

# UNITED STATES PATENT OFFICE.

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## MANUFACTURE OF ARTIFICIAL IVORY FROM ZYLONITE, &c.

SPECIFICATION forming part of Letters Patent No. 307,032, dated October 21, 1884.

Application filed March 13, 1884. (Specimens.)

*To all whom it may concern:*

Be it known that I, JARVIS B. EDSON, a citizen of the United States, residing at Adams, county of Berkshire, State of Massachusetts, have invented new and useful Improvements in the Manufacture of Artificial Ivory from Zylonite or a Cellulose Compound of a Similar Nature, of which the following is a specification.

10 This invention pertains to the production of an article which closely resembles and is adapted for being used as a proper substitute for ivory, the grain of which is still distinct, or at least has not been removed by artificial means, and designated hereinafter in this application  
15 as "grain ivory." In the manufacture of fictitious grain ivory from a pyroxyline base—such as zylonite—at least two lots of zylonite are prepared, differing from each other in color to  
20 such an extent that when combined and subsequently reduced to the ultimate and desired articles to be formed the general shade or color of the article and the individual characteristic of the integral parts forming the  
25 grain shall be such as to best approach the appearance of a fair average of the natural ivory as found in articles of a similar form. It will be recognized that the procurement of these degrees of shade and translucency is a  
30 matter of great nicety and judgment. Furthermore, the base or pyroxyline is in practice never white or even sufficiently opaque, but possesses a similar shade to horn, and this  
35 horn shade varies to such an extent in different "bleaches," from various causes, that it becomes necessary to take it into account, and it becomes a factor in determining the proper amount of coloring-pigments and foreign  
40 agents required to be added to the several lots of zylonite out of which it is intended, by combining together, to form the grain-ivory imitation. In this manner, then, having obtained the two or more integral parts which  
45 are to constitute the layers or grain of the product, their assembling, combining, and mechanical manipulation require to be governed with regard to the form or nature of the articles intended to be manufactured therefrom, and this part of the total process forms the  
50 chief feature of this invention—that is to say, while the United States Patent No. 283,225, granted me August 14, 1883, for a similar pur-

pose, contemplates all that herein occurs relating to the preparation and combination of the several layers and their subsequent subdivision, it goes no further. In it is shown the method of obtaining successive sheets or slabs of zylonite ivory, each possessing great similarity and uniformity of the grain formation, and quite essential where a certain class of articles is to be manufactured therefrom—such as brush and mirror backs—and wherein the upsetting of the grain caused by the small amount of flow of the material in taking the form of the mold by the aid of heat and pressure yields  
55 sufficient disturbance to the initial regularity of the grain to avoid monotony and give a waving and pleasing effect. The process may therefore be called the "positive" one, while that which forms the feature of this application may be designated the "accidental" or  
60 "inferential" one.

To enable those skilled in the art to which this appertains to practice the same, I will now proceed to describe the operation hereinbefore referred to for the manipulation and manufacture of zylonite and similar compounds for the production of factitious grain ivory therefrom.

Two lots of semi-transparent horn-colored pure pyroxyline or zylonite base are required. With one is incorporated, either prior to or at the rolling operation, sufficient pigment—say of oxide of zinc about five per cent., and of coloring-matter, say, one-half of one per cent., or such pigment without coloring-matter. These ingredients for giving the desired  
80 "body," "depth," and color, and destroying the horn-like appearance of the pure material, having been thoroughly incorporated and the whole sufficiently worked on the rolls to the consistency found best adapted to the purpose, occupying about thirty minutes, the rolls are set, say, one-sixteenth of an inch apart, and the "batch" is run through while  
85 it is yet warm, and emerges in a long sheet. This sheet is either subdivided into small areas or not, depending upon subsequent requirements. With another lot of the semi-transparent horn-colored pure pyroxyline or  
90 zylonite base is incorporated, either prior to or at the rolling or grinding operation, sufficient pigment—say of about ten per cent. of oxide of zinc or other suitable pigment, and  
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of coloring-matter, say, about one-quarter of one per cent., or such pigment without coloring-matter. These ingredients for giving the desired depth, body, and color, and destroying the horn-like appearance of the pure material, having been thoroughly incorporated and the whole sufficiently worked on the rolls to the consistency found best adapted for the purpose, occupying about thirty minutes, the rolls are set, say, one-sixteenth of an inch apart, and the batch is run through while it is yet warm, and emerges in a long sheet. This sheet is either subdivided into small areas or not, depending upon subsequent requirements.

Having thus provided what is to constitute the layers representing the grain of the ivory, we now come to the arranging and combining of these together. This may be accomplished in various ways. For instance, the several layers may be placed upon each other and closely coiled together in scroll form, either when fresh or aided by a little warmth, after which sections of such roll or rolls may be taken and placed in what is termed a "stuffer" in this industry, and similar to a lead-pipe-forcing machine; or it is obvious that, having arranged the several layers as desired, they may be assembled in other ways than strictly the scroll form herein described, and subsequently manipulated in the stuffer, and all of which is subject to the variety of nozzle used for ultimate effect. By the aid of heat and pressure the layers will become thoroughly welded or united, and the whole emerge from the outlet or nozzle of such stuffer in a solid form, and possessing not a homogeneous uniform color, but having a grain and variegated effect. This variegated effect is obtained whether the material emerges in a rod, tube, sheet, slab, or bar form, and all of which is subject to the variety of nozzle used for the purpose. The grain effect will in this way preserve in sufficient regularity its original characteristics without being too uniform, and neither being as heterogeneous as is the case when a lot of pieces of different colors are placed in the same stuffer and run through in the same manner. When no occasion exists for forming this grain product into rods or tubes, and it is still desired to disturb the

uniformity of the layers resulting from the method of amassing them together, lengths of each of the two grades before mentioned, of, say, a yard, may be cut, and then rolled up together tightly by hand, and when sufficient of these hand-made rolls are ready they are to be placed in a mold, and by the aid of heat and pressure consolidated into a solid cake. When this is sheeted or cut into blanks and finished, it will be found to possess a wavy grain, which is due to the amount of flow of the stock in its movement to fill up the blank spaces left in the mold. It is clear that the larger the rolls are made the greater the flow and the coarser the result, and the reverse.

Having thus described my invention, what I claim is—

1. The method of preparing an imitation ivory by forming two or more sheets of soluble pyroxyline having inert matters, and colored or otherwise, then rolling up in scroll form, and forcing the same through a suitable nozzle or die, so that the several layers shall partially preserve their parallelism, substantially as and for the purpose described.

2. The method of preparing an imitation of ivory by forming two or more sheets of soluble pyroxyline having inert matters, and colored or otherwise, then assembling the several layers parallel to each other in block form, and forcing the same through a suitable nozzle or die, so that the general or partial parallelism of the issuing mass shall be preserved, substantially as and for the purpose described.

3. The method of preparing an imitation of ivory by forming two or more sheets of soluble pyroxyline having inert matters, and colored or otherwise, then rolling up two or more sheets into one or more scrolls, and molding or consolidating these into a cake and cutting into sheets or sections, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JARVIS B. EDSON.

Witnesses:

RUSL. B. DEAN,  
W. N. BIXBY.