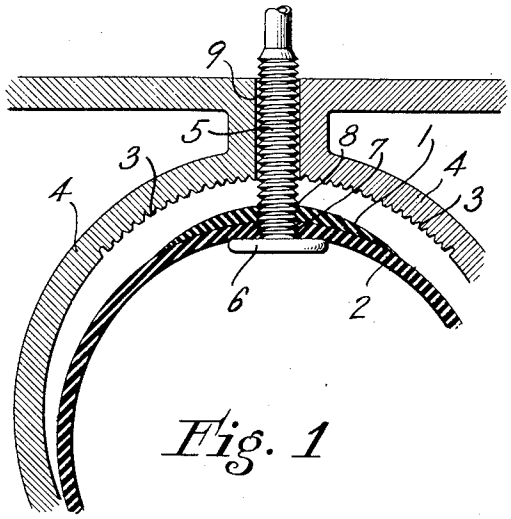


Fig. 1

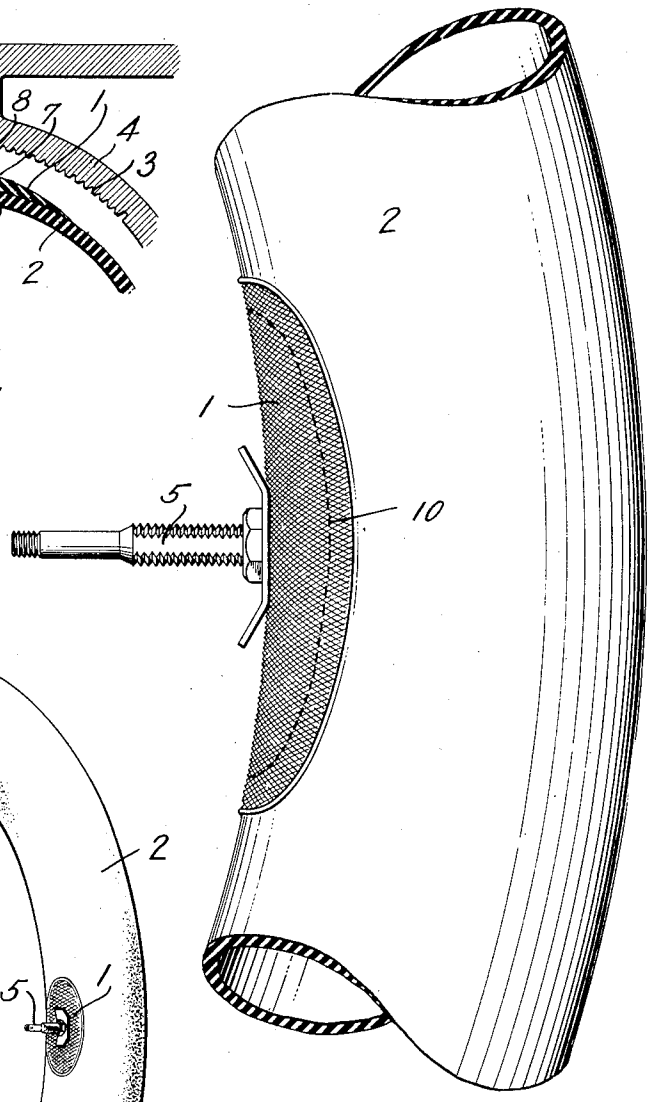


Fig. 2

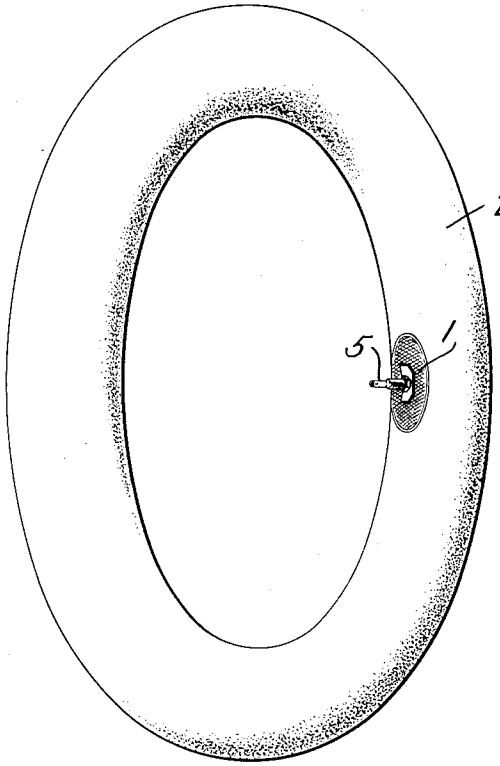


Fig. 3

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METHOD AND APPARATUS FOR UNITING MATERIALS

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6 Claims. (Cl. 18—35)

My invention relates to patches and methods and apparatus for applying the same, and more particularly to patches applied to rubber articles and methods and apparatus for applying the same.

For many purposes patches including plain patches, valve stem bases, labels and the like are attached to other materials by a vulcanizing operation. In the case of the application of valve stem bases to inner tubes, the engaging surfaces are often covered with materials, such as soapstone and the like, to prevent the accidental sticking of the material while being handled before assembly. As valve stem bases are usually oval in shape and taper toward their edges, the edges often fail to merge with the material of the tube at the joint or seam. This, in many cases is in part due to the presence of the coating material. While the mechanical strength of the bond between the patch and the inner tube is sufficiently strong to render the inner tube satisfactory from an operating view point, still the presence of the loose edges appears to reflect poor workmanship and customers are reluctant to purchase such a tube. The same disadvantages arise from the presence of loose edges or ragged seams on any patch whether it be a valve base, a label or a plain patch.

For insuring uniform merging of the edges of patches with the materials to which the patches are applied, I roughen, as by knurling the adjacent outer edges of the patch and material to which it is applied. The roughening of the material tends to remove looseness at the edges of the patch and strengthens such edges so that a uniform seam is obtained. The presence of the roughening surface also tends to obliterate the seam line in the finished article.

For applying such a roughened or knurled effect, a metallic surface is brought into effective engagement around the edges of the base. In the case of the application of valve bases to inner tubes where the vulcanizing takes place in a curved mold, it has been found preferable to roughen the inner surface of the vulcanizing mold throughout the entire area of the base and the adjacent material of the tube in preference to forming a ring or oval shaped roughened area in the mold.

The accompanying drawing illustrates a present preferred embodiment of my invention and apparatus for applying a patch in accordance with the present invention, in which

Figure 1 is a cross sectional view of a mold and an inner tube having a valve stem and base applied thereto;

Fig. 2 is a side elevational view of a portion of an inner tube with a valve base and a valve stem attached thereto; and

Fig. 3 is a perspective view of an inner tube having a valve stem and base applied thereto in accordance with my invention.

Referring to the drawing, a valve base 1 is applied to an inner tube 2 by confining the base 1 between the tube 2 and roughened surfaces 3 of a sectional mold 4 upon the inflation of the tube 2. The usual valve stem 5 is anchored within the tube by a flange 6 and extends outwardly through openings 7, 8 and 9 in the tube 2, base 1 and mold 4, respectively. The roughened areas 3 of the mold collectively cover an area in excess of the exposed area of the base 1, whereby the roughened surface is in contact with the tapering surfaces of the base near its edges and also with the adjacent material of the tube 2 so that both are given a roughened surface at the seam between the base 1 and the tube 2. It is to be understood that the roughened surfaces on the mold sections 4 would be limited to areas following the general outline of the edges of the base, but it has been found more expeditious to machine the entire areas of the molds involved rather than to form special configurations therein.

The valve base 1 is considered to be a type of patch which definition includes ordinary patches, labels and the like, as the invention is applicable to such patches. Also the inner tube 2 is considered to be an example of a considerable number of materials to which such patches may be applied.

By roughening or knurling the edges of the base and inner tube along the seam, loose base edges at the seam are avoided thereby giving the assembly a finished appearance. The roughened or knurled surface tends to obliterate the seam line 10, as shown by dotted lines in Fig. 2.

The ribs formed by the roughened surfaces, which in the illustrative embodiment are cross ribs, reinforce the edges to increase the adherence between the base and inner tube. The increased surface area caused by the indentations between the ribs in the mold, stretches the base edges and removes any looseness that may originally be present. Also the impressions tend to impart an uneven resistance to the pressure within the tube in somewhat the manner of stitches which assist in improving the base edge adhesion.

While I have shown and described a present

preferred embodiment of my invention and a method and apparatus for practicing the same, it is to be understood that it may be otherwise practiced and embodied within the spirit of the invention and the scope of the appended claims.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. In the method of applying patches to bodies of plastic material, a step consisting in roughening an external edge of a patch and the adjacent external surface of the body of material to which the patch is applied for causing uniform adherence therebetween at the edges of the patch.

2. In the method of applying patches to bodies of plastic material, a step consisting in roughening an edge of one side of a patch and the adjacent corresponding side of the body of material to which the patch is applied for causing uniform adherence therebetween and for concealing the seam.

3. Apparatus for applying a valve base to an inner tube comprising a vulcanizing mold having an opening for the reception of a valve stem and a roughened surface surrounding said opening and of an area greater than the area of a valve base for roughening the edges of one surface of the base and the adjacent corresponding surface of an inner tube to which the patch is applied.

4. An article of manufacture comprising a body of material with a patch applied thereto, the external surface edges of the patch and the adjacent external surface of the body being roughened to provide a uniform seam therebetween.

5. In the method of obliterating a seam between a patch and a body of plastic material to which it is applied, a step consisting in pressing the edges of one surface of the patch and the adjacent corresponding surface of the body against a roughened mold surface.

6. An article of manufacture comprising an inner tube and a valve base applied thereto, the external surface edges of the base and the adjacent external surface of the tube being roughened to provide a uniform seam therebetween.

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