

## Detaching Paper from India Rubber.

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## IMPROVEMENT IN METHODS OF DETACHING PAPER FROM VULCANIZED GUM.

Specification forming part of Letters Patent No. 22,584, dated January 11, 1859.

*To all whom it may concern:*

Be it known that I, ALBERT C. RICHARD, of Newtown, in the county of Fairfield and State of Connecticut, have invented a new and Improved Mode of Stripping or Detaching Paper from India-Rubber, Gutta-Percha, or other Elastic-Gum Sheets, Valves, Belts, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon.

In the process of heating or vulcanizing india-rubber or other elastic-gum sheets, valves, belts, &c., it is necessary in order to preserve their shape to confine the surfaces of such objects between plates or molds or to coil the sheets, &c., on themselves. It is further necessary in said process that some thin, smooth, and porous medium be interposed between the object and the confining-surface for the double purpose of affording egress to the gases generated during the heating and to give to the sheet or object operated upon a smooth and even surface. Cloth has been generally used as such medium; but it is expensive and leaves the surface of the gum, after it is stripped off, very rough and harsh. Paper has been found to unite the desirable properties of cheapness and of affording a superior surface unattainable by the use of cloth, however smooth the latter may be. In the process of vulcanizing the paper becomes, however, so tenaciously attached to the gum sheet or object that it has been found necessary in order to remove the paper to strip the same off in small fragments, leaving the greatest portion to be further removed by moisture and by scouring the surface of the gum by means of sharp stones, scraping with knives, &c. The operation of detaching the paper in that manner is so laborious and consumes so much valuable time that it is often found preferable to forego the advantages arising from its use by employing cloth in its stead. Another disadvantage attendant on scouring the gum is that it abrades the surface to more or less extent, thus inflicting permanent injury to the wearing qualities of the sheets, valves, &c.

The nature of my invention consists in removing the paper from vulcanized elastic-

gum sheets, valves, belts, or other objects by a process of mechanical and gradual bending or elongation of the gum-surface to which the paper is attached.

To enable others skilled in the art to use my invention, I will proceed to describe the mechanism employed and my mode of operation.

In the accompanying drawings, making part of this specification, Figure 1 is a front view, and Fig. 2 is a vertical cross-section through the line A B of Fig. 1.

*a*, *b*, and *c* are rollers having their journals secured in boxes. These boxes are adjusted in a suitable framing. Motion is given to roller *a*, and this motion is communicated to rollers *b* and *c* by gearing or by friction or by both. The direction of the motion of the rollers is indicated on the drawings by arrows. Roller *a* as well as roller *c* are capable of being removed from or toward roller *b*, in order to accommodate themselves to the different thicknesses of the sheets or objects and to obtain the necessary friction.

*d* represents the sheet of gum to be operated on, and *e* the paper adhering to its surface.

I introduce the sheet or object to be stripped between rollers *c* and *b*. When it has passed through a sufficient length, I bend the same over roller *b* toward roller *a*, and introduce it likewise between rollers *b* and *a*. When the gum-sheet is thus bent over and while it is passing over the semi-circumference of roller *b*, it is evident that the outside surface circumscribed by the outline from 1 to 2 in Fig. 2 becomes elongated the moment it issues from between the rollers *b* and *c*. This elongation is at least equal in extent to the difference in the length of the arc circumscribing the elongated portion of the gum's surface from 1 to 2 and of the semicircle bounding half of the periphery of roller *b* from 3 to 4. The paper *e*, being non-elastic, cannot follow the elongation of the gum's surface, and it consequently becomes detached and separates itself tangentially from the gum as the surface of the latter is gradually elongated and while, as it were, atom after atom is drawn out of the pores of the paper. This process continues as long as the motion imparted to roller *a* is kept up.



The advantages of my improved mode are that it is much cheaper than the laborious process hitherto followed, it requires much less time, and it leaves the surface of the gum unabraded and of a superior smoothness.

I do not claim as new the mechanism described; nor do I wish to be understood as limiting myself to the use of such mechanism exclusively, as the same may be varied without altering the nature of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

Subjecting the surface or surfaces of vulcanized india-rubber, gutta-percha, or other elastic-gum sheets, valves, belts, or other objects which have been so vulcanized or cured between or on paper and to which the paper

adheres to a mechanical process of regular bending and continual elongation, substantially as described, having the continuous effect of drawing or detaching the filaments or atoms of the elastic gum which adhere to or which have entered into the pores of the paper gradually and regularly therefrom and thereout simultaneously across the whole width of the surface operated upon, in the manner as herein set forth, or in any other manner producing substantially the same result.

ALB. C. RICHARD.

Witnesses:

DAVID SANFORD,

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