

No. 719,289.

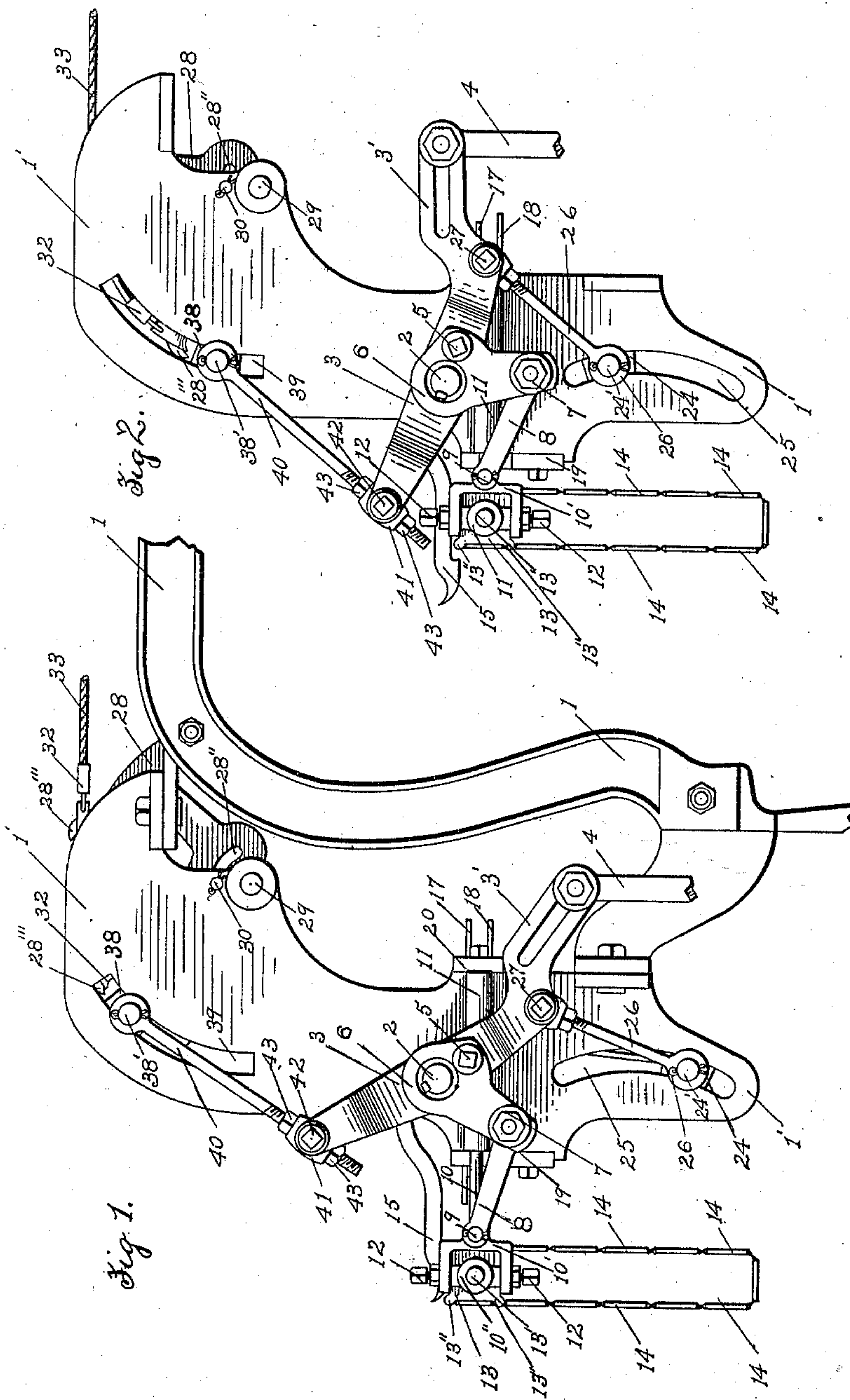
PATENTED JAN. 27, 1903.

H. WYMAN.  
SHEDDING MECHANISM FOR LOOMS.

APPLICATION FILED APR. 25, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses  
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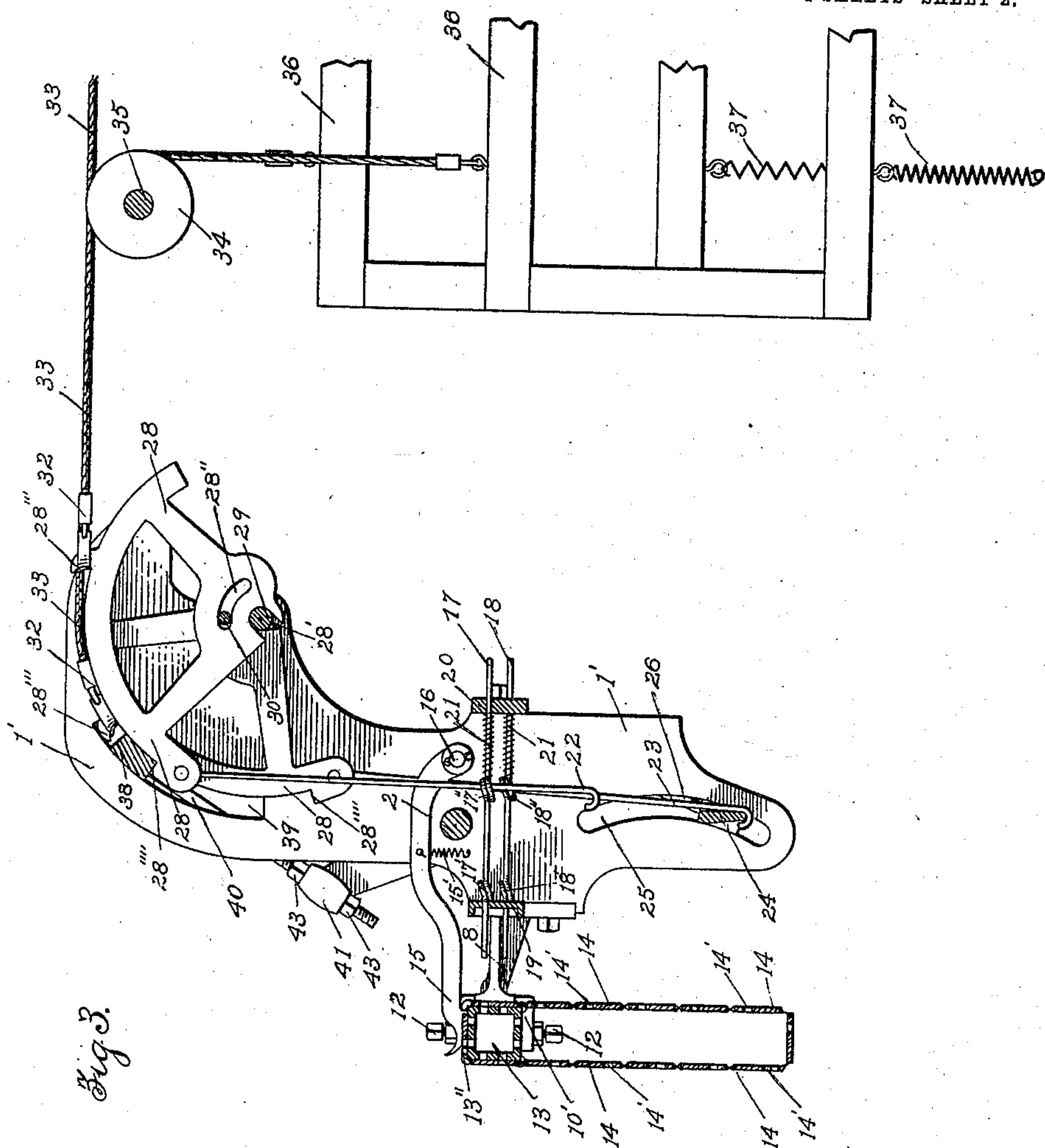


Fig. 3.

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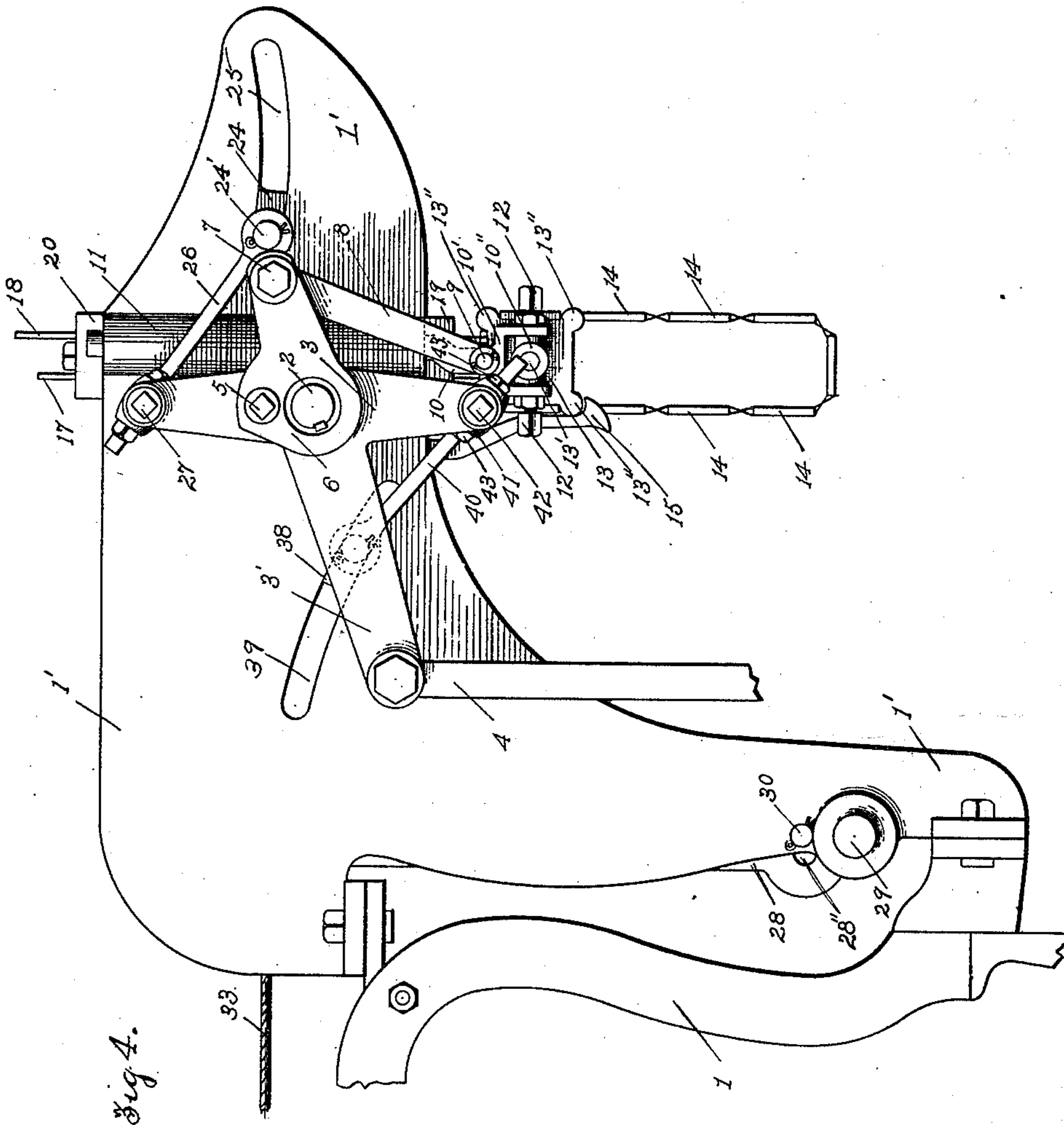
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4 SHEETS—SHEET 3.



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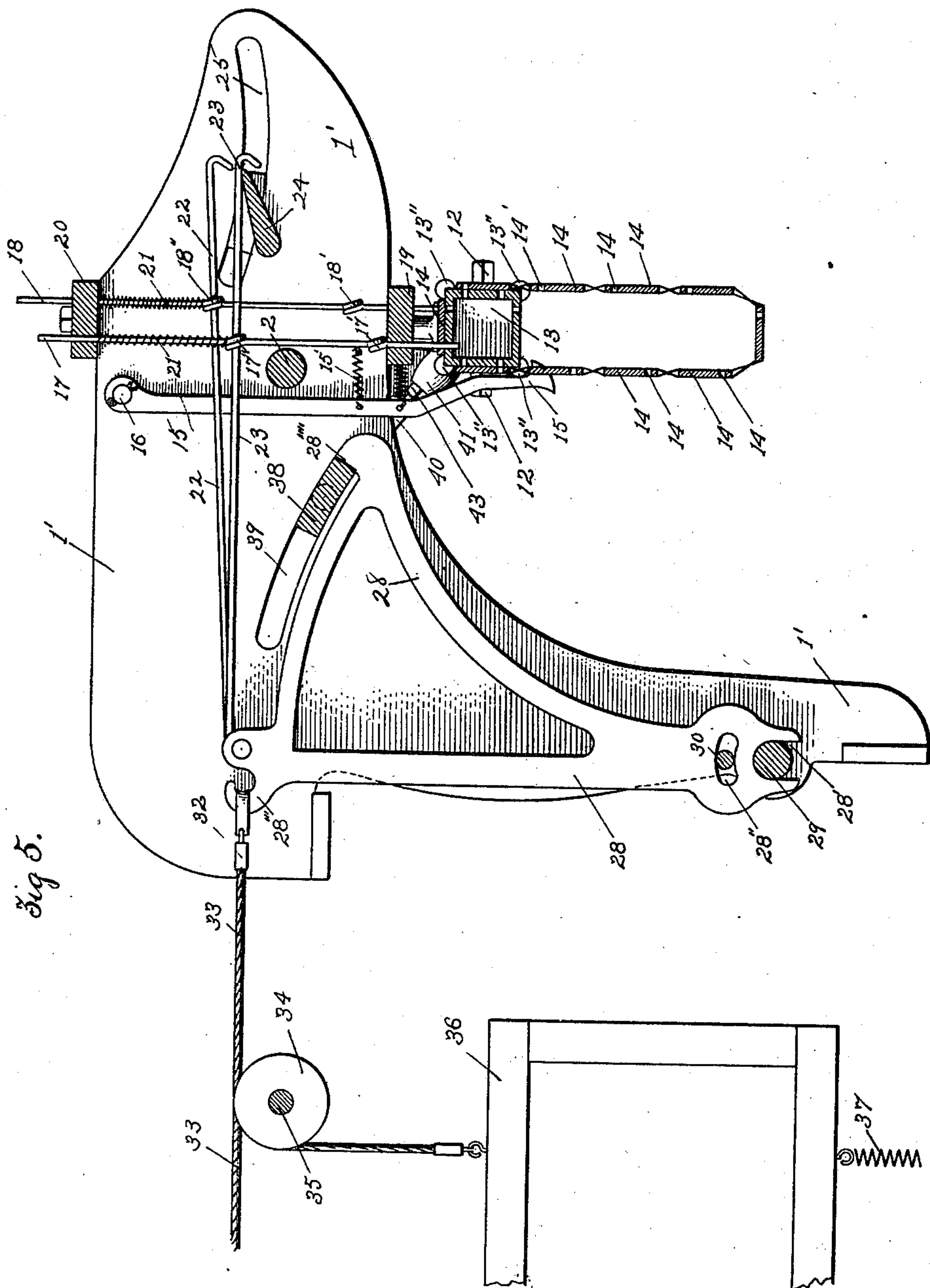


Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## SHEDDING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 719,289, dated January 27, 1903.

Application filed April 25, 1902. Serial No. 104,588. (No model.)

*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 Shedding Mechanism for Looms, of which the following is a specification.

My invention relates to shedding mechanism for looms, and more particularly to that class of shedding mechanism or harness-motion termed "single-acting dobby," in which there is only one lifter-bar moving at every pick to raise the harnesses through intermediate mechanism to form the top shed.

The object of my invention is to improve upon the construction of single-acting dobbies of the class referred to as now ordinarily made; and my invention consists in certain novel features of construction of my improvements, as will be hereinafter fully described.

In my improvements as shown in the drawings the single-acting dobby mechanism is placed at one end of the arches or top rails of the loom-frame and secured thereto, with its upper surface in substantially the same horizontal plane as the sheaves supported in the arches, and over which sheaves the cords pass to the harnesses, said cords extending in a horizontal plane from the dobby mechanism to said sheaves. To the lower edges of the harnesses are attached springs in the ordinary way to move into the lower shed the harnesses which are not moved into the top shed by the lifter of the dobby mechanism in the operation of the loom. Between the hooks which engage the lifter-bar and the ends of the cords leading to the harnesses are placed intermediate carriers or transferrers, shown in the drawings as pivoted rocking-carriers with circular peripheries, to transfer the movement of the hooks operated by the lifter-bar to the cords leading to the harnesses. The axis of the arc of the circle in which the carriers move is located at one side of the hook-jacks.

The indications on the hooks operated by the lifter-bar from the pattern-cards by the needles or wires are made about midway between the ends of said hooks when they are

at their central position, and as the free ends of the hooks, which are pivoted at one end to the carriers and move in the arc of a circle, will have a lateral motion during their movement, due to the rocking movement of the carriers, I make the lifter which operates the hooks move in the arc or segment of a circle which is the reverse of the arc or segment of the circle of movement of the carriers, whereby the movement of that part of the hook upon which the indication takes place is practically in the same plane as the movement of the ends of said hook, so that the indications from the pattern cards or surfaces will be correctly transmitted to the hooks to determine whether they shall be engaged by the lifter-bar or left disengaged to allow the harnesses to be moved into the lower shed by the action of the springs attached to the lower edge of the harnesses. The axis of the arc of the circle in which the lifter moves is on the opposite side of the hook-jacks from the axis of the arc of the circle in which the carriers move.

In order to govern the movement of the harnesses when moved by the springs attached thereto to properly move the harnesses into the lower shed, I provide what I term a "retarder," moving in the same arc of a circle as the peripheries of the carriers to which the cords leading to the harnesses are connected. The carriers have projections thereon which are engaged by the retarder, which limits the movement of the harnesses downward. Said retarder also acts as an evenner when the sheds are closed to correctly aline the hook-jacks in position free of the lifter, whereby the pattern surface or cards, through the needles or wires, will move the ends of the hooks into or out of line of movement of the lifter, all as will be hereinafter fully described.

I have only shown in the drawings a detached portion of one end of a loom-arch and the frame of a single-acting dobby mechanism and some of the parts of the dobby mechanism, with my improvements applied thereto, and one end of two harnesses and cording therefrom to the dobby mechanism sufficient to enable those skilled in the art to



understand the construction and operation of my improvements.

Referring to the drawings, Figure 1 is a side elevation of the frame of a single-acting 5 dobby mechanism with my improvements applied thereto and showing one end of a loom-arch to which the dobby-frame is secured. Fig. 2 corresponds to Fig. 1, but shows the opposite position of the movable parts. The 10 loom-arch is not shown in this figure. Fig. 3 is a vertical section through the parts in the position shown in Fig. 1 and showing the ends of the two harnesses and their operating-springs and cording leading from one end of 15 the harnesses over the guide-sheaves to the dobby mechanism. Fig. 4 corresponds to Fig. 1, but shows a modified construction of my improvements on the opposite end of the 20 loom-arch, with the wires of the pattern mechanism working in a vertical instead of a horizontal plane; and Fig. 5 is a vertical section through the parts shown in Fig. 4 and showing the end of a harness and the cording.

In the accompanying drawings, Figs. 1, 2, and 25 3, the part marked 1 is the end of a loom-arch, to which is attached the dobby-frame 1', with its top in substantially the same horizontal plane as the top of the loom-arch. 2 is a rock-shaft suitably journaled in the frame 1' and 30 having fast thereon at each end a lever 3, with oppositely-extending arms, to the slotted end 3' of one of which is pivotally attached the upper end of a rod or connector 4, which has communicated thereto from some driven part 35 of the loom a regular up-and-down motion at regular intervals to rock the lever 3 and operate the parts connected therewith. Mounted on the shaft 2 and secured to the lever 3 by a bolt 5 is an arm 6, the outer end of 40 which is pivotally connected by a bolt 7 to one end of the link 8. The other end of the link 8 is pivotally connected to a pin 9 on the piston or rod 10, supported and having a reciprocating motion in a horizontal plane in a 45 bearing 11 on the frame 1' in the ordinary way.

The outer end of the piston 10 has a fork 10' thereon which carries a bearing 10'', secured thereon by bolts 12 for the projecting ends or journals 13' of the pattern-barrel 13, 50 carrying the pattern-cards 14, in the usual way.

A hook 15, pivoted at its inner end on a stud 16 on the inside of one end of the frame 1', as shown in Fig. 3, is adapted to engage 55 at its outer end one of the projections 13'' on the pattern-barrel 13 to rotate said barrel on the outer movement of the piston 10, caused by the rocking of the lever 3 through arm 6 and link 8, in the usual way. A spring 15', 60 attached to the hook 15, acts to hold it in position to engage the pattern-barrel 13.

In connection with the pattern-cards 14, which have perforations 14' therein, (see Fig. 3,) according to the indications desired, are 65 used ordinary indicating needles or wires, two of which 17 and 18 are shown. (See Fig. 3.) The indicating-wires 17 and 18 are loosely

mounted at their ends in openings in the transverse bars 19 and 20 of the dobby-frame, and the horizontal movement of said wires is 70 controlled by the action of the pattern-cards 14 thereon on the inward and outward movement of the pattern-barrel 13 in the usual way, according to whether a perforated or a non-perforated surface on the pattern-card 75 comes against the ends of said wires. A coil 17' and a coil 18' in the wires 17 and 18, respectively, strikes against the inner surface of the transverse bar 19 and limits the outer motion of the wires moved by a spiral spring 80 21, encircling each wire and extending between the transverse bar 20 and the coils 17'' and 18'' in the central part of each wire 17 and 18, in the usual way.

Through each of the coils 17'' and 18'' in 85 the central part of the wires 17 and 18 loosely extends a hook-jack 22 and 23, respectively. The lower end of each jack 22 and 23 is hooked, as shown in Fig. 3, and adapted to extend 90 under the lower edge of the lifter-bar 24, which extends at its ends through a slot 25 in the lower part of the frame, said slot being in the form of a segment or arc of a circle with its axis on the outer side of the frame 1'.

To each end of the lifter 24 is pivotally se- 95 cured, on a stud or journal 24', the lower end of a link 26, which is pivotally secured at its upper end by a bolt 27 to the rocking lever 3, as shown in Figs. 1 and 2. The upper end of each hook-jack 22 and 23 is pivotally con- 100 nected to a rocking lever or arm 28, having an open end slot 28', which engages a transverse rod 29, extending between the end plates of the frame 1', and which rod acts as a pivot-support for the levers 28. A transverse rod 105 30, extending through a curved slot 28'' in the levers 28, (see Fig. 3,) acts to hold the levers on their pivot-support 29. The levers 28 are in this instance made in the form of a segment of a circle, as shown in Fig. 3, and 110 I term these levers "carriers" or "transferrers."

On the periphery of each lever 28 is a hook or projection 28''', over which extends a metal 115 loop 32 on the end of the cord 33, which passes over the guide-sheave 34, mounted on the transverse rod 35, and is divided and its ends secured to the upper edge of the harness 36. To the lower edge of the harness 36 is secured at each end the upper end of 120 the spring 37. The lower end of said spring is secured to some stationary part. Also on the periphery of the lever or carrier 28 is a notch 28''', which is adapted to be engaged by a transverse bar 38, extending at its ends 125 through slots 39 in the upper part of the frame 1'. (See Figs. 1 and 2.) The slot 39 extends in the segment or arc of a circle, with its axis on the inner side of the frame 1'—that is, in the reverse direction to the arc of a circle of 130 the slot 25.

The transverse bar 38, which I term a "retarder," has on its ends projecting studs 38', to which are pivotally attached the upper



ends of links 40. The lower ends of the links 40 extend through the hub 41, pivotally attached by a bolt 42 to one arm of the rocking lever 3, and are adjustable in said hub 41 by nuts 43.

It will be understood that the parts shown in Figs. 1 and 2 on the outer part of the frame 1' are duplicated on the outside of the other end of the frame. (Not shown.) It will also be understood that there is one indicator wire or needle and one hook-jack and one rocking lever or carrier for each harness.

The operation of my improvements shown in Figs. 1, 2, and 3 will be readily understood by those skilled in the art from the above description, in connection with the drawings.

The rocking of the levers 3 through the movement of the rod 4 will through the link 26 and the link 40 communicate a regular movement to the lifter-bar 24 and the retarder-bar 38 to move them away from each other and toward each other, the movement conforming to the curvature of the slots 25 and 39 in which they respectively move.

The downward movement of the lifter-bar 24, if the pattern surface or cards indicate for the engagement of said bar by the hook-jack, will move downwardly said jack and rock the lever or carrier 28 to raise the harness connected therewith, as shown in Fig. 3, while the non-engagement of the hook-jack with the lifter-bar 24 will allow the springs 37 to act to draw down the harness and move the lever or carrier 28, with the retarder-bar 38, as shown in Fig. 3, the retarder-bar 38 acting to limit the downward movement of the harnesses.

The engagement of the retarder-bar 38 with the carriers or transferrers 28 and the downward movement of said retarder-bar will place all the harnesses in the same plane.

Referring now to Figs. 4 and 5, in which is shown a modified form of my improvements shown in Figs. 1, 2, and 3, the construction and operation of the several parts of the modified form of my improvements shown in Figs. 4 and 5 are substantially the same as the form of my improvements shown in Figs. 1, 2, and 3, except that the hook-jacks extend in a horizontal plane and the indicating-wires extend in a vertical plane. In Figs. 4 and 5 the same numerals of reference are used as are used in Figs. 1, 2, and 3 to designate similar parts, and a description of said parts, which operate the same as the parts in Figs. 1, 2, and 3, is therefore not deemed necessary.

It will be understood that the details of 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—

1. In a shedding mechanism for looms, the combination of a rocking carrier, a harness connection attached to the periphery of said rocking carrier, a hook-jack connected to said carrier, a lifter-bar, pattern-controlled means for determining the engagement of said hook

and lifter-bar, the said rocking carrier having a peripheral notch as 28''', a retarder or evenner bar for engagement with said notch, and means for operating the lifter-bar and retarder.

2. In a shedding mechanism for looms, the combination of the loom-frame, a rocking carrier having a circular periphery and provided with a notch, as 28''', a retarder movable in a circular path coincident with the circular periphery of the rocking carrier and adapted to engage the said notch, a lifter-bar, a hook-jack connected to the carrier and adapted to engage the lifter-bar, and means for moving the lifter-bar in a circular path the reverse of the path of movement of the carrier.

3. In a shedding mechanism for looms, the combination of the loom-frame, a rocking carrier having a circularly-formed periphery and provided with a peripheral notch, a harness connection joined to the periphery of the rocking carrier, a lifting-bar and a retarder, curved guides one for the lifting-bar and one for the retarder, said guides being reversely curved, a two-armed lever connected to the lifting-bar and retarder, and means for operating said two-armed lever.

4. In the shedding mechanism of a loom, a hook-jack, a pivoted carrier which moves in the arc of a circle the axis of which is on one side of said hook-jack, said carrier being connected to the hooked jack, a lifter-bar which moves in the arc of a circle the axis of which is on the opposite side of said jack, said lifter-bar being engaged by said hook-jack, substantially as shown and described.

5. In the shedding mechanism of a loom, a hook-jack, a pivoted carrier for one end of the jack, a lifter for the other end of the jack, and means to move said carrier and lifter in opposite directions in arcs of circles the reverse of each other, substantially as shown and described.

6. In the shedding mechanism of a loom, a hook-jack, a pivoted carrier provided with a projection for one end of said jack, a retarder or evenner bar, and means to move it in the arc of a circle coinciding with the movement of the projection on the carrier, substantially as shown and described.

7. In the shedding mechanism of a loom, the combination with a frame comprising two side pieces, each side piece provided with curved slots, one for the lifter, and the other for the retarder or evenner bar, of said lifter and retarder adapted to move in said curved slots, and means to move the same, substantially as shown and described.

8. In the shedding mechanism of a loom, the combination with a frame comprising two side pieces provided with two curved slots, one for the lifter, and one for the retarder, of said lifter and retarder, and a pivoted rocking carrier, the pivotal point of which coincides with the axis of the arc of a circle in which the retarder moves, substantially as shown and described.



9. In the shedding mechanism of a loom, a harness provided with a bottom spring, a harness connection, one end of which is movable in a substantially horizontal plane, a hook-jack, a pivoted carrier intermediate said harness connection and said hook-jack, and a retarder or evenner bar for said carrier, in combination with a lifter, a frame comprising two side pieces having curved slots therein, one for the lifter, and the other for the retarder or evenner bar, substantially as shown and described.

10. In the shedding mechanism of a loom, a harness provided with a bottom spring, a harness connection, one end of which is movable in a substantially horizontal plane, a hook-jack movable in a substantially vertical plane, a pivoted carrier intermediate said harness connection and said hook-jack, to transfer the movement of the hook-jack to said harness connection with an angular movement, substantially as shown and described.

11. In the shedding mechanism of a loom, the combination with a frame comprising two side pieces each having a curved slot therein,

of a series of pivoted carriers having projections on their peripheries, the curvature of said peripheries corresponding with the curvature of said curved slot, and the retarder or evenner bar to move in said curved slot and in contact with the projections on the carriers, substantially as shown and described.

12. In the shedding mechanism of a loom, a harness provided with a bottom spring, a harness connection, one end of which is movable in a substantially horizontal plane, a hook-jack, a pivoted carrier intermediate said harness connection and said hook-jack and provided on its periphery with a projection for the harness connection, and a projection to cooperate with the retarder or evenner bar, and said retarder or evenner bar intermediate the two projections, substantially as shown and described.

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