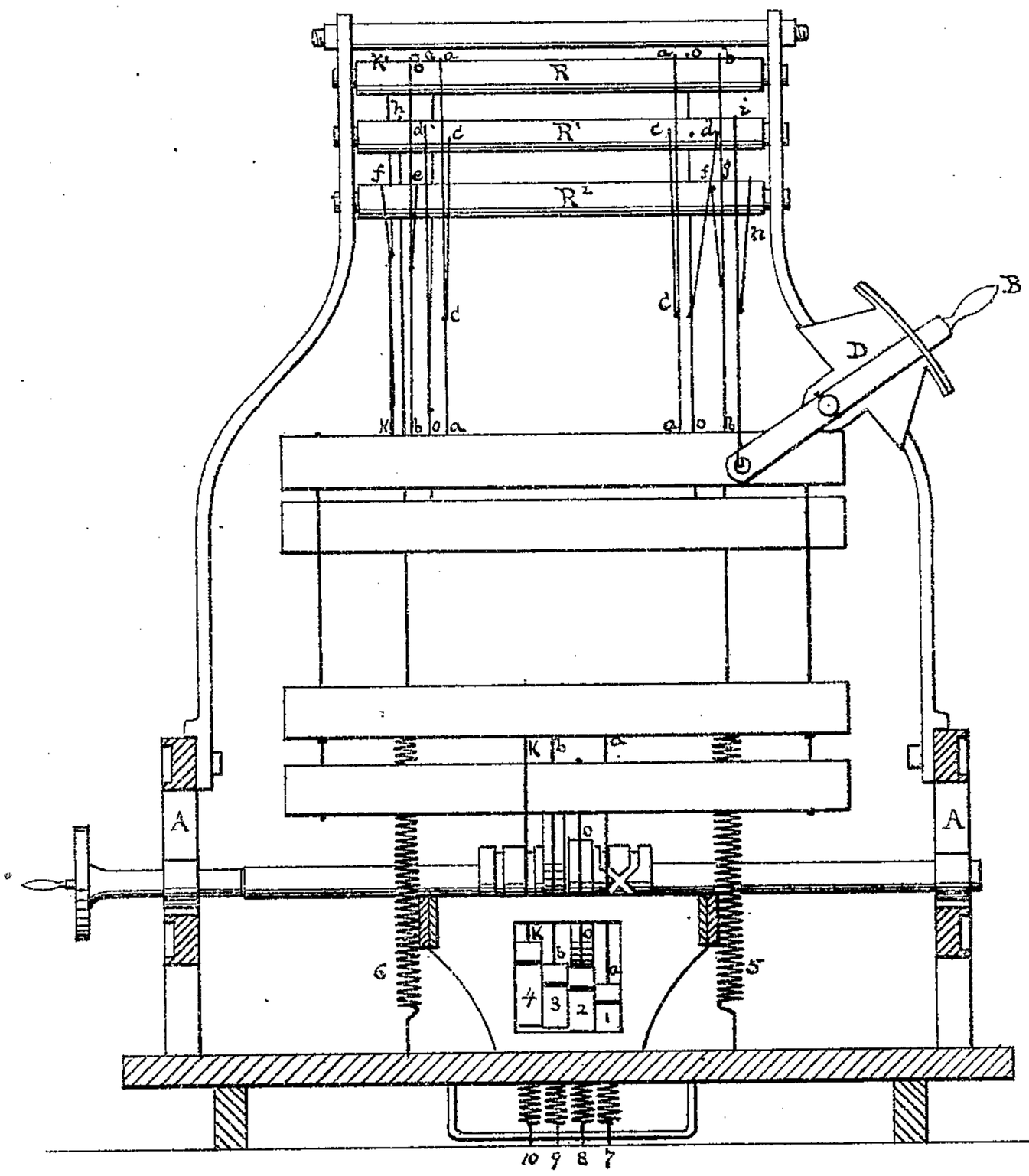
2 Sheets. Sheet 1.

JAMES BOOTH.

Improvement in Harness Mechanism for Looms.

No. 121,842. Patented Dec. 12, 1871.

Fig. 1.



Witnesses.

Robert Whitehead

Mason M. Culver

Inventor.

James Booth

2 Sheets. Sheet 2

JAMES BOOTH.

Improvement in Harness Mechanism for Looms.

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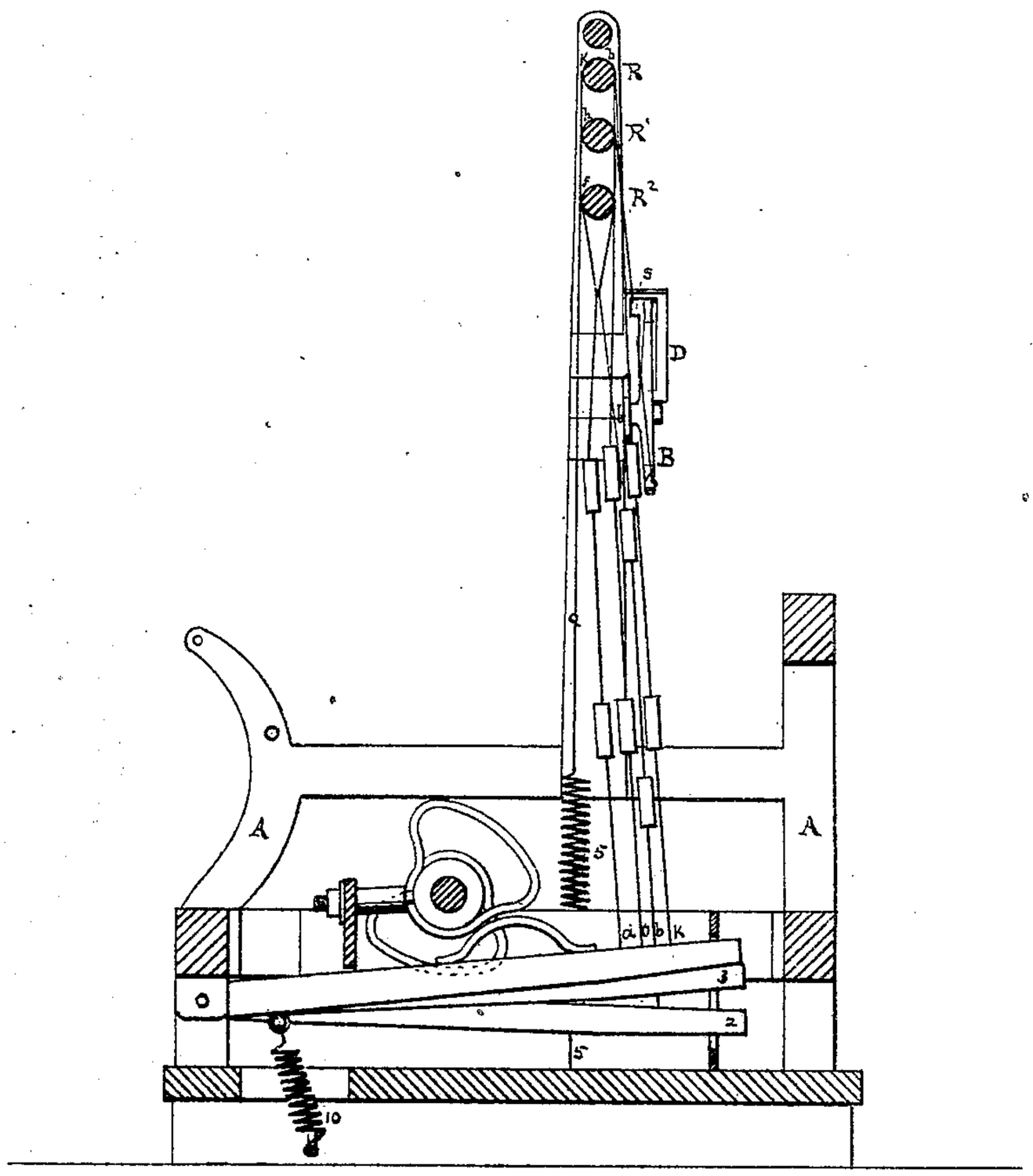
Fig. 2.



Witnesses.

Robert Whitehead

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James Booth

121,842

UNITED STATES PATENT OFFICE.

JAMES BOOTH, OF POTTSTOWN, ASSIGNOR TO JOHN DOBSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HARNESS MECHANISMS FOR LOOMS.

Specification forming part of Letters Patent No. 121,842, dated December 12, 1871.

To all whom it may concern:

Be it known that I, JAMES BOOTH, of Pottstown, Montgomery county, State of Pennsylvania, have invented certain Improvements in Power-Looms, of which the following is a specification:

The nature and object of the invention is to afford a simple and readily-adjustable device whereby the attendant can at any time, and without loss of time or stopping the loom, change the operation of weaving from plain to twilled cloth, as the attendant may desire. My invention is particularly adapted to the manufacture of Balmoral skirts with a twilled border, and the balance of the skirt woven plain. The invention may be used for other classes of goods.

Figure 1 is a diagram showing the rollers and cords or straps, and the method of suspending the heddles to the rollers; also, the method of connecting the lever B and spiral springs 5 and 6 to the rollers R^1 and R^2. Fig. 2 is a front view of so much of a power-loom as is required to illustrate my invention. Fig. 3 is a diagram illustrating the method of suspending the heddles from the rollers and connecting them to the treadles. Fig. 4 is a view of the stand for guiding and retaining the lever B.

Similar letters and figures in the drawing refer to like parts.

In Fig. 2, A A represent the loom-frame of an ordinary loom. At the top are three rollers, R R^1 R^2, which are constructed in the usual manner. To the rollers are suspended four heddles by cords or straps, to be hereinafter described. The bottoms of the heddles are connected to jacks and the jacks are connected to four treadles. (The jacks to the treadles are single strapped.) These four treadles are operated by a scroll-cam on the cam-shaft in the usual manner for producing a four-leaf twill. The heddles are connected to the rollers as follows: The heddle marked 1 is the front or first heddle when standing in front of the loom. Heddle 1 is connected to the top roller R by straps *a a*, and to roller R^1 by straps *c c*. Heddle 2 is connected to roller R by straps *o o*. In the diagrams, Figs. 1 and 3, the cords or straps are shown as seen on one end of the rollers R R^1 R^2. On the opposite ends is an equal number of straps, except the straps *g*, *h*, *i*, and *n*, attached to the rollers R^1 and R^2, which are shown in full number. Heddle 2 is also connected to roller R^1 by straps *d d*. Heddle 3 is connected to roller R by straps *b b* and to roller R^2 by straps *e e*. Heddle 4 is connected to roller R by straps *k k* and to the roller R^2 by straps *f f*. Under the loom, and back of the heddles, fastened to the floor, are two spiral springs, 5 and 6. The opposite end of spring 5 is fastened to roller R^2 by the cord *g*. The spring 6 is fastened in a similar manner to roller R^1 by cord *h*. The changing lever B is connected to rollers R^1 and R^2 by cords *i* and *n*. (See Figs. 1 and 2.) The lever B is pivoted on a stud in a stand, D, fastened to a part of the loom-frame. (See Fig. 2.) In the stand D is a slot. At the top is a rest. At and fastened to the heels of each treadle is a spiral spring, 7, 8, 9, and 10. The opposite ends of these springs are fastened to the floor or to the lower part of the loom-frame. It will be seen in Fig. 1 that each and all of the four heddles are connected to the top roller R by some of the straps. When the lever B is down, as shown in the drawing, the loom is set for working a four-leaf twill—that is, three up and one down—making the twill on the under side of the cloth as wove in the loom, it being understood that the heddle going down raises the remaining three, and in making plain cloth the two going down raise the remaining two. In weaving the twill we tread the back heddle 4—first, which will raise heddles 3 and 1, and heddle 2 will be raised by spring 6, fastened by cord *h* to roller R^1, which is fastened to heddle 2 by straps *d d*. The next tread will be heddle 2, which will raise heddles 3 and 1. Heddle 4 will be raised by spiral spring 5, fastened by cord *g* to roller R^2, which is fastened to heddle 4 by straps *f f*. The next tread will be heddle 3, which will raise 4 and 2. Heddle 1 will be raised by spiral spring 6, fastened by cord *h* to roller R^1, which is fastened to heddle 1 by straps *c c*. The next tread will be heddle 1, which will raise heddles 2 and 4. Heddle 3 will be raised by spiral spring 5, fastened by cord *g* to roller R^2, which is fastened to heddle 3 by straps *e e*, and at each tread the depressing of one heddle will raise the other three when assisted by the spiral springs 5 and 6. When the attendant wishes to change from twilled to plain without stopping the loom, he raises the lever B in the guide D and catches it on the notch *s*, where it remains so long as it is desired to weave plain. The raising of the handle of lever

B tightens the straps *n* and *i* and gives a part of a revolution to the rollers R^1 and R^2, which will make slack the straps *c c*, *d d*, *e e*, and *f f*, and draw the spring 5 and 6 tight, and stop the movements of the rollers R^1 and R^2. The first tread in weaving plain is the depression of heddles 2 and 4. By means of the cam the back heddle 4 is depressed, which will raise heddles 1 and 3, and heddle 2 will be drawn down by one of the spiral springs. The second tread in making plain cloth is the depression of heddles 1 and 3. By means of the cam and treadle, heddle 1 is depressed, which will raise heddles 2 and 4 and the spring on the heel of treadle 3 will draw heddle 3 down. It will be understood that the treading is done on four treadles with a scroll-cam, and when the cam treads one of the treadles two heddles will be raised and the fourth will be drawn down, which will in all the treads make two up and two down, producing plain cloth so long as the change lever remains on the catch-notch and the rollers R^1 and R^2 are thrown out of action. When it is desired to produce twilled cloth the change lever B is relieved from the catch *s*, and twilled goods are produced, as before described.

The described method of strapping may be varied and I do not confine myself to the placing the straps on the rollers as described; but each loom operator may arrange them to suit his own particular fancy.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a loom-harness mechanism, the combination of the lever B and straps *i* and *n* for the purpose of throwing the rollers R^1 and R^2 out of action, as above described.

2. The combination of the spiral springs 5 and 6, cords H and *g*, and rollers R^1 and R^2 for raising the heddles, as described, for the above purpose.

JAMES BOOTH.

Witnesses:
ROBERT WHITEHEAD,
MASON M. CULVER. (95)