

# UNITED STATES PATENT OFFICE.

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OF NEWARK, NEW JERSEY, ASSIGNORS TO THE BONSLATE COMPANY,  
(LIMITED,) OF ALBANY, NEW YORK.

## PLASTIC MATERIAL TO IMITATE IVORY, &c.

SPECIFICATION forming part of Letters Patent No. 305,205, dated September 16, 1884.

Application filed March 18, 1884. (No specimens.)

### *To all whom it may concern:*

Be it known that we, CHARLES S. LOCKWOOD, a citizen of the United States, and a resident of Albany, in the county of Albany and State of New York, and JOHN W. HYATT, a citizen of the United States, residing at Newark, New Jersey, have invented certain new and useful Improvements in Plastic Material to Imitate Ivory, &c., of which the following is a specification.

The invention has relation to an improved process of producing articles of factitious material.

It consists, essentially, in the discovery that if certain kinds of substances are sufficiently comminuted the powder will form, when subjected to heat and pressure, a homogeneous mass without the use of adhesives or other ingredients of an analogous nature. We have discovered that if the particles are sufficiently fine they will, when subjected to heat and pressure in a mold, be united to form an article of exceptional value.

It has heretofore been customary to produce articles of commerce by subjecting powders of different kinds to treatment in heated molds; but in no instance has the discovery that we make available been utilized. On the contrary, in every instance an adhesive agent has been employed, or the adhesive nature of some one or more of the elements composing the powder has been relied upon to cause the particles to adhere together. Our invention proceeds upon a different theory—namely, that if the substance is sufficiently comminuted the adhesion may be fully effected without the addition of any adhesive agent of any kind, and this although the substance may be entirely without any of the qualities of what are commonly known as “adhesive” agents.

The kinds of substances which we have heretofore used may be defined as those which are generally classified as organic, and especially such as have what is known as a “cellular” structure. Among the materials which we have used with particularly satisfactory results are bone, horn, wood, paper, leather, &c., all of which are found to possess in an eminent degree the qualities which seem to be of value

in the effectuation of our process. It is not impossible, however, that other materials can be successfully employed, and that only what are known as strictly “inert” substances are to be avoided. Indeed, it is not possible to define with certainty the class of substances in connection with which the process may be successfully practiced. Whatever substance or material is of such a nature that the particles will flow or be mollified when subjected to pressure in a die heated to, say, three hundred and fifteen degrees (315°) Fahrenheit is subject more or less to the principle which we have discovered. We do not limit ourselves, therefore, to materials which are strictly organic, although we prefer and recommend some form of material or substance similar in its nature and structure to those which we have enumerated.

It is essential, as has been stated, that comminution of the material be carried sufficiently far to effect a very advanced separation of the elements. It is not practicable for us to define with entire accuracy the size of the particles which is most desirable; but we are able to say that if the comminution is carried so far that the particles are about one twenty-thousandth of an inch in size a perfectly satisfactory result will be attained. If the substance or material is still further reduced, the result will not be less satisfactory, while a good result will be produced even if the particles are not all carried as far as the point which we have indicated. The size which we give is intended as an illustration to facilitate the practicing of the invention by others skilled in the art, and not as an exact and invariable definition from which there is to be no departure. Our experience leads us to believe that the size which we have indicated—to wit, about one twenty-thousandth of an inch—is to be preferred; but particles somewhat larger may be used, while any further reduction will not prejudice, but rather tend to enhance, the result. The comminution may be effected by means of a mill or otherwise, as may be desired, the only essential consideration being that the material be sufficiently reduced, and that at the time it is introduced into the molds it be substantially free

from moisture. In grinding or reducing the material great pains will be taken to effect a thorough comminution, as a considerable difference in the size of the particles will certainly prejudice, if it does absolutely prevent, the attainment of an entirely satisfactory result.

The invention may be practiced in connection with the production of a large variety of articles, and especially that class of articles which resemble in appearance ivory, or which are made of rubber and like materials. The powder may be colored by the use of pigments of different kinds, which may be introduced by combining them with water-repellents or gums, or otherwise, according to methods well understood in the art to which the invention relates. After the material or substance has been reduced, as hereinbefore described, it will be subjected to heat and pressure in dies of ordinary construction, the pressure being about, say, from one thousand to three thousand pounds per square inch, and the heat about 315° Fahrenheit, which will be slightly varied, according to circumstances,

as will be readily understood by persons skilled in the art.

What we claim as our invention, and desire to secure by Letters Patent, is—

The process herein described of forming articles of organic or analogous substances, which consists in comminuting the substance or material, as hereinbefore set forth, and then subjecting the comminuted substance to the action of heat and pressure in a mold.

Signed at Albany, in the county of Albany and State of New York, this 7th day of March, A. D. 1884, by CHARLES S. LOCKWOOD.

CHARLES S. LOCKWOOD.

Witnesses:

DAVID M. KINNENAR,

JOHN R. FORAN.

Signed at New York, in the county and State of New York, by JOHN W. HYATT, this 15th day of March, 1884.

JOHN W. HYATT.

Witnesses to signature of John W. Hyatt:

CHAS. C. GILL,

HERMAN GUSTOW.