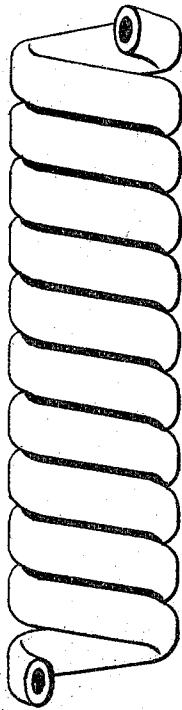


I. B. HARRIS.

Improvement in Process of Manufacturing India-Rubber
Piston-Packing.

No. 126,953.

Patented May 21, 1872.



Witnesses:

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UNITED STATES PATENT OFFICE.

ISAAC B. HARRIS, OF EDINBURGH, SCOTLAND.

IMPROVEMENT IN PROCESSES OF MANUFACTURING INDIA-RUBBER PISTON-PACKING.

Specification forming part of Letters Patent No. 126,953, dated May 21, 1872.

To all whom it may concern:

Be it known that I, ISAAC BLUE HARRIS, of Castle Mills, Fountain Bridge, Edinburgh, Scotland, rubber-works superintendent, have invented certain new and useful improvements in the manufacture of piston-packing formed of canvas, cloth, or other textile material, in combination with India rubber or India-rubber compounds susceptible of vulcanization; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification.

Piston-packing formed from canvas coated with India rubber or India-rubber compounds has hitherto been manufactured by rolling strips of such coated canvas into straight flexible cords or ropes, either round or square. Some of these cords or ropes have a central strand or core of India rubber or India-rubber compounds, and have been called core-packing. Others again have no core, and have been called rope or cord packing. Both forms have been made, as already stated, into straight flexible cords or ropes, of varying lengths, and sometimes vulcanized in that form. From these straight lengths pieces are cut off of varying lengths, as required, and bent round to form "open rings" to embrace the piston-rod or other piece intended to move steam, air, or fluid tight through them, as in common use in glands or stuffing-boxes. This mode of fitting in or applying the packing is very troublesome, and the packing is often put in unequally tight, and it is afterward unequally crushed, while the ends of the rings often fit badly, and no provision whatever is made for equalizing the pressure on and lubrication of the rod that works through the packing.

To avoid these inconveniences is the object of my present invention, which consists in coiling the lengths of piston-packing (prepared as heretofore, and while in a soft, uncured, or unvulcanized state) upon mandrels, each into a spiral, (like bell-pull springs,) and submitting them, while retained in that form by bands or otherwise, to vulcanization. The ef-

fect of this operation on the packing will be to give the lengths a permanent spiral or helical "set."

The advantages of this form for a piston-packing are important; for a piece of several convolutions can be cut off and expanded into fewer convolutions, or into a single ring; or a single convolution may be contracted into a greater number of convolutions, always retaining the circular form, and thus the packing will always be ready not only to be formed into rings to fit piston-rods of various sizes more perfectly, but with more smoothness and regularity than heretofore, while the time required for making a joint with my improved packing is very much reduced. Further, in the case of core-packing the core is rendered elliptical in cross-section by the pressure round the mandrel in the act of coiling, and, the longer axis of the ellipse being thus formed parallel to the piston-rod, the binding-ring employed in forming a gland or stuffing-box presses this core into a circular one, thus communicating tightness round the rod and stuffing-box, and with more regularity than heretofore.

In the accompanying drawing I have shown a coil of core-packing made according to this invention. The core, it will be seen, is elliptical, as explained, and the coil or "set" given to the flexible cord is permanent, while at the same time it admits of an indefinite expansion to suit various diameters of glands or stuffing-boxes.

Having now explained the nature of my invention, I wish it to be understood that I claim—

Submitting cords or ropes of India-rubber packing to vulcanization in a coiled state, thereby securing for the packing a permanent spiral or helical "set," for the purpose above explained.

I. B. HARRIS.

Witnesses:

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