UNITED STATES PATENT OFFICE.

ASAHEL K. EATON, OF NEW YORK, N. Y.

IMPROVEMENT IN VULCANIZING RUBBER COMPOUNDS.

Specification forming part of Letters Patent No. **26,172**, dated November 22, 1859.

To all whom it may concern:

Be it known that I, ASAHEL K. EATON, of New York, in the county and State of New York, have invented a new and improved method of curing india-rubber or gutta-percha compounds in such a way as to effect great saving in time, improvement in quality, and certainty of results, of which the following is a specification.

The nature of my invention consists in the use of a metallic bath so constituted as to fuse at or below the lowest degree of temperature required in vulcanization, and capable of being elevated readily to the highest temperature required in the process. Preparations of india-rubber and sulphur, or india-rubber combined with any vulcanized agent or agents immersed in such a bath when at its fusing-point, are thoroughly vulcanized in from two to five hours, according to the temperature maintained. Preparations of gutta-percha are similarly affected, and the process is equally adapted to the manufacture of soft and hard gutta-percha or india-rubber.

The composition of the bath may be varied to meet any required case; but as it is more convenient to use one of a low fusing-point it will perhaps be well, usually, to make use of an alloy of fifty parts bismuth, thirty-one of lead, and nineteen of tin, which melts at 203° Fahrenheit. When the articles to be vulcanized will bear a higher temperature than 212 in the early stages of the process, a bath of higher fusing-point may be used and the above alloy may be modified accordingly. It may be made less fusible by increasing the proportion of tin and lead or by the addition of zinc or other metal. Mercury also may be used as a bath, but would be expensive, and when used in an open vessel is objectionable on account of the mercurial vapors that would be evolved. It may be used in small proportions, however, for the purpose of increasing the fusibility of the alloys.

The process can be conducted in any open iron vessel, and the temperature regulated by means of a thermometer inserted in the bath. The articles may, if desired, be transferred from one bath to another successively, in order to avoid the necessity of materially raising the temperature of a single bath. For instance, articles may be immersed in a bath varying from 212° to 220° for one hour for the purpose of expelling moisture and commencing the process of vulcanization and then be transferred to one ranging from 225 to 230°, and so continue until the highest desirable point of temperature has been reached.

In the vulcanization of fine soft goods I prefer to raise the temperature of the bath only to 225° during the first hour, and gradually elevate it to 275° in five hours from, the time of the first immersion. If the articles to be vulcanized are of a coarser quality, this may be done in two hours by bringing up the temperature during that time to 300° Fahrenheit.

The value of this invention consists in the following points of superiority over the ordinary mode of treating india-rubber or gutta-percha: first, the greater convenience arising from the use of an open apparatus, into which articles may be immersed, or from which they may be withdrawn at any time during the process of heating; second, the absolute certainty with regard to the time when the articles are completely vulcanized, trial samples being withdrawn from time to time to determine the state of the process of manufacture; third, the perfect exclusion of air and moisture, which is essential to the most satisfactory results; fourth, much greater uniformity of temperature, every article and every part of each article being equally affected.

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

The use of a metallic bath, substantially as herein described, for the purposes of vulcanization.

A. K. EATON.

Witnesses:
L. D. GALE,
GEORGE WOOD.