

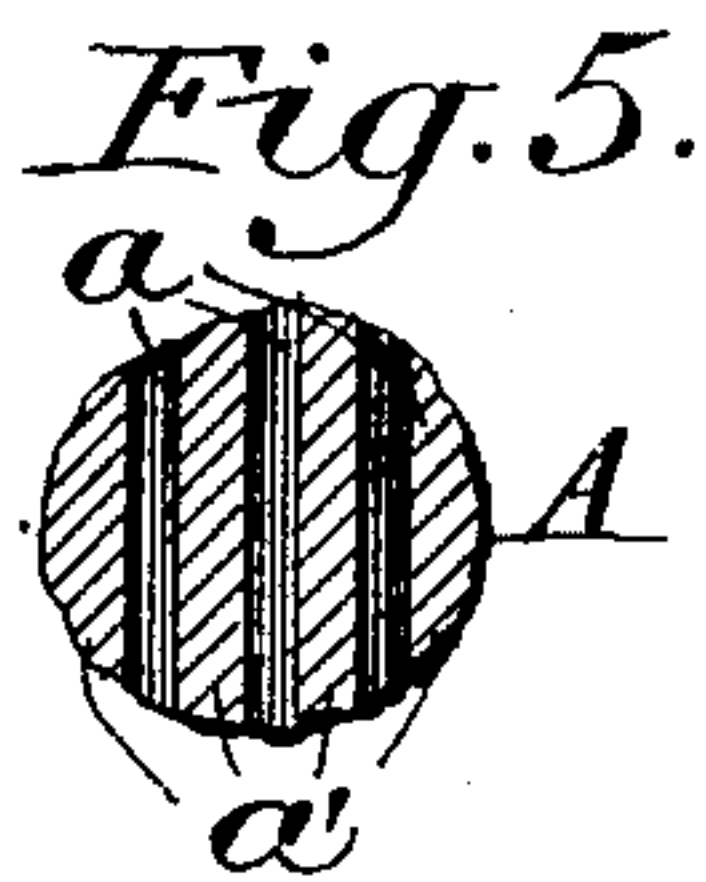
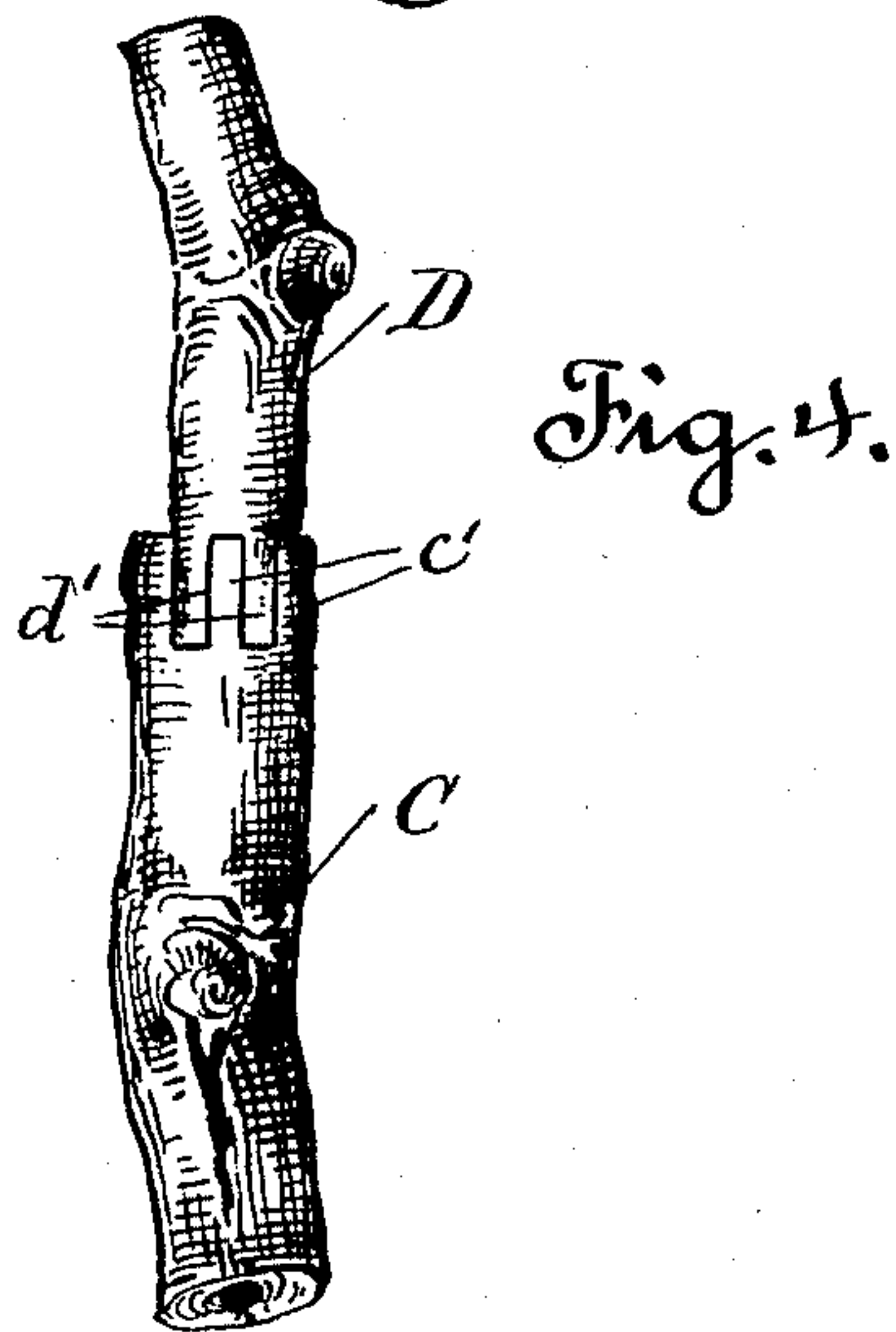
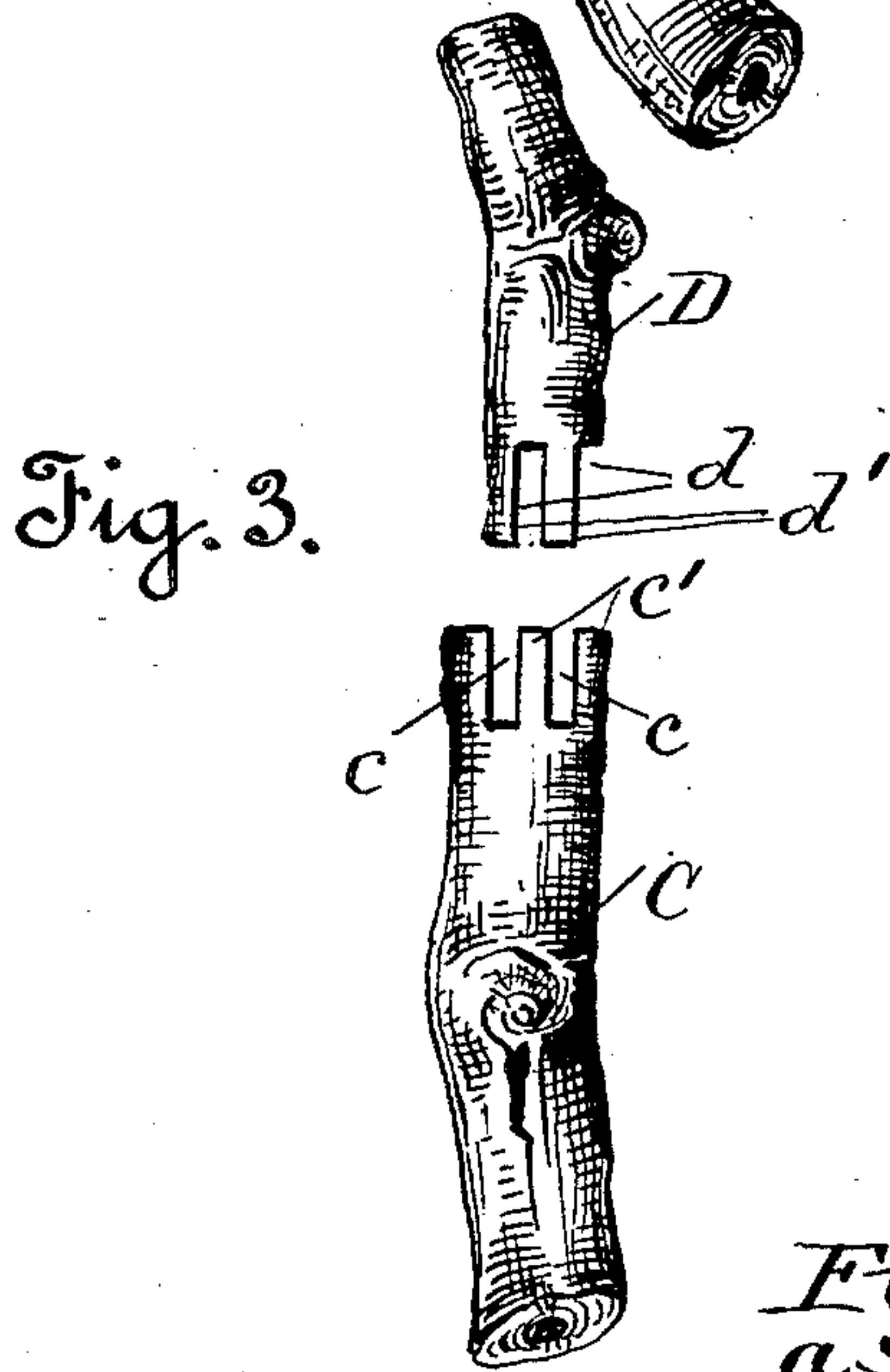
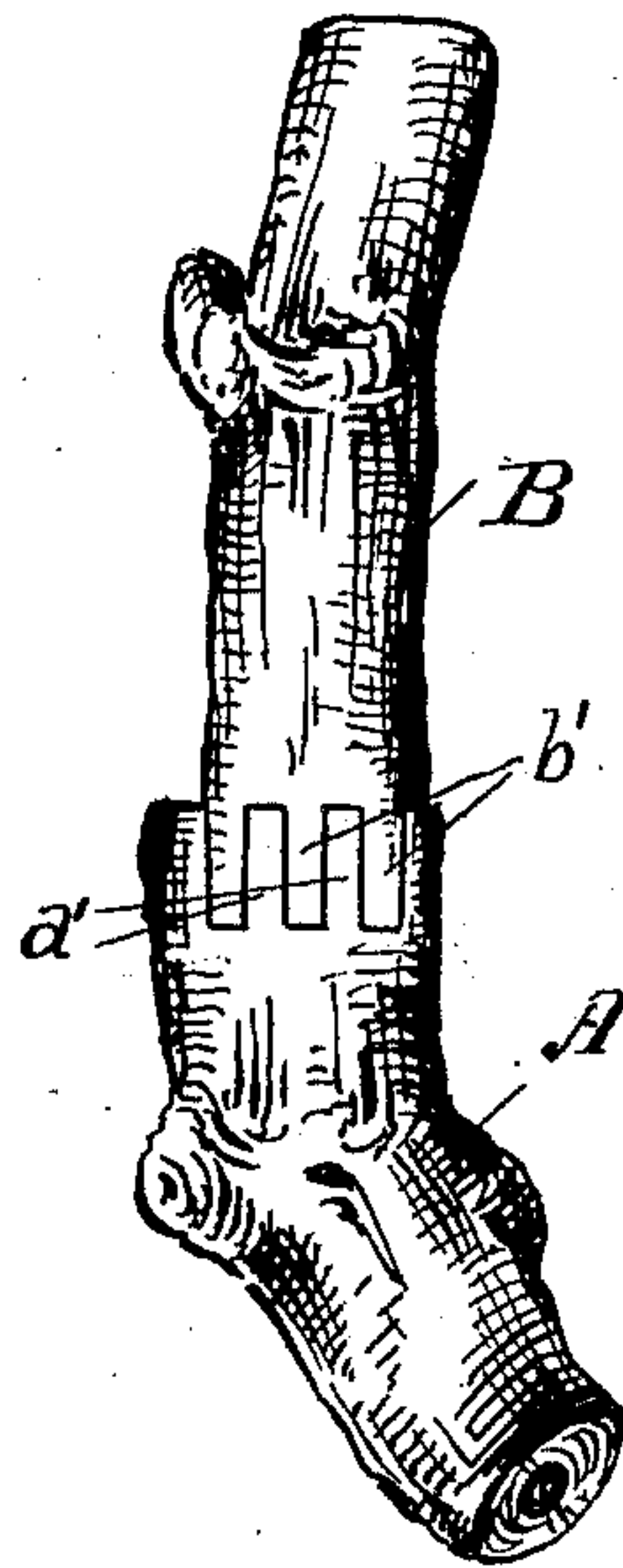
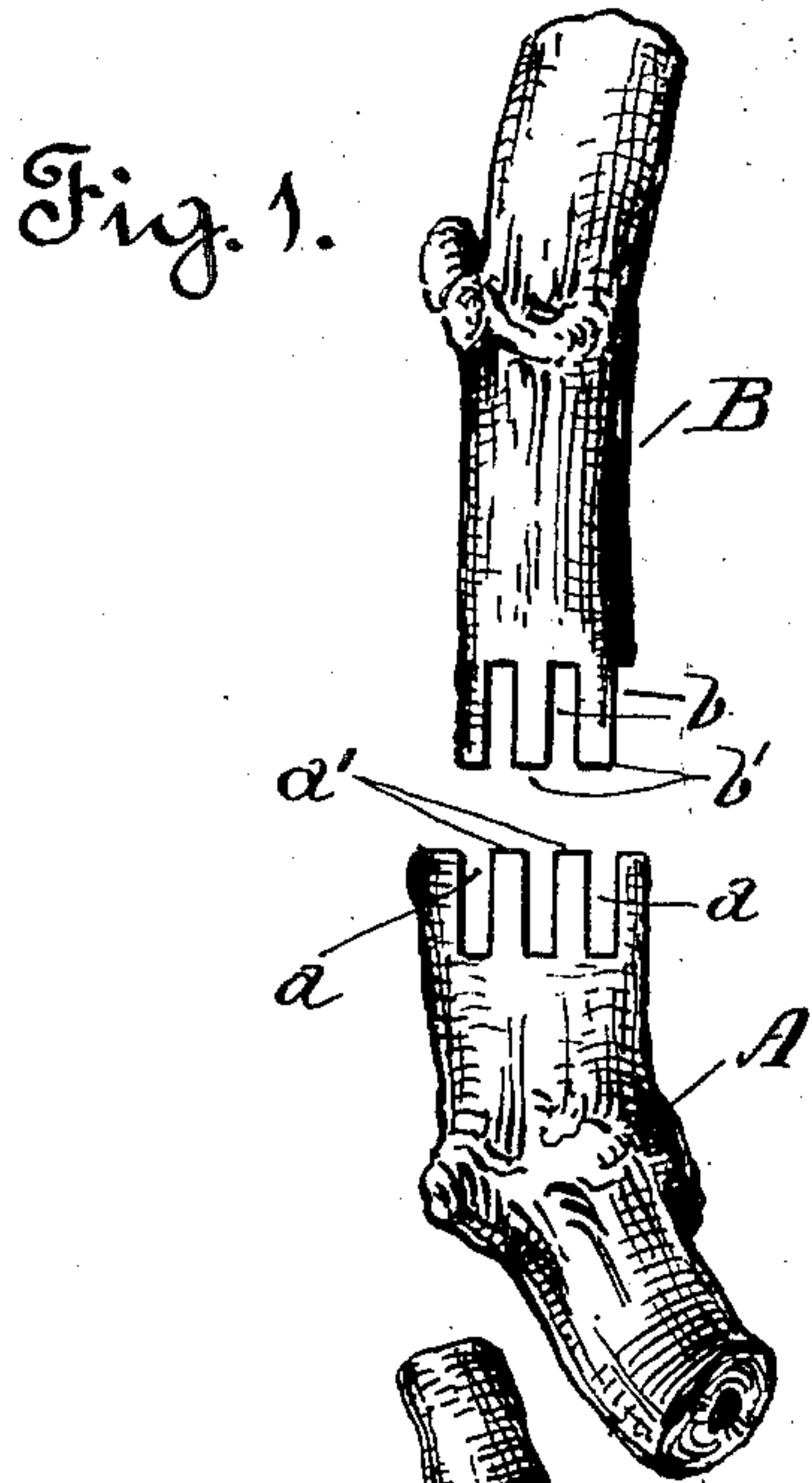
No. 713,949.

Patented Nov. 18, 1902.

J. B. BURRELL.  
GRAFTING.

(Application filed Mar. 24, 1902.)

(No Model.)



Witnesses.

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# UNITED STATES PATENT OFFICE.

JAMES BIRNEY BURRELL, OF WRIGHTS, CALIFORNIA.

## GRAFTING.

SPECIFICATION forming part of Letters Patent No. 713,949, dated November 18, 1902.

Application filed March 24, 1902. Serial No. 99,570. (No specimens.)

*To all whom it may concern:*

Be it known that I, JAMES BIRNEY BURRELL, a citizen of the United States, residing at Wrights, Santa Clara county, State of California, have invented certain new and useful Improvements in Grafting; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the art of grafting; and it consists in an improved method or process of forming the graft lock or joint between the stock and scion, and in the novel graft lock or joint itself as the product of said process or method.

The essentials of successful grafting, in general terms, are extensive and close contact of the cambium layers of stock and scion and a sufficiently strong and tight lock or joint to avoid displacement or separation. These results it is the object of my invention to secure.

To these ends my process or method consists, first, in making in all the twigs, both stocks and scions, clefts of equal width separated by tongues of equal thickness, said thickness of the tongues being proportioned relatively to the width of the clefts as to permit the tongues to enter and to be held in the clefts by the spring of the material, and, second, in fitting the tongues of one twig into the clefts of the other. My graft lock or joint, which is the result of this method or process, consists of interengaging clefts and tongues on the stock and scions, said clefts being of equal width and said tongues being of equal thickness, the thickness of the tongues being so proportioned relatively to the width of the clefts that the tongues fit and are held in the clefts with pressure due to the spring of the material.

In the accompanying drawings I illustrate the steps of my method and the resulting lock or joint.

Figure 1 shows the stock and scion separated and provided with three operative clefts and tongues. Fig. 2 shows the stock and scion of Fig. 1 fitted together to form the graft lock or joint. Fig. 3 shows the stock and scion separated and provided with two operative clefts and tongues. Fig. 4 shows the stock and scion of Fig. 3 fitted together

to form the graft lock or joint. Fig. 5 is a top plan view of the stock A.

Referring to Fig. 1, A is the stock. In the end of the stock, which has previously been cut crosswise, I make clefts *a*, here shown as three in number. They are of equal width, and the tongues *a'*, which separate them, are of equal thickness.

B is the scion, in which I make clefts *b*, which are equal in width to each other and are also equal in width to the clefts *a* of stock A. The tongues *b'* of scion B are equal in thickness to each other and are also equal in thickness to the tongues *a'* of stock A. The end of the scion in which these clefts and tongues are made has previously been cut crosswise and said clefts and tongues are like those of the stock. In the scion B, Fig. 1, I have shown three tongues and three clefts, two of the clefts being perfect and the third being incomplete, because of cutting into the circumference. The thickness of the tongues I make so proportioned relatively to the width of the clefts that upon being fitted into the clefts they will be held therein by pressure due to the spring of the material. To secure this result, a substantial equality between the thickness of the tongue and width of cleft will suffice in many cases, because of the natural inaccuracies of practical cutting; but to insure the result I prefer to make the thickness of the tongues slightly in excess of the width of the clefts, but so slightly that there will be no practical difficulty in forcing the two together. In any case, however, their relative proportions are such that the tongues in entering the clefts will force the cleft-walls to yield sufficiently to take advantage of the spring of the wood to hold the two together in close and tight contact.

In Fig. 2 I show the graft lock or joint of the stock A and scion B as formed. The tongues and clefts of the two twigs are interengaged tightly and closely. Thus a very extensive, close fitting, and tight graft lock or joint is formed. It will require no elastic wrapping to complete or maintain the close contact, for the lock is inherently close fitting on account of the spring of the material. The usual protection of the exposed surfaces



from the weather is made by means of earth or wax, as the circumstances may call for.

In Fig. 3 I show a stock C, previously cut crosswise, with two operative clefts *c* and  
 5 tongues *c'* and a scion D with two operative tongues *d'* and two clefts *d*, one of the latter intersecting the circumference. The lock formed by the engagement of these twigs is  
 10 shown in Fig. 4 and presents extensive contact of cambium surfaces and a close-fitting and tight graft-joint. It will be seen that in thus making a plurality of clefts and  
 15 tongues there will usually be, according to the number formed and the diameter of the twig, one or more incomplete clefts by reason of the cut intersecting the circumference  
 20 and one or more outside tongues with the bark uncut and not necessarily having a thickness to enter a cleft, as they may not be required to so enter, but will lie on the outside. This,  
 however, is merely incidental to the practice; but for this reason in the best practice of the  
 25 process it will be necessary to form a sufficient number of clefts and tongues to materially increase the number and extent of contact-surfaces and to make a tight close lock. I  
 therefore express this idea by the term "plurality" as applied to the number of such clefts  
 30 and tongues. A plurality of clefts is further distinguished by the result that stock and scion may be united in substantial alinement, making a neat joint, and without such exposed  
 shoulders or corners as would follow a union by means of a single cleft, which would  
 35 result in throwing the two twigs materially to one side of each other; but the more vital essential of my method and graft-lock lies in the accurately-determined relative widths  
 and thicknesses of the clefts and tongues in

both twigs, enabling the work to be done expeditiously and accurately by such instrumentalities as may be employed for the purpose  
 and, moreover, forming the necessary close and tight lock, thereby distinguishing from  
 45 the common cleft-grafting, in which a single cleft is made in the stock and a tongue is roughly whittled by hand from the scion and  
 which results in a loose fit, requiring wrapping to hold the parts in contact and to prevent  
 50 their displacement.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The process of grafting herein described, which consists first in making in both twigs, stock and scion, clefts all of equal width, separated by tongues all of equal thickness, the  
 55 thickness of the tongues being slightly greater than the width of the clefts whereby the tongues fit and are held in the clefts with pressure due to the spring of the material, and  
 60 second, in fitting the tongues of one twig into the clefts of the other.

2. A graft lock or joint consisting of inter-engaging clefts and tongues on the stock and  
 65 scion, said clefts being of equal width and said tongues being of equal thickness, the thickness of the tongues being slightly greater than the width of the clefts whereby the  
 70 tongues fit and are held in the clefts with pressure due to spring of the material.

In witness whereof I have hereunto set my hand.

JAMES BIRNEY BURRELL.

Witnesses:

ROBT. LOOSEMORE, Jr.,  
 H. H. MOSER.