

No. 795,734.

PATENTED JULY 25, 1905.

J. E. SEELEY.
METHOD OF PRODUCING BODIES.
APPLICATION FILED JULY 19, 1904.

Fig. 1

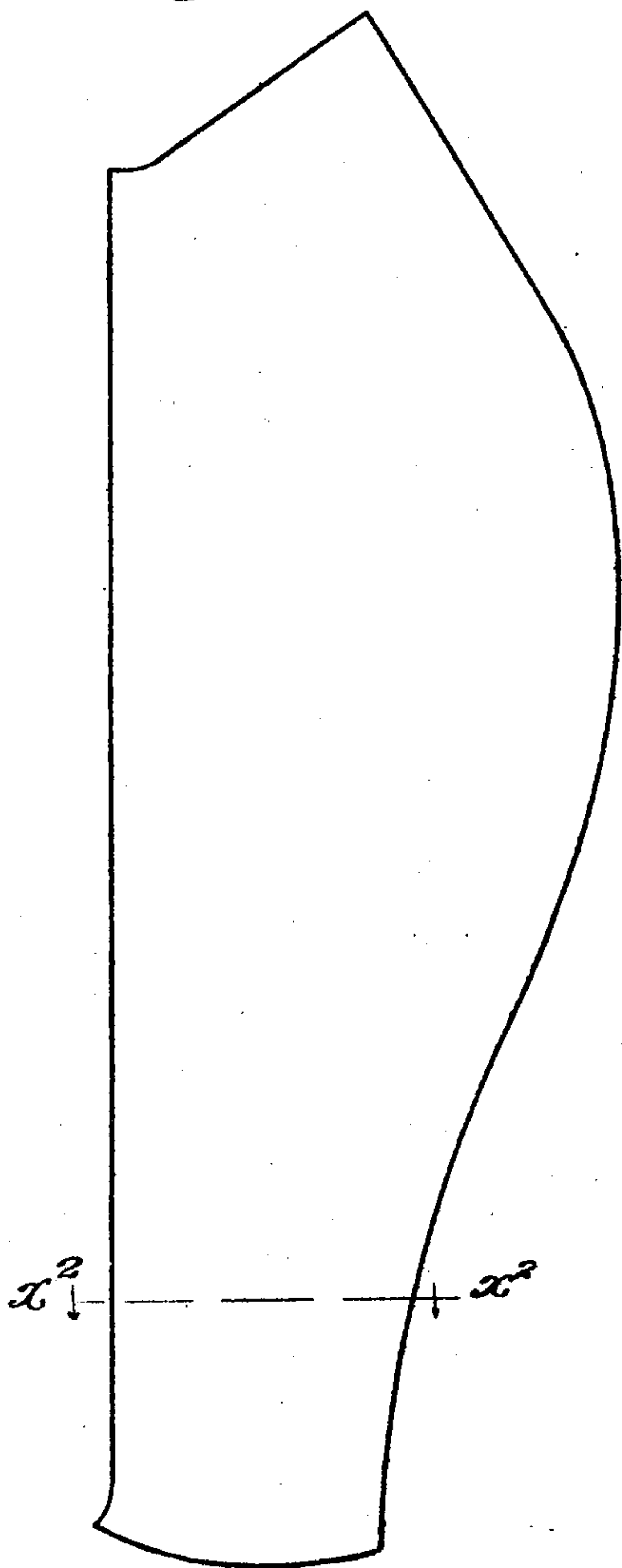
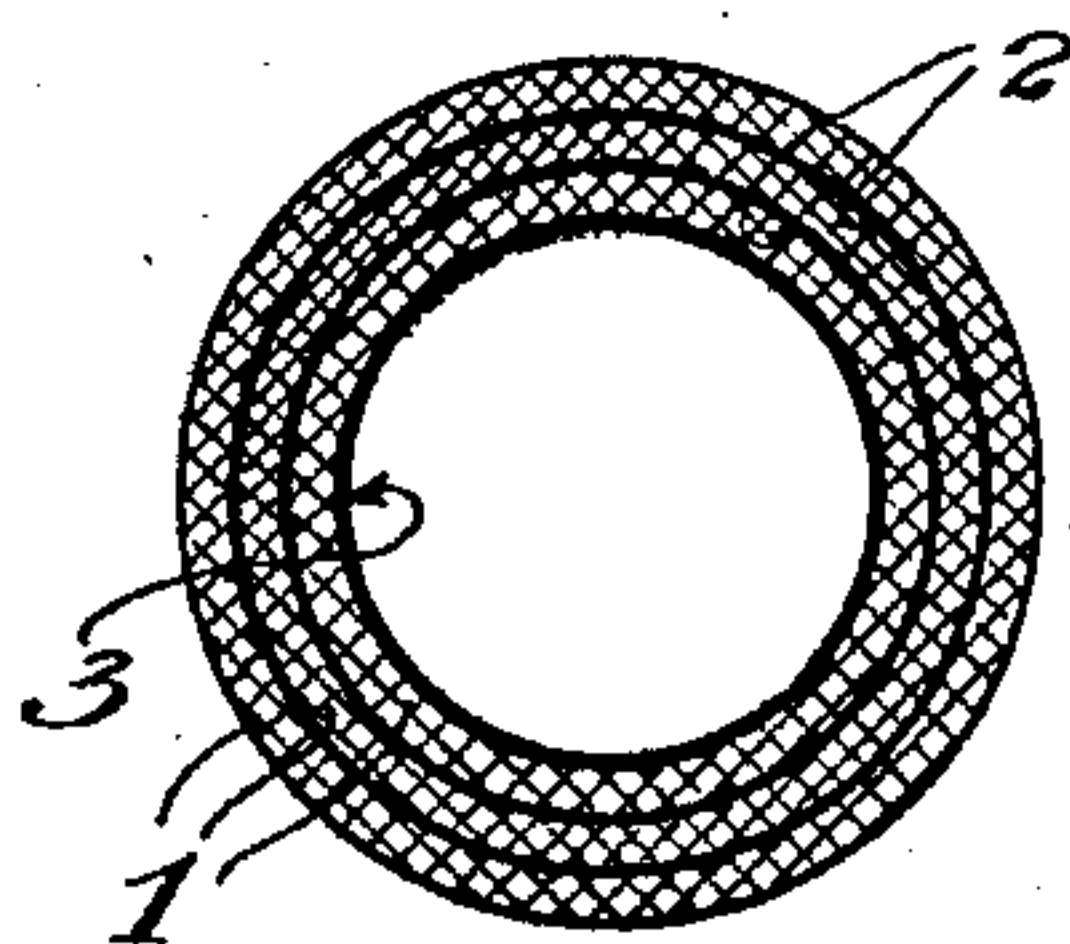


Fig. 2



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UNITED STATES PATENT OFFICE.

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METHOD OF PRODUCING BODIES.

No. 795,734.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed July 19, 1904. Serial No. 217,174.

To all whom it may concern:

Be it known that I, JAMES E. 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 Method of Producing a Body, of which the following is a specification.

This invention relates to a method of producing a body, which is especially adapted for artificial limbs, but which is also adapted for other bodies of various shapes and for various uses.

The object of the invention is to provide a method for constructing a body composed of two or more parts and to unite the parts so firmly that the resulting body will be of great strength; and a further object is to provide a novel and efficient method for binding the parts together.

The invention is particularly applicable to bodies made of *Yucca brevifolia* wood. In its natural state the fiber of this wood has associated with it non-fibrous material, which adds to the weight of the wood without imparting a proportionate strength to the wood, so that by removing the non-fibrous material from the wood and leaving the fiber of the wood a strong light material is obtained which may be built up to the form desired. It has been found that the fibers of the wood are closely interwoven and are naturally united and that it is not necessary to employ any binding material to strengthen the intersections of the fiber, and that the wood after having had the non-fibrous material removed is substantially as strong as after a binding material has been associated with it.

The preferred form of the body comprises parts consisting of *Yucca brevifolia* wood fiber, the parts being united with an adhesive, with an intervening formaldehyde coating.

The method of producing the body consists in first removing the non-fibrous material from the *Yucca brevifolia* wood, then applying an adhesive—such, for instance, as glue—to the surfaces of the wood which are to be united, then coating at least one of the glued surfaces with formaldehyde, then bringing the prepared surfaces of the parts together, whereupon the parts are united.

The accompanying drawings illustrate an artificial limb made by this process.

Figure 1 is a side elevation of the limb. Fig. 2 is a section on line X² X², Fig. 1.

An efficient method of constructing the body consists of first boiling the pieces of *brevifolia* wood 1 which are to be united in an alkaline solution, which removes the non-fibrous material. The pieces may then be dipped in an acid solution—such, for instance, as hydrochloric acid—which will free the pieces of wood from the alkali which may have permeated the fiber, and the pieces may then be washed in water to remove the acid. The pieces are preferably applied to the mold one over the other in laminated form while wet and allowed to dry. A very strong body is produced by utilizing relatively thin sheets of the wood cut along the fiber and arranging the sheets so that the grain of the sheets cross. While drying, the sheets they may preferably be bound in place by elastic bands. After the sheets have dried the elastic bands may be removed and the sheets taken off from the form. Stork-sheeting 2 is then wound over the form and a coating of shellac is given to the sheeting. The first layer of *Yucca brevifolia* is then placed over the sheeting and bound down with tape, and after the shellac is set the tape is removed. The first layer is then given an external coating of glue, and very thin glue may be used for this purpose. 3 designates the coating of glue and formaldehyde. As soon as the glue has been applied it is coated with formaldehyde, the commercial undiluted solution being used. The application of the formaldehyde sets the glue immediately and gives a slick surface. It also prevents the glue from entering the pores of the wood and for that reason very little glue is required. The second sheet of wood is then coated with glue and immediately applied to the first sheet, and as soon as the glue of the second sheet makes contact with the formaldehyde it sets and the two pieces are united. The second piece may preferably be bound in place by tape. The formaldehyde renders the joint waterproof, and therefore retards evaporation of moisture from the glue. Hence it is preferable to assist the drying of the glue by applying heat. After the joint has been thoroughly dried the tape may be removed and the external surface of the second sheet may be coated with glue. The formaldehyde may

then be applied as before, and the third sheet having been internally coated with glue is applied to the second sheet in like manner and held in place by tape and dried. Thus the body may be built up with as many sheets as desired. After the desired structure has been attained the mold may be removed and the body may be coated externally or not, as desired. The inner surface of the leg is formed by the stork-sheeting, which gives a neat waterproof finish.

The formaldehyde is an antiseptic, and as it permeates practically the entire body it renders the body odorless, which is an important feature and one not attained in artificial limbs as heretofore constructed.

It should be understood that while the process is particularly adapted for artificial limbs of *Yucca brevifolia* other bodies may be made of other woods and other materials, the parts being joined by glue and formaldehyde.

What I claim is—

1. The method of producing a body which consists of applying an adhesive to a part,

then coating the adhesive with formaldehyde, coating another part with an adhesive and applying the parts together with their coated surfaces together.

2. The method of producing a body which consists of applying an adhesive to a part, then coating the adhesive before the adhesive sets, with formaldehyde; coating another part with an adhesive and applying the parts together with their coated surfaces together.

3. The method of producing a body which consists of removing the non-fibrous material from *Yucca brevifolia* wood parts, applying glue to the parts, applying formaldehyde to at least one glue-coated surface, and then bringing the parts together with the coated surfaces in contact.

In testimony whereof I have hereunto set my hand, at Los Angeles, California, this 13th day of July, 1904.

JAMES E. SEELEY.

In presence of—

GEORGE T. HACKLEY,
A. P. KNIGHT.