

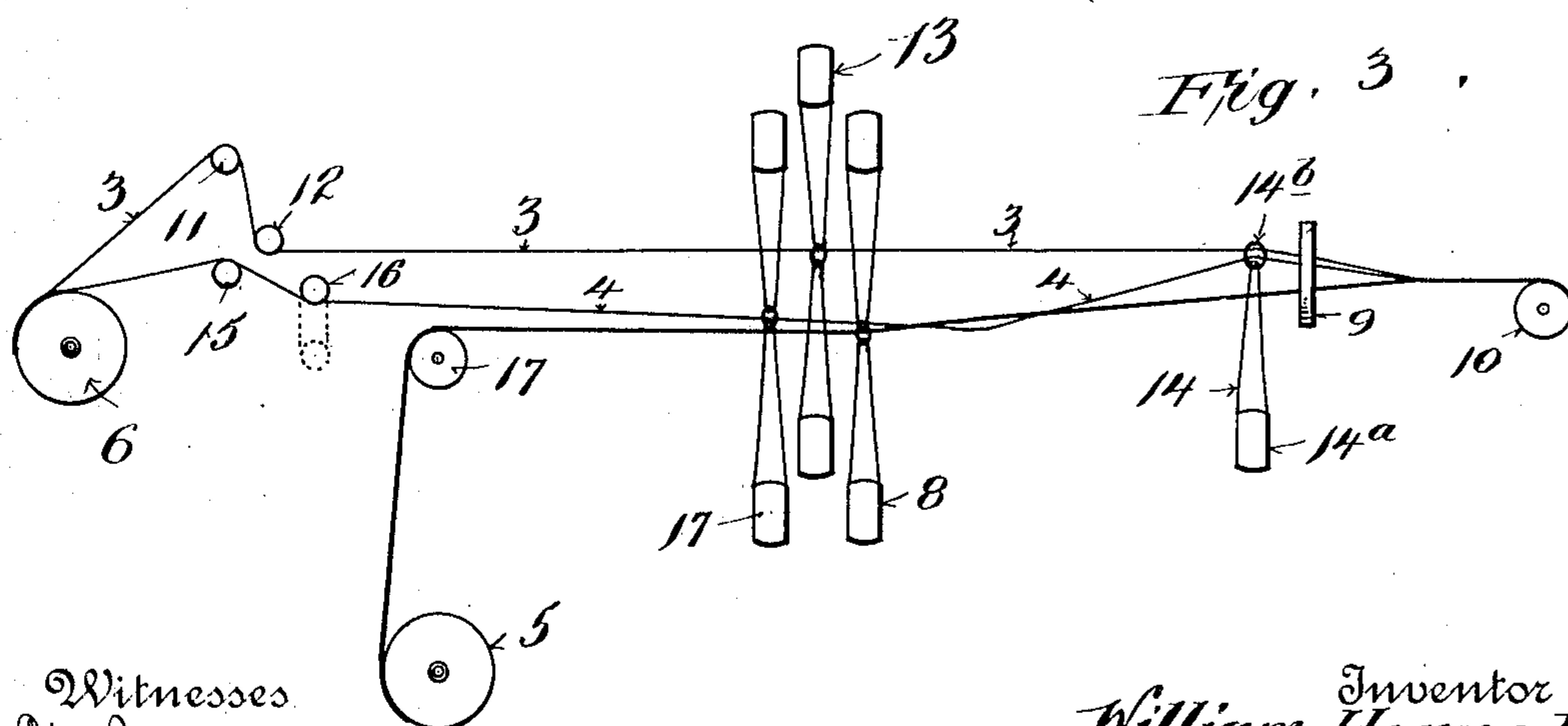
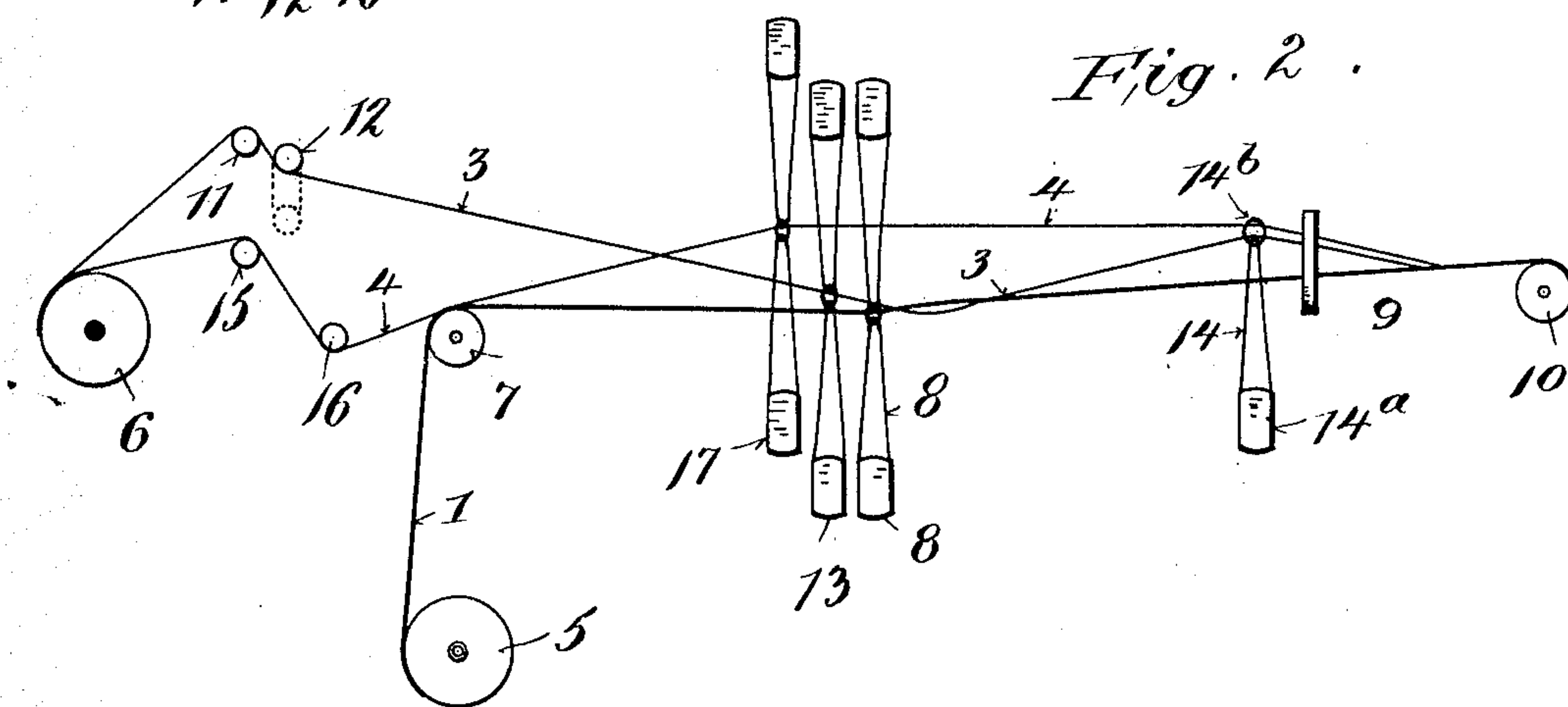
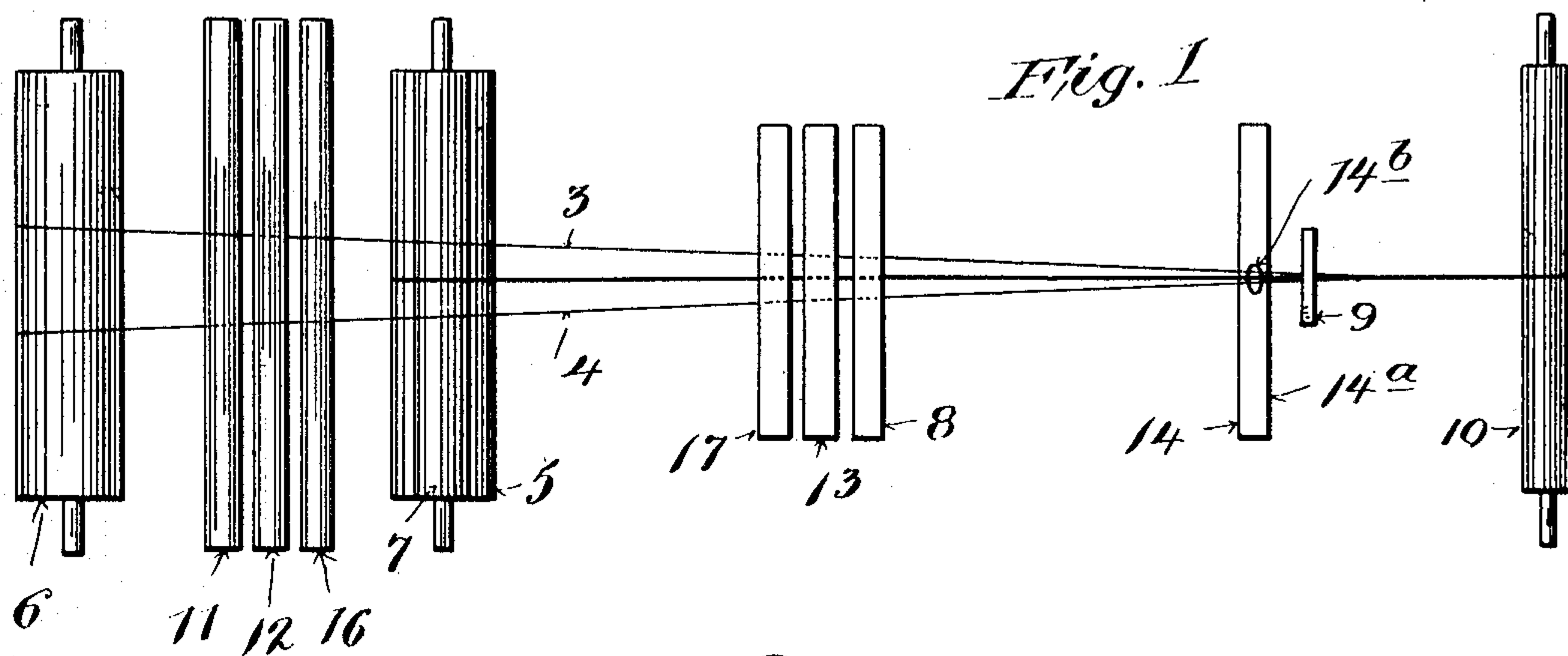
No. 870,823.

PATENTED NOV. 12, 1907.

W. HANNAH.
ART OF WEAVING.

APPLICATION FILED JULY 25, 1906.

8 SHEETS—SHEET 1.



Witnesses
W. Benjamin
Phas G. Hershey.

Inventor
William Hannah.
By his Attorney
Jesse L. Levy

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8 SHEETS—SHEET 2.

Fig. 4

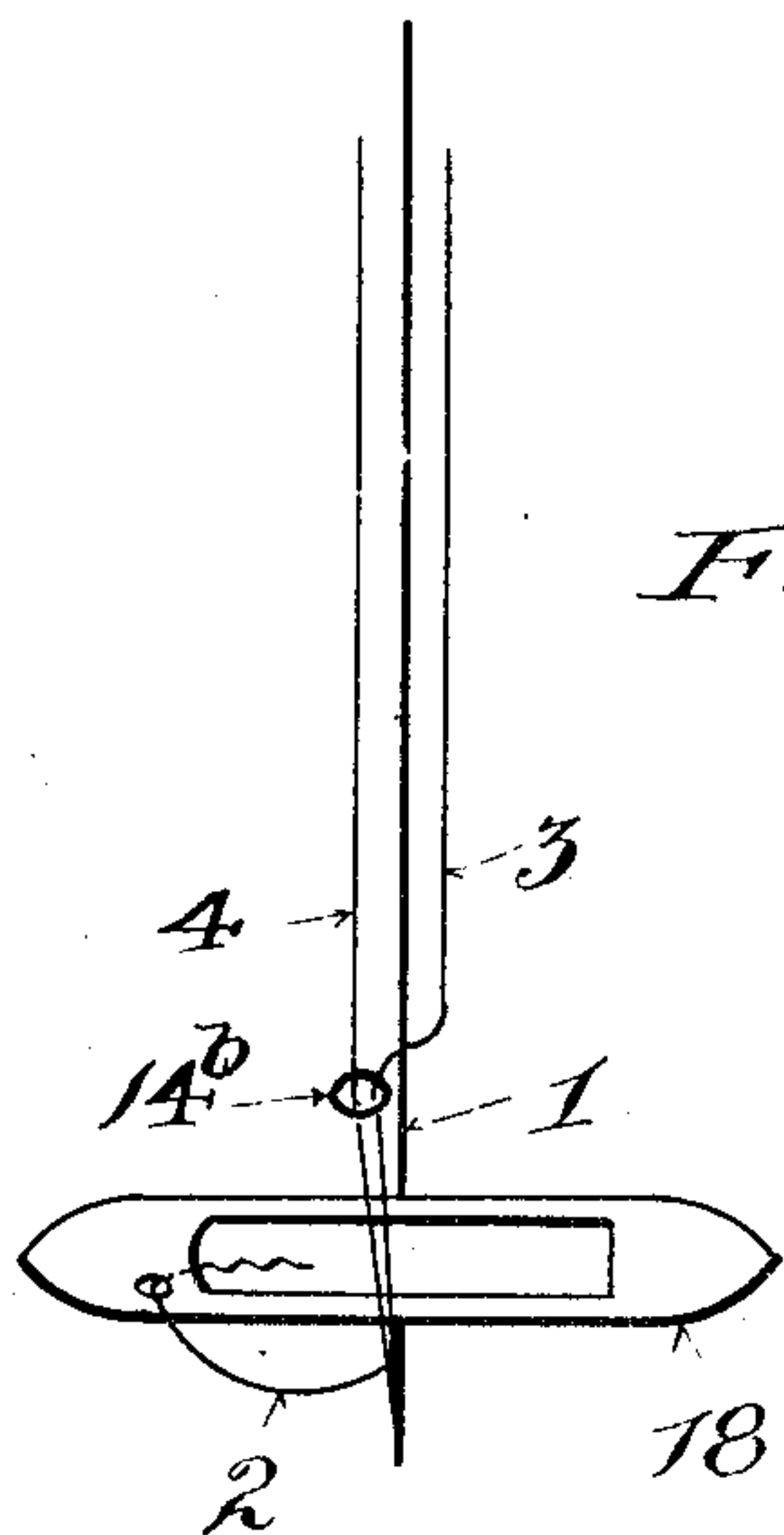


Fig. 5.

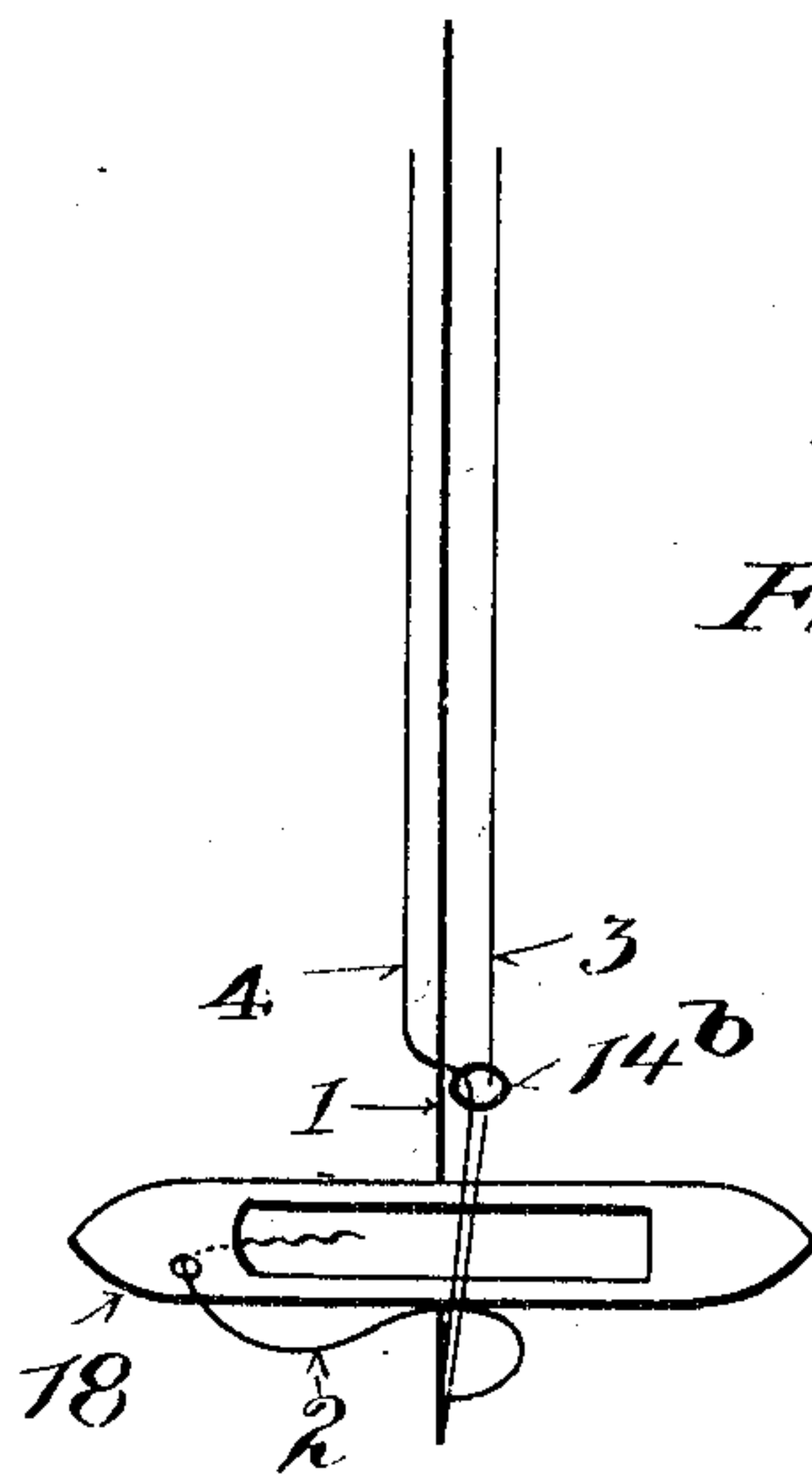
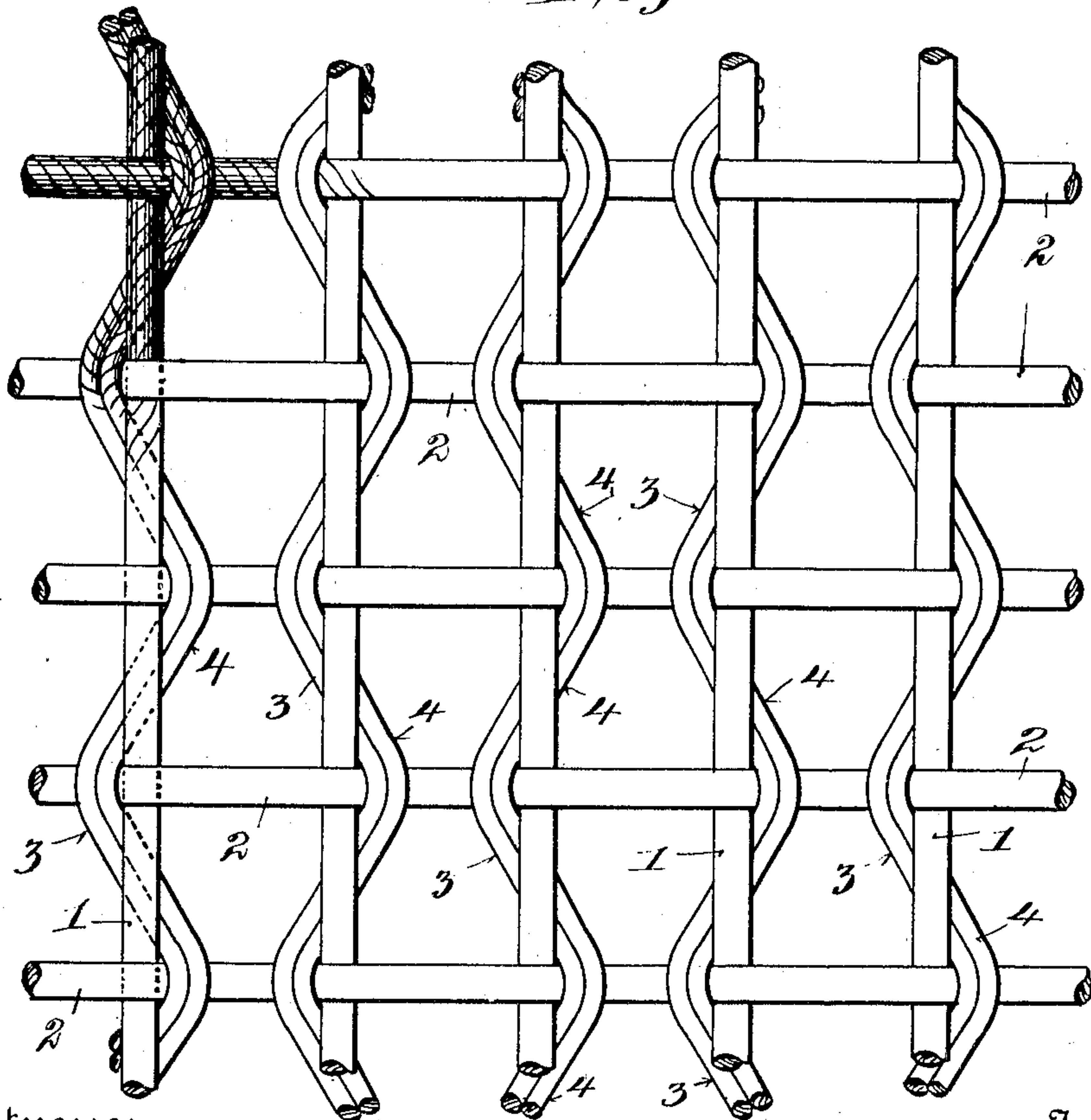


Fig. 6



Witnesses
C. W. Benjamin
Phos. G. Hershey.

Inventor
William Hannah.
By his Attorney
Joseph L. Levy

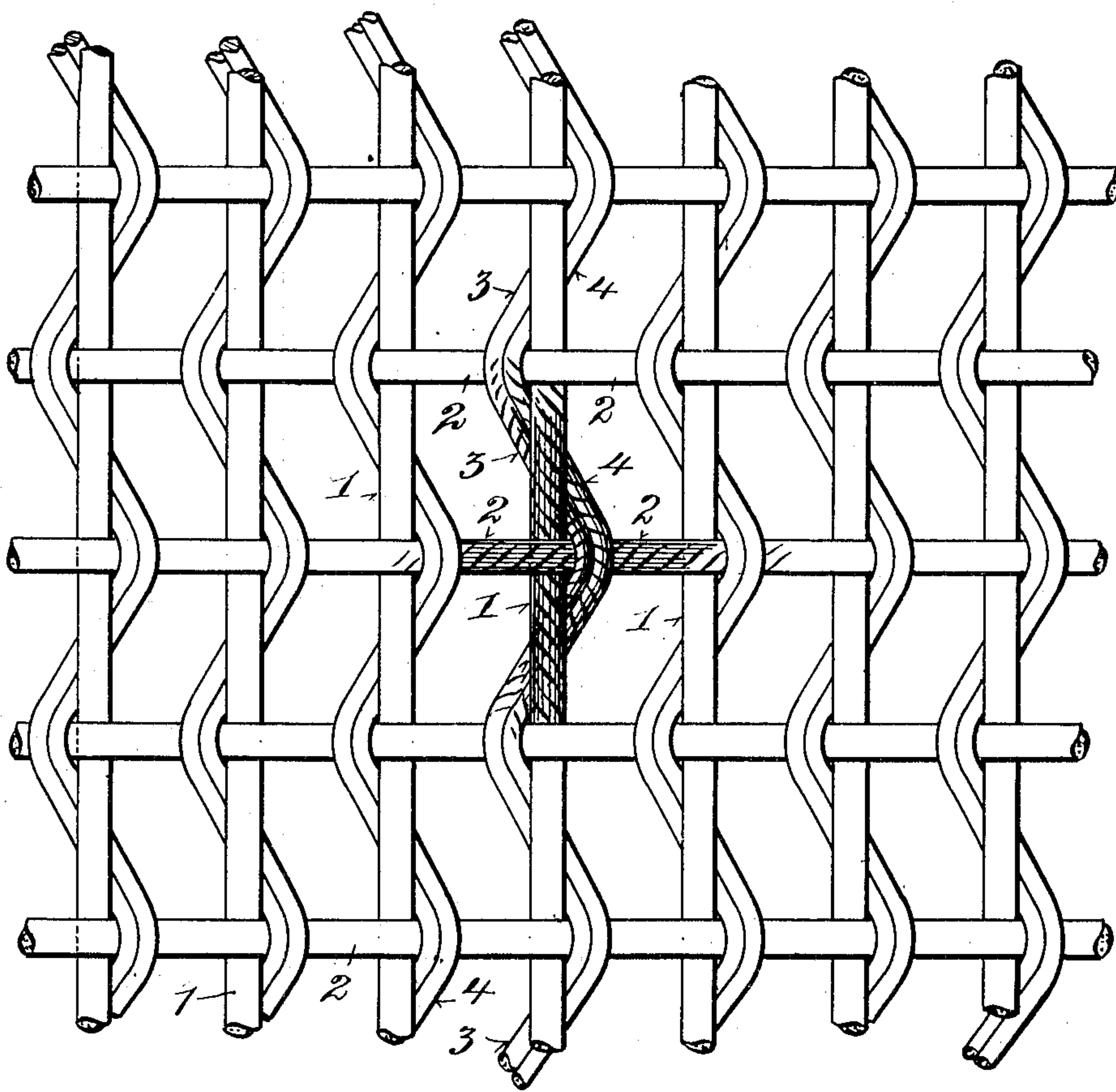
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W. HANNAH.
ART OF WEAVING.
APPLICATION FILED JULY 26, 1906.

8 SHEETS—SHEET 3.

Fig. 7.



Witnesses
W. Benjamin
Chas. Hensley.

Inventor
William Hannah.
By his Attorney
Joseph E. Roy

UNITED STATES PATENT OFFICE.

WILLIAM HANNAH, OF PATERSON, NEW JERSEY.

ART OF WEAVING.

No. 870,823.

Specification of Letters Patent.

Patented Nov. 12, 1907.

Application filed July 25, 1905. Serial No. 271,132.

To all whom it may concern:

Be it known that I, WILLIAM HANNAH, a citizen of the United States, and a resident of the city of Paterson, county of Passaic, and State of New Jersey, have
5 invented a new and useful Improvement in Art of Weaving, of which the following is a specification.

The object of my invention is to produce a gauze of silk or other material of an improved quality and at a reduced cost, the machine and process for producing
10 the gauze being cheaper and simpler than any heretofore known to me. This object is attained by my invention, one embodiment of which is hereinafter set forth.

For a more particular description of my invention,
15 reference is to be had to the accompanying drawings forming a part hereof, in which,

Figure 1 is a diagrammatic plan view of a loom provided with my improvement. Figs. 2 and 3 are side elevations of the same showing the parts in different
20 positions. Figs. 4 and 5 are similar plan views showing the relative positions of the threads and shuttle in different positions. Figs. 6 and 7 are enlarged views of the fabric, parts being exaggerated to make the weave clear.

25 Throughout the various views of the drawings, similar reference characters designate similar parts.

The well known details of the loom are not shown because they would confuse the drawings. Only such parts are indicated as are necessary to make clear the
30 exact nature of my invention, it being understood that my improvements may be added to any suitable loom for weaving gauzes.

As the nature of my improvement is best explained by considering the fabric, reference is to be had to
35 Figs. 6 & 7 of the accompanying drawings. In these figures the warp threads 1 rest entirely under the woof threads 2. These warp and woof threads 1 and 2 are bound together by the warp binding threads (hereinafter called binding threads) 3 and 4. Ordinarily the threads 3 and 4 are the same size and half
40 the size of the threads 1, and 2. These proportions may be varied as desired. Threads pass over the woof threads and under the warp threads substantially in the manner shown, the binding threads always remaining with the same warp thread throughout the
45 fabric.

By reference to the other figures in the case, the manner in which the fabric is woven will be readily understood. The warp 1 is wound on the warp beam
50 5 which is suitably mounted in the usual manner. The binding threads 3 and 4 are wound on the beam 6 as is also common. The thread 1 passes over the guide roll 7, through the harness or heddle 8, and reed 9 to the beam 10 where the finished fabric is wound.
55 The binding thread 3 passes from the beam 6 over a fixed horizontal rod 11, under a vertically movable

rod 12, through the heddle 13, doup 14, reed 9 and finally on to the roll 10. The other binding thread 4 passes similarly from the beam 6, over the fixed rod 15, under the vertically movable rod 16, through the
60 heddle 17, doup 14, reed 9, and onto the roll 10. The threads 1, 3 and 4 all pass through the same space in the reed. The threads 3 and 4 are normally in a plane slightly below the horizontal plane of the thread 1 and are located on opposite sides of this thread 1 as indicated in Fig. 1. Only one warp and two binding
65 threads are shown in Figs. 1 to 5 because the other warp and binding threads are identical with the set shown and described. Therefore a description of one set answers for all. The shuttle 18 passes between the
70 reed 9 and roll 10 leaving the woof 2 in its path. The doup 14 consists of a shaft or bar 14^a which has a flexible connection with a small glass ring 14^b.

As the shuttle carrying and actuating mechanisms are old as well as those for the heddles, reed, rods and
75 rolls, a description of them is unnecessary as they may be of any of the usual forms. It will be assumed that they actuate their respective mechanisms so that they will operate as herein set forth. The doup may be
80 operated as the harness or heddles.

Assuming the parts as above described, the thread 1 is never raised by its heddle 8, above the horizontal plane of its normal position although it may be slightly depressed if desired. The rod 12 on the binding
85 thread 3 is shown not depressed, but raised from the position shown in dotted lines. (See Fig. 2.) The heddle 13 through which it passes is in its inoperative position and the thread is a little slack. On the other hand, the thread 4 is tightened by the rod 16 which is in its lowest position and passes through its heddle 17
90 which is raised to its limit whereby the thread is tight and thereby controls the doup 14 which causes the thread 3 to pass under the warp 1 and to be raised sufficiently with the doup 14 and thread 4 to allow the shuttle 18 to pass over the thread 1 and under the threads 3
95 and 4 as indicated in Fig. 4. After the shuttle 18 passes the reed 9, forces the woof 2 into its proper place in the fabric. Upon the return movement of the shuttle the movements of the binding threads 3 and 4 is reversed, the thread 3 being drawn tight by the rod 12
100 and heddle 13, the string 4, being loose, the doup 14 is brought up on the other side of the thread 1, over which and under the threads 3 and 4 the shuttle 18 passes, but in the opposite direction and the reed 9 then forces the woof 2 into its position as before. By
105 so operating the loom, either form of fabric shown in Fig. 6 or Fig. 7 may be woven. The preferred fabric is shown in Fig. 7. Both forms show the two binding threads which must always be woven in accordance with my invention if one binding thread were used for
110 each warp.

I have equipped several old fashioned looms with my

improvements and find that their capacity is increased from 28 to 45 yards per day because the machine is simplified so that its speed may be increased. I also find that the life of the harness is greatly prolonged because the warps and binding threads pass through metal or glass pieces in the heddles and doups instead of through a mass of twisted cotton strings as heretofore.

It is obvious that the substance of my invention may be embodied in many other forms than the one herein described so that it is not to be understood as limited thereto, but as broad enough to cover all forms that come within the scope of the annexed claims.

Having thus described my invention, what I claim is,

15 A process of weaving gauze or similar fabrics which consists in stretching a series of warp threads and in

stretching a series of converging binding threads, two for each warp thread, one on each side and joining a little below the warp thread, then loosening one of said binding threads and tightening the other and raising the tight thread whereby the loose thread is drawn under the warp thread and the binding threads are elevated to a plane above that of the warp threads then passing a woof thread between the warp and binding threads, then shifting the woof thread to its proper place and securing it by the binding threads, then loosening the tight binding thread and tightening the formerly loose binding thread whereby the two binding threads are raised as before except on the other side of said warp thread, and passing the woof thread, and securing the same as above set forth.

Signed at the city of New York, county of New York, State of New York, this 19 day of July, 1905.

WILLIAM HANNAH.

Witnesses:

M. STEINER,

O. E. EDWARDS, Jun.