UNITED STATES PATENT OFFICE.

CHARLES GOODYEAR, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN TREATING VULCANIZABLE GUMS.

Specification forming part of Letters Patent No. **10,738**, dated April 4, 1854.

To all whom it may concern:

Be it known that I, CHARLES GOODYEAR, of New Haven, in the State of Connecticut, have invented certain Improvements in the Manufacture of Caoutchouc, Gutta-Percha, and other Gums and their Compounds; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists in an improved method of manufacturing caoutchouc and other gums susceptible of vulcanization, and their compounds, in flat or curved sheets or other desired forms or shapes; and it consists in covering the surface or surfaces of the sheets of gum with sheets or plates of paper, cloth, or other material, and then confining the same during the process of vulcanization by pressure between plates of metal or other rigid material, or otherwise.

I take any of the compounds of caoutchouc or gutta-percha which have been suitably prepared by mixture or contact with sulphur, in order that it may be cured or vulcanized by being subjected to a high degree of artificial heat, according to the process well known to manufacturers of caoutchouc. I spread or form the compound into sheets, and I place the sheets of compound between sheets or plates of paper, or of cotton, or linen, or other cloth, or plates of vulcanized caoutchouc or gutta-percha or other material; and in order of preventing the caoutchouc or its compounds from adhering too strongly to the sheet of paper or other material, I first dust or cover the surfaces of the caoutchouc with finely-pulverized soapstone or some equivalent substance. The sheets of compound thus placed between sheets of paper are placed between plates of iron or other suitable rigid material capable of bearing a high degree of heat without alteration, and several sheets of compound may be thus piled one on top of the other and the whole pile placed between the plates of iron. The plates of iron are then subjected to pressure by weight or other pressure, so as to press them together and compress the pile or single sheet of compound between them. The whole apparatus of sheets of caoutchouc lying between the sheets of paper or other material and between the plates of iron is then subjected to a high degree of artificial heat—say from 260° to 300° Fahrenheit, or thereabout—for several—say from three to seven—hours, the heat being gradually raised, using generally steam heat in a steam-heater, until the process of vulcanization shall be completed. Upon taking the sheets of compound out from between the iron plates it will be found that they have assumed permanently the shape in which they were heated, so that if the sheets of paper and the plates of iron were smooth and flat the sheets of compound compressed between them would be smooth and flat. If the sheets of paper or other material in contact with the sheets of compound were embossed, then the sheets of compound would take impressions from embossed surfaces, and if the plates of iron were curved or irregular in their shapes the sheets of compound would be curved and of similar irregular shapes, so that by these means sheets or masses of caoutchouc, gutta-percha, or their compound may be manufactured smooth or embossed, flat or curved, or of other desirable form without the aid of molds, which are troublesome and expensive, and in large quantities at one heating and with one pair of plates.

The sheets of compound may be combined with cotton or other cloths, or with fibrous substances, in order to give strength, or for other purposes, before being placed between the sheets of paper.

Having thus described the nature of my invention and the mode of putting it into operation, what I claim as my invention, and desire to secure by Letters Patent, is—

The method of manufacturing compounds of caoutchouc, gutta-percha, and other gums susceptible of vulcanization in sheets, by covering the surface or surfaces of the sheets of gum with sheets of paper or cloth, or the equivalent thereof, and then confining the same during the process of vulcanization by pressure between plates of metal or their equivalents, or otherwise, substantially as described.

CHARLES GOODYEAR.

Witnesses:

JOSEPH H. DORR,

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