UNITED STATES PATENT OFFICE.

JOHN W. NEWELL, OF NEW BRUNSWICK, NEW JERSEY.

IMPROVEMENT IN ELASTIC FABRICS.

Specification forming part of Letters Patent No. **21,270**, dated August 24, 1858.

To all whom it may concern:

Be it known that I, JOHN W. NEWELL, of the city of New Brunswick, county of Middlesex, and State of New Jersey, have invented a new and useful Elastic Fabric, which I denominate "Newell's Elastic Braid," of which the following is a specification.

My invention consists of a new and useful article of elastic fabric produced by means of combining india-rubber or gutta-percha or their compounds, or the compounds of either of them, or other elastic gum with a plaited or braided fabric, when applied either by being cemented to the braid in strips or sheets or in a plastic state.

I am aware that elastic fabrics have been produced by having the sides of two pieces of cloth cemented by rubber cement, and then having the two cemented sides with threads or straps of rubber between them placed together and caused to adhere. Such is described in the English patent granted to Thomas Hancock in 1835, also an English patent was granted to Caleb Bedell in 1844 for employing stockinet or looped fabrics combined with threads of rubber in the same manner as described in the patent to said Hancock, and also that an English patent was granted in 1838 to Christopher Nichols for a means of introducing threads or strands of rubber into a plaited or braided fabric while forming the braid in the braiding-machine, also that a patent was granted by the United States for the shirred goods in 1844 to Charles Goodyear, also a patent to Richard Solis for a process of giving elasticity to cloths, and also a patent to Henry Tyer and John Helm for an elastic fabric in 1856; but none of these goods are like the goods for which I seek a patent, either in construction, materials used, manner or process of making, or qualities. In none of these goods is a plaited or braided fabric used, except in the goods made by the process described in the patent granted to Nichols, and those goods differ from mine in an essential and important particular. In the goods made according to the manner described by the Nichols patent, the elastic threads or strands, being only placed in their position among the threads of the braid by the braiding or plaiting machine, are liable while being extended, owing to their diminished size, from that cause or from their great liability to break and to contract and slip back from among the threads of the braid, thereby rendering it comparatively worthless. The same is true in respect to all shirred goods as manufactured, for which patents were granted to Hancock, Bedell, and Goodyear, and also the Solis goods, although from a different cause, arising in the latter cases from the softening or decomposition of the cement by which the laminæ of fabric are united, caused by animal heat and perspiration, allowing it to give way and the pieces of fabric to separate, and consequently destroying all elasticity. In the goods made according to the patent to Tyer and Helm none of these difficulties occur; but as the warp-threads of the fabric used by them run in a longitudinal direction of the goods, and not being shirred or corrugated, it is impossible to obtain elasticity in that direction or in a line with the filling. It therefore becomes necessary, in order to apply them to any useful purpose requiring elasticity, to cut them neither in a line with the warp or filling, but through the largest angle of the meshes of the fabric, to obtain its greatest elasticity. The objections to the necessity of so cutting these goods are, first, it leaves a raw and unfinished edge, which is unsightly, and also when cut in that manner it is necessarily in short pieces, depending upon the width of the fabric used, and therefore liable to cause considerable loss and waste, as in some cases it will be either too long or too short for many purposes. It therefore remained for some plan to be devised by which all these objections should be removed, and at the same time an article be produced the parts of which should firmly adhere together and be proof against perspiration and animal heat under all the changes of weather, climate, and circumstances attending its use, and at the same time secure the greatest elasticity. Such an article I have produced, and it is for this article as a new manufacture, differing essentially from anything before known, and of great value, that I claim a patent.

To enable others to make and use my said invention, I will proceed to describe its formation in detail.

My article consists of a combination of braid between sheets or strips of india-rubber or gutta-percha, or their compounds, or the compound of either of them, or of braid with one

side attached to a sheet or strip of india-rubber or gutta-percha, or their compounds, or the compound of either of them, or of two pieces of braid with a sheet or strip of india-rubber or gutta-percha, or their compound, or the compound of either of them, between them. Before applying the gum to it the braid may be stretched in accordance with the desired elasticity of the fabric—that is, if great elasticity be required in the direction of its length, then the braid may be stretched laterally; if great elasticity be required in the direction crosswise of the piece of braid, then such pieces should be stretched longitudinally; but if only a medium elasticity be required, then the braid should not be stretched before applying the gum. The combination may be effected by means of first coating the braid with the ordinary india-rubber cement made by dissolving the india-rubber in camphene, naphtha, or any other of the known solvents of india-rubber, and then applying india-rubber or other elastic vulcanized gum in sheets or strips to the cemented side of the braid and pressing it upon it with sufficient force to cause it to adhere, or by applying the india-rubber or other elastic vulcanizable gum while in a plastic state to the braid by means of any of the ordinary spreading calenders in common use by manufacturers of india-rubber goods, and then vulcanize the gum so applied by submitting it to the vulcanizing process.

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

An elastic fabric formed by the application of an elastic gum to the side of braid, substantially as herein described.

J. W. NEWELL.

Witnesses:
A. D. NEWELL,
ST. CLAIR D. BROWN.