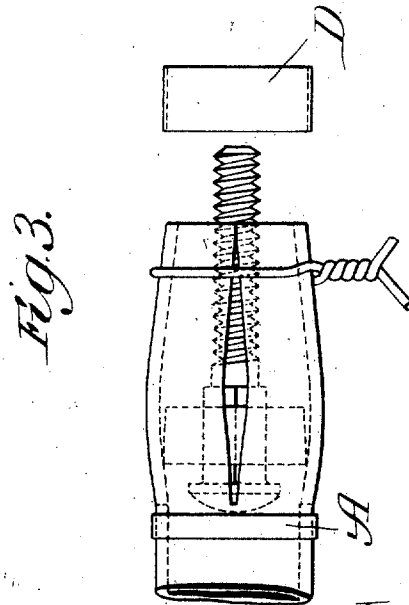
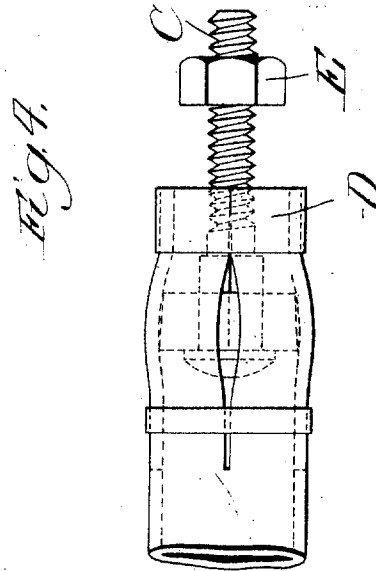
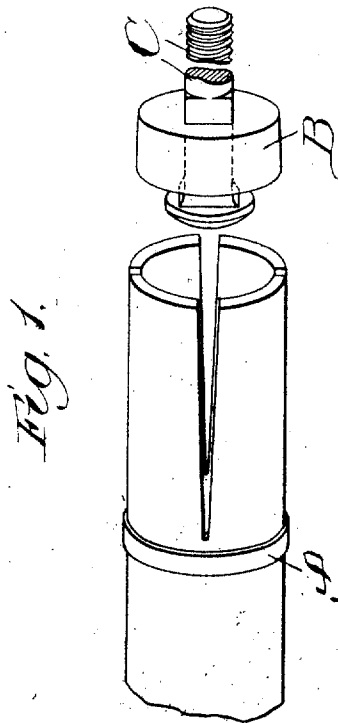
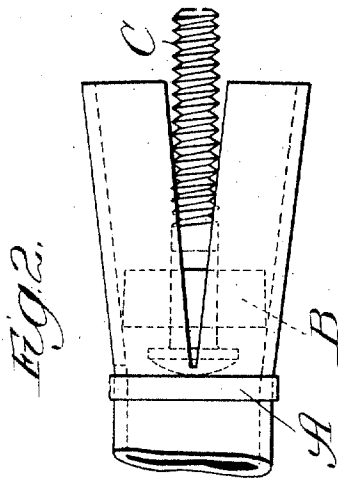


J. F. SANDELL.
 DEVICE FOR CONNECTING BAMBOO.
 APPLICATION FILED JUNE 9, 1910.

990,599.

Patented Apr. 25, 1911



Witnesses:
Ed. C. Gaylord,
Chas. H. Buell.

Inventor:
John F. Sandell,
 By *Dyrenforth, Lee, Britton & Mills,*
Attys.

UNITED STATES PATENT OFFICE

JOHN F. SANDELL, OF CHICAGO, ILLINOIS

DEVICE FOR CONNECTING BAMBOO.

990,599.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed June 9, 1910. Serial No. 566,038.

To all whom it may concern:

Be it known that I, JOHN F. SANDELL, a citizen of the United States, residing at 1614 Farragut avenue, Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Devices for Connecting Bamboo, of which the following is a specification.

My invention relates to certain new and useful improvements in devices for connecting bamboo and is fully described and explained in the specification and shown in the accompanying drawing, in which:

Figure 1 is a perspective view of the end of a piece of bamboo with the first ferrule in place, the bamboo slotted and the connecting device separate therefrom; Fig. 2 is an elevation of the same parts with the plug forced home; Fig. 3 is a view similar to Fig. 2 showing the parts in the next stage of the operation and Fig. 4 is a similar elevation showing the completed construction.

Very great difficulty has been experienced in the past in working with bamboo because of the fact that any usual connecting device therefor will have a great tendency to split the bamboo. Furthermore expanding plugs or nuts have been used with an ordinary piece of bamboo surrounded by a ferrule, but such constructions are unsatisfactory because the inner fibers of a piece of bamboo are comparatively weak, and if they are broken in place, they will slide out longitudinally. An expanding nut or bolt will therefore simply take hold of these weaker fibers and when pressure or tension is applied will break the same, and the connecting device can then be very easily pulled longitudinally from the end of the piece.

In the present device a small ferrule A is first placed upon the end of a piece which is to be joined, the same being slipped back about three inches from the end and fitting as tightly as is convenient. The bamboo is then sawed longitudinally in the manner illustrated to divide it into four separate pieces at its end, the ferrule preventing the continuation of the saw-kerf by splitting.

B is a plug which is slightly frusto-conical in shape and has a square hole to receive a bolt C threaded at its end, provided with a head at the other, and provided also with a square shank adjacent to the head to co-operate with the hole in the plug. The plug is placed upon the bolt with its smaller

end extending away from the head and is then forced into the bamboo piece in the manner shown in Fig. 2, the four sectors of the bamboo spreading apart as shown. The plug is forced as far into the piece as is possible. The free-ends of the four sections of the end of the bamboo piece are then brought together by a suitable clamping device, such as the piece of wire twisted as shown in Fig. 3, and a ferrule D is then driven on to the end of the bamboo piece. A nut E is then screwed up on the bolt and by a manipulation of the nut in an obvious manner the plug is drawn toward the end of the bamboo piece as far as possible, a washer or plate being interposed between the nut and the end of the bamboo during the pulling out of the plug. The small ferrule A is then driven up after the plug as far as possible so that a construction like that shown in Fig. 4 is produced.

It is to be noted that the slightly conical character of the plug permits it to fit the shape which the inside of the bamboo piece ultimately takes, and that when the joint is completed the plug is held absolutely immovably in place. Furthermore, the plug not only engages the comparatively weak inner fibers of the bamboo, but it occupies an enlarged portion of the bamboo tube which is reduced both to the front and rear of the plug, so that any force which might be applied tending to move the plug is resisted by the entire body of the bamboo. As a result of this construction, the bamboo piece is very readily and cheaply provided with a screw-threaded peg extending from its end in position to be satisfactorily used as a means of union with other parts of any nature whatsoever.

The device is exceedingly strong and can be made very cheaply and it has been demonstrated in practice repeatedly that when this device is used in connection with a piece of bamboo about an inch in diameter a three-eighths inch bolt can readily be twisted off before the bamboo will break, crack or split. In fact the union is in every way as strong as the original material of the bamboo.

It will be evident that the device and method herein made, shown and described, while especially devised for bamboo are equally applicable to use in connection with any other similar tubular growth having the longitudinal fibers of bamboo, and when I

use the word bamboo in this specification and claims, I do so in a broadly generic sense intending thereby to cover not only the substance which is technically known as bamboo but other similar hollow reed like tubular growth, which can be used for similar purposes.

I realize that considerable variation is possible in the details of construction of my improved device without departing from the spirit of my invention, and I do not intend, therefore, to limit myself to the specific form herein shown and described.

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

1. The combination with a tube of bamboo of a ferrule on the tube, the tube being split above the ferrule, a plug of larger diameter than the tube driven into the same, and a second ferrule placed around the free-ends of the sections to contract the same to embrace the plug.

2. The combination with a tube of bamboo of a ferrule on the tube, the tube being split above the ferrule, a plug of larger diameter than the tube driven into the same, and a second ferrule placed around the free-ends of the sections to contract the same to embrace the plug, the said first ferrule being forcibly drawn toward the second ferrule to embrace the plug tightly between them.

3. The combination with a tube of bamboo, and a ferrule on the tube, the tube being split above the ferrule to form sections, of a frusto-conical plug forced into the split part of the tube, and a second ferrule placed around the free-ends of the sections of the tube to contract the same to embrace the plug, the plug being forcibly drawn into said contracting space.

4. The combination with a tube of bamboo, and a ferrule on the tube, the tube being split above the ferrule to form sections, of a frusto-conical plug forced into the split part of the tube, and a second ferrule placed around the free-ends of the sections of the tube to contract the same to embrace the plug, the plug being forcibly drawn into said contracted space, and the first ferrule being driven toward the plug after such

drawing of the plug for the purpose set forth.

5. The combination with a tube of bamboo split at its end, of a plug of greater diameter than the tube and placed therein to expand the tube opposite said plug, means for preventing the expansion of the tube in advance of the plug, means for contracting the tube in the rear of the plug, and means for drawing the plug forcibly into the contracted part.

6. The combination with a tube of bamboo split at its end, of a frusto-conical plug of greater diameter than the tube and placed therein with its smaller end toward the end of the tube, whereby the tube is expanded opposite the larger end of said plug, means for preventing the expansion of the tube in advance of the plug, means for contracting the tube in the rear of the plug, and means for drawing the plug forcibly into the contracted part.

7. The method of providing an anchorage for an attaching plug in a tube of bamboo or other similar tube of vegetable fibrous growth, which consists in splitting the end of the tube to divide the same into sections, expanding the sections to receive the plug, and contracting the ends of the sections to a less diameter than the plug.

8. The method of securing an attaching plug within a vegetable tubular growth having longitudinal fibers, as bamboo, which consists in placing on said tube near the end thereof means to prevent the splitting of the tube, dividing the tube beyond said means into separate sections longitudinally, inserting in such divided portion a plug of greater diameter than the diameter of the tube, contracting the divided portion of the tube beyond the plug, placing binding means about such contracted portion to prevent the expansion thereof, and forcibly drawing the plug into such contracted portion for the purpose set forth.

JOHN F. SANDELL.

In presence of—

A. U. THORSEN,
R. A. SCHAEFER.