

(No Model.)

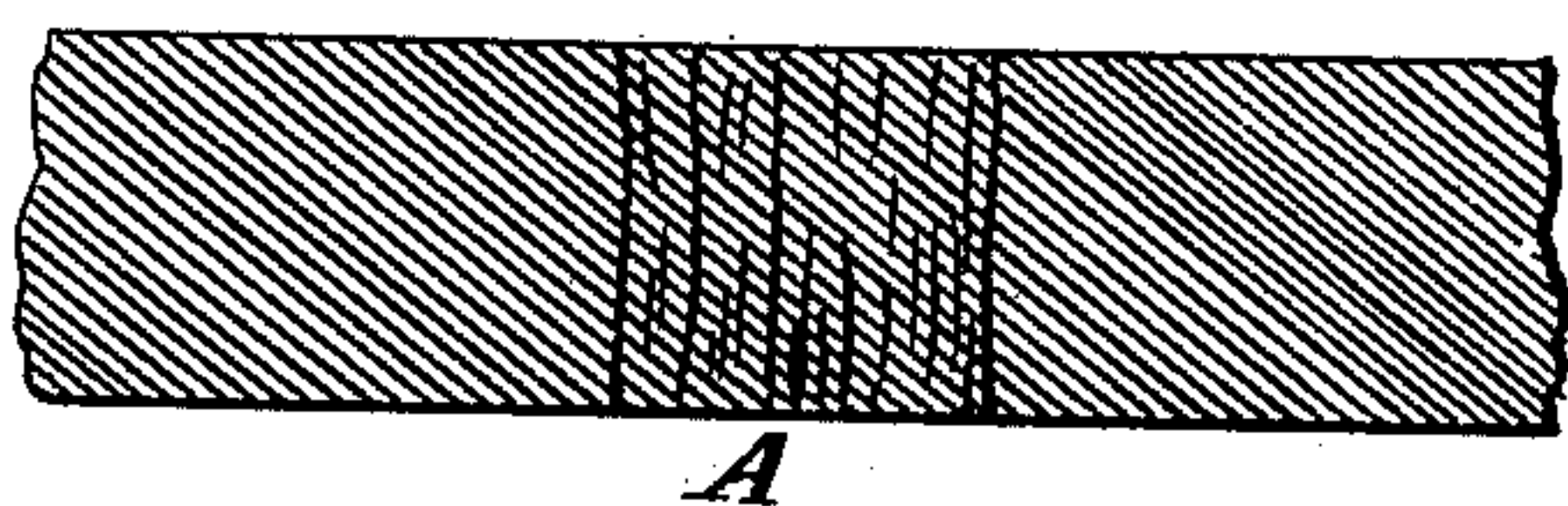
B. HOLMES.

METHOD OF CLOSING THE PORES OF KNOTS IN STAVES, &c.

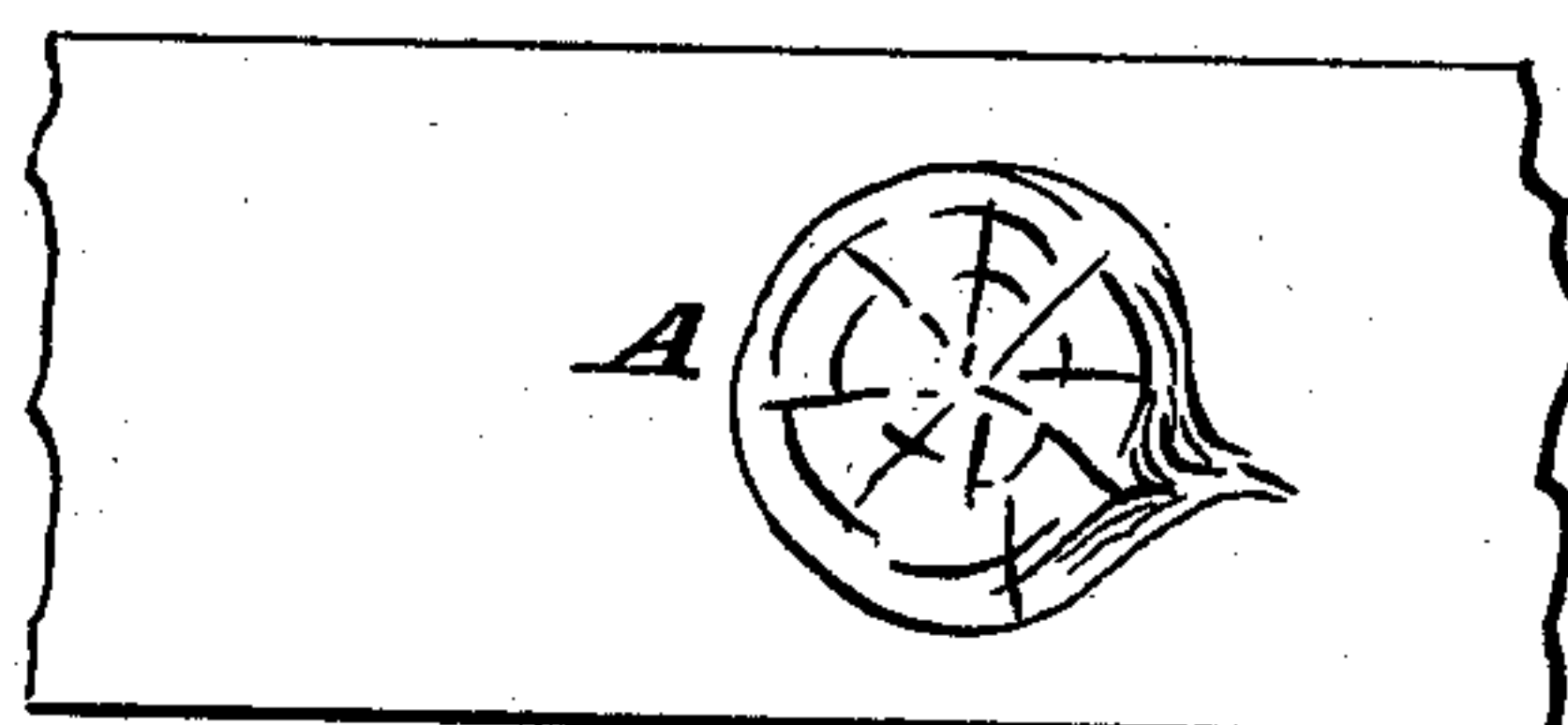
No. 256,568.

Patented Apr. 18, 1882.

*Fig. 1*



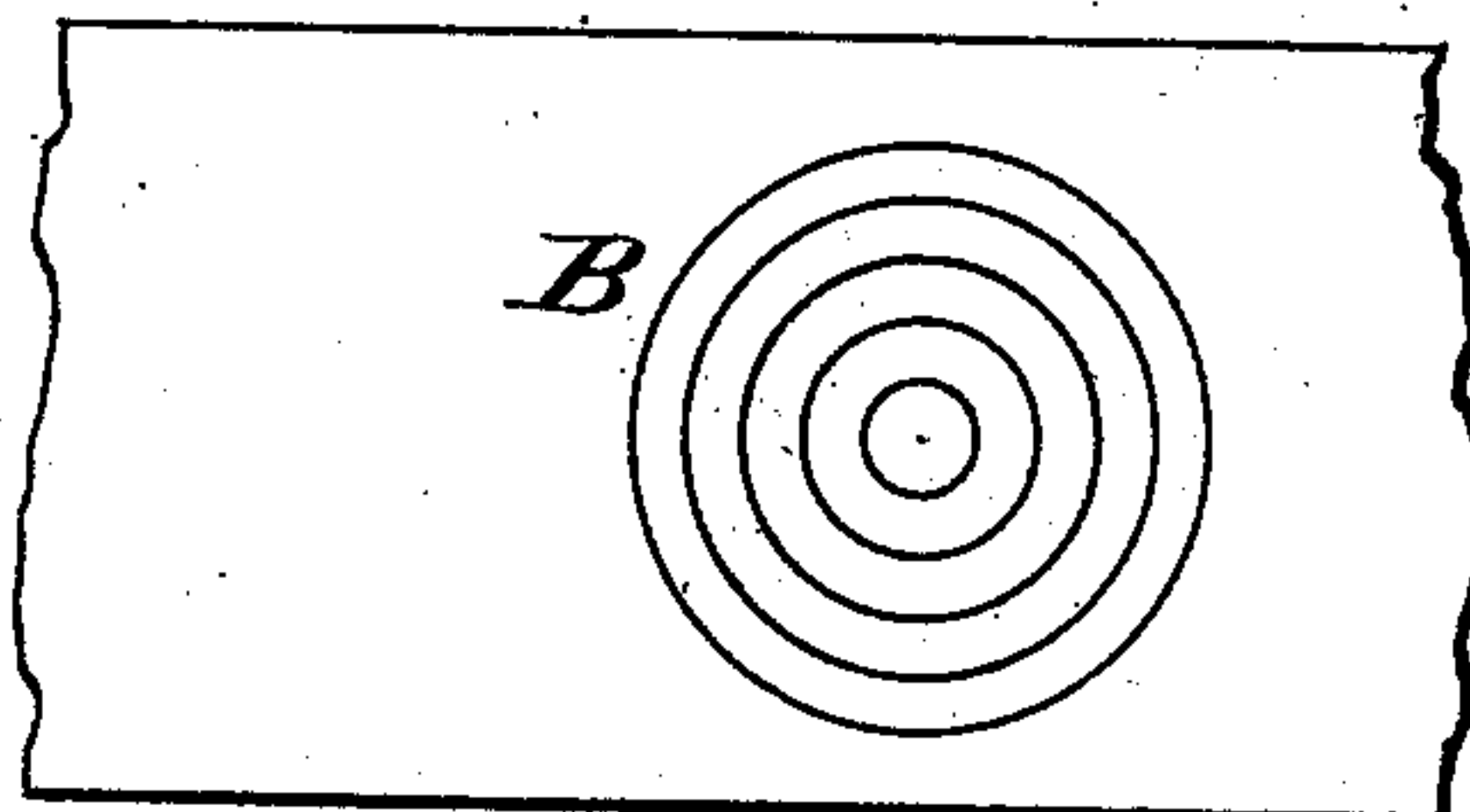
*Fig. 2*



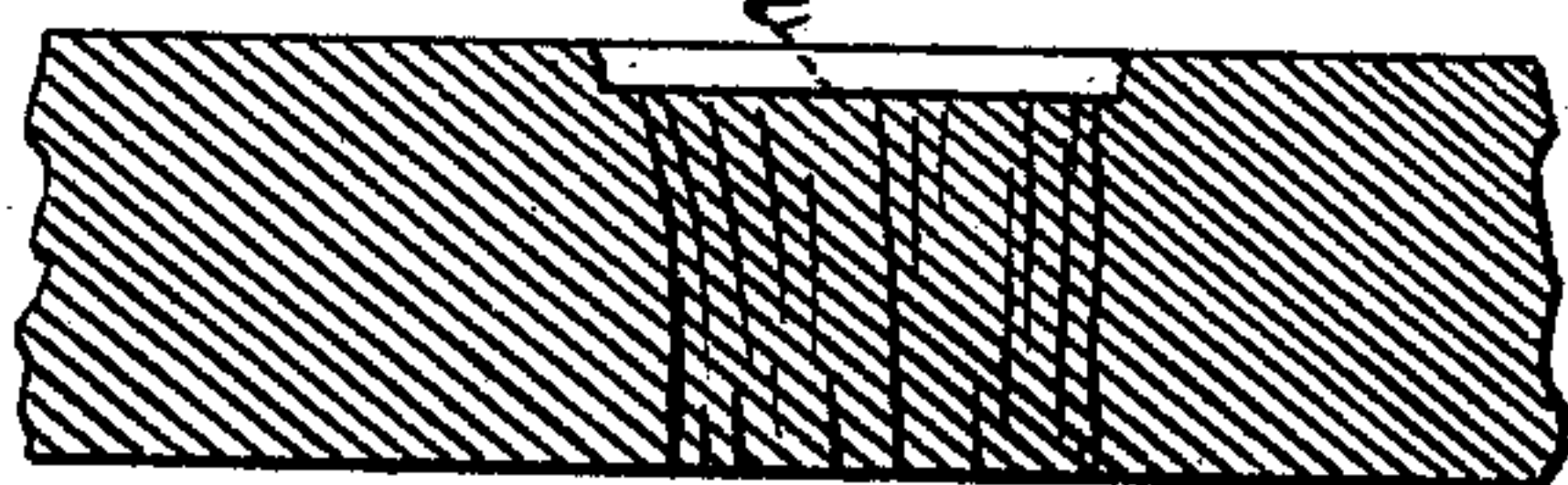
*Fig. 3*  
*B*



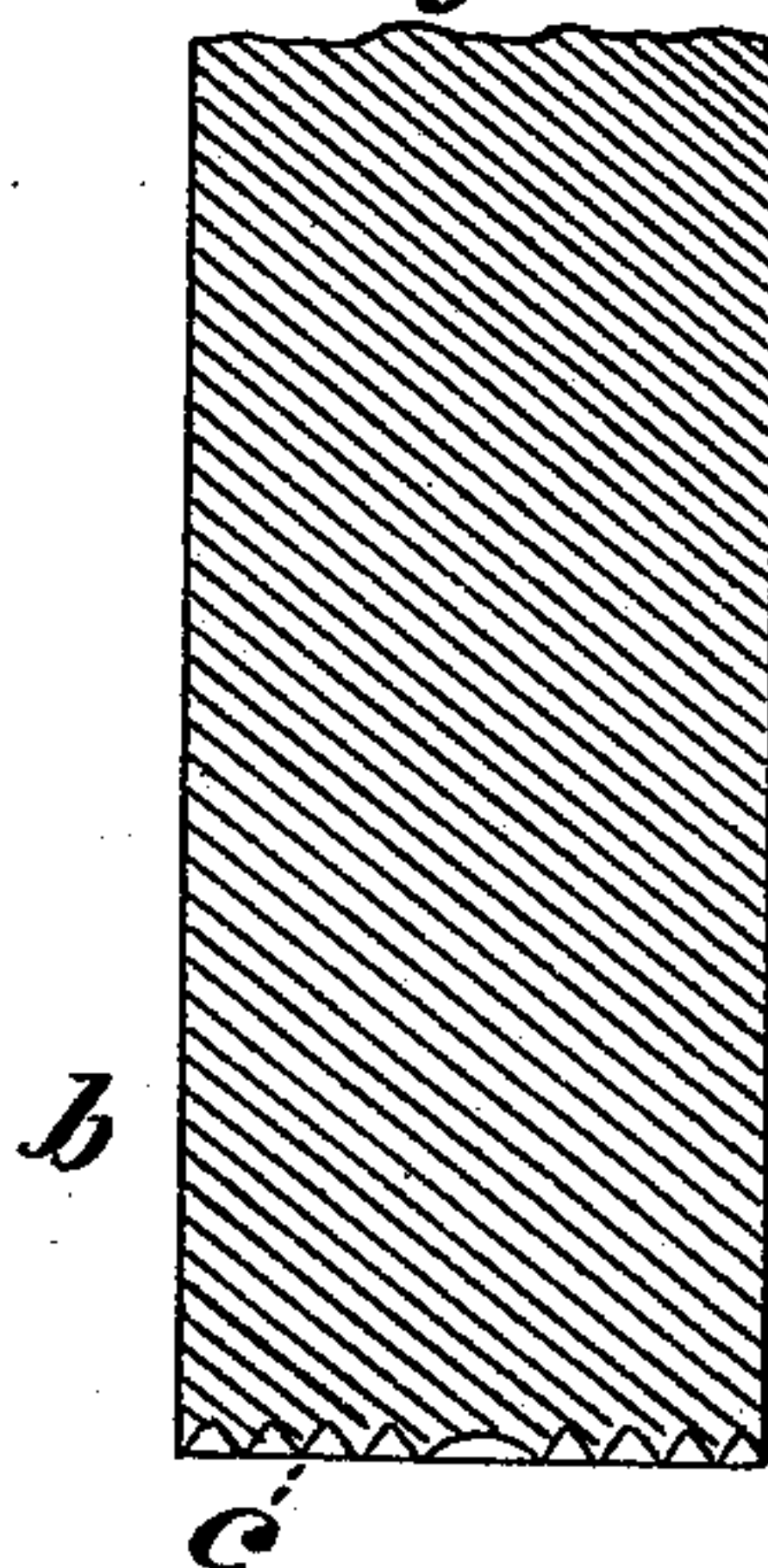
*Fig. 4*



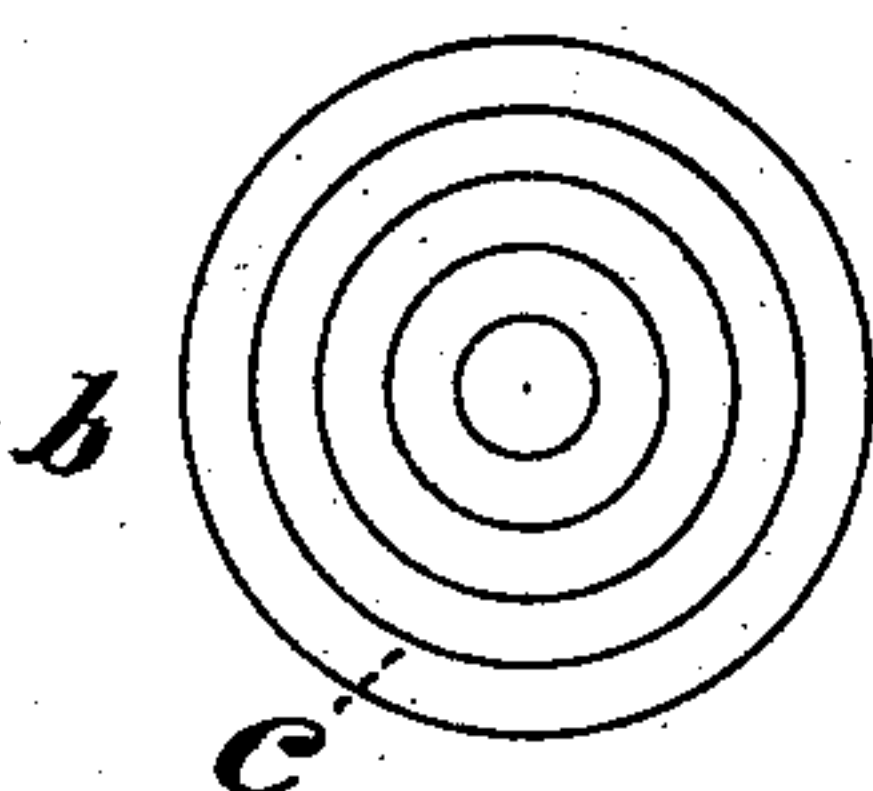
*Fig. 5*  
*e*



*Fig. 6*



*Fig. 7*



*Witnesses.*

*A. J. Sangster*

*Amos W. Sangster,*

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*Britain Holmes*

*By James Sangster*  
*Atty*



# UNITED STATES PATENT OFFICE.

BRITAIN HOLMES, OF BUFFALO, NEW YORK, ASSIGNOR TO HIMSELF AND  
EDWARD HOLMES, OF SAME PLACE.

## METHOD OF CLOSING THE PORES OF KNOTS IN STAVES, &c.

SPECIFICATION forming part of Letters Patent No. 256,568, dated April 18, 1882.

Application filed November 23, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, BRITAIN HOLMES, a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented certain new and useful improvements in the mode of treating knots or other defects in wood, boards, or other lumber, or barrels or other wooden vessels for holding liquids, so as to make them water-tight, of which the following is a specification.

It is well-known that a knot and the grain of the same runs in a direction across the grain of the wood and that it is porous in the direction of its grain, thereby leaving openings through which the water can pass; and it is further well-known that a knot is liable to shrink and leave openings around it, so that the water or air can pass freely through, and it often happens that a knot will shrink enough to drop out of its seat.

The object of my invention is to render those portions of wood having knots or other defects water and gas proof; and it consists in subjecting the knot to sufficient pressure on either one or both sides to close the pores or other openings or defects and harden the surface of the same, so as to render it water-proof.

My invention further consists in employing heat obtained by friction or in any other well-known way in connection with the pressure where pine or other woods containing resin are to be treated, so as to melt the resin, and thereby assist in rendering such knots or other defects water-proof, all of which will be more clearly hereinafter shown and described by reference to the accompanying drawings, in which—

Figure 1 is a section through a piece of wood and a knot before being treated by my process. Fig. 2 is a top view of a piece of wood and a knot before treatment. Fig. 3 is a section through a knot and piece of wood after being treated by my process. Fig. 4 is a top or face view of a piece of wood and a knot or other defect so treated; and Fig. 5 represents a section through a piece of wood and a knot, showing a slight change in the treatment of the same. Fig. 6 represents a central section through a portion of a suitable device for treating knots or other defects according to my process, and Fig. 7 is a face view of the same.

A in Figs. 1 and 2 represents an ordinary knot before treatment. B in Figs. 3 and 4 represents the same after being treated by my method and rendered water-proof.

In shrinking the knot not only shrinks away from the wood around it, so that it often falls out, but it also cracks across the face, thereby leaving openings that allow water or air to pass freely through.

In carrying my invention into practice I find that the most convenient and practical way is to subject the knot and the wood immediately surrounding it to a heavy pressure from a rapidly revolving tool, *b*, having a series of circular grooves, *c*, in its face, similar to that shown in Figs. 6 and 7.

The tool may be used in any upright and well-known drilling-machine capable of a vertical as well as a revolving movement, so that the required pressure may be given while the tool is turning. The turning of the tool by its friction generates heat enough to melt the resin in the knot, and also assists in condensing and hardening the wood, thereby forcing all portions of the wood and knot closely together. Furthermore, by its heat and friction it partly chars the face of the knot and wood and renders it very hard and compact and water-proof.

The tool should be large enough to a little more than cover the knot, so as to completely close any opening between the wood and the knot by pressing the fiber of the two together.

If desired, the tool *b* may be used without being made to revolve; but the pressure in that case would have to be much greater; and a flat-faced tool may be used; but this would also require a much greater pressure.

I claim as my invention—

The within-described mode of treating knots or other defects in wood to render them water-tight, consisting in subjecting the knot and the wood immediately surrounding it to a heavy pressure by means of a tool, *b*, or its equivalent, either with or without a revolving motion, substantially as described, whereby the knot is securely fastened in place and rendered water-tight, as specified.

BRITAIN HOLMES.

Witnesses:

JAMES SANGSTER,  
HUGH SANGSTER.