

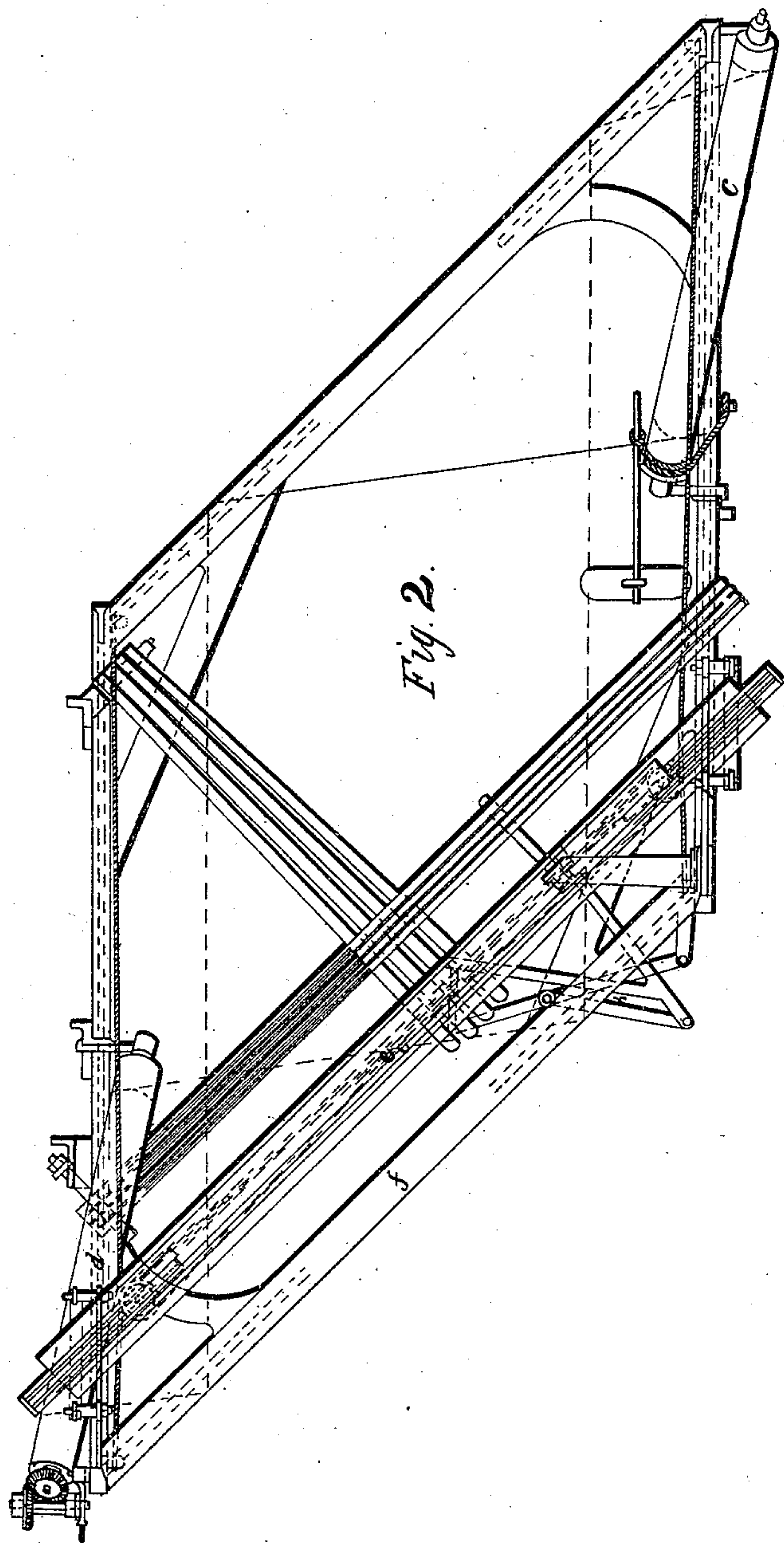


No. 13,970.

PATENTED DEC. 18, 1855.

J. HEALEY,  
LOOM.

3 SHEETS—SHEET 2.



Witnesses  
Peter Johnson  
J. A. Healey

Inventor  
John Healey

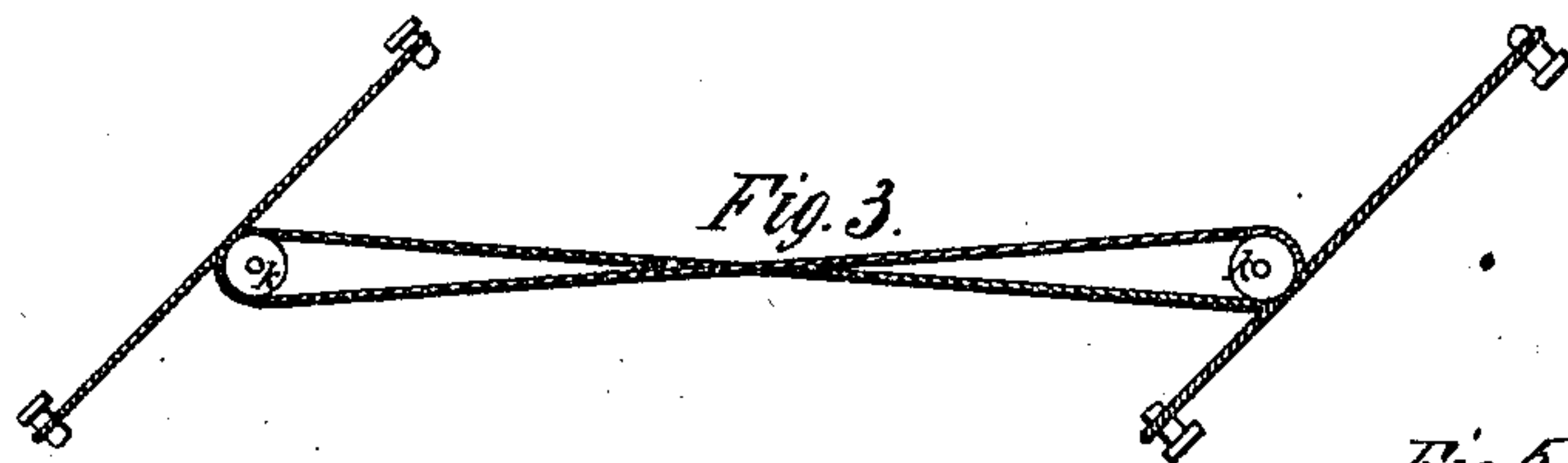


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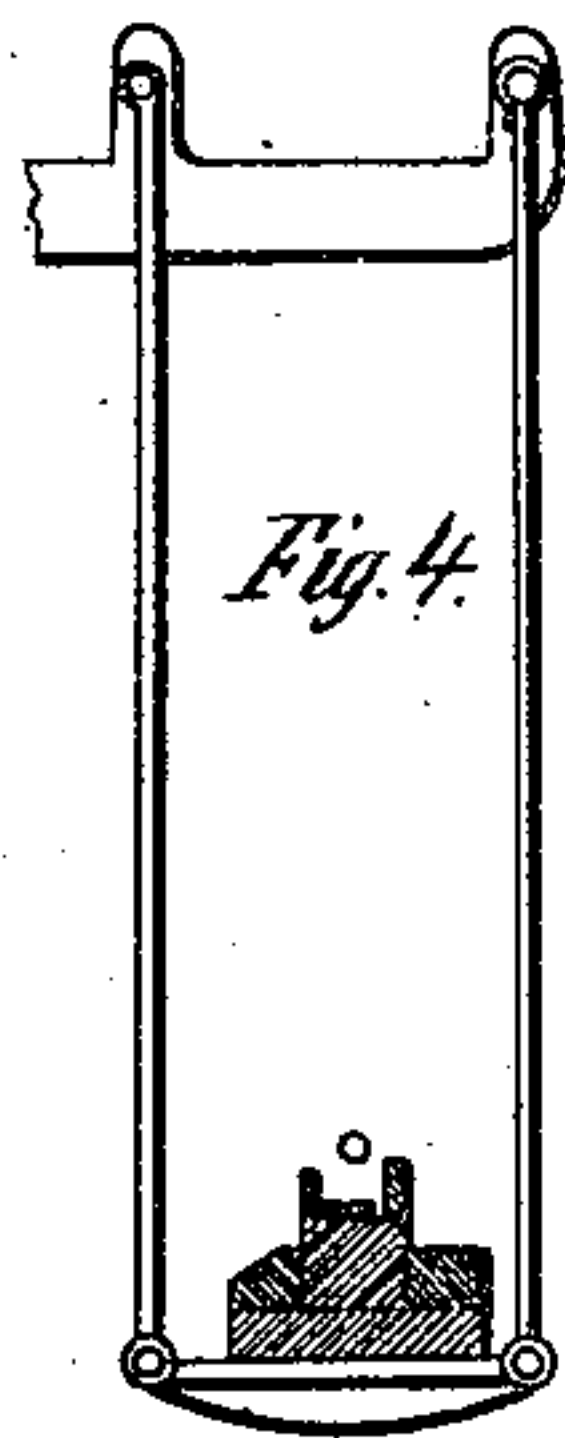
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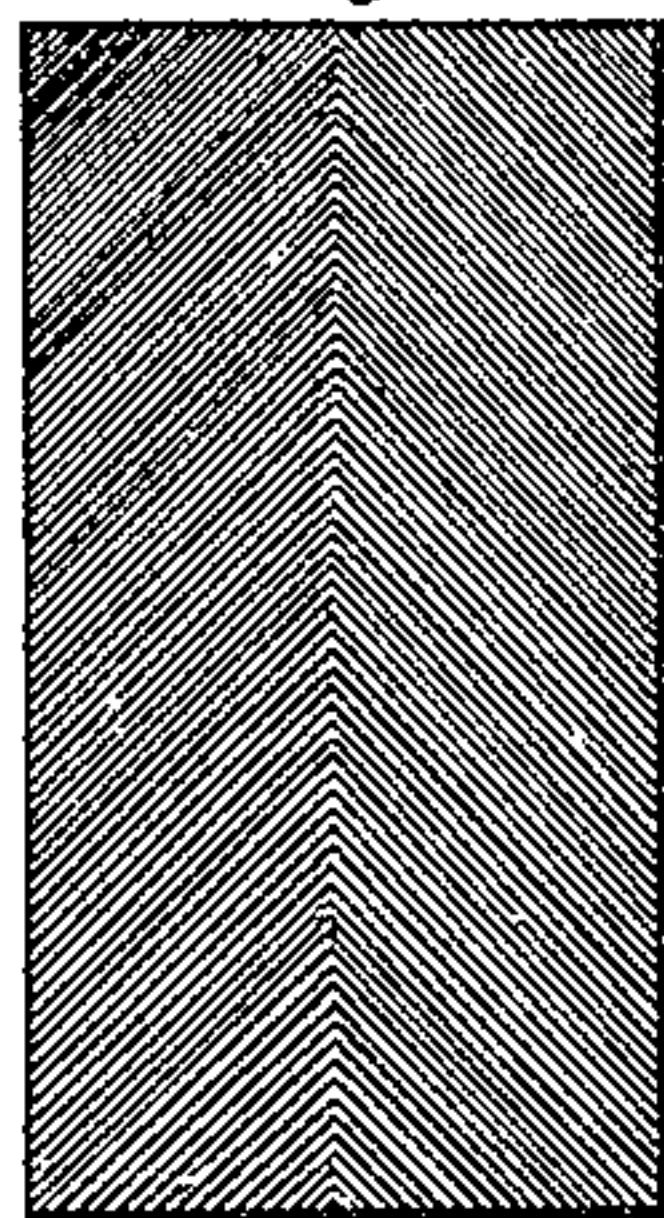
3 SHEETS—SHEET 3.



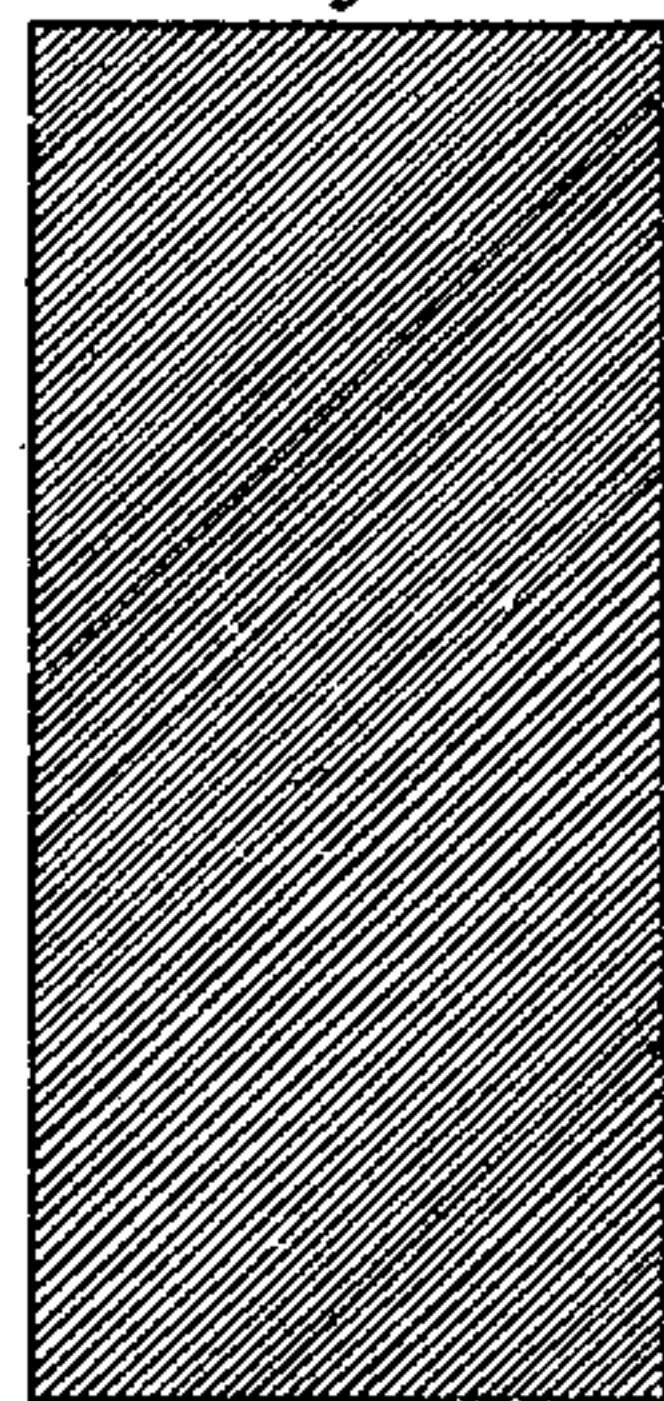
*Fig. 3.*



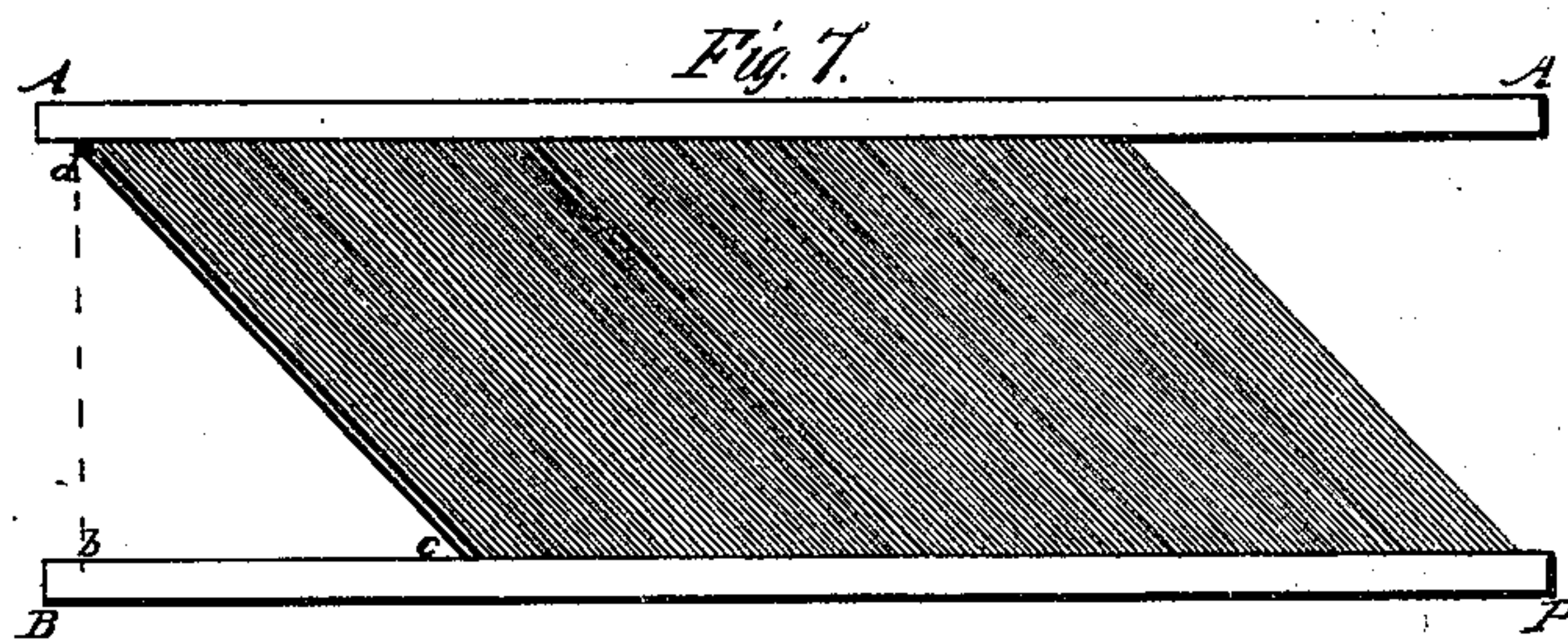
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



*Fig. 7.*

Witnesses  
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*J. D. Hyde*

Inventor  
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# UNITED STATES PATENT OFFICE.

JOHN HEALEY, OF BOLTON, ENGLAND, ASSIGNOR TO JAMES BISHOP.

## WOVEN FABRIC.

Specification of Letters Patent No. 13,970, dated December 18, 1855.

*To all whom it may concern:*

Be it known that I, JOHN HEALEY, of Bolton-le-Moors, in the county of Lancaster, England, Great Britain, have invented a new and useful Improvement in Woven Fabrics, as Well as in Looms for Weaving the Same, and for which I am about to apply for Letters Patent of the United States.

The nature of my invention in woven fabrics consists in placing the cross threads or weft which cross from one selvage to the other in a diagonal position or at any angle more or less than a right angle, with the warp making thereby an elastic fabric when stretched in a line of direction corresponding with the shortest diagonal of the meshes. There are two kinds of said fabric which I have produced; one of which is produced by removing the weft threads from a right angle with the warp and placing them at an angle of more or less than a right angle with the warp. One way of producing this kind is as follows. Referring to the annexed drawings, Figure 7, A A and B B represent the two parallel sides of a stretching frame on which is to be placed or fastened the selvages of cloth woven in the ordinary manner being first wet by starch-water or other tenacious liquid according to the nature of the finish it is designed to give it. In placing the selvages on the parallel sides of the stretching frame care must be taken not to allow the cross threads or weft to pass directly across as indicated by the line *a, b*, but to place it in a diagonal line to the selvage as indicated by the line *a, c*; after the selvages are fastened the stretchings is communicated and the cross threads or weft are thereby brought into a diagonal position and at any angle more or less than a right angle with the warp as represented at Fig. 6. This process necessarily narrows the cloth and brings the warp threads nearer to each other and they are retained in that position by the starch or other tenacious liquid.

My improved fabric which is formed by weaving is made by means of my invention of improvements in looms for that purpose; and for which improvements in looms I am about to apply for Letters Patent of the United States and is done as follows—reference being had to the annexed drawings.

Fig. 1 of the annexed drawings represents a side elevation and Fig. 2 a plan of the loom. Figs. 3 and 4 are detached parts.

In Figs. 1 and 2, *c* represent the warp or yarn beam, *d*, the cloth beam on to which the woven fabric is wound, and, *e*, the lay or slay for beating up the weft.

On referring to the plan of the loom at Fig. 2 it will be seen that the breast beam *f*, the lay or slay *e*, and the beam *g*, over which the warp passes from the yarn beam *C*, are parallel to each other, but diagonal to the side of the loom which diagonal is necessarily imparted to the cross threads or weft as the weaving proceeds.

Fig. 3 is a plan showing the two small pulleys *h, h*, on the under side of the lay or slay provided with squaring bands to keep it parallel with the weft threads, and to keep the vibrations of the lay or slay parallel with the warp threads I apply a parallel motion of which one is exhibited at *h* Figs. 1 and 2; but it is obvious that there are many other ways of applying parallel motions for that purpose with the same effect.

Fig. 4 is an end view of the lay or slay which is suspended at each end by two perpendicular rods, the use of which is to carry it evenly with the surface of the warp and also to keep the reed perpendicular. Instead of these supporting rods the lay or slay may be supported by a shaft and swords from the bottom of the loom when it is to be worked by power. The reed used in weaving this description of cloth must have the teeth or dents set diagonally to the ribs of the reed as shown in section by Fig. 8.

Another modification of diagonal weaving is represented at Fig. 5 where the cross threads or weft forms two opposite diagonal lines and which is effected by varying the form of the lay or slay to correspond with the required direction of the weft.

What I claim as my invention and desire to secure by Letters Patent is—

The improvement in the woven fabric above described in which the weft is placed in a diagonal position to the warp.

JOHN HEALEY.

Witnesses:

PETER J. LINDSEY,  
J. B. HYDE.