

**No. 693,540.**

**Patented Feb. 18, 1902.**

**R. CHWALLA.**

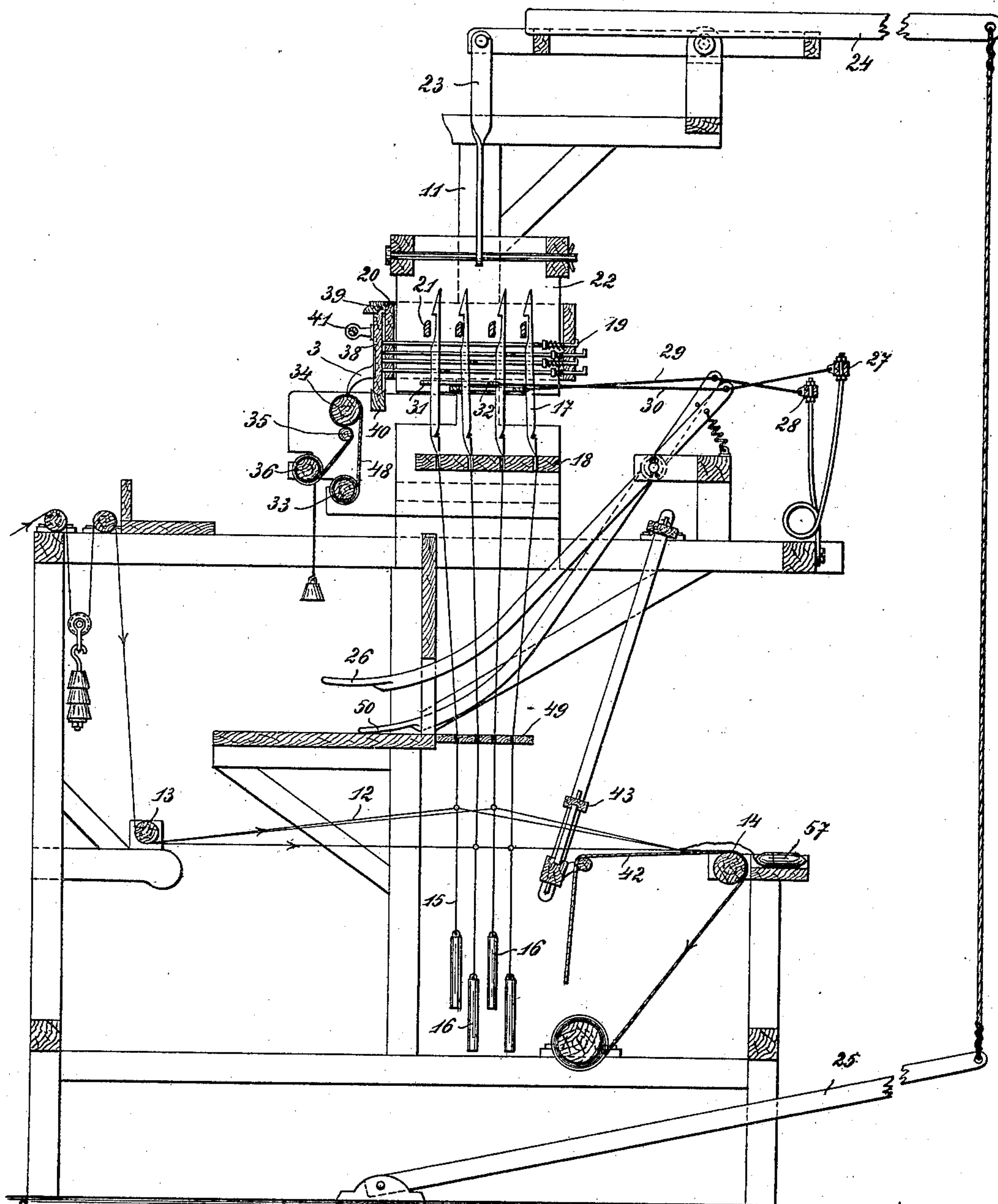
## JACQUARD MECHANISM FOR LOOMS.

(Application filed May 14, 1901.)

(No Model.)

**5 Sheets—Sheet 1.**

*Fig:1.*



WITNESSES.

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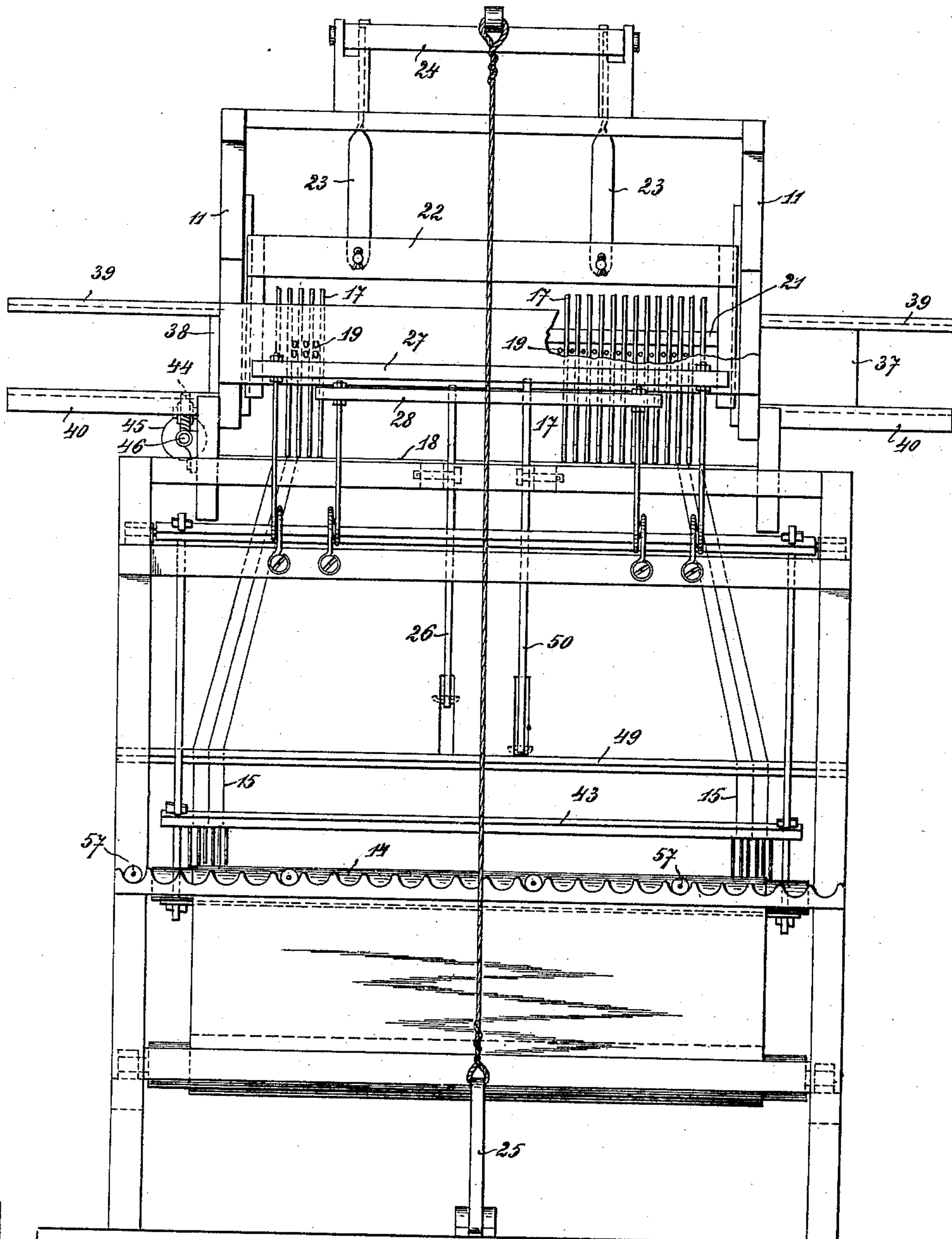
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Fig. 2.



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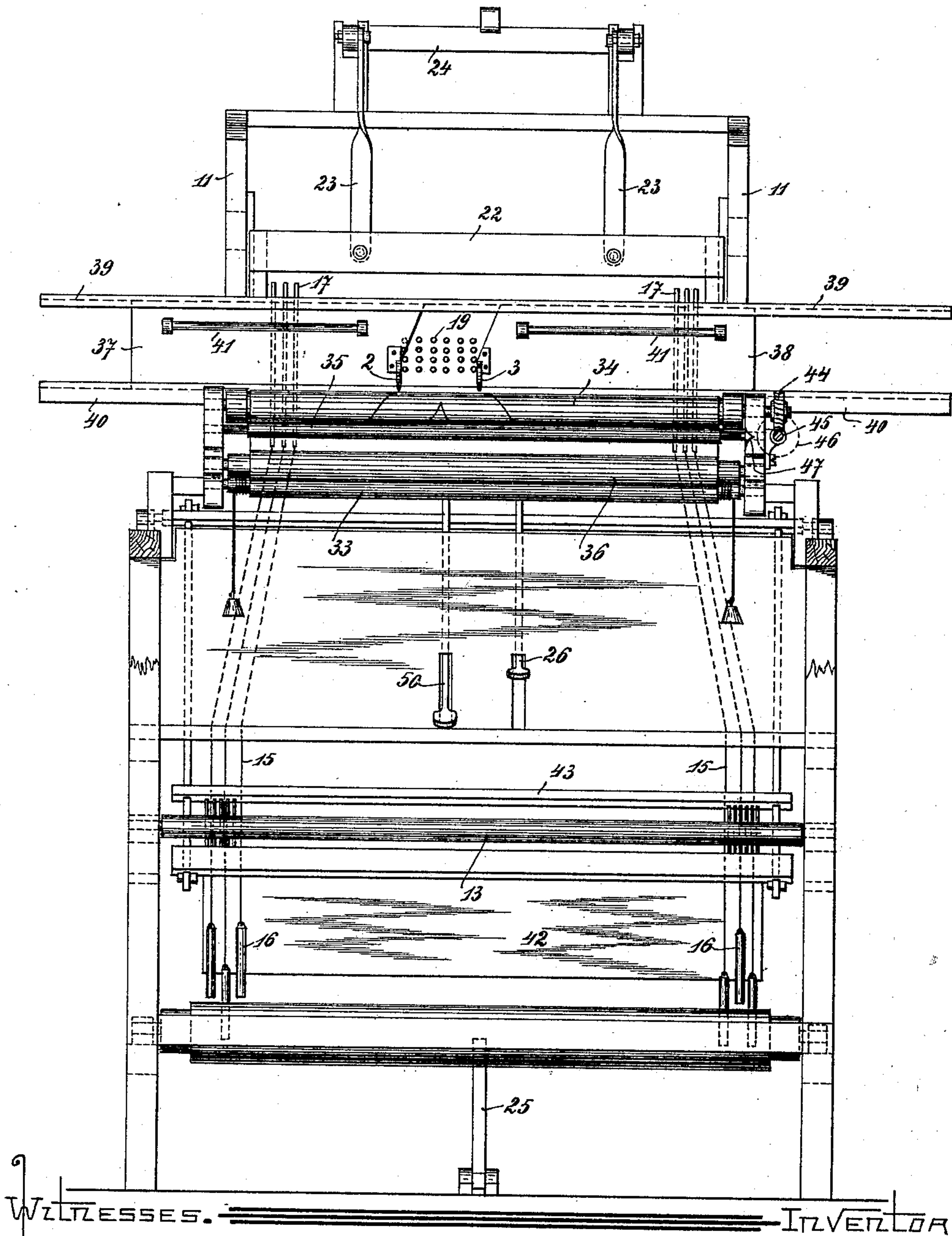
# JACQUARD MECHANISM FOR LOOMS.

(Application filed May 14, 1901.)

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**5 Sheets—Sheet 3.**

*Fig: 3.*



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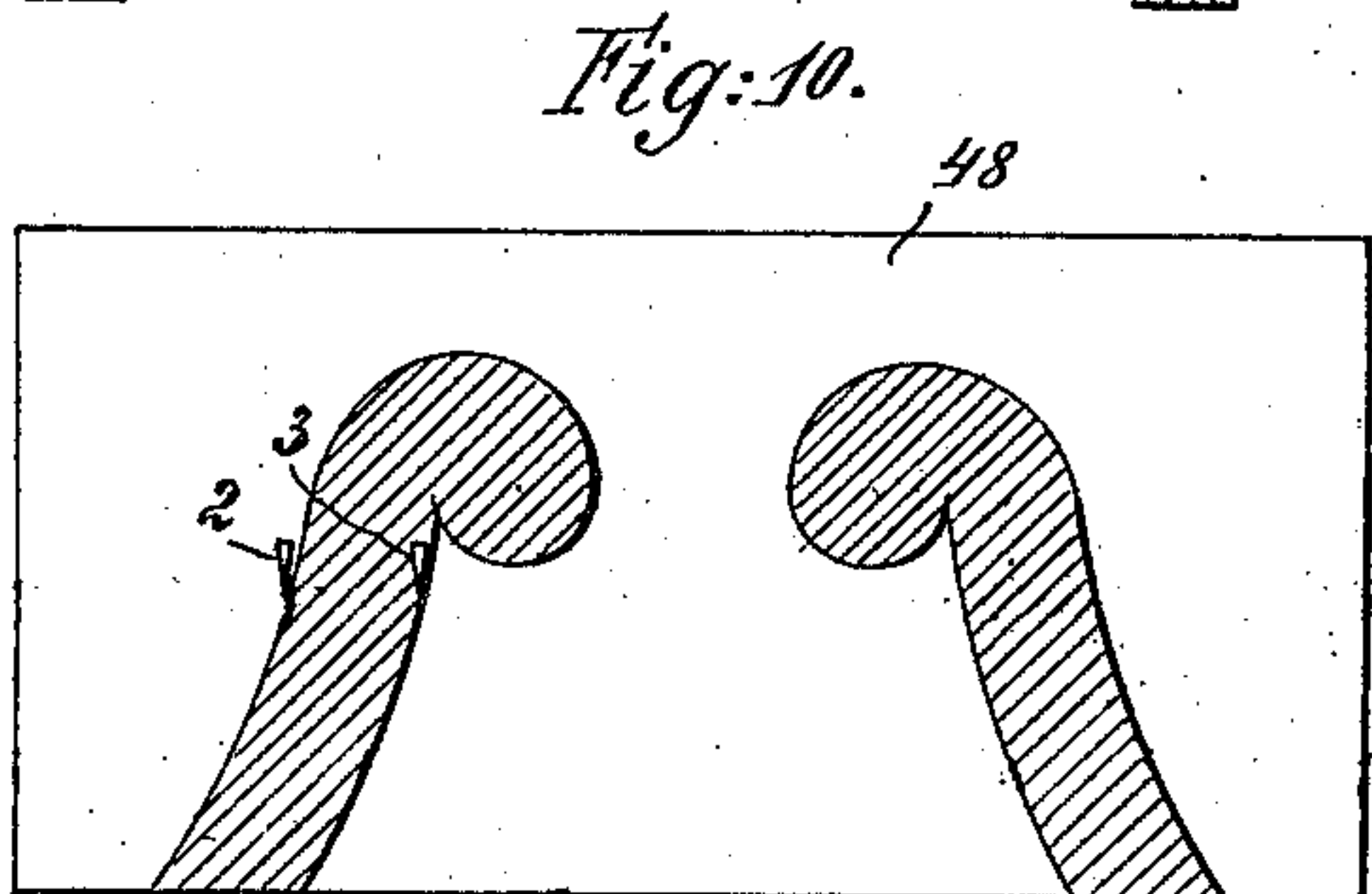
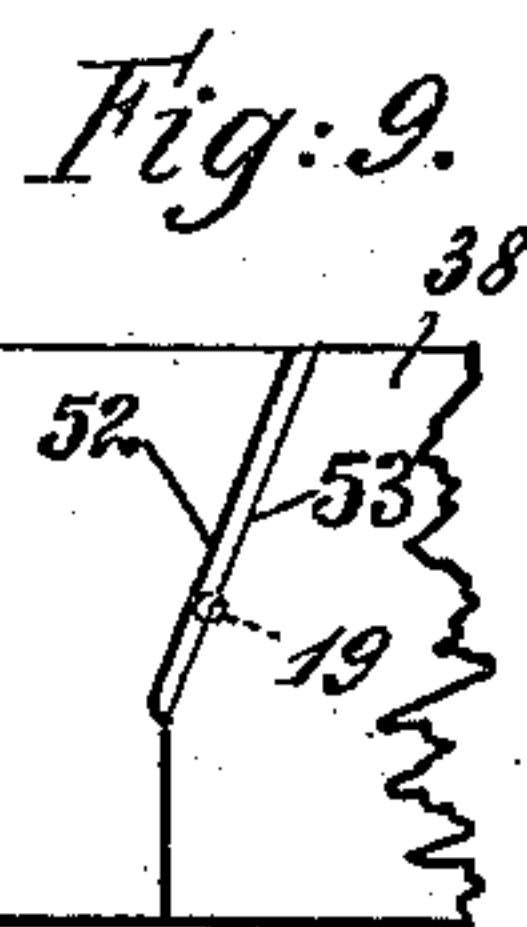
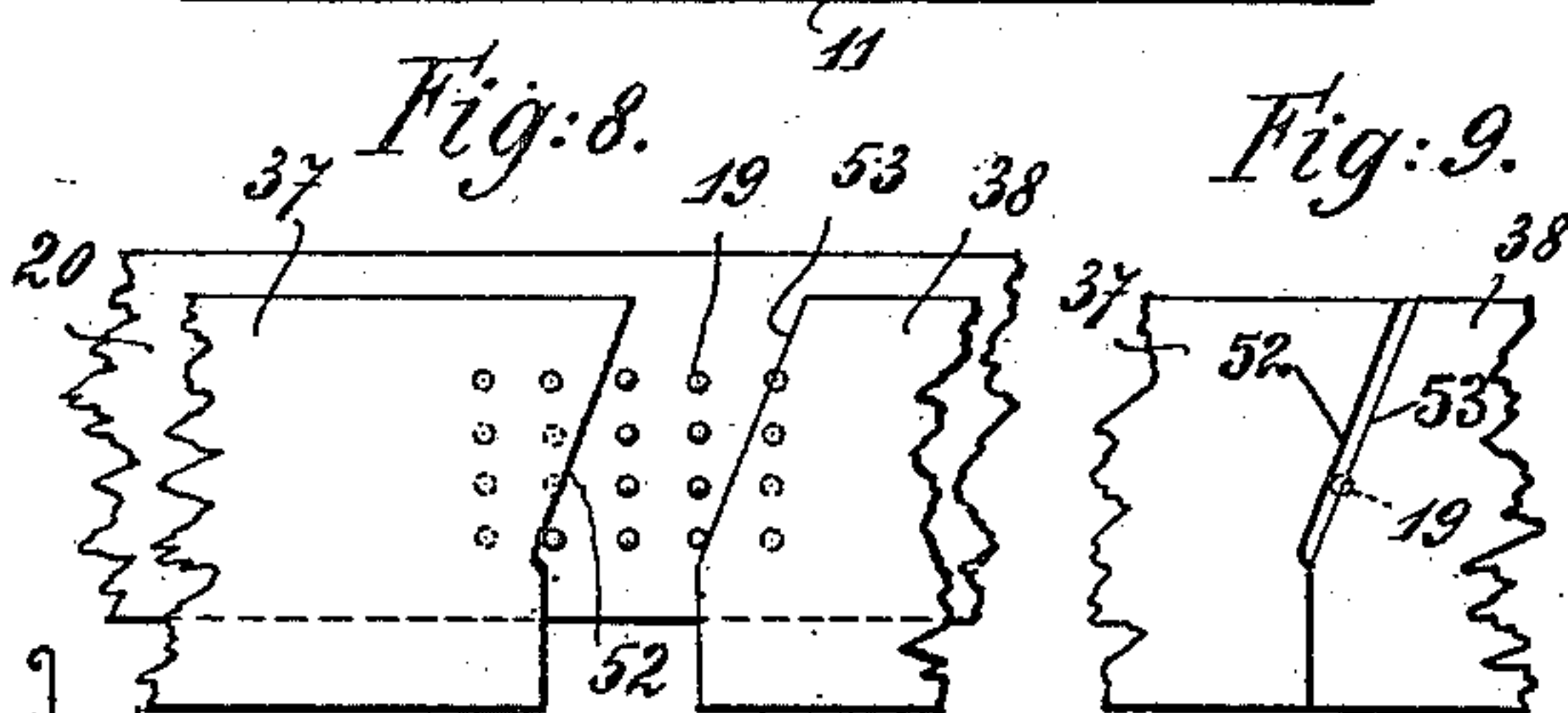
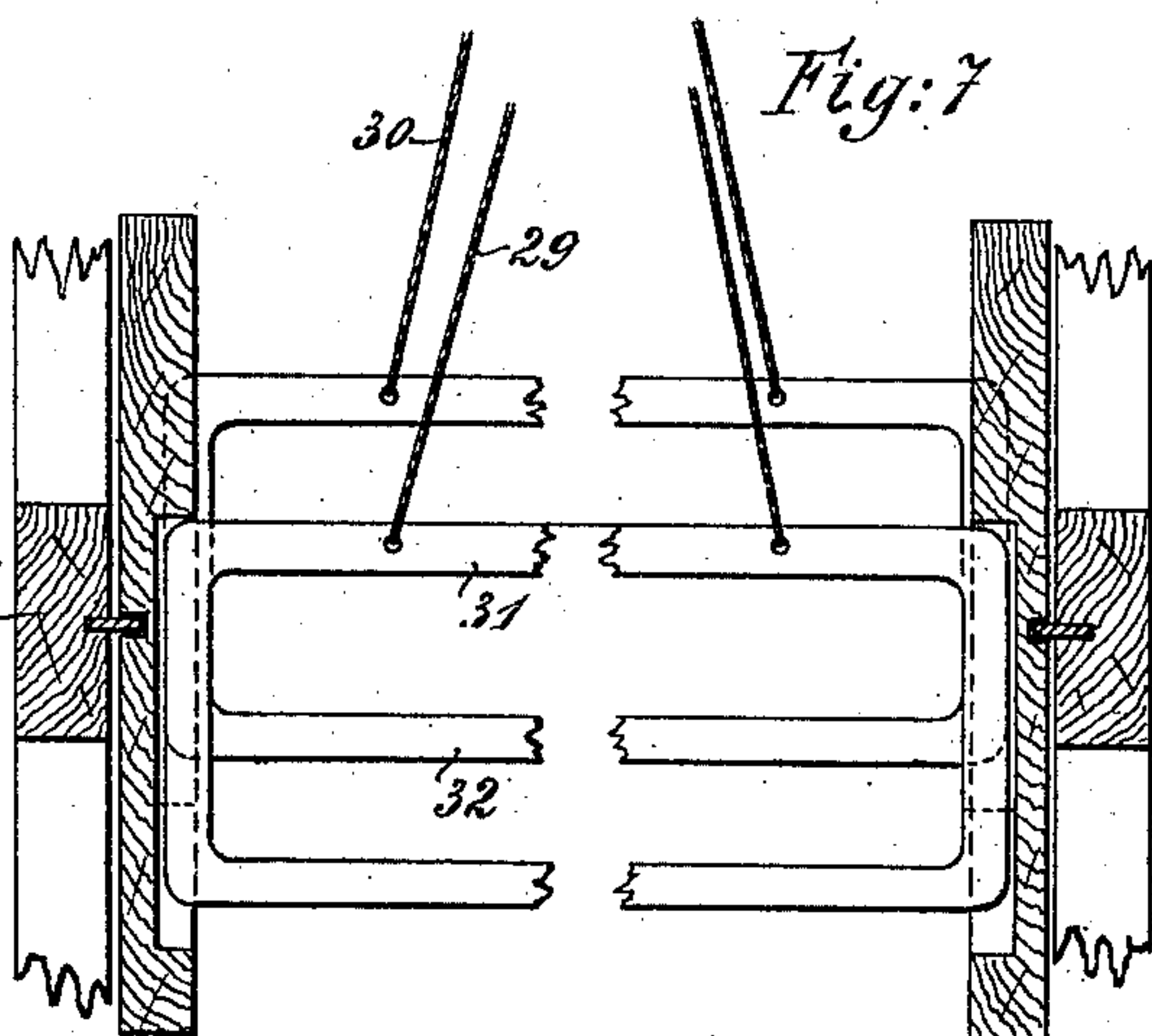
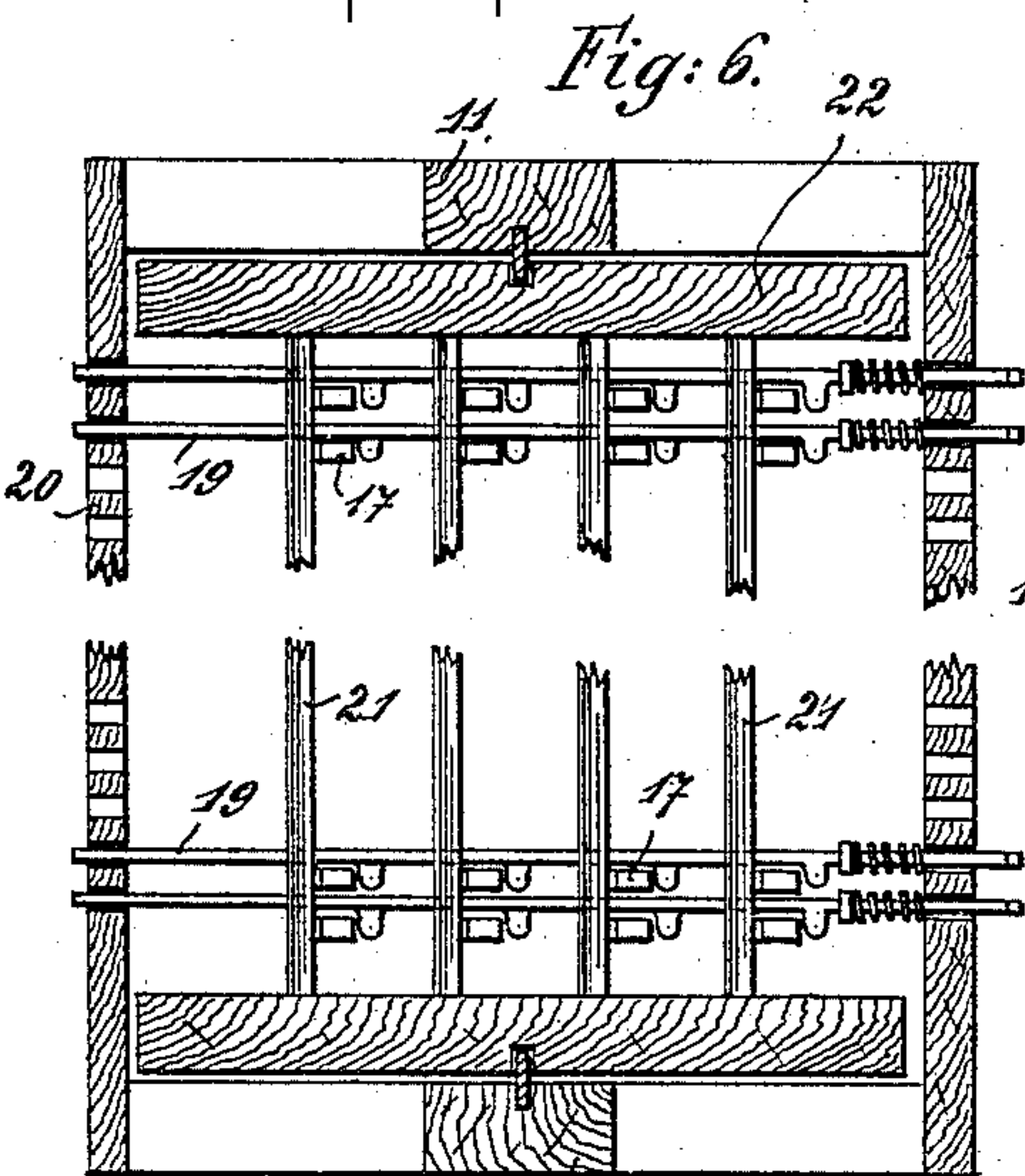
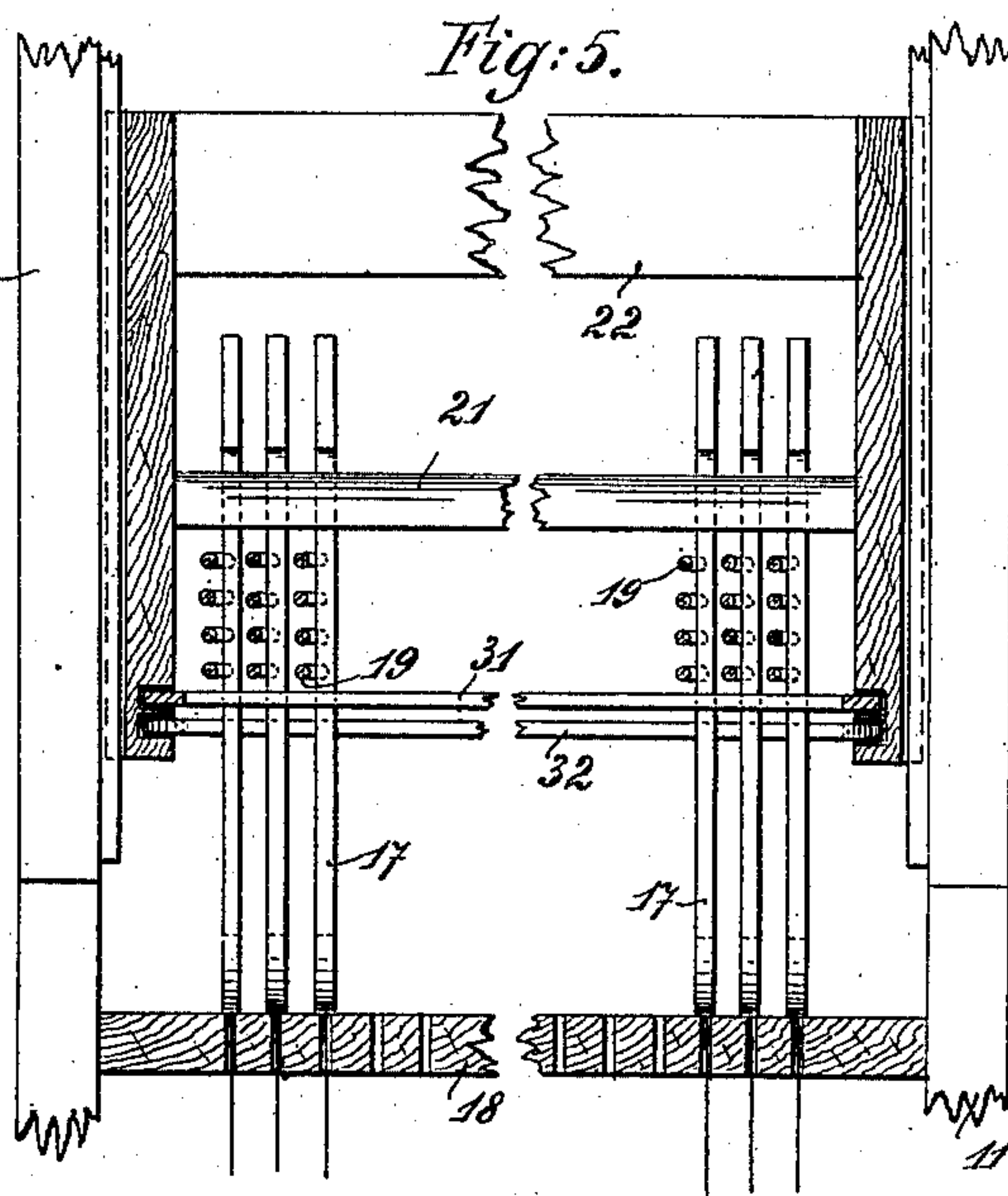
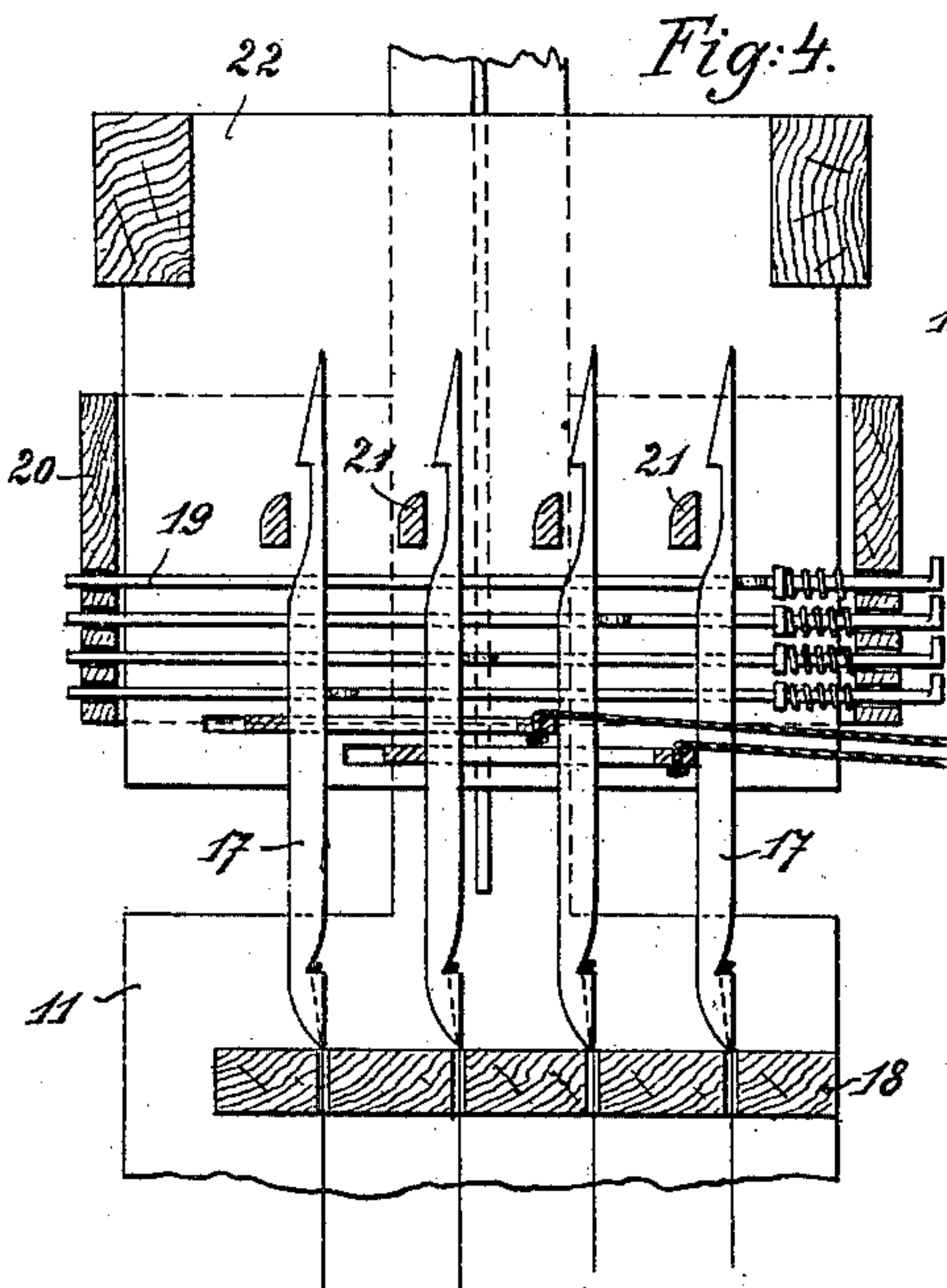
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JACQUARD MECHANISM FOR LOOMS.

(Application filed May 14, 1901.)

(No Model.)

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No. 693,540.

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JACQUARD MECHANISM FOR LOOMS.

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(No Model.)

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Fig. 12.

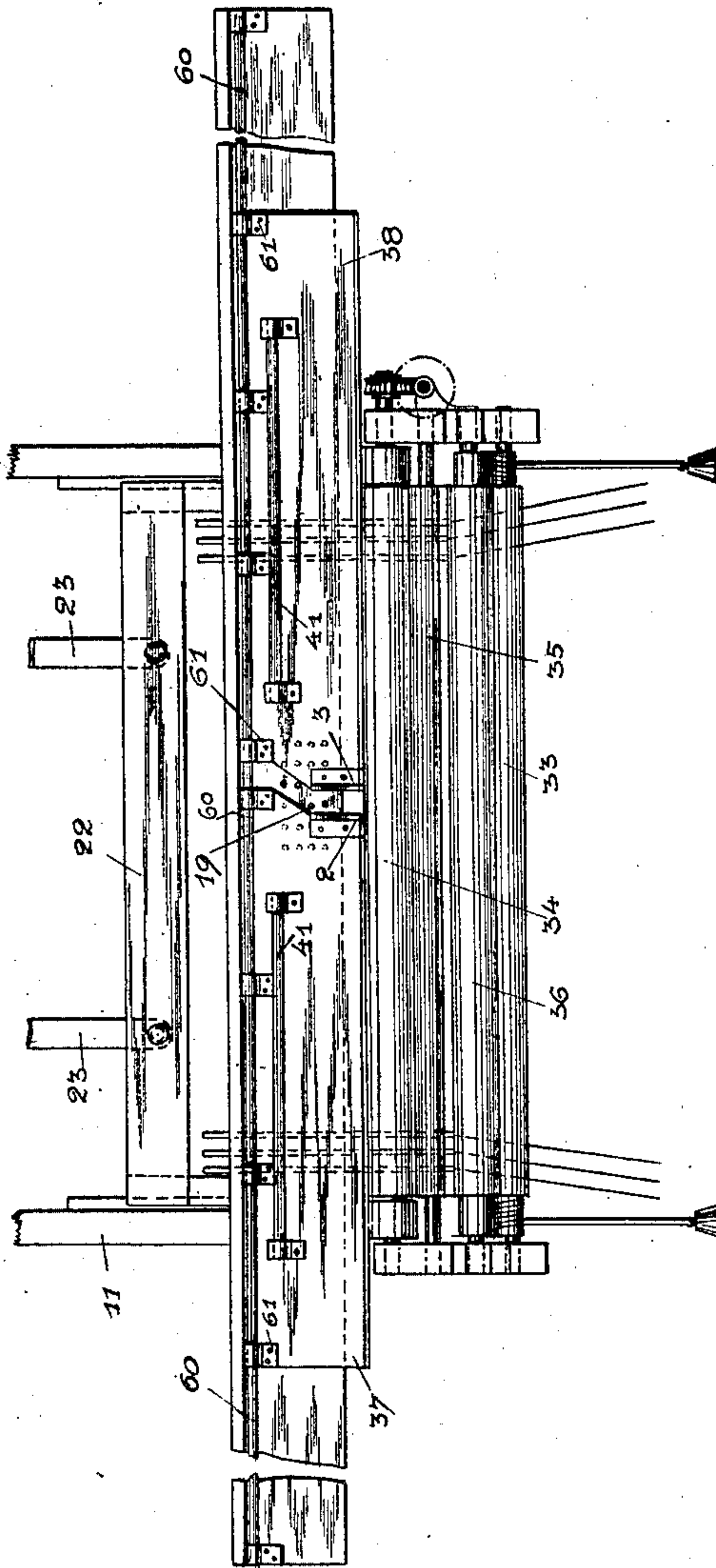
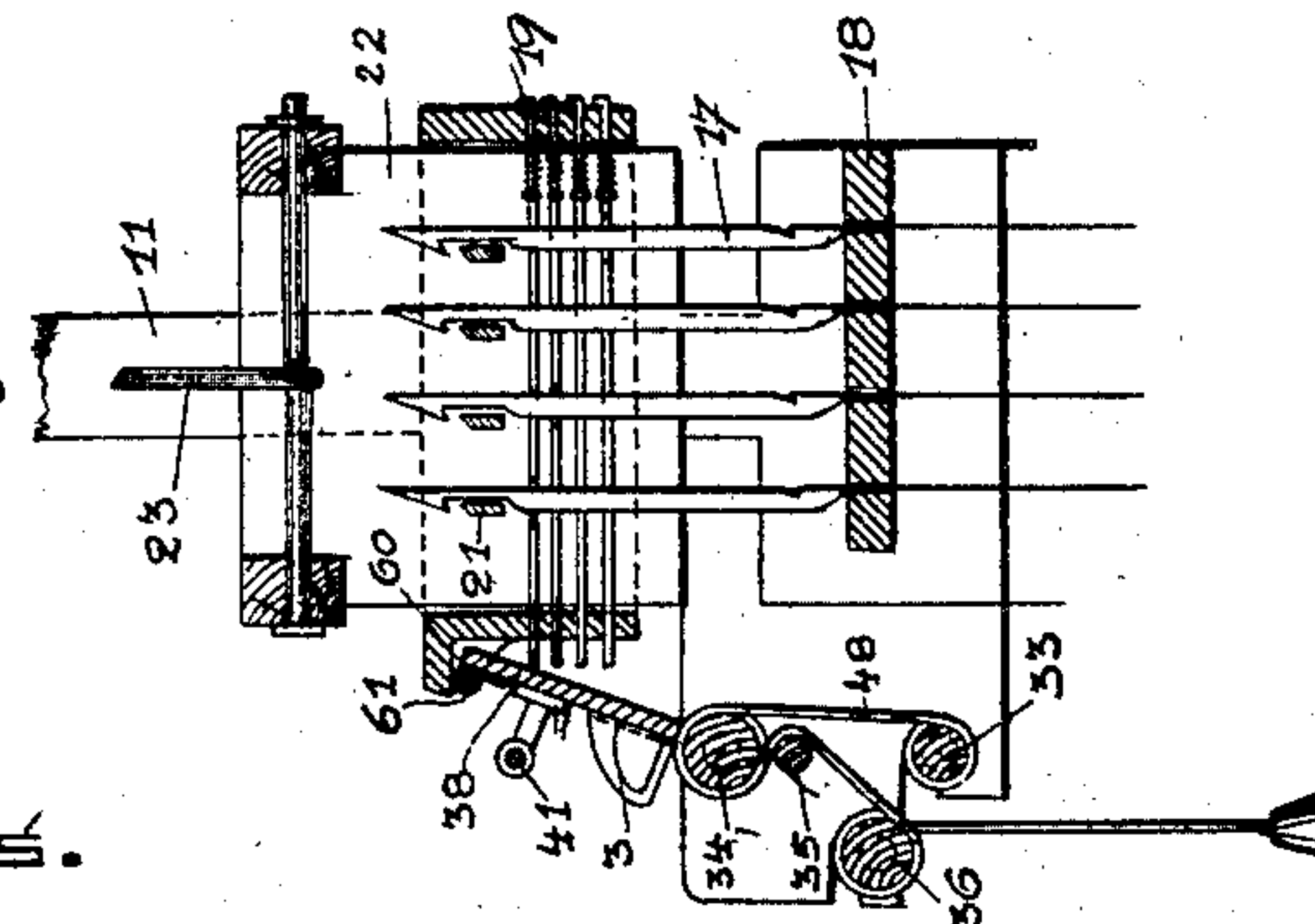


Fig. 11.



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# UNITED STATES PATENT OFFICE.

RUDOLF CHWALLA, OF VIENNA, AUSTRIA-HUNGARY.

## JACQUARD MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 693,540, dated February 18, 1902.

Application filed May 14, 1901. Serial No. 60,153. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLF CHWALLA, manufacturer, a subject of the Emperor of Austria-Hungary, residing in VII Seidengasse 32, Vienna, Austria-Hungary, have invented certain new and useful Improvements in Jacquard Mechanism for Looms Used in the Manufacture of Gobelin and Like Woven Fabrics; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

Heretofore in the production of gobelin and other similar complicated patterns of the tapestry variety of woven fabrics the operation, at best a tedious one, has been made the more tedious and slow owing to the fact that the manipulation of the warp in selecting and elevating the threads thereof to form the sheds has been effected manually.

It is therefore the object of this invention to provide mechanical means for controlling the wefts in producing the sheds, thereby enabling the work to be proceeded with not only with the greater expedition, but with greater accuracy.

I will describe my invention with reference to the accompanying drawings, wherein—

Figure 1 is a longitudinal section of my improved loom. Fig. 2 is a front view of said loom. Fig. 3 is a rear view of the loom. Figs. 4, 5, 6, and 7 are sectional views of the means for controlling the warp in producing the shed. Figs. 8 and 9 are detail views of said warp-controlling means. Fig. 10 shows a pattern or guide which the operator follows in working said warp-controlling means, and Figs. 11 and 12 illustrate a modified form of the warp-controlling means.

12 in said drawings designates the warp, the same passing under a roller 13 at the back of the loom to and over the breast-beam 14.

15 designates the harness-cords, kept taut by weights 16 and suspended from lifters or hooks 17 of the warp-controlling means, which latter is mounted in the upper part 11 of the loom-frame, normally resting on a bottom-

board 18. To these lifters or hooks are connected in a well-known manner horizontal spring-actuated needles 19, which pass through a needle-board 20 at the back of the warp-controlling means. 21 denotes the knives or griff-bars, carried in a frame 22, for elevating the lifters or hooks 17, said frame being connected by a link 23 with a lever 24, which is in turn connected in some suitable manner with a lever 25 near the base and at the front of the loom. The arrangement is such that normally the depression of the lever 25 and the consequent elevating of the frame 22 would result in the lifting of all the hooks 17 and the entire warp, because the various needles 19 normally hold the hooks 17 where they will be engaged by the rising griff-bars or knives 21. In order, therefore, to elevate only those warp-threads in the particular part of the warp into which the weft is to be introduced, I provide special means for selecting the needles which are to be held back, so as to clear their corresponding lifters from the rising griff-bars or knives, which means may be described as follows: At the back of the warp-controlling means is arranged a series of rollers 33, 34, 35, and 36, the rollers 33 and 36 being the one a supply-roller and the other a take-up roller and the rollers 34 and 35 being simply guide-rollers. These rollers carry a strip of paper or other similar material 48, on which is the design, produced either in colors corresponding to the pattern to be worked out or in simple outlines, from which the warp-controlling means is to be operated. (See Fig. 10.) It is preferable that the arrangement of the sheet 48 be such that the warp-threads indicated on its design run parallel with the actual warp-threads of the finished fabric. In front of the needle-board 20 are arranged two slides or needle-stops 37 and 38, each of which can be moved laterally in guides 39 and 40 to an extent equal to the width of the fabric, at least, by means of a handle 41. These needle-stops or slides have pointers 23, the points of which almost touch the design on the paper 48.

From the foregoing it will be seen that according as the slides or needle-stops 37 and 38 are moved, so as to maintain their pointers



at the edges of the pattern being worked out and which is continually advancing as the loom operates, so those needles which are opposed to the space between said needle-stops 5 will be free to advance, thus permitting their corresponding lifters or hooks to be engaged by the rising griff-bars or knives. In this way, according to a pattern, just those warp-threads which are to be called to form the 10 shed in that part of the warp where the weft is to be next inserted are selected.

Of course in that embodiment of my invention now being described some means is needed to normally hold the entire set of needles 15 back before each operation of the loom. This is accomplished by sliding frames 31 and 32, which respectively engage the first and third and the second and fourth rows of lifters 17 and which are connected with spring-bars 27 20 and 28 at the front of the loom by cords 29 30. To the cords 29 and 30 are connected the upper ends of levers 26 and 50. It will be seen that by depressing these levers the needles which the frames 31 and 32 control will 25 be permitted to move forward, thereupon to be either held back by the needle-stops or project through the space between them.

It will be seen that although, as above described, that particular part of the warp which 30 the weaver is directly at work on is selected according as the space between the needle-stops is opposite the needles with which the warp-threads have connection no shed, if all the selected needles are permitted to advance 35 between the needle-stops, can be formed. In order, therefore, to produce the shed, the operator who follows the pattern 48 in practice depresses but one of the levers 26 and 50, the other being left elevated, so that its spring- 40 plate 27 (28) holds back the corresponding frame 31 (32.) In this way alternating threads of the warp are raised to form the shed, the others remaining depressed.

In the modified form of the invention shown 45 in Figs. 11 and 12 the needle-stops 37 and 38 are sustained by brackets 61 on a rod 60, the arrangement being such that they are capable of a pivotal and a lateral sliding movement on said rod 60. In the operation of this 50 form of the warp-controlling mechanism the operator simply swings the needle-stops 37 and 38 on their pivot outwardly, then adjusts them so that their pointers register with the design, and then presses them inwardly, thus 55 pushing back all but those needles which control the immediate part of the warp to be worked upon. The paper 48, on which the design or pattern is worked, may be adjusted to a nicety as the work proceeds by a worm-wheel 60 44, engaging a worm 45, which carries a hand-wheel 46, with which coöperates a pointer 47 for further insuring accuracy in the adjustment of the pattern. It will be understood that the usual batten 43 is employed for beating 65 up the weft each time it is passed through the shed; also, that the usual pattern 42 is pro-

vided, from which the weaver—i. e., the operator who inserts the weft—works. If the adjacent edges of the needle-stops were vertical, it would be impossible to bring within 70 control any less than four warp-threads at a time or as many as there are needles in each vertical row. In order, therefore, to be able to split up the vertical rows of needles, and thus make the adjustment in the warp more 75 delicate, the adjusting edges of said needle-stops are similarly beveled, as shown at 52 and 53 in Figs. 8 and 9. Moreover, if the adjacent edges of the needle-stops were adapted to contact with each other throughout their 80 lengths it might occur that in two complete operations of the mechanism one needle would be unintentionally twice in succession held back by the needle-stops. This would occur 85 if in one operation one needle-stop at its edge held back said needle and in the next operation the other needle-stop had to be moved to a position where its edge practically coincided with the edge of said first-named needle-stop, which latter would be afterward 90 moved away therefrom to produce the space. In order to avoid this, therefore, the edge of one of the needle-stops is cut away to an extent slightly less than the diameter of each 95 needle. Then under the above conditions when the first needle-stop is moved for adjustment for the second operation the needle could advance.

Having thus fully described my invention, what I claim as new, and desire to secure by 100 Letters Patent, is—

1. In a loom, the combination of lifters for raising and lowering the warp-threads, lifter-elevating means, controlling devices for said lifters adapted to move them into and out of 105 operative position relatively to said elevating means, a pattern, and a selecting member for said controlling devices adjustable relatively to the pattern, substantially as described.

2. In a loom, the combination of lifters for 110 raising and lowering the warp-threads, lifter-elevating means, controlling devices for said lifters adapted to move them into and out of operative position relatively to said elevating means, a pattern, and sliding selecting mem- 115 bers for said controlling devices adjustable with reference to the pattern, substantially as described.

3. In a loom, the combination of lifters for 120 raising and lowering the warp-threads, lifter-elevating means, controlling devices for said lifters adapted to move them into and out of operative position relatively to said elevating means, a pattern, and a movable stop for said controlling devices adjustable with reference 125 to said pattern, said controlling devices being movable through the plane of movement of said stop, substantially as described.

4. In a loom, the combination of lifters for 130 raising and lowering the warp-threads, lifter-elevating means, needles controlling said lifters and adapted to move them into and out



of operative position relatively to said elevating means, a pattern, and movable needle-stops adjustable with reference to said pattern, said needles being movable through  
5 the plane of movement of said stops, substantially as described.

5. In a loom, the combination, with lifters for raising and lowering the warp-threads, lifter-elevating means, and rows of needles  
10 controlling the positions of said lifters relatively to the lifter-elevating means, of a

movable needle-stop, said needles being movable through the plane of movement of said needle-stop, substantially as described.

In testimony that I do claim the foregoing 15  
I have hereunto set my hand this 29th day  
of April, 1901.

RUDOLF CHWALLA.

Witnesses:

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ALVESTO P. HOGUE.