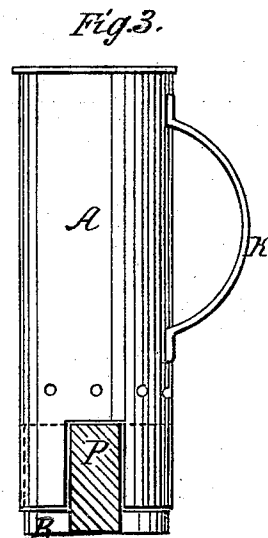
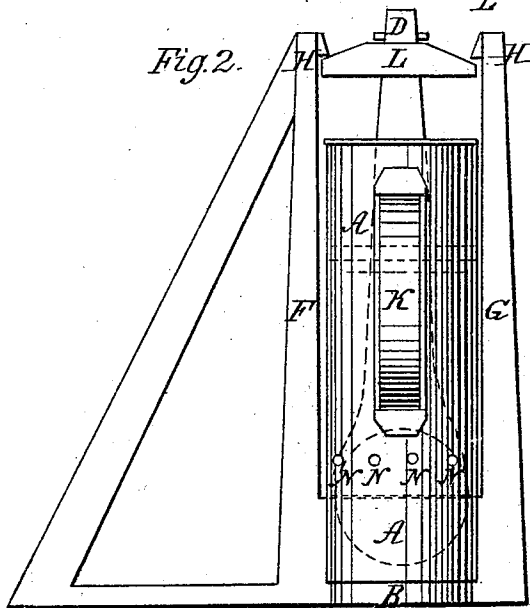
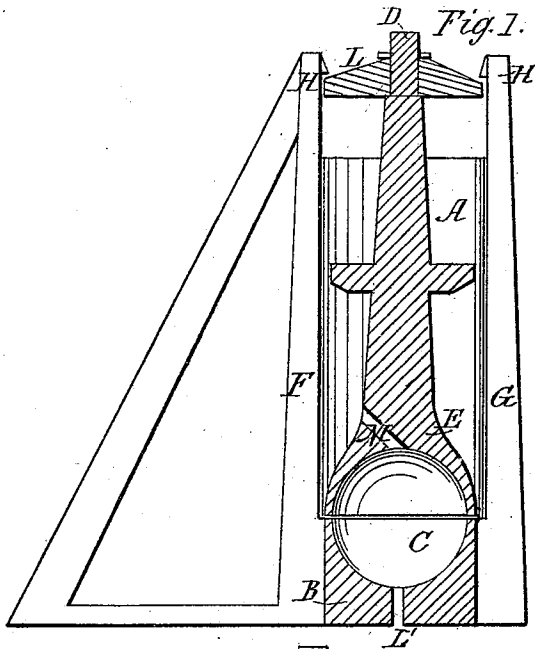


E. M. CHAFFEE.
Vulcanizing Apparatus.

No. 1,939.

Patented Jan'y 21, 1841.



UNITED STATES PATENT OFFICE.

EDWIN M. CHAFFEE, OF CAMBRIDGEPORT, MASSACHUSETTS, ASSIGNOR TO CHARLES B. ROGERS AND EDWD. ARNOLD, OF CHARLESTOWN, MASSACHUSETTS.

METHOD OF MANUFACTURING BALLS, SUCH AS BOYS USE IN THEIR GAMES, FROM CAOUTCHOUC OR INDIA-RUBBER.

Specification of Letters Patent No. 1,939, dated January 21, 1841.

To all whom it may concern:

Be it known that I, EDWIN M. CHAFFEE, of Cambridgeport, in the county of Middlesex and State of Massachusetts, have invented a new and useful Method of Manufacturing Balls, Such as Boys Use in Their Games, from Caoutchouc or India-Rubber, and that the following is a full and exact description of the same.

10 The said description taken in connection with the accompanying drawings of the machinery or apparatus used in the above-mentioned process and herein referred to forms my specification.

15 The nature of my invention consists in the formation of balls from caoutchouc, which is chopped or otherwise reduced to fine or small pieces by any of the well-known methods and afterward heated and pressed into molds in the manner herein-after set forth.

Figure 1 of the drawings represents a vertical section and Fig. 2, an elevation of the mold I use for the purpose. The caoutchouc should be chopped about as fine as kernels or grains of buckwheat. It naturally adheres together more or less when thus comminuted, but if used within a few days after, the particles will separate from each other, or their adhesion together may be easily destroyed by throwing the mass into boiling water. This is also necessary in order that they may adhere more firmly when pressed in the mold, which is constructed as follows: A hollow cylinder A, Figs. 1 and 2, 3, of tin or other proper material about six inches deep and two inches diameter, more or less, according to the size of the ball, has a wooden or metallic plug or bottom B inserted in its lower end, the said plug having a hemispherical cavity C turned in that end in the interior of the tube, thus forming with the cylinder a cup or mold into which the chopped caoutchouc is poured. A cylindrical or other proper shaped piston D E, having its lower end E, of the size of the bore of the tube and cut out or formed hemispherical like the plug B, is inserted in the cylinder A as represented in Fig. 1; and when forced down so that it rests on the plug B, the hemispherical cavities of each (which are symmetrical,) coincide and form together a spherical mold. Two standards, F G, rise upward on op-

posite sides of the plug, they being at their lower ends properly attached to the bottom or sides of the plug. They project above the top of the cylinder A a sufficient distance to have a suitable notch or projection H cut out of or formed on their inner sides to receive the ends of a turning button L properly placed on the top D of the piston D E, so that when the piston is forced down, until it rests on the plug B, on turning the button around so that its ends, may enter the spaces or notches or pass under the projections H, H, it is thus secured in position and prevented from rising upward through the action of the elastic force of the caoutchouc.

The sides of the cylinder A, where the standards F G are connected to the plug, are removed or cut away, as seen at P, Fig. 3, so that the plug may enter the cylinder, or in other words, so that the cylinder may be pressed down over the plug as represented in Fig. 2, that part of the plug within the cylinder being denoted by dotted lines. A handle K may be affixed to the outside of the cylinder by which it may be easily lifted from the plug.

In order to make a ball I weigh out a sufficient quantity of chopped gum, which I throw into boiling water suffering it to remain a few minutes, until it is well separated and hastening the process if necessary, by stirring with a spatula or any proper instrument. It is then dipped out and poured into the cylinder or mold and on inserting the piston and forcing the same down by any suitable power applied to the top D, the material is compressed into the globular or spherical space formed in the plug and piston, the water escaping through a hole L' in the bottom of the plug, through another M in the piston, forming a communication between the space in the bottom of the piston and that part of the cylinder above the same as shown in the drawing, and also through any suitable number of holes N, N, Fig. 1, bored through the cylinder just above the top of the plug. The apparatus being suffered thus to remain for a suitable length of time, on moving the piston and cylinder from the plug B the ball will be found completely formed, with the exception that it may require a little paring as the mold does not always shut perfectly.

In winter I prefer to freeze the gum after

chopping it, and then rub it through a wire sieve having five or six meshes to the inch. Then weigh it out and put it directly into the mold, and pour boiling water upon it and press it as before. If the balls are frozen in the molds, or immediately after they are taken out, they will afterward retain a smoother surface.

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

The making of balls from caoutchouc, by chopping it fine, or otherwise properly reducing it, to small pieces and separating and heating the same by throwing it into hot

water and afterward pressing it in a mold constructed as above described, the whole process being conducted substantially as herein set forth.

In testimony that the above is a true description of my said invention and improvement, I have hereto set my signature, this fifth day of December, in the year eighteen hundred and forty.

EDWIN M. CHAFFEE.

Witnesses:

R. H. EDDY,
JOHN NOBLE.