

No. 897,759.

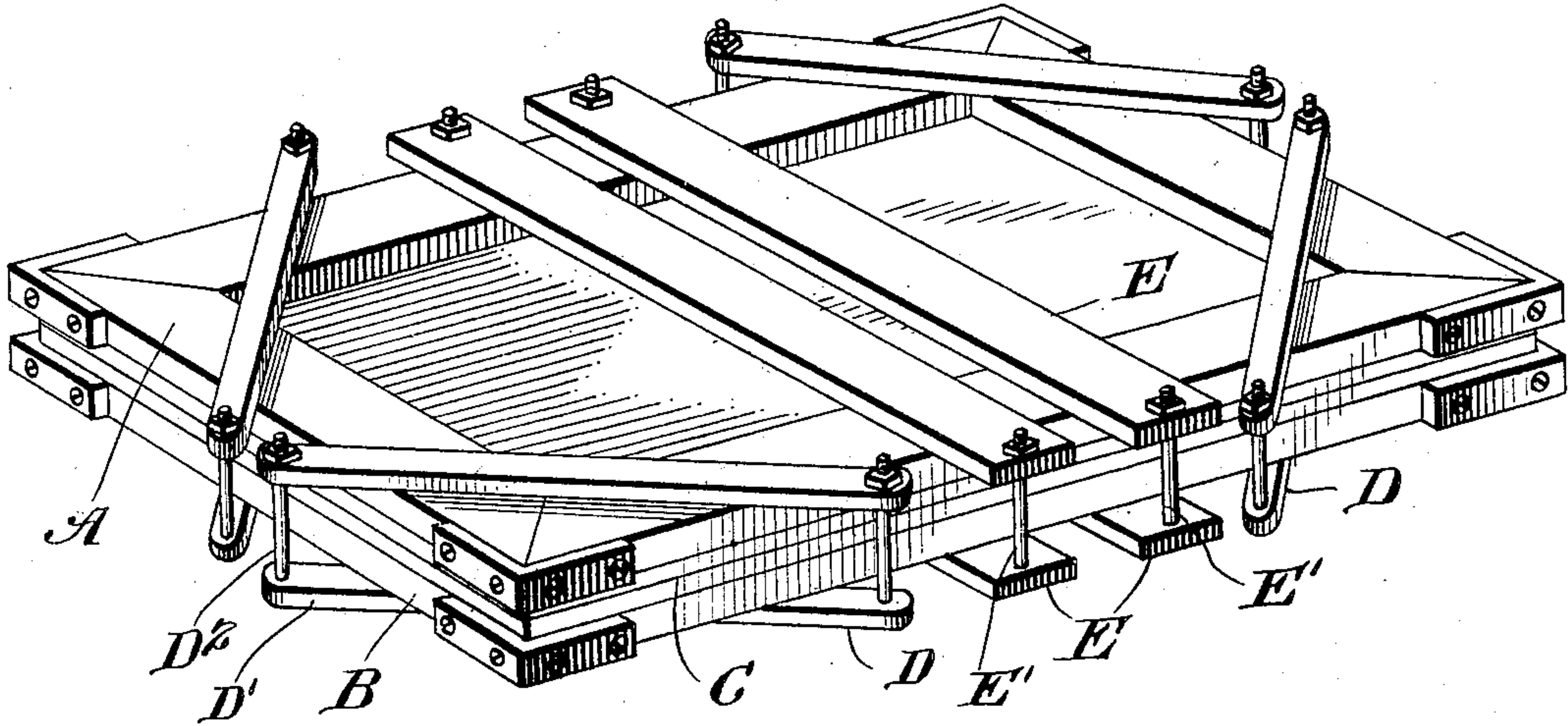
PATENTED SEPT. 1, 1908.

I. W. MARSHALL.  
METHOD OF SOAKING SHEET FIBER.

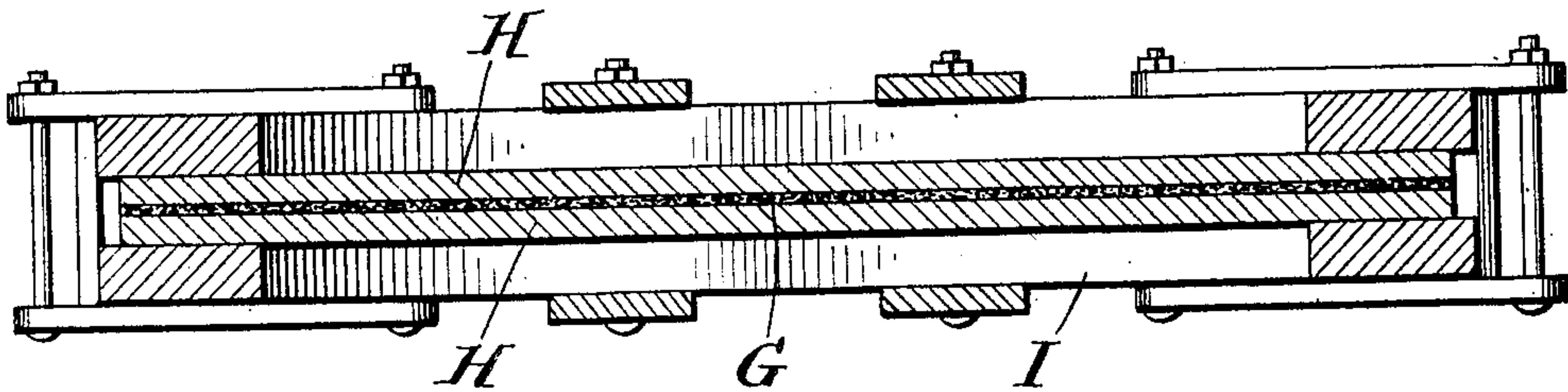
APPLICATION FILED JAN. 13, 1908.

2 SHEETS--SHEET 1.

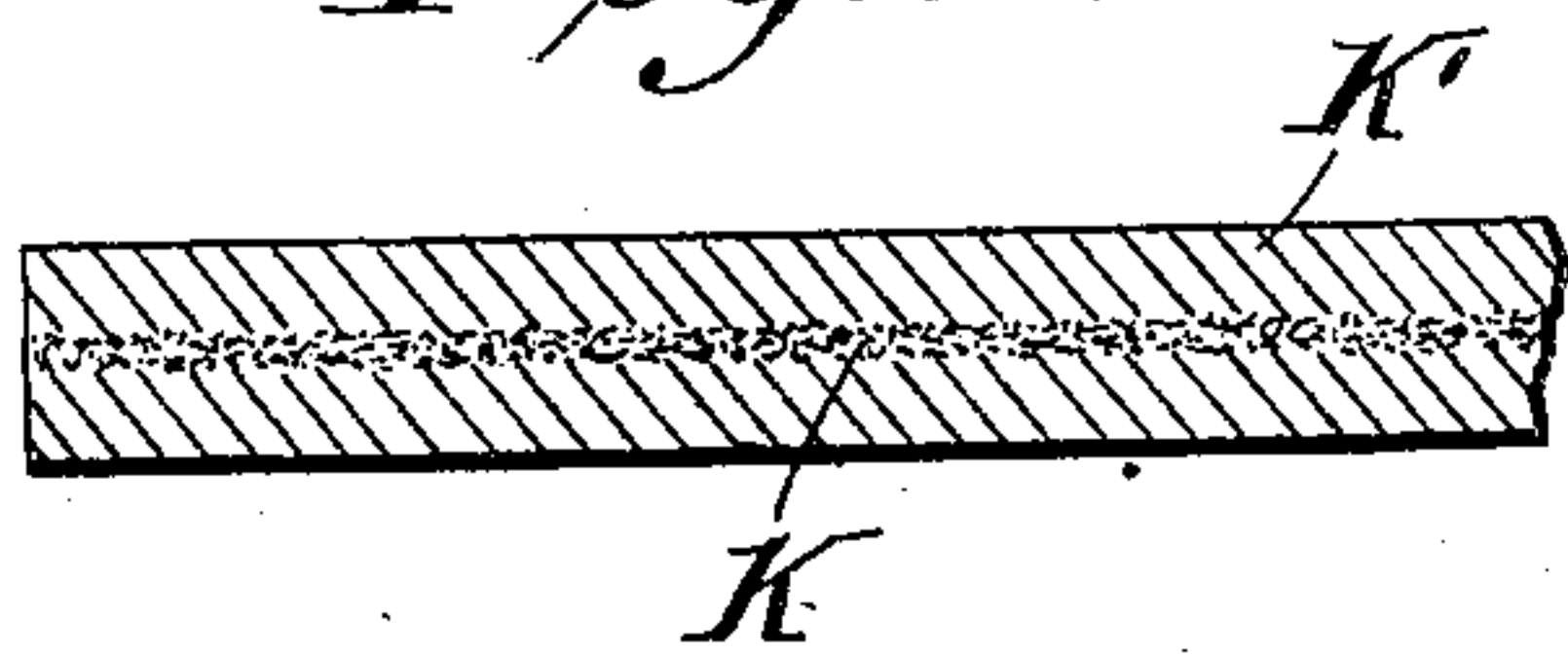
*Fig. 1.*



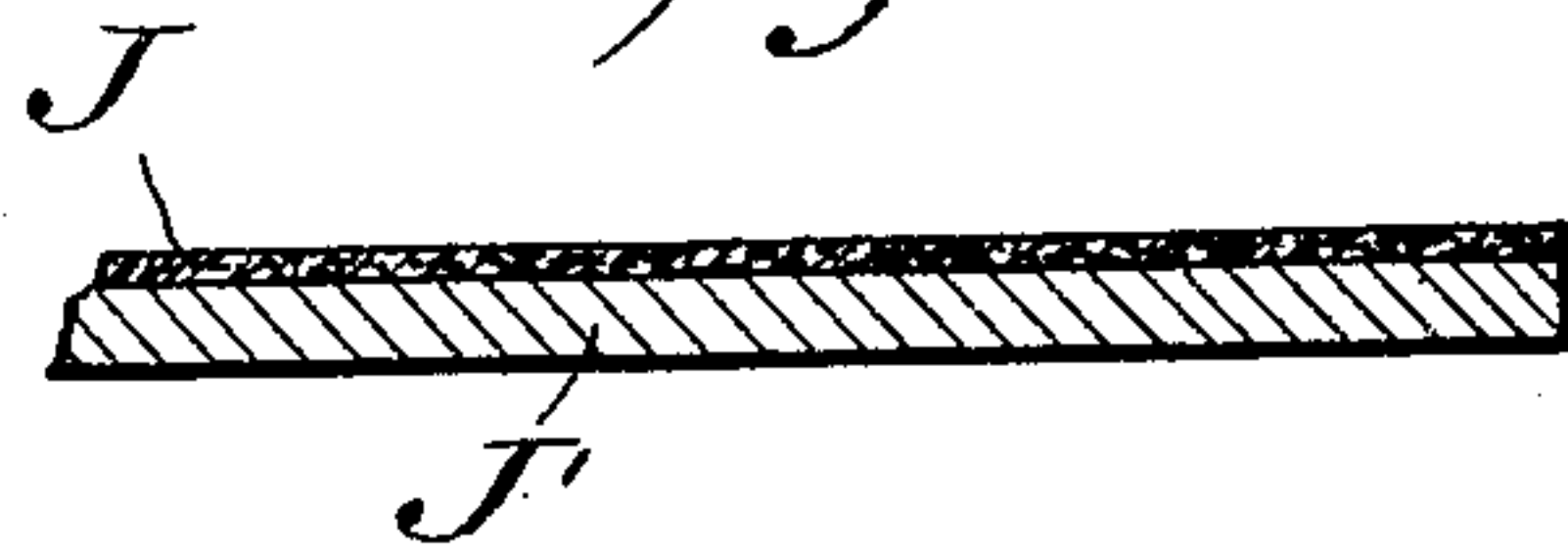
*Fig. 2.*



*Fig. 4.*



*Fig. 3.*



Witnesses

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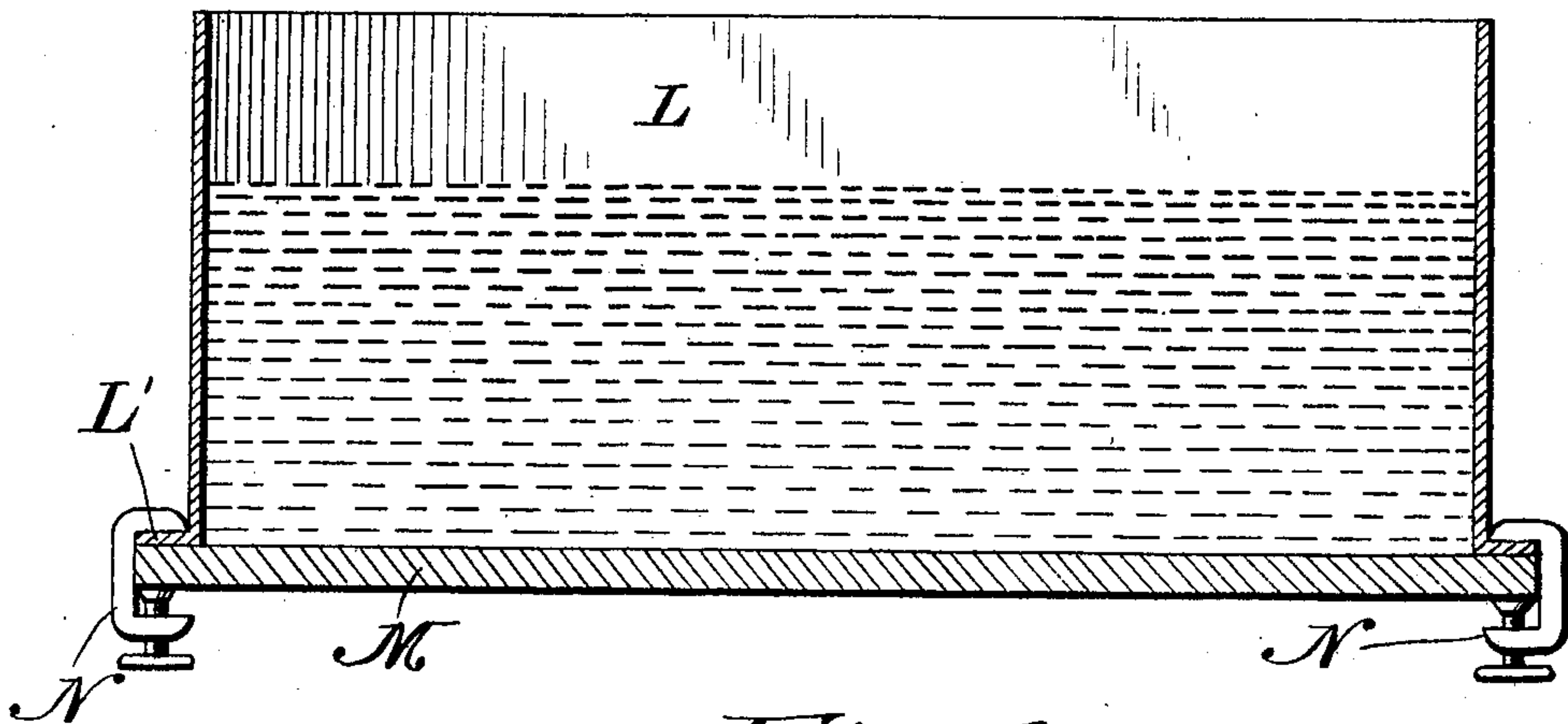
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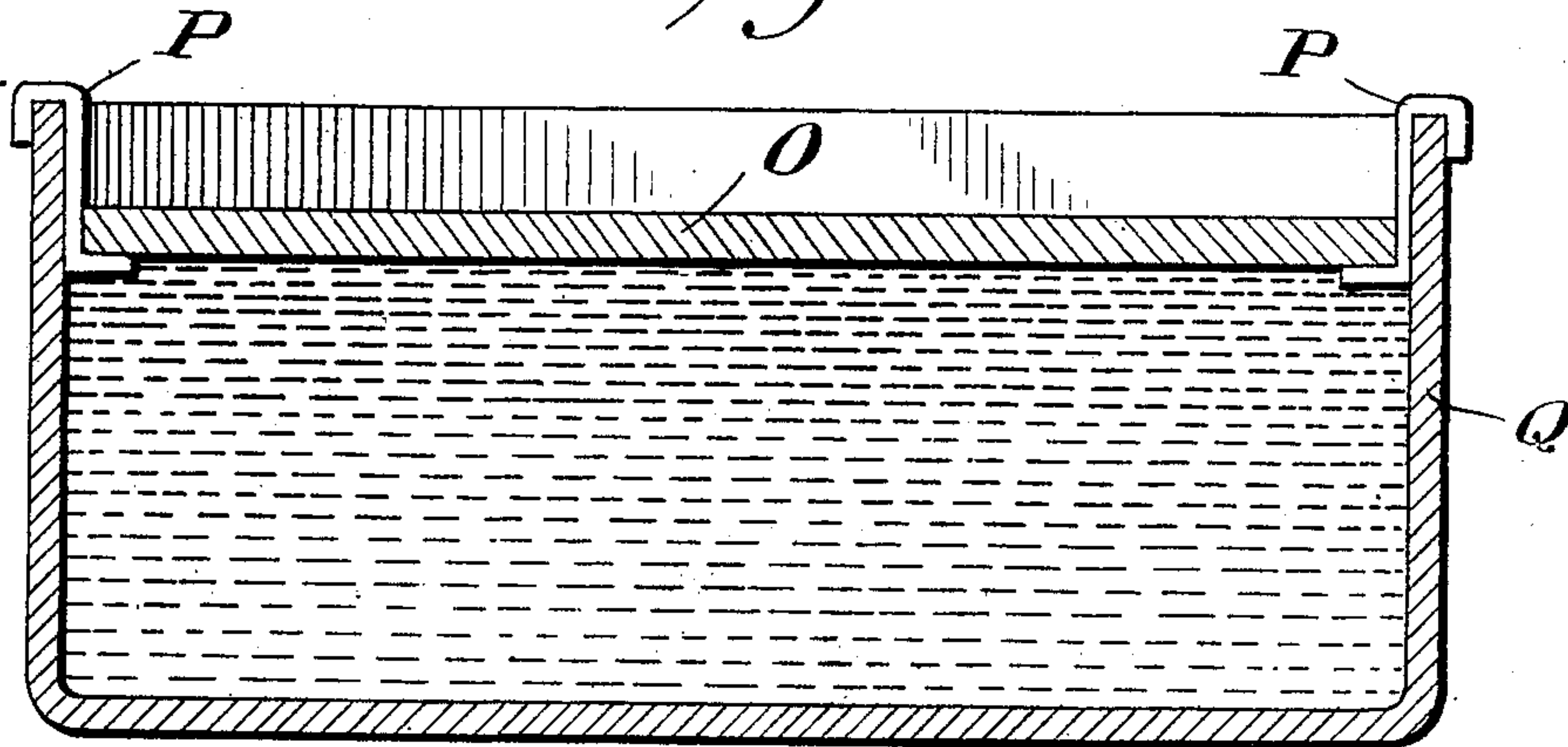
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2 SHEETS—SHEET 2.

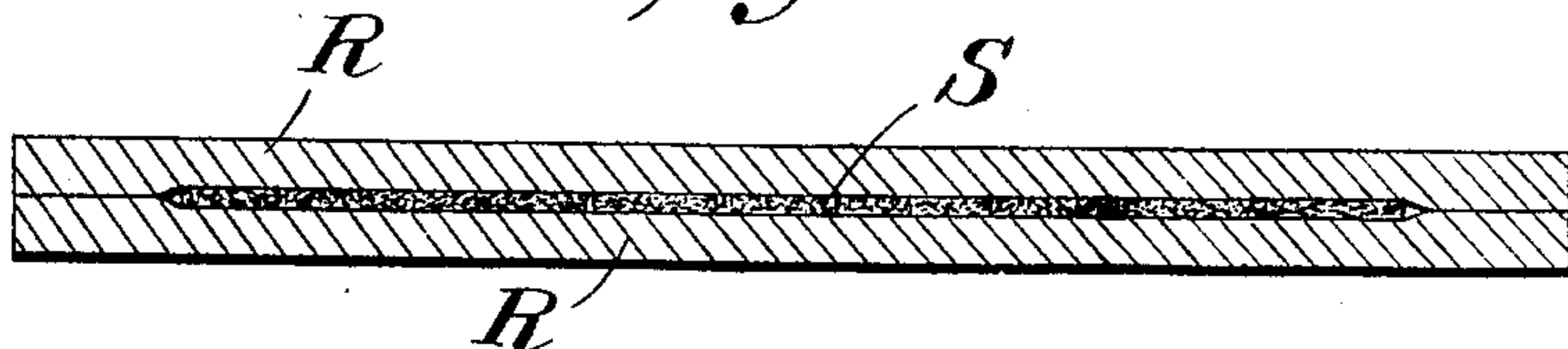
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



Witnesses

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# UNITED STATES PATENT OFFICE.

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## METHOD OF SOAKING SHEET FIBER.

No. 897,759.

Specification of Letters Patent.

Patented Sept. 1, 1908.

Application filed January 13, 1908. Serial No. 410,539.

*To all whom it may concern:*

Be it known that I, ISRAEL W. MARSHALL, a citizen of the United States, residing at Yorklyn, in the county of Newcastle and State of Delaware, have invented certain new and useful Improvements in Methods for Soaking Sheet Fiber, of which the following is a specification.

My invention relates to a method of soaking indurated sheets of fiber, and more particularly for soaking sheets of fiber where a series of fabricated sheets are combined indissolubly into one, the object being to provide a method by which the chemical solution for partially gelatinizing or albuminizing the fibers causing them to coalesce, can be extracted by soaking the sheets in water, without causing the sheets to blister, separate or split.

Heretofore it has been found impossible to successfully manufacture sheets of fiber three quarters of an inch or more in thickness, as when placed in the water, the water enters both sides and the edges at the same time, thereby causing the sheets to expand or swell unequally, forming blisters and separations in the interior of the sheet, and splitting on the edges, which practically makes it worthless. I have found by extended experiments that it is possible to overcome the blistering, separation and splitting by allowing the sheet of fiber to soak or take the water from one side only.

This invention consists of rendering one side of the sheet of fiber water-proof before placing the same in the water tank, whereby the sheet will be soaked from one side only. This may be accomplished in various ways, a few of which are as follows: First. By clamping a couple of sheets together in a pair of skeleton frames. Second. By clamping a pair of sheets of fiber having a sheet of water-proof material between them in the skeleton frames. Third. By placing a sheet of water-proof material centrally between the layers of the sheets in the combining of the same. Fourth. By coating one side of the sheet with a water-proof compound.

Reference is to be had to the accompanying drawings forming a part of the specification, and wherein similar letters of reference indicate similar parts in all of the figures.

Figure 1, is a perspective view of the frame, showing the sheets of fiber clamped between the same. Fig. 2, is a section through a frame, showing sheets of fiber

clamped between the same, having a sheet of water-proof material arranged between the sheets of fiber. Fig. 3, is a section through a sheet of fiber having one of its sides coated with a water-proof compound. Fig. 4, is a section through a sheet of fiber provided with a central layer of water-proof material. Fig. 5, is a section through a frame showing it attached to a sheet of fiber. Fig. 6, is a section through a tank showing a sheet of fiber supported on the surface of the water. Fig. 7, is a section through a sheet of fiber, showing a water-proof sheet of material arranged in the interior of the same.

In Fig. 1, of the drawing which represents a frame for carrying out my method, A and B, indicate a pair of skeleton frames formed of any suitable material and size, between which are placed a couple of sheets of fiber C. The frames are then clamped together by clamping members D, which consists of flat bars D', having apertured ends, which are arranged diagonally across the corners of the frame, and are secured together by bolts D<sup>2</sup>, whereby the frame can be drawn together over the sheets of fiber with great pressure. In addition to these clamping members I use a couple of pair of bars E, which are arranged crosswise of the frame to each side of the center, and are provided with outwardly extending apertured ends, through which bolts E', extend for clamping them together, which prevents the bars of the frame from giving by the pressure of the sheets when swelling.

The frames are formed a little larger than the sheets to be soaked, so that the side bars of the same will extend out slightly beyond the edges of the sheets, thereby preventing the same from splitting, and yet allowing the water to enter from each side of the frame, the frame and sheets are then immersed in a tank of water, and allowed to stand until the chemical solution has been extracted by the water soaking through the sheets, which requires from one to nine months, according to the thickness of the sheet. It will be seen by this means of clamping sheets together, the water enters the sheet from one side and the edges only, thereby preventing the blistering and separation of the sheets in the interior, and the splitting of the same around the edges.

In Fig. 2, I show another way of carrying out my invention, which consists of placing a sheet of water-proof material G, between



sheets of fiber H, and clamping them between a pair of skeleton frames I.

In Fig. 3, I have shown another way of carrying out my invention, which consists of applying a coat of water-proof composition J, to one side of the sheet of fiber J', and then immersing the sheet in water, which allows the water to enter only one side and the edges of the sheet and accomplish the same result.

In Fig. 4, I have shown still another way of carrying out my invention, which consists of placing a sheet of water-proof material K, centrally between the layers of a sheet of fiber K', when the sheet is combined, which accomplishes the same result, and I have found by experiments that when the water reaches the water-proof sheet, the sheet on each side can be separated without any difficulty.

In Fig. 5, I show another way of carrying out my invention, which consists of placing a frame L, having a flanged lower end L', over a sheet of fiber M, over which clamps N, are placed for securing the frame tightly on the sheet, so as to form a water tight joint, the space between the frame is then filled with water, whereby only one side of the sheet will be soaked.

In Fig. 6, I show another way of carrying out my invention, which consists of supporting a sheet of fiber O, by supporting members P, on the surface of the water in a tank Q, whereby the water will soak in from only one side.

It has also been found by experience that a sheet can be run up on a combining machine to the required thickness, and then place a sheet of water-proof material of a smaller size on the sheet, and then start another sheet on top of this sheet and run it up to the required thickness, which is clearly shown in Fig. 7, in which R, indicates the sheets of fiber, and S, the water-proof sheet arranged between the layer of the same, and it will be seen that when run through the combining machine the edges of the sheets will be coalesced. The sheets are then immersed in water, and when the sheets have been soaked the required time they can be readily separated by inserting an instrument so as to release the binding edges.

It is evident that various methods may be employed to accomplish the desired result, without departing from the spirit and scope of my invention.

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

1. In the manufacture of fiber, the method herein described of extracting the chemicals from sheets of fiber, consisting of exposing only one side of the sheet to water, whereby blistering or separating of the layers of the sheet is prevented.

2. In the manufacture of fiber, the method herein described of extracting the chemicals from fibrous sheets consisting of clamping two sheets together and immersing them in water.

3. In the manufacture of fiber, the method herein described of extracting the chemicals from fibrous sheets consisting of placing two sheets together, clamping them between skeleton frames, and immersing the sheets and frames in water.

4. In the manufacture of fiber, the method herein described of extracting the chemicals from fibrous sheets consisting in rendering one side of a sheet impervious to water, clamping a second sheet to the impervious side of the first sheet, and immersing the sheet in water.

5. In the manufacture of fiber, the method herein described of extracting the chemicals from fibrous sheets consisting in water-proofing one side of a sheet, placing a second sheet against the water-proof side of the first sheet, clamping the sheets together between skeleton frames, and immersing the sheets and frames in water.

6. In the manufacture of fiber, the method herein described of extracting the chemicals from fibrous sheets consisting in combining a series of sheets of fiber with a central sheet of water-proof material, and immersing the sheet in water.

7. In the manufacture of fiber, the method herein described of treating fiber sheets for the extraction of the chemicals therefrom, consisting of rendering one side of the sheet water-proof, and then soaking the sheet in water, whereby blistering or separating of the layers of the sheets is prevented.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ISRAEL W. MARSHALL.

Witnesses:

REA P. WRIGHT,  
R. H. KRENKEL.