

(No Model.)

3 Sheets—Sheet 1.

T. GREENWOOD
LOOM.

No. 547,782.

Patented Oct. 15, 1895.

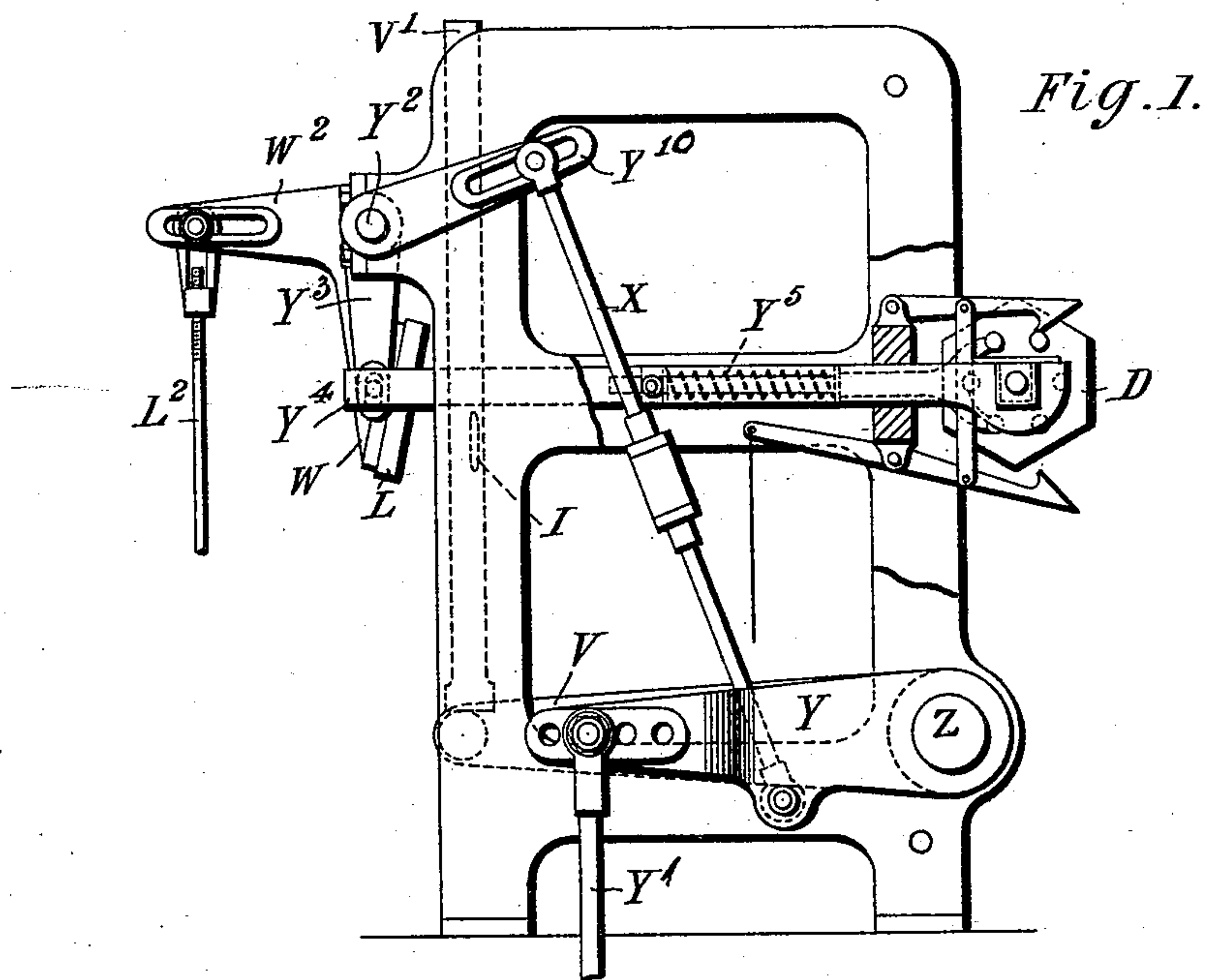


Fig. 1.

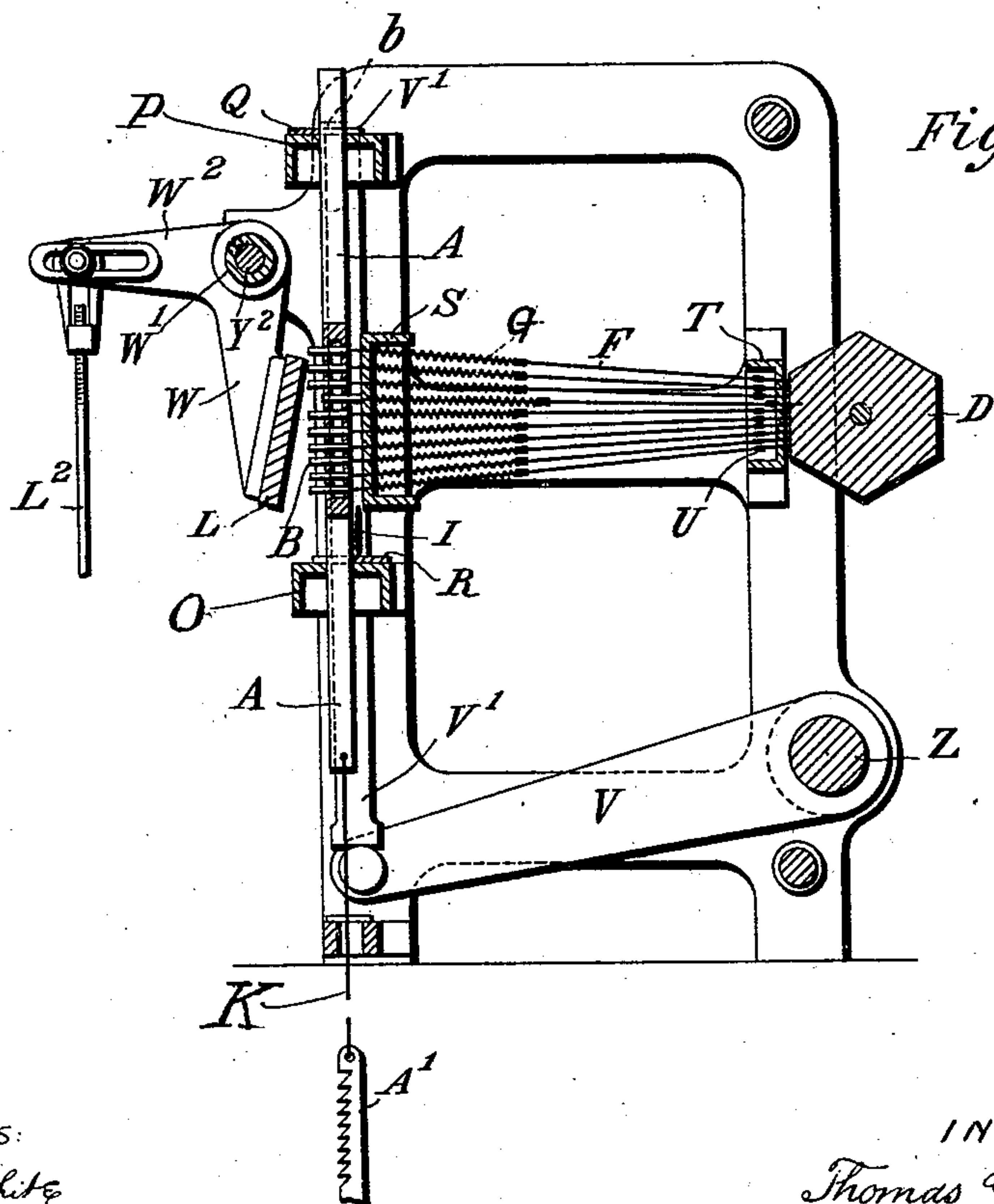


Fig. 3.

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(No Model.)

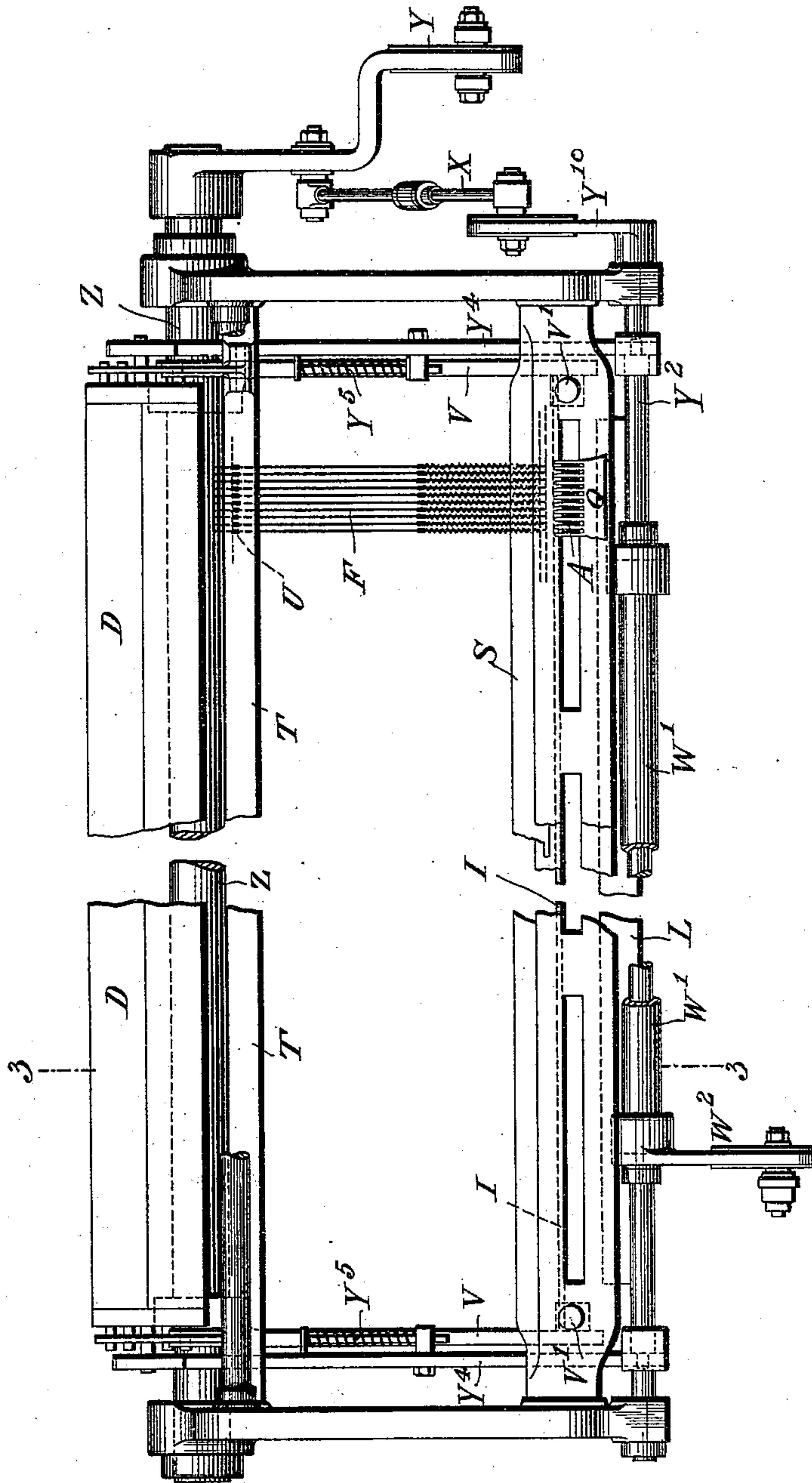
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Fig. 2.



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Fig. 8.

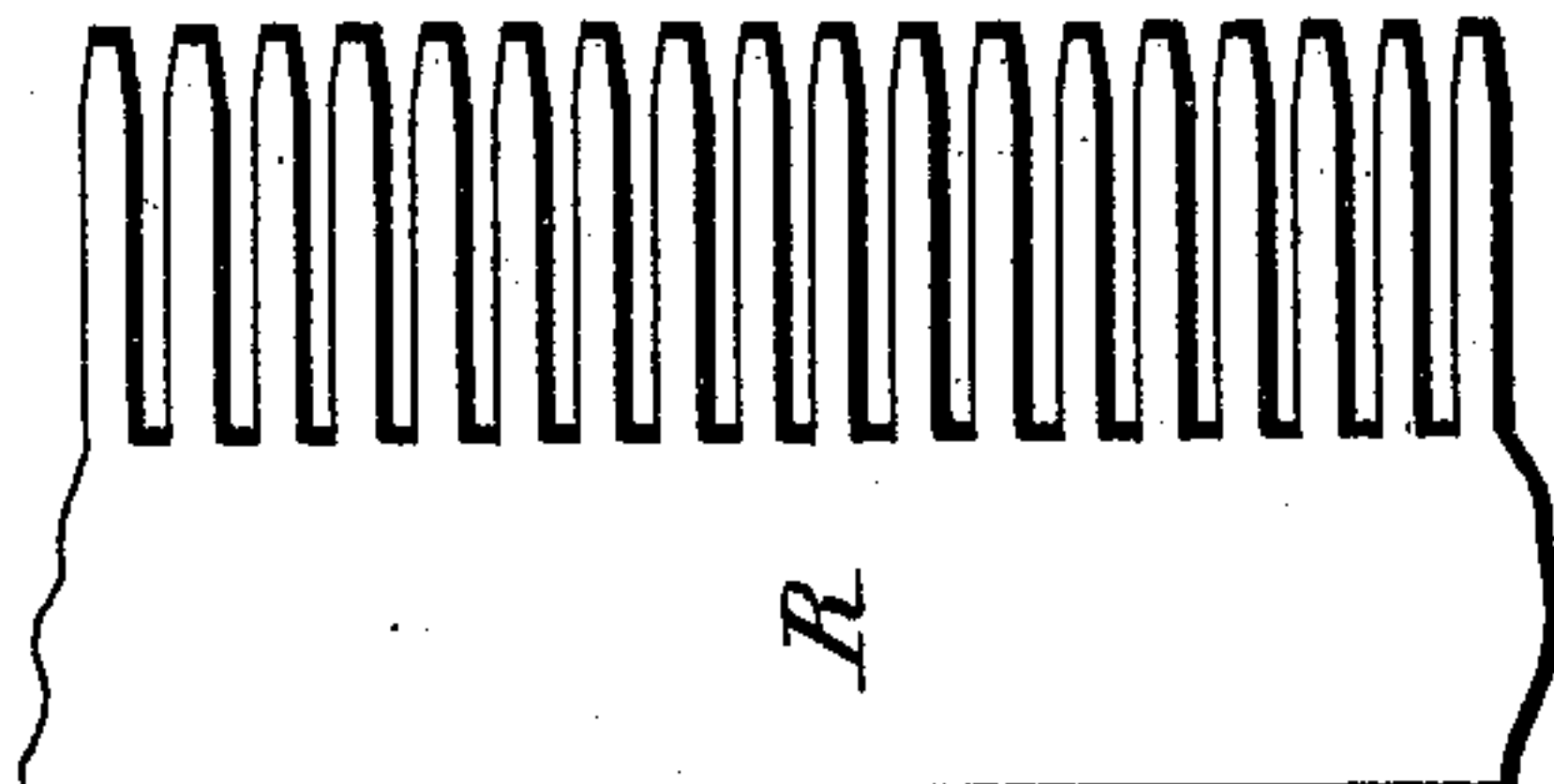


Fig. 7.

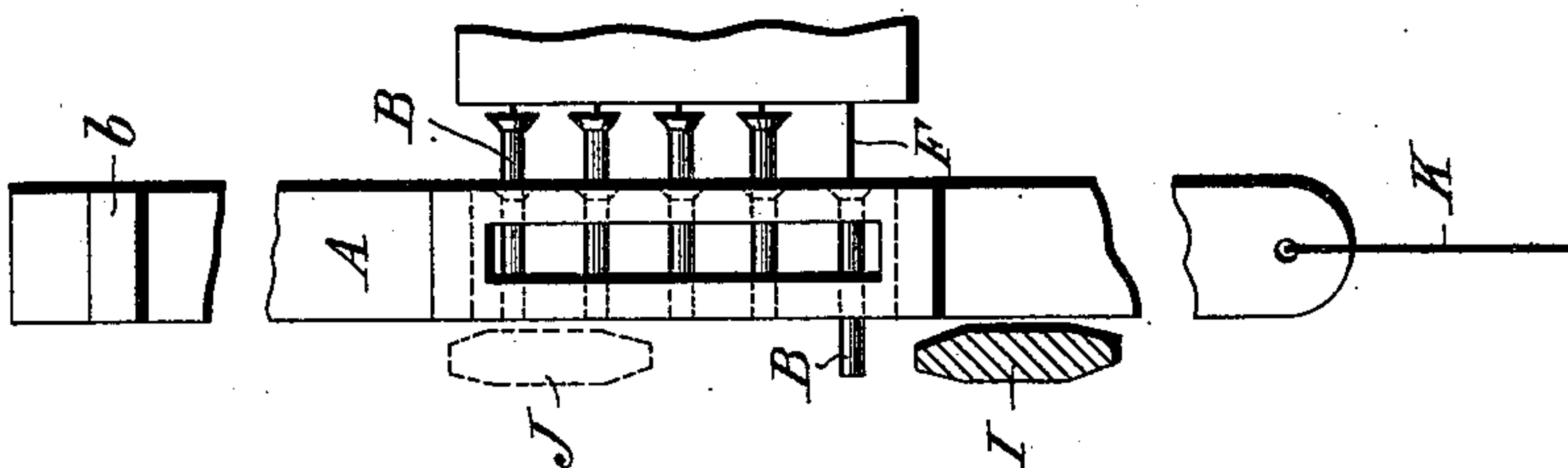


Fig. 5.

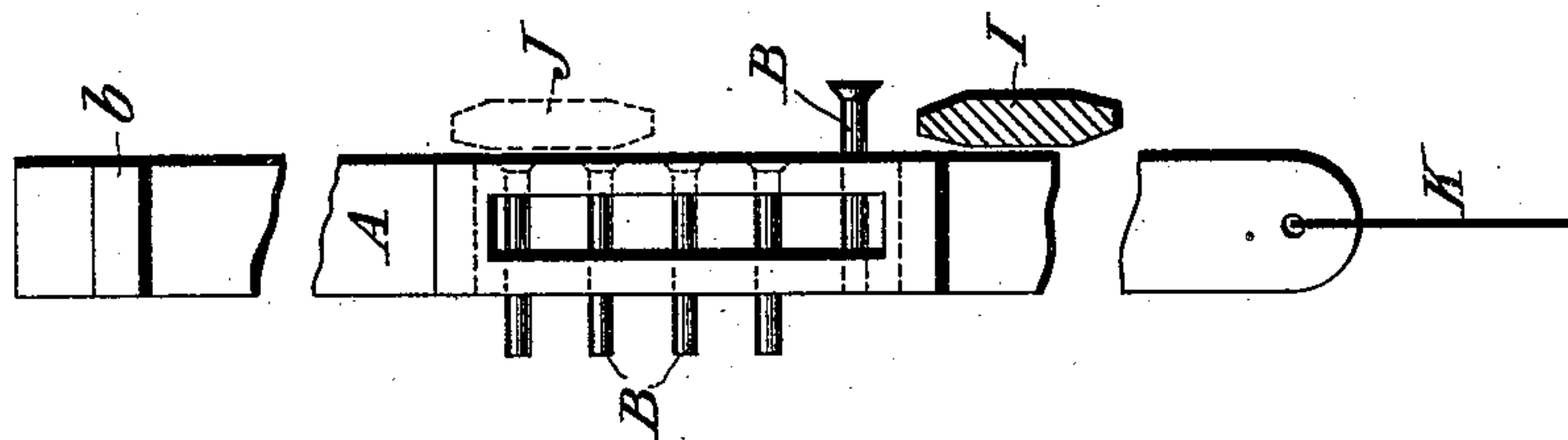


Fig. 4.

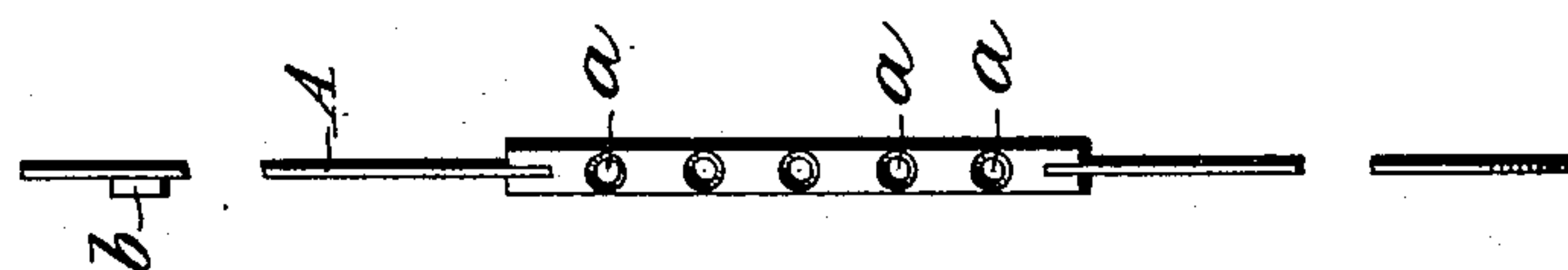


Fig. 6.



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UNITED STATES PATENT OFFICE.

THOMAS GREENWOOD, OF WOLVERLEY, ASSIGNOR TO BRINTONS, LIMITED,
OF KIDDERMINSTER, ENGLAND.

LOOM.

SPECIFICATION forming part of Letters Patent No. 547,782, dated October 15, 1895.

Application filed July 15, 1895. Serial No. 555,943. (No model.) Patented in England June 12, 1894, No. 11,397.

To all whom it may concern:

Be it known that I, THOMAS GREENWOOD, of Wolverley, near Kidderminster, England, have invented certain new and useful Improvements in or Relating to Looms for the Manufacture of Tufted or Pile Fabrics, (for which I have obtained a patent in England, No. 11,397, dated June 12, 1894,) of which the following is a specification.

10 This invention has reference to looms for the manufacture of tufted or pile fabrics of the kind known as "Royal Axminster" or "Jacquard Axminster," and its chief object is to simplify the Jacquard mechanism and
15 also to dispense with the large number of levers and cords hitherto generally employed to impart the required up and down movements from the jacquard to the yard-carriers.

20 The invention mainly consists of a set of strips or bars to which the yarn-carriers are connected, one strip or bar to each carrier, in combination with a set of pegs engaging in holes in the said strips or bars, one peg for each hole; a set of Jacquard needles for selecting the particular pegs required by the ex-
25 igencies of the design to be produced, and a device for lifting the strips by means of the selected pegs.

30 The invention also consists in the combination, with the said strips or bars, pegs, Jacquard needles, and lifting device, of a plate for returning to their normal positions after the strips have been lowered to their normal positions the pegs that were moved at the last
35 previous action of the Jacquard needles.

40 In carrying out the invention there is employed in connection with the Jacquard apparatus a set of strips or bars equal in number to the yarn-carriers, one for each carrier. Every such strip is formed with a number of holes, the distance of which from each other is exactly the same as that of the holes in the yarn-carriers. The yarn-carriers are sus-
45 pended by means of wires or cords to the corresponding strips, so that every lift given to a strip is equally given to the corresponding yarn-carrier. In the holes of the strips are fitted pegs, the heads of which project there-
50 from until pushed in by the Jacquard needles under the influence of the cards on the card cylinder or drum. The Jacquard nee-

dles pass through holes in back and front guide-plates. On the opposite side of the plates facing the ends of the pegs is a plate which is moved at certain times, so as to re-
55 turn to their normal positions the pegs that have been pushed by the Jacquard needles. Below the vertical rows of pegs in the strips is a horizontal bar or lifter which extends
60 across the loom.

65 In the accompanying drawings, which represent so much of a loom as is necessary to enable my invention to be fully understood, Figure 1 is an end elevation of the upper part of the loom with part of the framework re-
70 moved. Fig. 2 is a plan of the same. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4 is an edge view, on a larger scale, of one of the strips or bars detached and without the
75 pegs. Fig. 5 is a face view of the strip shown in Fig. 4, but also showing the lifting-bar and the pegs in place. The strip shown in Figs. 4 and 5 is for holding only five pegs, while that seen in Fig. 3 is for ten pegs, the number being variable according to the number
80 of "frames" in the loom. Fig. 6 shows in edge view another strip, in which the holes are oblong instead of round, the pegs used therewith being of corresponding shape in section. Fig. 7 is a view similar to Fig. 5, but showing
85 the lifting-bar placed at the other side of the strips. Fig. 8 is a plan of a portion of the lower comb R on a larger scale than in Figs. 2 and 3.

85 In Figs. 1 and 2 the parts are seen in the positions they occupy when the card-cylinder D is in its outer position and in Fig. 3 when the card-cylinder is in its inner position.

90 A A are the strips or bars, which are equal in number to the yarn-carriers A'. Fig. 3 represents a part of one of the yarn-carriers. Every strip A is formed with a number of holes *a a*, Figs. 3 and 4, the number of which and distance from each other is exactly the same as the number and distance from each
95 other of the holes in the yarn-carriers. The yarn-carriers are suspended by means of wires or cords K to the corresponding strips A, so that every lift given to a strip is equally given to the corresponding yarn-carrier.

100 B B are pegs fitted in the holes of the strips. The heads of these pegs project from the holes

until pushed in by Jacquard needles F F, there being one needle for every peg. In Fig. 3 all the needles are shown as pushed in, except one, (the fourth from the top.)

5 S and T are guide-plates through which the needles F F pass.

L is a plate facing the ends of the pegs.

I is a bar or lifter below the vertical rows of pegs and extending across the loom.

10 D is the card-cylinder.

The operation is as follows: The card-cylinder D, which is operated by means of the rod X, as hereinafter explained, is moved from the position shown in full lines in Figs. 1 and 2 to the position shown in Fig. 3, so as to bring its cards in contact with the needles F F, the ends of which at this time project beyond the guide-plate T. All the needles are thereby pushed forward by blanks or full parts of the cards except one needle in each vertical row, (see the fourth from the top in Fig. 3,) this one being that which corresponds with the design. The needles, except those thus selected, come against the pegs B and push the heads home against the strips A, one peg in each strip being left projecting. (See Figs. 3 and 5.) The card-cylinder D is now returned, and the needles which it pushed forward move back to their first position under the action of the springs G, the small bosses U preventing them from going back too far. The bar or lifter I is then raised to the position indicated at J, this being effected by the levers V V, and in this movement it comes in contact with the one projecting peg of every strip A, and thereby lifts the strip by means of this peg to an extent equal to one, two, or more holes, according to the particular peg that projects, as previously selected by the card, the corresponding yarn-carriers being by the same action lifted to the same extent through the intermediation of the cords or wires K. The bar and the strips will remain lifted while the loom goes through various movements, as will be well understood, after which they are allowed to return to their former position. Then the plate L on the opposite side of the strips is moved by means of the levers W W, (operated as hereinafter described,) so as to come against the ends of the pegs B projecting at that side and push them back into the strips, ready for the next action of the Jacquard needles. This plate L is then returned. In Fig. 3 the plate L is shown in its back or returned position. The card-cylinder D next repeats its forward movement, and so on, being caused to make a partial revolution in the usual manner and by the usual devices before each such forward movement. Y is the lever and Z the main shaft, which give motion to the Jacquard apparatus. The lever Y is operated by the rod Y' from the loom and imparts a rocking motion to the shaft Z. On the shaft Z are keyed the two levers V V, already referred to, which lift the bar I. This bar is carried by two up-rights V' V', the lower ends of which rest

upon the levers V V and move up and down as these levers rock with the shaft Z. The lower end of the rod X, already referred to as operating the drum D, is jointed at its lower end to the lever Y and at its upper end to an arm Y¹⁰, keyed to the shaft Y², to which it imparts a rocking motion. To the shaft Y² are keyed other arms Y³, which as they rock give rectilinear motion in the one direction to bars Y⁴, that move the drum D, rectilinear motion in the other direction being given to the bars Y⁴ by the springs Y⁵. The levers W W, that move the plate L, are carried by a sleeve W' on the shaft Y² and are operated by the rod L², which is connected with the loom and rocks the sleeve W' by means of the arm W². Instead of the required needle being selected by a hole in the Jacquard card, as hereinbefore described, in accordance with the design, the needle may be selected by a blank or full part of the card, in which case the selected needle will be the one pushed forward, instead of, as above described, the one not pushed. The bar or lifter must therefore be placed at the other side of the strips A, as indicated at I, Fig. 7. The strips A in their up-and-down movements are guided by top and bottom frames P and O, with combs Q and R for keeping the strips apart. The comb-teeth are preferably pointed, (see Fig. 8,) to enable them to enter between the strips more easily. The strips should have stop-pieces, such as shown at b, Figs. 4, 5, 6, and 7, to prevent their dropping too low. When the holes a a are oblong, as in Fig. 6, and the pegs B are of corresponding shape in section, there is a greater surface for the points of the needle F to act against. This is of advantage, because the needles cannot conveniently be put always in a straight line with the pegs.

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

1. In a loom for the manufacture of tufted or pile fabrics the combination with the yarn carriers of an equal number of vertical strips to which said yarn carriers are respectively connected, said strips each having horizontal holes corresponding in number and distance apart with the holes in said yarn carriers, a set of pegs engaging in the holes of said strips one peg for each hole, a set of Jacquard needles for selecting the particular pegs required by the exigencies of the design to be produced, a card drum for operating said needles, and a device for lifting the strips by means of the selected pegs, substantially as and for the purpose set forth.

2. In a loom for the manufacture of tufted or pile fabrics the combination with the yarn carriers of an equal number of vertical strips to which said yarn carriers are respectively connected, said strips each having horizontal holes corresponding in number and distance apart with the holes in said yarn carriers, a set of pegs engaged in the holes of said strips one peg for each hole, a set of Jacquard needles for selecting the particular pegs required

by the exigencies of the design to be produced, a card drum for operating said needles, a device for lifting the strips by means of the selected pegs, and a plate for returning to the normal positions the pegs that have been moved by the Jacquard needles, substantially as and for the purpose set forth.

3. In a loom for the manufacture of tufted or pile fabrics the combination with the yarn carriers of the strips A having holes *a*, connectors K connecting said strips with said yarn carriers, pegs B fitted in said holes, Jacquard needles F for selecting said pegs according to the exigencies of the design, card drum D for operating said needles, lifter I for lifting the strips A by the selected pegs, uprights V' V' carrying said lifter, rocking levers V V for raising said uprights, and reciprocating plate L for pushing back the pegs that have been moved by the Jacquard needles, all substantially as and for the purpose described and shown.

4. In a loom for the manufacture of tufted or pile fabrics the combination with the yarn carriers, of the strips A having holes *a*, connectors K connecting said strips with said yarn carriers, pegs B fitted in said holes, Jacquard needles F for selecting said pegs according to the exigencies of the design, card drum D for operating said needles, lifter I for lifting the strips A by the selected pegs, plate L for pushing back the pegs that have been moved by the Jacquard needles, and rocking levers W W for imparting reciprocating motion to the plate L, all substantially as and for the purpose described and shown.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

THOMAS GREENWOOD.

Witnesses:

REGINALD SEYMOUR BRINTON,
GEORGE RICHARD WOODWARD.