

J. W. HYATT.

Manufacturing Pyroxyline Articles.

No. 138,254.

Patented April 29, 1873.

Fig. I.

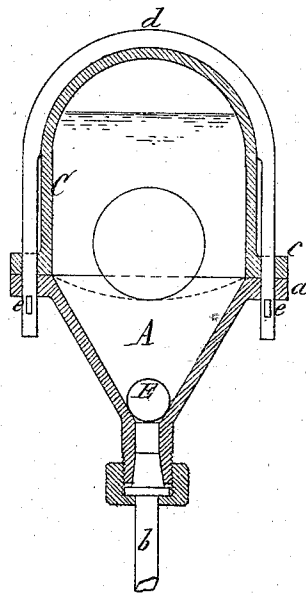


Fig. II.

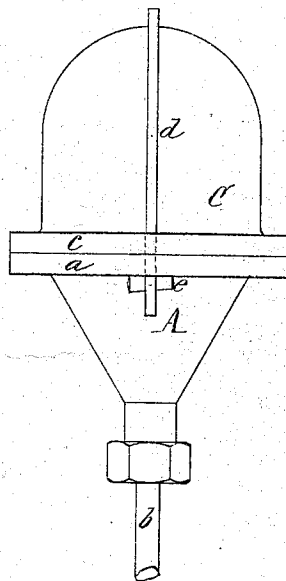
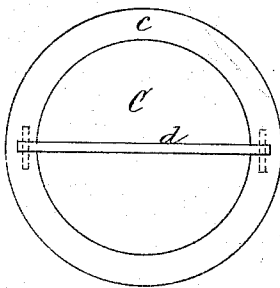


Fig. III.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MANUFACTURING PYROXYLINE ARTICLES.

Specification forming part of Letters Patent No. **138,254**, dated April 29, 1873; application filed October 23, 1872.

To all whom it may concern:

Be it known that I, JOHN W. HYATT, of the city and county of Albany, State of New York, have invented a certain Process in Manufacturing Articles from Compounds of Pyroxyline, of which the following is a specification:

The invention relates more especially to the manufacture of articles from pyroxyline or soluble cotton, where liquid solvents are employed in the conversion thereof. When liquid solvents, such as ether, alcohol, &c., are employed in the manufacture of articles from compounds of soluble cotton or pyroxyline, the material shrinks greatly in drying, and is liable to become spongy and filled with air-cells by reason of the rapid evaporation of the solvents and expansion of the gases in the material. In articles which are coated with compounds of soluble cotton or pyroxyline the same results take place, while, in addition, small quantities of the gases resulting from the evaporation of the volatile solvents, accumulate between the coating and the core, thereby preventing the desired close and firm connection of the coating with the body of the article. Attempts have been made heretofore to avoid these imperfections by subjecting such articles, immediately after they are formed, to pressure in porous molds, or in vessels filled with sand. The porous molds when they are used, are required to be made to exactly fit each article, which is very difficult and expensive, and especially so in the case of fine and delicately-molded articles, which are almost certain to be distorted when subjected to pressure in such molds. The use of sand, as above stated, is also objectionable, as it does not possess sufficient mobility to prevent distortion of the more delicately-formed articles. The object of my improvement is to obviate these defects. The invention consists in the process of subjecting articles made of compounds of soluble cotton or pyroxyline, or coated therewith, to pressure in a closed vessel by means of air or other suitable gas or liquid forced therein, which will properly absorb the solvent from the compound, while the article, of whatever form or configuration, is subjected to a uniform pressure, which effectually prevents the expansion of the material and the formation of air-cells without produc-

ing the least distortion or derangement of the parts, while at the same time the rapidity of the drying or seasoning process can be easily regulated.

In using my improved process I prefer air as the medium for applying the pressure, both on account of economy and the facility with which it absorbs the solvent. The method I prefer is to place the article, immediately after being molded or coated with the compound, in a receiver, and then force in air under sufficient pressure to prevent air-cells forming. For this purpose a pressure of twelve atmospheres is generally sufficient, although a greater pressure will have no injurious effect on the article. The receiver being provided with a discharge-aperture, the rapidity of the drying can be controlled by regulating the amount of air passed through the vessel in contact with the articles to be dried. Ordinarily the articles are not required to remain in the receiver longer than about thirty-six hours before the material will be sufficiently freed from the solvent to permit the articles to be removed to the ordinary drying-room.

The accompanying drawing represents the apparatus I prefer to use when a liquid is employed as the compressing agent. Of this drawing, Figure I is a sectional elevation of a vessel or flask for receiving the articles to be dried under pressure. Fig. II is an outside elevation thereof at right angles to Fig. I. Fig. III is a plan view of the same.

Like letters designate like parts in each of the figures.

A represents the lower conical part of the flask, and *b* the pressure-pipe connecting its lower end with a force-pump of any suitable construction. C represents the upper removable part of the flask, provided with a circular flange, *c*, fitting on a similar flange, *a*, formed on the lower part A. The upper part C is secured to the latter by a ball, *d*, fitting over the part C, and projecting with its ends through openings in the flanges *a c*, on the under side of which it is secured by wedge-keys *e*, so as to be readily attached and detached. The part C may, however, be secured to the lower part by screw-bolts passing through the flanges *a c*, or in any other suitable manner. E is a rubber ball-valve, which prevents the

return of the fluid when the case is removed from the force-pump.

The article to be dried is placed in the lower part A, upon a diaphragm made of open cloth, stretched upon a hoop to prevent marring the article, when the upper part C is tightly secured to the lower. Water, glycerine, turpentine, or a mixture of alcohol and water, or any other liquid possessing a sufficient affinity for the solvent to readily absorb the same, is forced therein, by means of a force-pump, until the required pressure (which is the same as when air is used) is obtained. The air in the case, being compressed to, say, one-tenth its former bulk, serves to retain ample pressure within the vessel, even though a small quantity of the fluid should escape through the valve or packing between the two parts of the vessel. Articles allowed to remain in the vessel under this pressure for about thirty-six hours will be sufficiently hardened, or the coating thereof, to permit of their removal from the vessel.

The rapidity of the drying process can be regulated by using a liquid possessing a greater or less affinity for the solvent.

Claim.

In the manufacture of articles composed of compounds of pyroxyline or soluble cotton, or of articles coated therewith, the process of subjecting the articles, when first formed or coated, and before drying, to pressure in a vessel, by forcing therein air, alcohol, and water, or other suitable fluid which will absorb the solvent from the formed article, the pressure on the surface preventing the expansion thereof and the formation of air-cells without distorting the shape of the article, substantially as hereinbefore set forth.

JOHN W. HYATT.

Witnesses:

JAMES GRAY,
A. A. SANBORN.