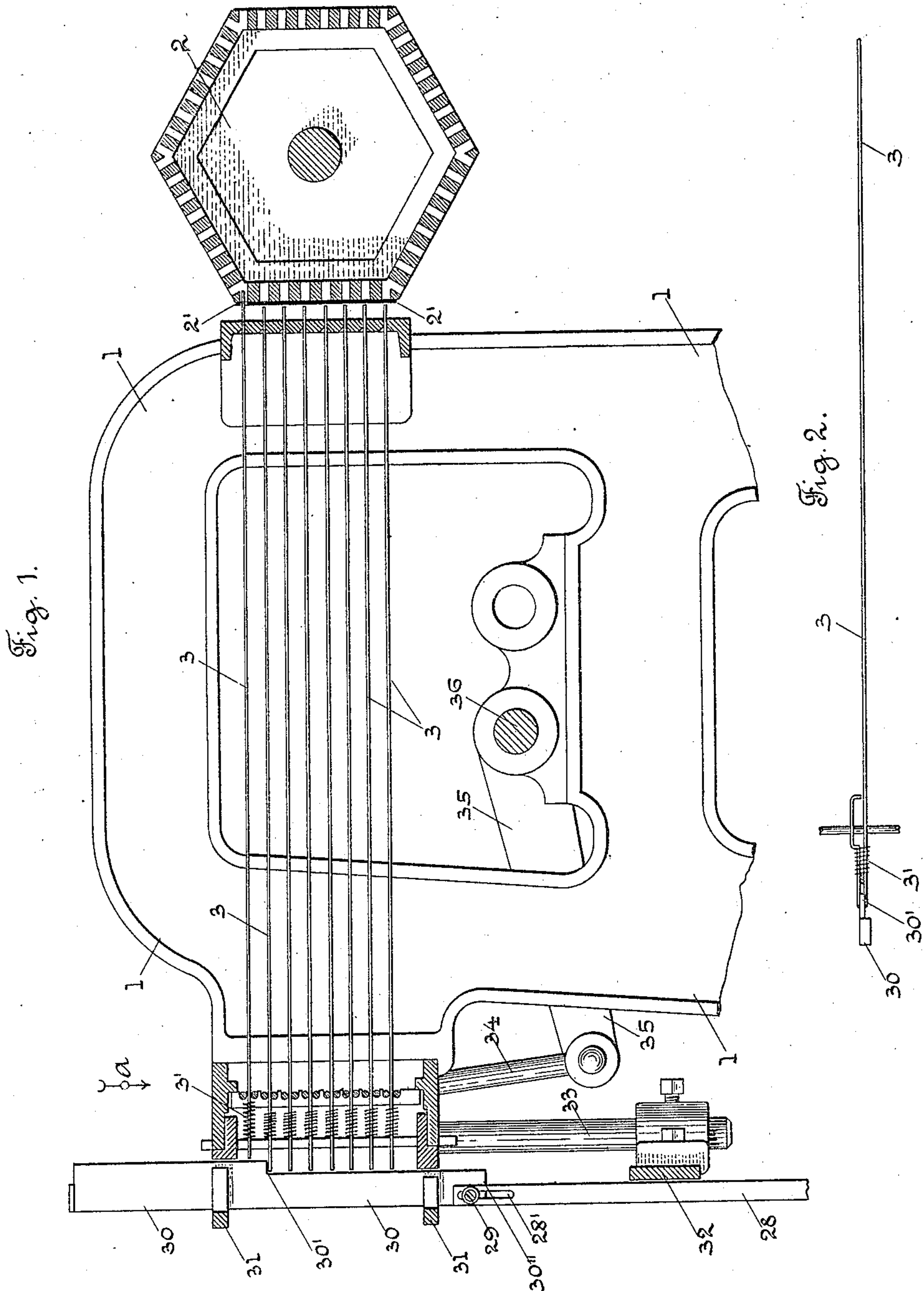


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2 SHEETS—SHEET 1.



Witnesses  
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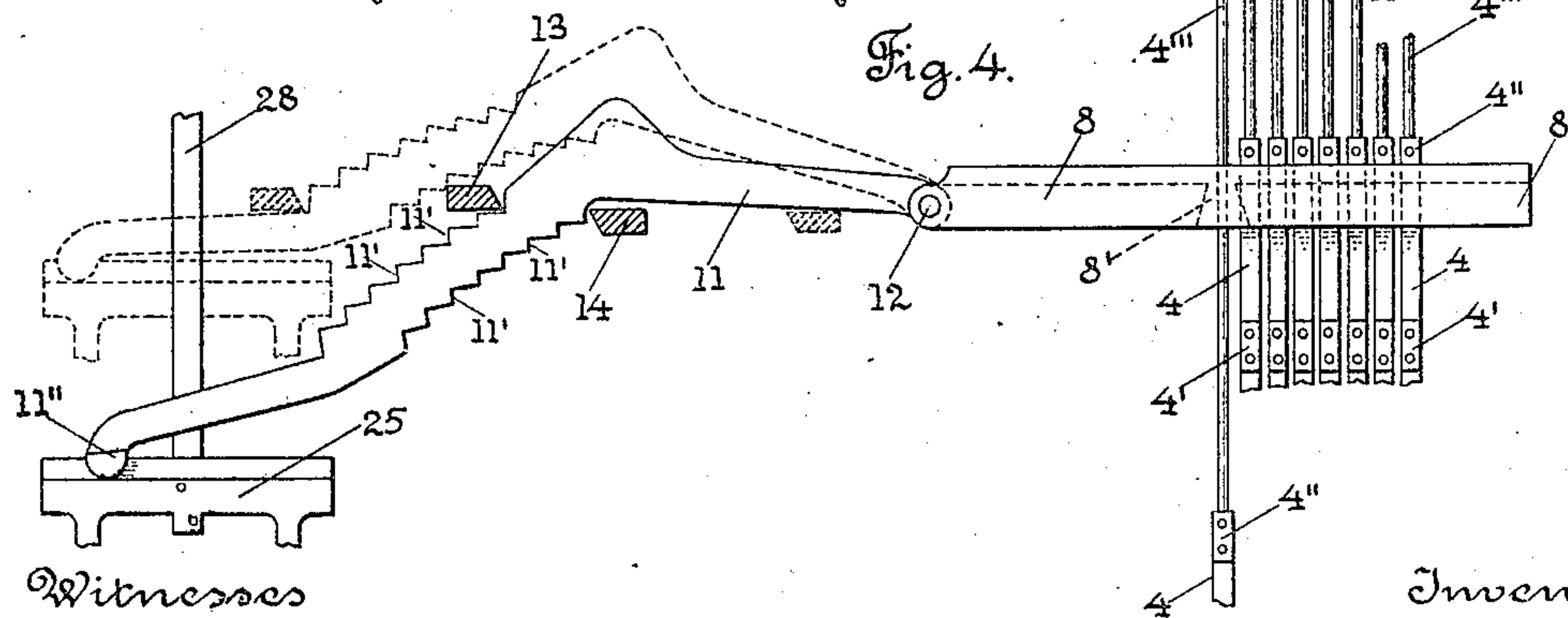
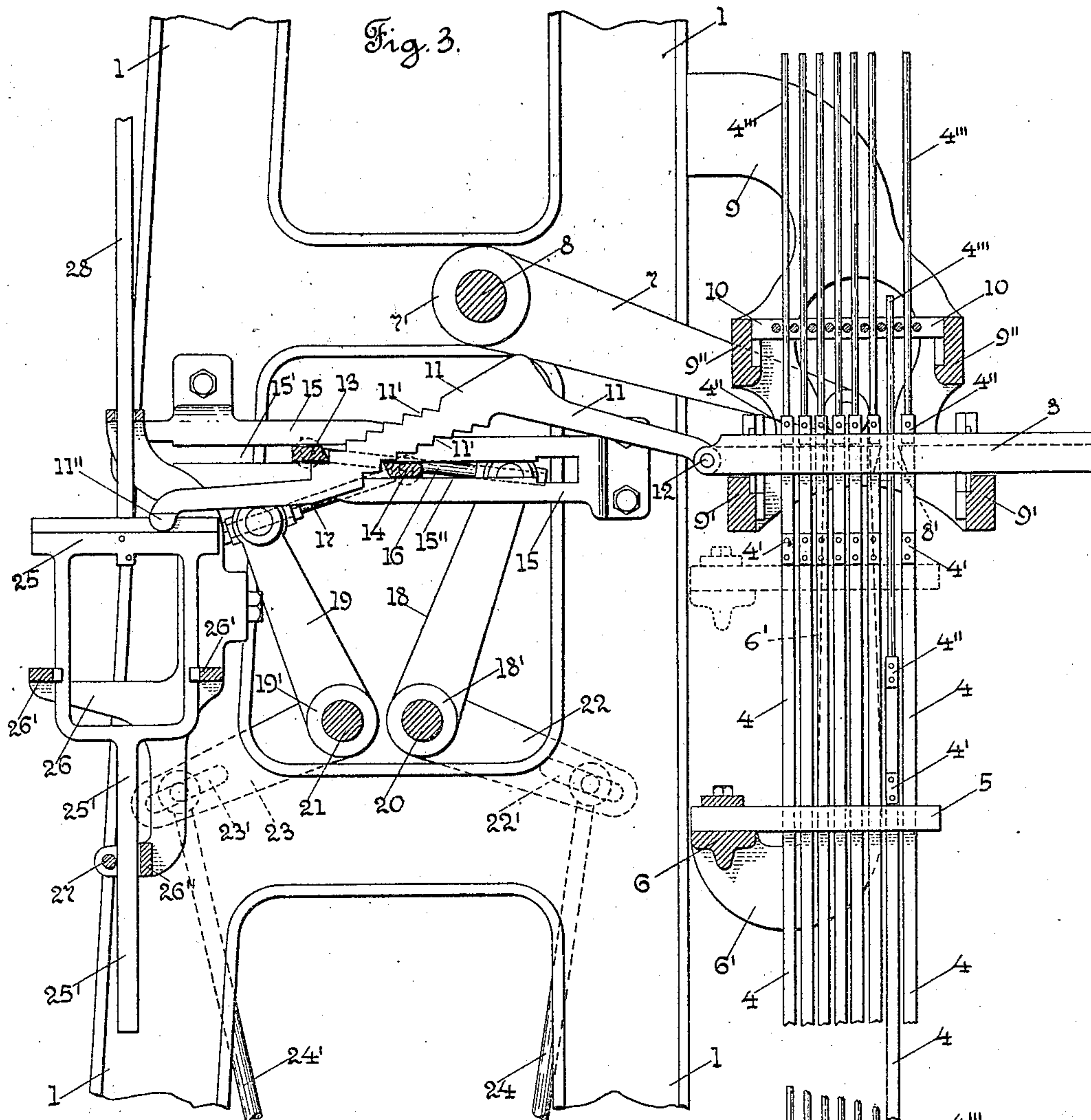
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# UNITED STATES PATENT OFFICE.

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## LOOM FOR WEAVING TUFTED FABRICS.

942,953.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed September 21, 1908. Serial No. 454,019.

*To all whom it may concern:*

Be it known that I, HORACE WYMAN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Looms for Weaving Tufted Fabrics, of which the following is a specification.

My invention relates to looms for weaving tufted fabrics, and particularly to the jacquard mechanisms for looms of the class referred to. In this class of looms for weaving tufted fabrics as shown and described in U. S. Letters Patent, No. 446,402, there are a series of needles which carry the yarn to form the tuft or pile on the woven fabric, and as shown in said patent there is a set of eight needles, which carry tuft yarn of different colors, for each tuft in one row across the fabric. A selected needle from each set is lowered, to insert the end of the needle into the warps and interweave its tufts with the weft threads, to form the fabric.

The object of my invention is to improve upon the construction of looms of the class referred to, and more particularly the mechanism for selecting the needles, and the mechanism for inserting the needles into the warps, in looms of the class referred to.

My invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

I have only shown in the drawings a detached portion of a loom, with my improvements applied thereto, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is a cross section through the upper portion of a jacquard with my improvements applied thereto. Fig. 2 shows a jacquard needle, detached, looking in the direction of arrow *a*, Fig. 1. Fig. 3 is a cross section of the lower portion of the jacquard, on a smaller scale, with the needle operating mechanism combined therewith. Fig. 4 shows a detached portion of the parts shown in Fig. 3, in a different position.

In the accompanying drawings, 1 is the end frame of a jacquard, and of the needle selecting mechanism. 2 is the jacquard cylinder, and 2' one of a series of indicating cards carried on said cylinder, in the usual way. 3 are a series of needles operated by

the cylinder 2, in the usual way. 4 are the tuft yarn needles, see Fig. 3, having secured thereon, near their upper ends, the metal plates, which form shoulders 4', through which said needles 4 are raised into their upper position by the lifter bars 5.

There is a lifter bar 5 for each set of needles 4, which bar is secured to the bar 6, see Fig. 3, which has an upwardly extending arm 6', which is pivotally secured to a lever 7, the hub 7' of which is fast on a shaft 8, which has a rocking motion, through an operating lever, not shown, on the loom. The tuft yarn needles 4 also have a second set of plates thereon, which form a second series of shoulders 4'' above the first mentioned shoulders 4'. The shoulders 4'' are adapted to rest upon a series of selector bars 8, one bar for each set of needles 4. Each bar 8 has an opening 8' therethrough, see Fig. 4, through which opening one of the upper shoulders 4'' on the needles 4 may pass, when the bar 8 has been moved with its opening 8' under one of said shoulders. The selecting bars 8 are held and guided on two bars 9', on the lower end of a stand 9 secured to the frame 1, see Fig. 3.

The selecting bars 8 have a range of movement back and forth, sufficient to place the opening 8' therein under any one of the upper shoulders 4'' on the needles 4, whereby a needle of each set may be selected and lowered by the downward movement of the lifter bar 5, to insert the ends of the needles into the warps, as shown and described in U. S. Letters Patent, No. 446,402, above referred to. When the lifter bar 5 is lowered, as shown by full lines in Fig. 3, after the selection of a needle 4, the shoulders 4'' on all of the needles, except those which pass through the openings 8' in the selecting bars 8, will rest on the selecting bar 8 until the lifter bar 5 is raised again into its highest position, shown by broken lines in Fig. 3.

Extending upwardly from each needle 4 is a rod extension 4'''; said extensions are guided by a rack 10 secured to the bars 9' on the stand 9, see Fig. 3. The rod extension 4''' on the needles 4, when a needle has passed through the opening 8' in a selecting bar 8, will extend through the opening 8', to prevent the movement of the selecting bar 8 until the needle has been raised again to its highest position, thus pre-



venting the selecting bar 8 from being displaced when the shoulder 4' on a needle 4 is below said bar.

Connected with each selecting bar 8 is a 5 jack lever 11, preferably made of sheet metal, which is pivotally attached to a stud 12 on the end of the selecting bar 8. Each jack lever 11 is provided with as many 10 shoulders 11' on its upper edge and lower edge, as there are needles in one set of needles, for example, eight. The shoulders 11' are arranged on radial lines from the pivot stud 12, and are the same distances 15 apart as the needles of one set of needles. The shape and location of the shoulders 11' on the jack levers 11, as shown in the drawings, allow said jack levers to pass between two evener bars 13, and 14.

A stand 15 is secured on the frame 1, and 20 has thereon a longitudinally extending slot 15', and a second lower longitudinally extending slot 15'', in which travel respectively, in a horizontal plane, the two evener bars 13, and 14. The evener bars 13 and 14 are 25 operated through connectors 16, and 17, to levers 18 and 19, which have hubs 18' and 19', mounted respectively on shafts 20 and 21. Fast on the shafts 20 and 21 are the arms 22 and 23, respectively, having slots 30 22' and 23' therein, in which are adjustably secured the upper ends of two connectors 24 and 24', leading to some driven part of the loom, not shown.

The evener bars 13 and 14 move in the 35 same plane as the selecting bar 8, and said evener bars will engage, on their movements toward each other, the shoulder 11' on the jack lever 11, which is in the path of their movement, to move said jack lever 11 to a 40 point at which each evener bar 13 and 14 will engage a shoulder on the upper and lower side of the jack lever 11, as shown in Fig. 3, to move said lever and the selecting bar 8, and bring an opening 8' in the 45 selecting bar 8, under the shoulder 4' on the needle 4, corresponding in position in a set of needles with the position of the shoulders 11' on the lever 11. For instance, Fig. 3 shows the position of the jack lever 11, to 50 select the second needle 4 from the right to be lowered, and Fig. 4 shows a position of the jack lever 11, to move the selecting bar 8 to bring an opening 8' therein under a shoulder 4' on the first needle at the left.

55 When the evener bars 13 and 14 are in their outward position, as shown by broken lines in Fig. 4, the jack levers 11 may be raised or lowered to bring one of the shoulders 11' on the upper and lower edge of said 60 levers in the path of movement of the evener bars 13, and 14, whereby said evener bars will move the jack lever 11 and its attached selecting bar 8 to place its opening 8' in a position under the shoulder 4' on the needle 65 4 desired to be selected.

Each jack lever 11 has a slotted extension 11'' thereon which rests on a horizontally extending guide track 25, which guides the jack levers as said levers move back and forth. The track 25 is in this instance held 70 and guided, to have a movement in a vertical plane, by a guide frame 26, having the two transverse bars 26', and a lower transverse bar 26'', and a rod 27, see Fig. 3. The guide track 25 has a downward extending 75 extension 25', which extends between the lower transverse bar 26'' and the rod 27. Extending upwardly from the guide track 25 is a connector 28, preferably made as a thin steel bar, and having an elongated slot 80 28' through its upper end, see Fig. 1, which is adjustably connected by a screw 29 to a slide bar 30, which is guidingly held in a vertical direction by two transverse bars 31. The slide bars 30 are recessed to form a 85 shoulder 30'.

A bar 32 is adjustably secured on a vertically extending rod 33, see Fig. 1, to have an up and down movement with said rod 33, through a link 34 attached to a lever 35 fast 90 on a shaft 36. The vertically moving bar 32 is adapted to engage the lower edge 30'' of the slide bar 30, to hold this bar in its raised position, with its notched shoulder 30' above the series of indicating needles 3 of the jac- 95 quard.

The needles 3 of the jacquard are arranged as ordinarily, with springs 3' to retain them in a normal forward position, from which 100 the usual card indicating surface 2' on the cylinder 2 will move the selected needles back into the path of the shoulder 30' on the vertically moving slide 30. On the downward movement of the slide 30, through the operation of the bar 32, the notched shoulder 105 30' will be engaged by the inner end of one needle, in this instance the second from the top, see Fig. 2, to retain said slide 30 in a position to bring, through the connector 34, a jack lever 11 at its outer end into position 110 to be operated by the evener bars 13, and 14, to move the selecting bar 8, and bring the opening 8' therein into position to have the selected needle 4 dropped.

It will be understood that the details of 115 construction of my improvements may be varied if desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:— 120

1. In a loom for weaving tufted fabrics, yarn carrying needles arranged in sets, for yarns of different colors, each needle carrying a tufting yarn, and means to raise all of the needles with their ends above the 125 warps, and means to select and lower a needle in each set, to carry its lower end into the warps, and means to support the unselected needles.

2. In a loom for weaving tufted fabrics 130



having tufted yarn needles arranged in sets, a bar having means to select a needle in each set to be lowered, and means to move said bar back and forth across the sets of needles.

5 3. In a loom for weaving tufted fabrics having tufting yarn needles arranged in sets, a selecting bar, and means to move it back and forth across the needles to select a needle in each set, combined with a fixed frame  
10 attached to the loom, to support said selecting bar and the unselected needles thereon, with their ends above the warps.

4. In a loom for weaving tufted fabrics having tufting yarn needles arranged in sets,  
15 a selecting bar movable back and forth across each set, and having means for selecting a needle, and a frame supported on the loom frame, and having guides for said selecting bar to move in.

20 5. In a loom for weaving tufted fabrics, a series of tufting yarn needles arranged in sets, and having lifting shoulders thereon, a lifter bar for each set of needles to contact with said shoulders and raise the needles  
25 into their elevated position, said needles having also selecting shoulders thereon, and a notched selecting bar for each set of needles, movable under said selecting shoulders.

6. In a loom for weaving tufted fabrics,  
30 tufting yarn needles having lifting and selecting shoulders thereon, and arranged in sets, and a lifting bar under the lifting shoulders of each set, to raise the needles, and a selecting bar under the selecting shoulders of each set, to select a needle in each  
35 set.

7. In a loom for weaving tufted fabrics, sets of tufting yarn needles having selecting shoulders and lifting shoulders thereon, and  
40 a selecting bar under the selecting shoulders of each set, and a lifting bar under the lifting shoulders of each set.

8. In a loom for weaving tufted fabrics, having horizontally disposed indicating needles  
45 dles arranged in sets, springs to retain the

needles in their normal position, a slide at the end of each set of needles, and having a detecting shoulder thereon with guide-ways at its ends, and having its detecting shoulders normally retained in an elevated position above the ends of the needles, and means  
50 to release said slide and allow it to fall by gravity across the ends of the normally retained needles, and indicating pattern cards to move the selected needles into an abnormal position, and arrest said slide in its  
55 downward movement by its detecting shoulder.

9. In a loom for weaving tufted fabrics, having sets of indicating needles, a vertically  
60 movable detector slide for each set of needles, a vertically movable jack lever, with connectors to each slide, and provided with stop notches on the top and bottom, said notches corresponding in number with a set  
65 of the needles.

10. In a loom for weaving tufted fabrics, selecting means for tufting yarns, a series of movable jack levers for said selecting means, provided with stepped engaging  
70 shoulders on their upper and lower edges, two evener bars movable to and from each other in parallel planes, one above, and one below the stepped shoulders on the jack levers, and indicating means to place a shoulder on each edge of the jack levers in the  
75 path of movement of the evener bars.

11. In a loom for weaving tufted fabrics, tufting yarn needles, arranged in sets, and having lifter and selector bar shoulders  
80 thereon, and rack guiding extensions above the shoulders, and having yarn retaining means thereon for tuft yarns, and a selector bar for each set of needles, movable back and forth across the needles.

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