J. W. HYATT.

Producing Tubes and Hollow Articles from Celluloid and other Plastic Material.

No. 204,228. **Patented May 28, 1878.**

Fig. 1.

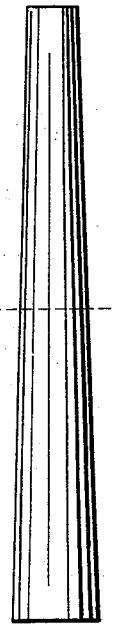


Fig. 3.

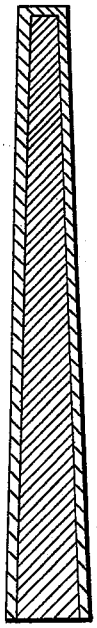


Fig. 4.

Fig. 2.

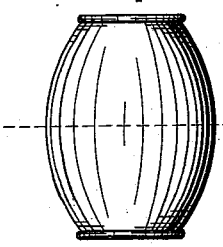


Fig. 5.

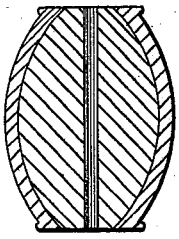
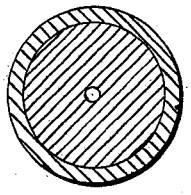


Fig. 6.



WITNESSES -

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UNITED STATES PATENT OFFICE.

JOHN W. HYATT, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE CELLULOID MANUFACTURING COMPANY, OF NEW YORK, N. Y.

IMPROVEMENT IN PRODUCING TUBES AND HOLLOW ARTICLES FROM CELLULOID AND OTHER PLASTIC MATERIALS.

Specification forming part of Letters Patent No. **204,228**, dated May 28, 1878; application filed March 25, 1878.

To all whom it may concern:

Be it known that I, JOHN W. HYATT, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Processes of Producing Hollow Frames and Tubes from Plastic Composition, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figures 1 and 2 are plan views of the invention, Figs. 3 and 4 representing a longitudinal and a transverse central section of Fig. 1; and Figs 5 and 6, similar views of Fig. 2.

The invention relates to covering cores of substances of such nature as are not capable of sustaining the pressure of dies or rolls—for instance, wood and other fibrous materials, or tubes or other analogous structure which are liable to collapse under pressure.

It is also intended to cover cores composed of material that is liable to warp or swell in the course of seasoning, it being particularly applicable to the covering of wood cores, such as the handles of whip-stocks, parasols, umbrellas, and other structures of an analogous outline, although it may be successfully applied to cores the diameters of which are at all approximate.

The operation of the invention is as follows: The material is expelled over a mandrel or other suitable structure placed at the nozzle of a stuffing-machine, so that the composition exudes therefrom in a tubular form. The core is coated with any soap which does not contain rosin, or with any other suitable lubricant, to prevent friction between the material and the core, which is firmly held, so that it shall enter the tube as it exudes over the mandrel while the stuffing-machine expels it, the progress of the tube over the core being assisted by the hands, or in any other suitable manner. After the tube has covered the core a suitable distance, it is cut off, and the material allowed to dry upon the core, in which process it shrinks with great tension upon the core, and remains immovable thereon.

If the core be of an irregular diameter—that is, larger at certain points than others—the plastic composition can readily be stretched over the larger parts, and when it dries will conform itself accurately to the contour of the core. Of course, the diameter of the tube must be somewhat, though very slightly, larger than the diameter of the core.

If desired, the material can be forced from the stuffing-machine through a nozzle, which forms a tube in it, leaving the balance of the material in any desired shape. Thus, a piece of composition which in the aggregate would make, for instance, a number of unfinished eyeglass-frames, superposed one above the other, can readily be forced from the machine, the core being received into the tubular portion of this structure, which, when it dries upon the core, can be severed into sections of suitable thickness to form the frame of the eyeglass, or, the core being suitably formed and the composition expelled in a suitably-shaped tube and allowed to dry on the core, sections of it can be removed and united so as to constitute links for chains. Of course, the sections of the core which are removed when the material is severed are taken out. In this manner it is plain that a great variety of hollow frames, such as rings, buckle-frames, spectacle-frames, and various other structures, can be formed in the aggregate, and completed by removing a section of the core and material. Of course, the mandrel being suitably conformed, structures having two or more apertures in them can be formed and fed to an appropriate number of cores filling such apertures. Nor is the invention limited to surfaces that are circular; but it may be applied with advantage to any core having a continuous unbroken outline.

In the above operation it is obvious that no pressure whatsoever is exerted upon the core, except such as is brought to bear thereon by the material in shrinking, and hence cores of comparatively soft material can be readily and successfully coated.

It is also obvious that, as the material binds the core very closely, the probability of its expanding from any cause is greatly reduced.

When celluloid is used in the above process it should be prepared with a larger amount of solvent than is usually employed, to the end

that a greater shrinkage may be obtained. By withdrawing the core before the composition has fully dried, it is plain that a tubular structure remains, and this can be severed into sections to form tubes, pencil-cases, and other analogous formations.

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

1. The process of covering cores of such nature as are not capable of sustaining the pressure of dies with a plastic composition, which consists in forcing a tubular structure from a stuffing-machine or other suitable device over such a core, substantially as specified.

2. A structure or piece of plastic composition, wholly or partially tubular, shrunk upon a core, substantially of the order specified, for the purpose set forth.

3. The process of forming hollow frames, which consists in shrinking a piece of plastic composition upon a suitable core and removing sections of the composition and core, substantially as specified.

4. The process of producing tubular structures above described, which consists in causing the material to pass over a core, which core is withdrawn before the material is fully hardened, substantially as set forth.

In testimony that I claim the foregoing improvement in processes of producing hollow frames and tubes from plastic composition, as above described, I have hereunto set my hand this 5th day of March, 1878.

JOHN W. HYATT.

Witnesses:
SAMUEL S. TIFFANY,
WILLIAM R. SANDS.