

No. 706,498.

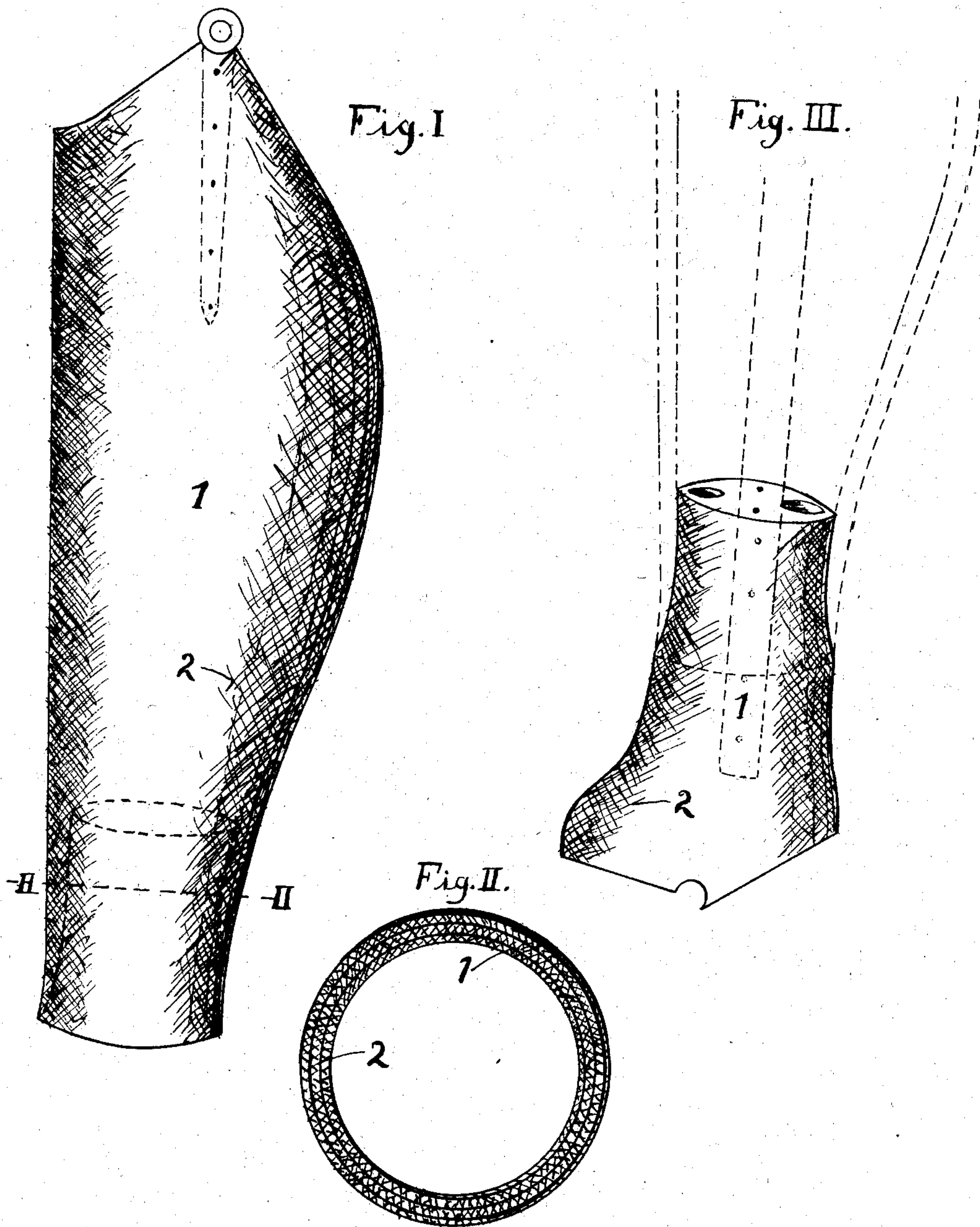
Patented Aug. 5, 1902.

J. E. SEELEY.

STRONG, LIGHT BODY AND METHOD OF PRODUCING SAME.

(Application filed Aug. 2, 1901.)

(No Model.)



WITNESSES
C. F. Richey.
J. Townsend.

INVENTOR.
James E. Seeley
by Townsend Bros.
his attys.

UNITED STATES PATENT OFFICE.

JAMES E. SEELEY, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO W. W. SWEENEY CO., OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

STRONG LIGHT BODY AND METHOD OF PRODUCING SAME.

SPECIFICATION forming part of Letters Patent No. 706,498, dated August 5, 1902.

Application filed August 2, 1901. Serial No. 70,606. (No specimens.)

To all whom it may concern:

Be it known that I, JAMES EDWARD SEELEY, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Strong Light Body and Method of Producing the Same, of which the following is a specification.

My invention relates to an article of manufacture and the method of making the same, and more particularly includes bodies suitable for portions of artificial limbs. It is also adapted for the manufacture of strong light bodies of different shapes and uses—such, for instance, as splints and the like.

The object of my invention is to provide an extremely light and strong body; and in carrying out my invention as applied to artificial limbs I propose to produce a member for an artificial limb composed of yucca-brevifolia wood fiber without any external wrapping or casing of thread, parchment, or like materials.

My invention relates to manufactures made of yucca-brevifolia wood. I have discovered that in its natural state the fiber of such wood is associated with non-fibrous material, which adds to the weight of the wood without a proportionate increase of strength, and in carrying out my invention I substantially remove such non-fibrous materials and employ, united in its natural structure, the fiber of said wood approximately free from the non-fibrous material with which said fiber is associated in its natural state. In its preferred form my newly-manufactured material includes, in combination with said fiber, a binding material binding the intersections of the fiber together. Preferably such binding material consists in fixed chromated gelatin. The method of manufacturing these bodies in its simplest form consists in, first, removing from a body of yucca-brevifolia wood the non-fibrous material occurring in said wood in nature, retaining the natural structure of the fibrous body; second, applying to the resulting body a binding material in solution, and, third, fixing said binding material. The non-fibrous material is readily removed by subjecting the yucca-brevifolia wood to the

action of a boiling alkaline solution. A solution which I have employed with great success is a five-per-cent. solution of bichromate of potash; but it is to be understood that a solution of any appropriate strength may be employed without departing from the broad field of my invention.

A material which I prefer to use in forming the binding material consists in chemically-pure gelatin sensitized by the bichromate of potash and fixed by exposure to light, and I prefer to apply such gelatin to the yucca-brevifolia wood after the non-fibrous material has been removed therefrom by the bichromate-of-potash solution and then allow the gelatin to dry and to fix the gelatin by exposure to the actinic rays of light, whereby the gelatin becomes an insoluble binder for the fibers of the yucca brevifolia, thus giving a far greater strength to the material and with a less weight than characterizes said material in its natural state.

The bichromate of potash serves the double purpose of removing the non-fibrous material from the wood and sensitizing the gelatin.

In the accompanying drawings, Figure I shows a member of an artificial limb made in accordance with this invention. Fig. II is a section of the same on line II II. Fig. III is a view of another limb member made in accordance with my invention.

In the manufacture of bodies for artificial limbs the yucca-brevifolia wood will be cut into veneer sheets, and said sheets will then be subjected to the action of a boiling solution of bichromate of potash, thus removing the non-fibrous material, after which the veneers will be removed from the solution and formed upon a form into a tubular shape, as shown at 1 in Figs. I and II, suitable for the member of the artificial limb for which the body is to be adapted. Then, preferably, the veneer thus formed will be fastened by elastic bands (not shown) and allowed to dry in the absence of the actinic rays of light. Then a gelatin solution will be applied to the outside of the body by means of a brush or other suitable means (not shown) and then will be allowed to dry and will be subjected to the actinic rays of light, thereby fixing the gelatin

and making the same insoluble. The resultant body will be strong and rigid and will not require any wrapping or outside strengthening devices.

5 It is to be understood that I do not limit my invention to the manufacture of artificial limbs, and that the bodies of yucca-brevifolia wood fiber freed from the non-fibrous material with which it is associated in nature is
10 adapted for many uses, with and also without the addition of the gelatin or other suitable binding material 2 for uniting the fibers at their intersections or points of contact.

It is obvious that, if desired, the body manufactured in accordance with this invention
15 may be incased in any way desired without departing from this invention.

What I claim, and desire to secure by Letters Patent of the United States, is—

20 1. A new article of manufacture comprising a body of yucca-brevifolia wood fiber, united in its natural structure, and approximately free from the non-fibrous material with which said fiber is associated in its natural
25 state.

2. A new article of manufacture comprising a body of yucca-brevifolia wood fiber, united in its natural structure, and approximately free from the non-fibrous material with
30 which said fiber is associated in its natural state; and a binding material binding the intersections of the fiber together.

3. As a new article of manufacture, a body composed of yucca-brevifolia wood fiber approximately free from the non-fibrous material with which it is associated in nature; and
35 fixed chromated gelatin binding the fibers of said body at their intersections.

4. The process of manufacturing a strong,
40 light body set forth which consists in, first, removing from a body of yucca-brevifolia wood the non-fibrous material occurring in said wood in nature; second, applying to said body a binding material in solution; third,
45 fixing said binding material.

5. The process of manufacturing a strong, light body set forth which consists in, first,

removing from a body of yucca-brevifolia wood the non-fibrous material occurring in said wood in nature; second, applying gelatin to said body; third, fixing said gelatin. 50

6. The process of manufacturing a strong, light body which consists in, first, boiling a body of yucca-brevifolia wood in an alkaline solution and thereby removing the non-fibrous
55 material from said wood; second, drying the wood so treated substantially in the absence of actinic rays of light; third, applying to the wood thus treated and dried a solution of gelatin; and fourth, exposing the material thus
60 produced to actinic rays of light.

7. A body composed of yucca-brevifolia veneer formed in a tube and approximately free from the non-fibrous material with which the fiber of said wood is associated in nature; and
65 a coating of fixed gelatin on the fibers of said wood.

8. The process of forming a strong and light body which consists in, first, treating a veneer of yucca-brevifolia wood with a solution in
70 which non-fibrous portions of said wood are soluble, thereby removing non-fibrous material from said veneer; second, forming said veneer in a tube over a form and coating the fibers of said wood with a gelatin solution; 75
third, fixing said gelatin solution.

9. The process of forming a strong and light body which consists in, first, treating a veneer of yucca-brevifolia wood with a solution of bichromate of potash, thereby removing non-
80 fibrous material from said veneer; second, forming said veneer in a tube over a form and allowing said veneer to dry in the absence substantially of the actinic rays of light; third, applying a gelatin solution to said wood; 85
and fourth, fixing said gelatin solution.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, California, this 27th day of July, 1901.

J. E. SEELEY.

Witnesses:

JAMES R. TOWNSEND,
JULIA TOWNSEND.