UNITED STATES PATENT OFFICE.

CHARLES S. LOCKWOOD, OF ALBANY, NEW YORK, ASSIGNOR TO THE BONSILATE COMPANY, (LIMITED,) OF SAME PLACE.

PLASTIC COMPOSITION FOR THE CORES OF BILLIARD-BALLS AND FOR OTHER PURPOSES.

SPECIFICATION forming part of Letters Patent No. 259,878, dated June 20, 1882.

Application filed May 11, 1882. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES S. LOCKWOOD, of Albany, in the State of New York, have invented a new and useful Improvement in Plastic Compositions for the Cores of Billiard-Balls and for other Articles, of which the following is a specification.

The invention has relation to an improved composition which admits of various uses in the arts, and which is intended to be employed especially in the manufacture of cores, backings, &c., in which elasticity, toughness, and strength are qualities of particular importance. My improved composition possesses all of these qualities, and may be used with satisfactory results in connection with materials which are less elastic and which have not the same degree of strength. I have found it especially useful as a core for billiard-balls, for which purpose I have chiefly employed it, although I do not limit myself to its use for any particular purpose.

The invention is based upon the discovery that comminuted and desiccated glue may be welded and agglutinated by heat and pressure, and that the articles formed therefrom possess the qualities which are hereinbefore especially referred to.

If preferred, the desiccated glue in powdered form may be mixed with ground bone or fibrous material of any kind, such as cotton or woolen flock, or any other fiber or dust, to which a pigment may be added to give weight and color, or both, according to the purpose for which the article is intended to be used. The materials other than the glue will, any or all of them, be used as may appear to be expedient.

It is obvious that the nature of the fibrous material is not of the essence of the invention, although its use under some conditions tends to give the compound greater strength. The proportion of materials employed is likewise a matter of judgment, which will depend upon the circumstances of the case. The manner of using the different materials mentioned will be understood by persons skilled in the art to which the invention relates, and need not be more specifically described herein.

The materials will, by preference, be mixed in the form of dry powder and formed into a homogeneous mass by means of mixing-rollers, or as may be preferred. A good result will be effected without the use of mixing-rollers, although I prefer to use them. The final step will be the introduction of the material into heated molds or dies, by means of which it is formed into any desired shape according to methods that are generally understood.

Of course, if desired, the comminution of the glue may be accomplished by using liquid vehicles which can be evaporated, the important consideration being that the glue shall be perfectly dry when it goes to the molds. It is also true that as hereinbefore stated comminuted bone or its equivalent may be added to the glue with satisfactory results, and also that glycerine may be used to give elasticity to the composition, and the greater the percentage of glycerine within certain limits the more elastic will the compound be.

The proportions of glue or glycerine will depend upon circumstances and upon the particular result which it is desired to obtain.

While I prefer to mix the materials in the form of powders, as hereinbefore recited, satisfactory results may be accomplished by a method which it may be more convenient to pursue under some circumstances, but which is not essentially different from that which I have described, the result being substantially the same in both cases.

In practicing the method last above referred to, I take a good article of glue, preferably in the form of powder, which is dissolved in a proper quantity of water by means of heat. After a solution has been formed, I add a percentage of glycerine, together with comminuted bone or its equivalent, and mix the elements in the most thorough manner possible, adding a pigment, earth or mineral matter, or coloring agent, if desired, after which the compound is permitted to cool in pans or trays, when it is cut into strips and subjected to the action of rolls, whereby its homogeneity is increased. It is next introduced into a suitable drier and very thoroughly desiccated by heated air; or the aqueous particles may be removed by other means, according to circumstances. The compound, having been properly dried, is next ground or reduced to as fine a powder as possible, when it may be again subjected, if necessary, to treatment to insure its complete desic-

cation, after which it is ready to be subjected to the action of the molds or dies.

In practicing this method, as well as that in which the materials are mixed in a dry state, the proportions of the different elements will be varied according to the circumstances and according to the character of the article which it is desired to produce. It is obvious that the bone or glycerine, or both, may also be used when the glue is mixed dry.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An article of manufacture formed by agglutinating desiccated glue in a heated die or mold, substantially as set forth.

2. An article formed by agglutinating desiccated glue and bone or its equivalent, with or without glycerine, by means of heat and pressure, substantially as described.

3. A core for billiard-balls, which consists essentially of glue agglutinated by pressure in a heated mold, substantially as set forth.

In testimony that I claim the foregoing improvement in plastic compositions, as above described, I have hereunto set my hand this 10th day of March, 1882.

CHARLES S. LOCKWOOD.

Witnesses:
ALBERT HESSBERG,
DAVID M. KINNEAR.