

No. 682,620.

Patented Sept. 17, 1901.

A. O. HUBBARD.
WOOD AND WIRE FABRIC.
(Application filed Feb. 16, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

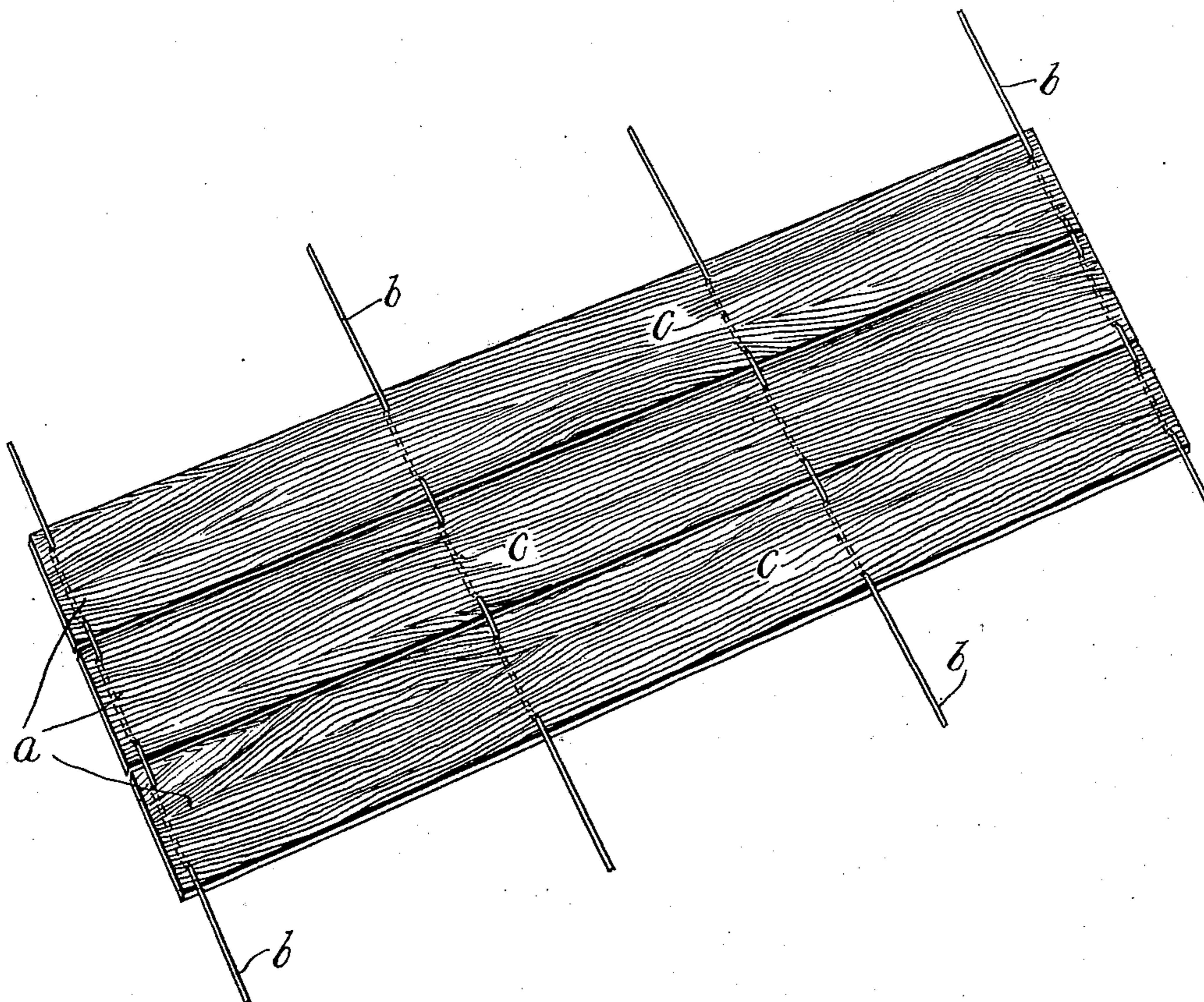
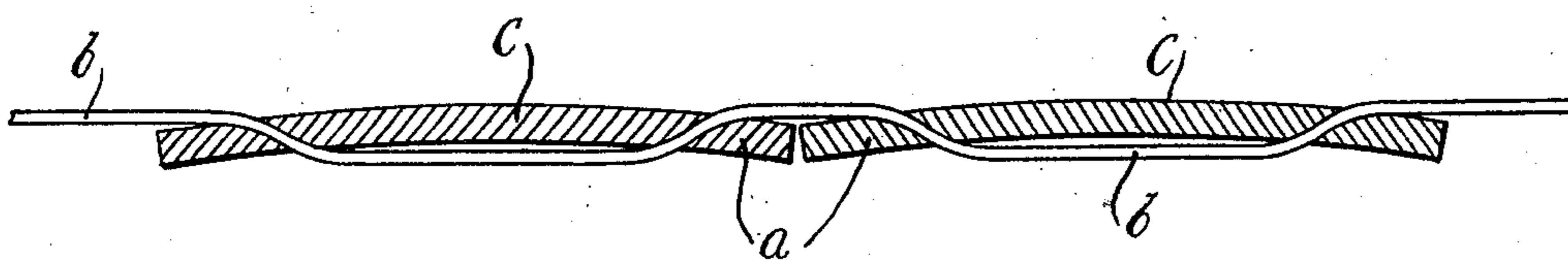


Fig. 2.



Witnesses

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Fig. 3.

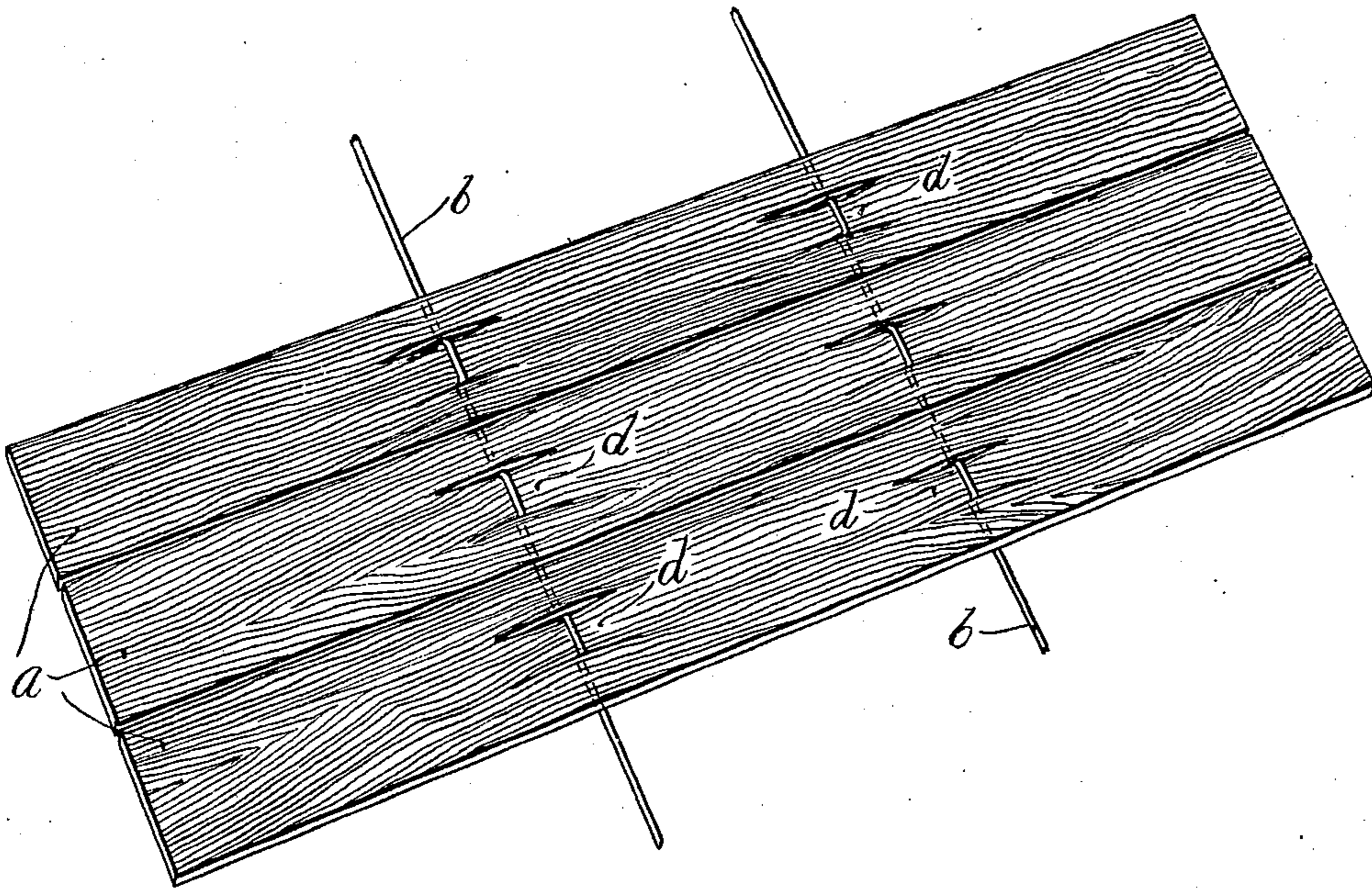
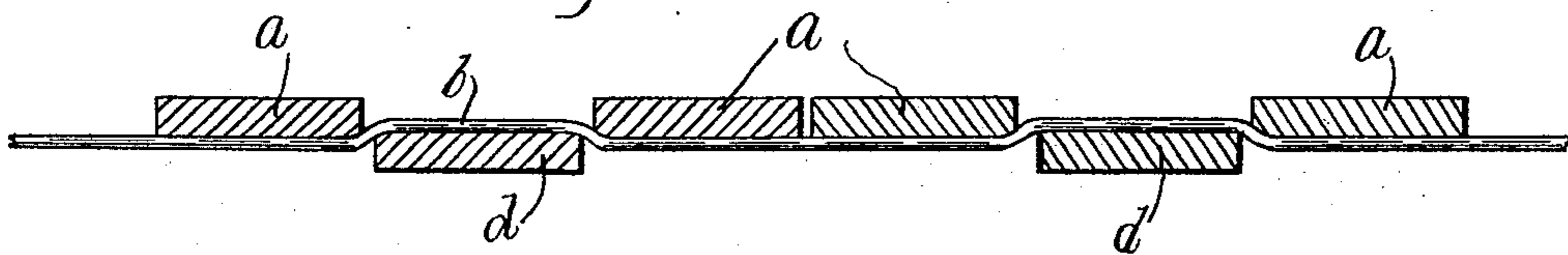


Fig. 4.



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UNITED STATES PATENT OFFICE.

ARTHUR O. HUBBARD, OF MINNEAPOLIS, MINNESOTA.

WOOD-AND-WIRE FABRIC.

SPECIFICATION forming part of Letters Patent No. 682,620, dated September 17, 1901.

Original application filed November 5, 1900, Serial No. 35,441. Divided and this application filed February 16, 1901. Serial No. 47,597. (No specimens.)

To all whom it may concern:

Be it known that I, ARTHUR O. HUBBARD, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Wood-and-Wire Fabric; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention has for its object to provide a wood-and-wire fabric well adapted for use in the manufacture of crates, boxes, baskets, and other similar articles.

To this end the invention consists of the novel fabric or product hereinafter described, and defined in the claims.

My improved product is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figures 1 and 2 represent, respectively, in perspective and in cross-section one form of my new fabric or product. Figs. 3 and 4 are views in perspective and cross-section, respectively, showing a modified form of my new fabric.

This application is filed as a division of my pending application, Serial No. 35,441, filed of date November 5, 1900, under title of "Wood-and-wire fabrics and process of making same."

My new fabric consists of wood and wire, wherein the wire is threaded through spring spans of the wood. Usually the fabric is made up of a series of thin wooden slats or boards *a* and a series of transversely-extended binding-wires *b*, applied to the slats *a* in the manner above noted. It must be understood, however, that instead of using a series of slats or sections of wood disposed in parallel arrangement edgewise in respect to each other the wood might be in a continuous piece and have the wires applied thereto in the manner described.

In accordance with my improved method of making my improved product, as set forth in the said application, of which this case is a division, a spring-span of the slot or wood is bulged laterally, so that the wires may

while straight be threaded between the spring-span and the body of said slat. The wire is thus passed through the sprung span of the slat on a straight line, going twice through the slat from a common side of the same, and hence when the slat is relieved and springs back into normal or flat position the span will embrace the wire with a spring action, thereby slightly kinking the wire and clamping the slat to the wire by the spring tension of the wood. The slat will therefore hold its position on the wire. The slats are indicated by the character *a*, and the wires are indicated by the character *b*. In the construction illustrated in Figs. 1 and 2 the character *c* indicates the spring-span, and in the construction illustrated in Figs. 3 and 4 the spring-span is indicated by the character *d*. In the construction illustrated in Figs. 1 and 2 the slats are bent or bulged transversely, so that the perforations therethrough stand in a straight line, and the straight wire is then threaded through the said perforations on a straight line. In the construction illustrated in Figs. 3 and 4 the spring-span is bulged in one direction and the adjacent portions of the slats are bulged in the reverse direction, so that the wire may be threaded therethrough on a straight line. In both constructions when the slats are relieved of strain the spring-spans and the adjacent portions of the slats spring back onto the wire and slightly kink the same, thereby securing the slats so that they will not slip or slide on the wire. To attain this latter noted result, the wire should be untempered and quite soft or flexible. The fact that the wires may be threaded through the slats without bending is a great advantage, inasmuch as to draw the wires on irregular lines through the same would necessarily weaken the same and, furthermore, would require very considerable force, which of itself would render the process of manufacture slow and much more difficult to perform than when accomplished in accordance with my invention. It is important to note that the wires are threaded through the slats transversely of the grain thereof. This leaves the spring-spans strong and makes it impossible for the wires to cut their way out through the same. In a fabric thus formed it is ob-

vious that the slats can join edgewise in respect to each other with close joints without any interference from the wire, that all the joints between the slots are lapped by the binding-wires, that the slats if not otherwise bound together will flex or bend in one direction in respect to each other by flexure of the wires at the joints between the slats, and that the binding-wires may be of such length as to afford projecting ends adapted to be twisted together to bind the fabric about any package to which it may be applied as a case, cover, or wrapper. It is preferable that the wood should be sprung to afford the wire-embracing span on what is to be the face or exterior surface of the fabric when in use as a case, crate, box, or wrapper. By thus making the span of the wood on the face side of the fabric the wires will lap the joints between the slats on the exterior or face side of the fabric, and this will better prevent the outturning of the edges of the slats or warping thereof under the action of the sun or other heat.

A fabric of this sort finds a very large field of use for the manufacture of boxes, crates, drums, or other cases intended only for temporary (such as a single) use and then to be thrown away. The demand for such cases is large for use in shipping a great variety of things—such as meats, vegetables, fruits, &c.—and in this line of trade the question of freight rates is all-important. A fabric of this sort is adapted to be shipped flatwise or rolled up, as may be preferred, and thereby take rank as substantially crude material in the freight classifications, thus securing a low rate as compared with a complete box, crate, or case. The fabric may then be readily converted into the desired case at the place of use by the addition of the necessary end walls or other parts. Moreover, the great strength secured to the fabric by the wires applied as described enables the use of a cheap grade of wood in the form of thin boards or veneer. Hence the fabric and the cases to be made therefrom are extremely cheap. The cheapness of the structure and the low freight rates available thereto adapt the fabric to the lines of trade above noted.

Another very important advantage secured by this fabric when made up into a case is due to the fact that no projecting wire surfaces protrude on the exterior of the case beyond the plane of the spring-spans which embrace the wires, and hence the case will readily slide over any surface to which it may be applied in loading or unloading. This is a great point for the saving of time, trouble,

wear, and tear. The ordinary woven fabric of wood and wire is not the equivalent of the fabric herein disclosed. Such woven fabrics require much more wire, and the wire must either be very light or the slats be widely spaced in order to permit the wires to pass outward between the joints of the slats, and the fabric as a whole is flimsy and necessarily provided with projecting portions of the wire on its exterior or face, which are bound to catch upon any surface to which it may be applied unless the wires be guarded by raised cleats or other surfaces applied to the face of the fabric. Moreover, in such woven fabrics the slats will not so firmly hold their proper positions in respect to the wire. The fabric illustrated has been shown as made up of a series of pieces of thin wood and a series of binding-wires applied as described; but it will be understood, of course, that the body of wood might be in the form of a continuous piece of veneer or thin board and the binding-wires be, nevertheless, applied thereto in the same way as to the series of slats. If a continuous piece of thin wood should be employed, of course it is equally obvious that any desired number of binding-wires may be applied to the wood.

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

1. As a new article of manufacture, a fabric made up of wood and wire, with the wire threaded through spring-spans of the wood from a single or common side of the same.

2. As a new article of manufacture, a fabric made up of wood and wire, with the wire threaded through spring-spans thereof, transversely of the grain of the wood and from a common or single side of the same.

3. As a new article of manufacture, a fabric made of wood and wire, with the wire threaded through spring-spans thereof, transversely of the grain of the wood and from a single or common side of the same, which wire is kinked by the wood which is sprung back onto the same.

4. A wood-and-wire fabric, made up of a series of parallel slats or sections of thin wood, and a transverse series of binding-wires threaded through spring-spans thereof transversely of the grain of the wood, and from a common side of the slats.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR O. HUBBARD.

Witnesses:

MABEL M. McGRARY,
F. D. MERCHANT.