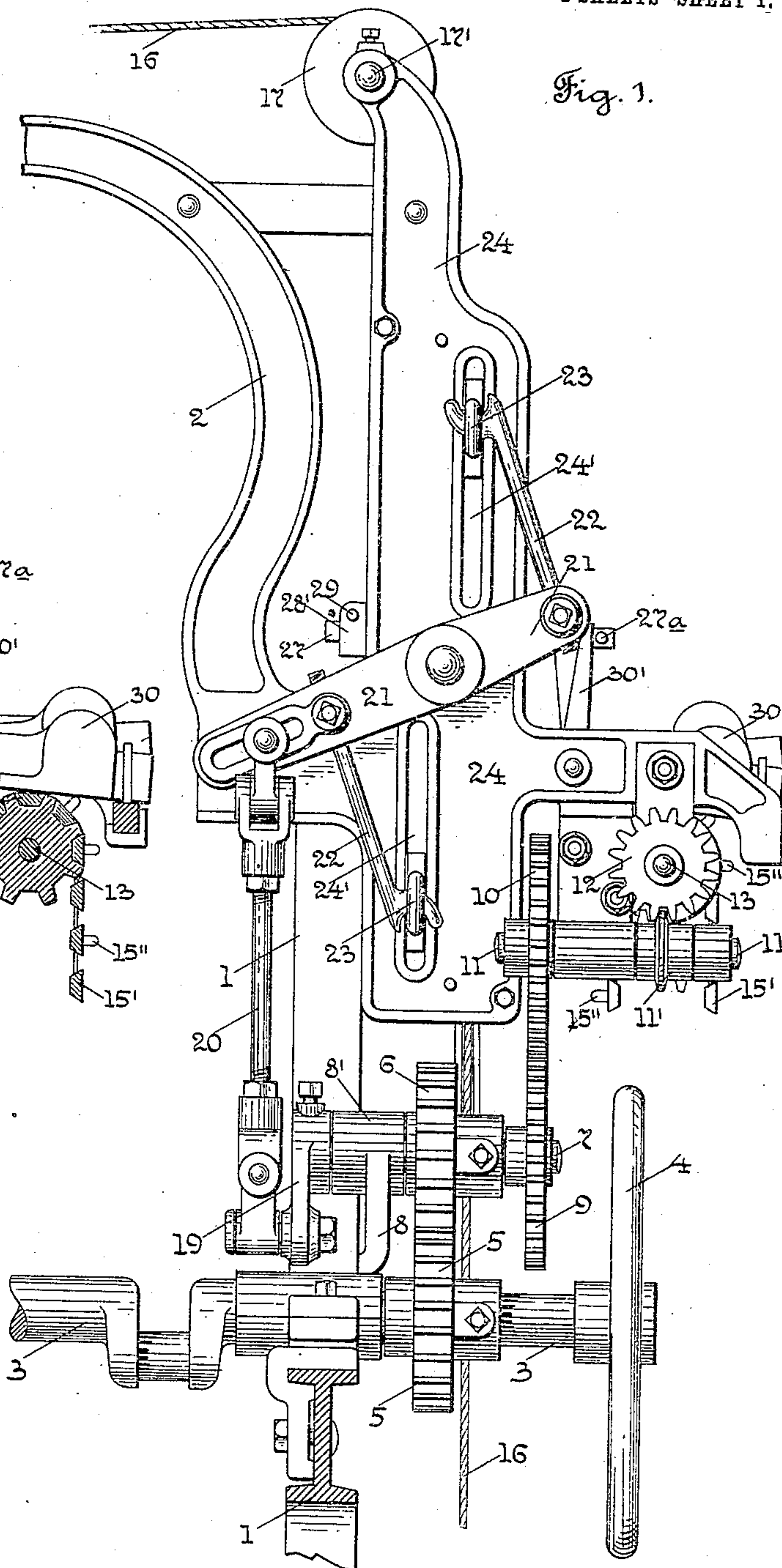
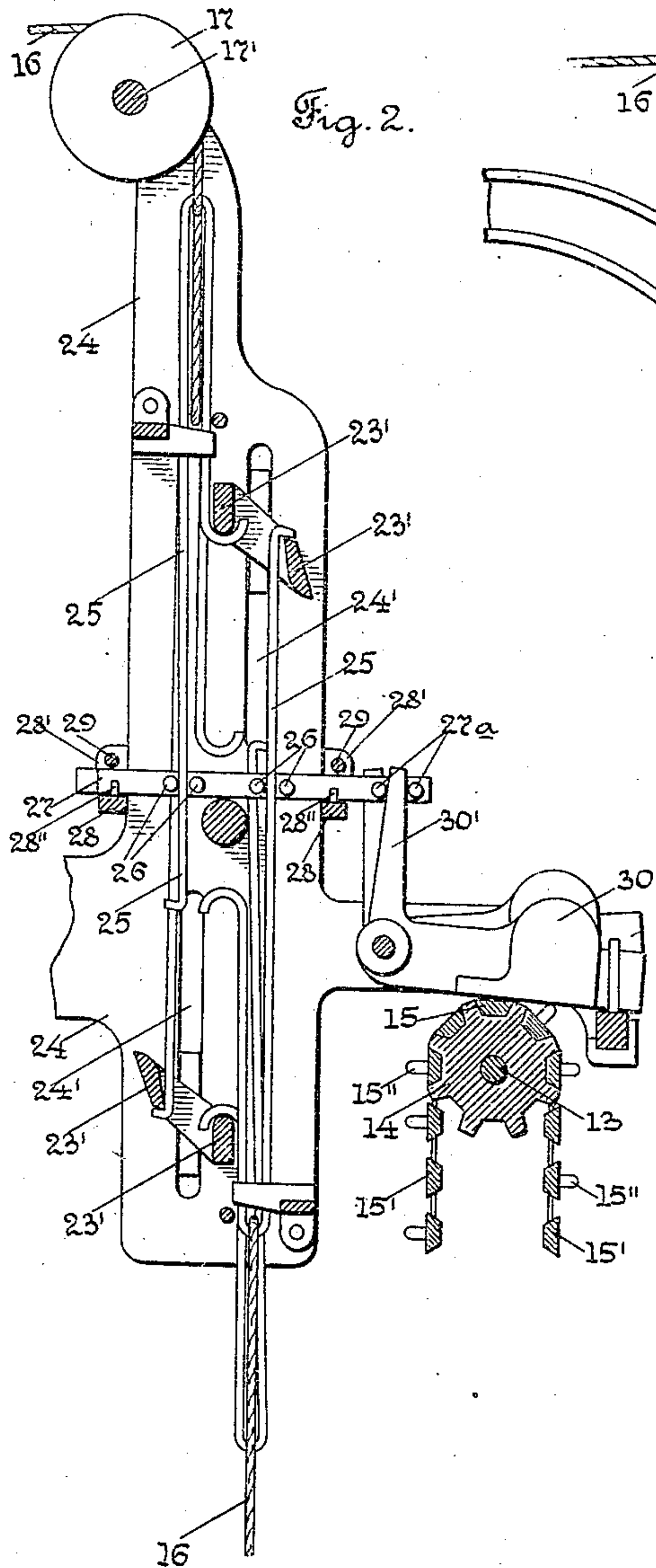


943,262.

D. D. MILLER.
LOOM HARNESS MOTION.
APPLICATION FILED APR. 12, 1907.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 1.



Witnesses

M. Brett.
W. Haas.

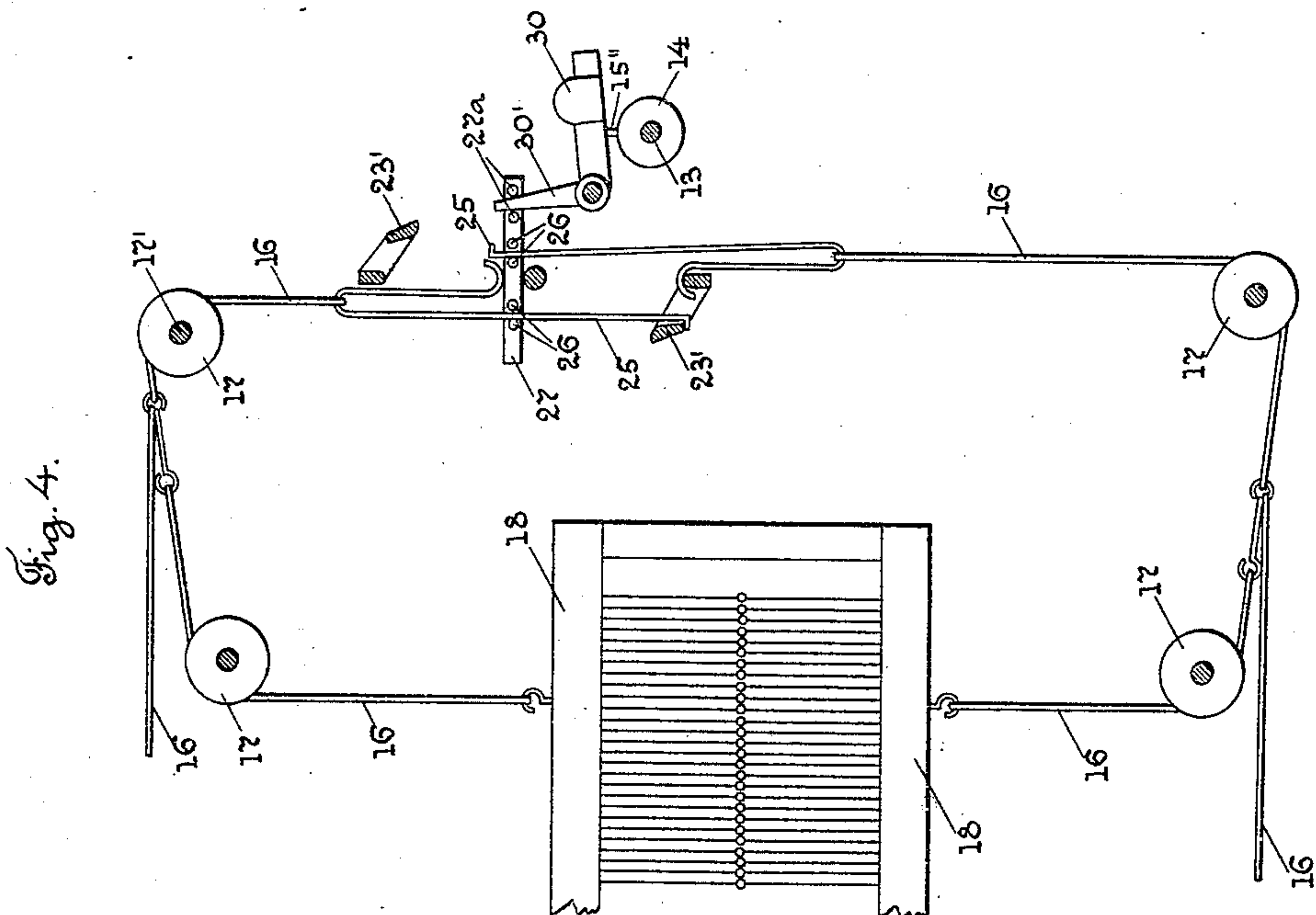
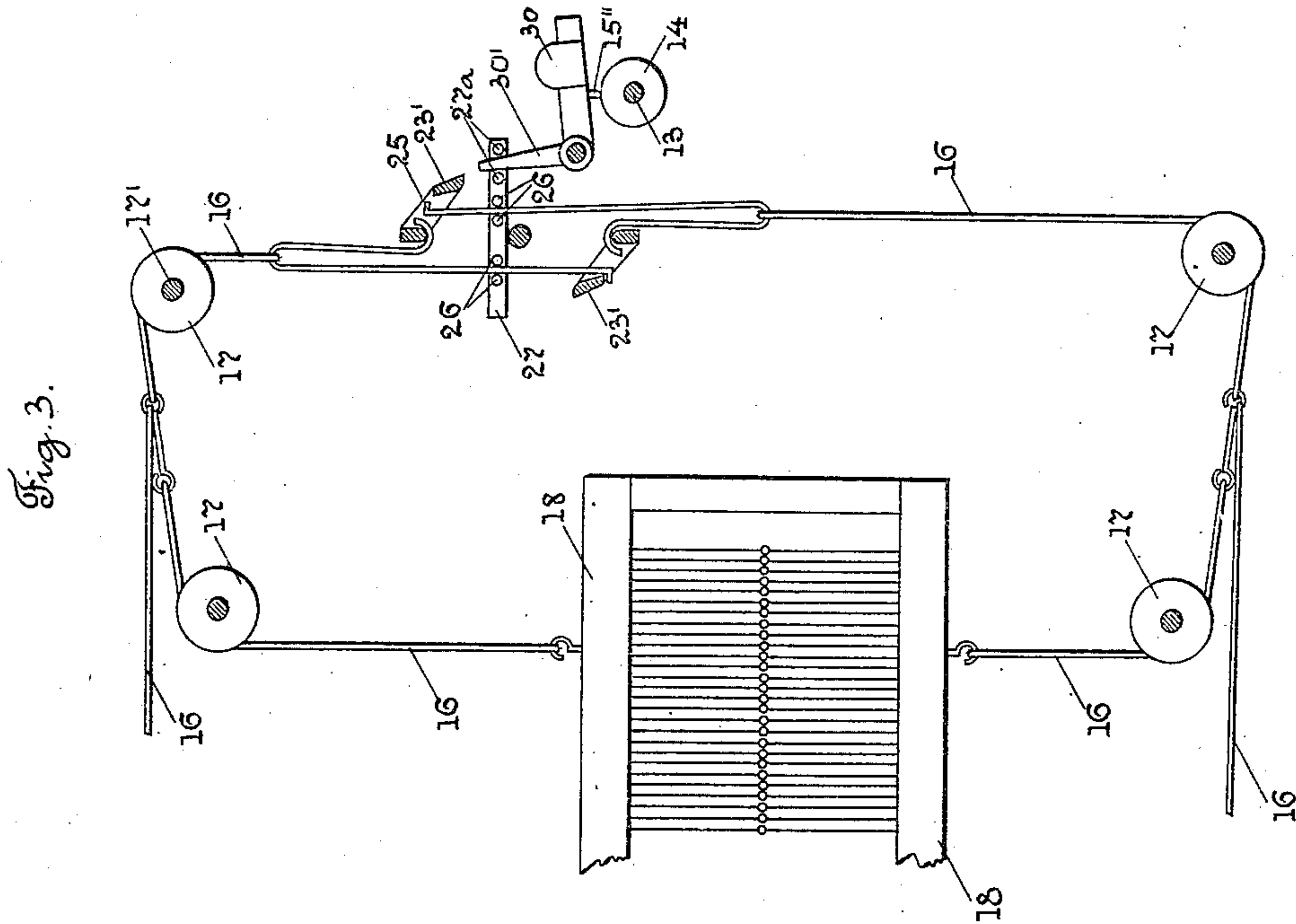
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2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

DAVID D. MILLER, OF MIDDLETOWN, CONNECTICUT, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

LOOM HARNESS-MOTION.

943,262.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed April 12, 1907. Serial No. 367,884.

To all whom it may concern:

Be it known that I, DAVID D. MILLER, a citizen of the United States, residing at Middletown, in the county of Middlesex and State of Connecticut, have invented certain new and useful Improvements in Loom Harness-Motions, of which the following is a specification.

My invention relates to a loom harness motion for operating the harnesses of a loom.

In a harness motion, as ordinarily used on a loom, there are jacks or harness levers for operating the harnesses to form the shed according to the pattern surface.

The object of my invention is to do away entirely with the jacks or harness levers ordinarily used, and substitute therefor uprights or wires, similar to the uprights or wires used in a jacquard. The uprights or wires are moved by two lift bars, corresponding to the griff bars of a jacquard. The lift bars have a movement toward and away from each other, and each lift bar has two blades or engaging bars.

There are two uprights or wires for each harness frame, and each of the wires has a hook at one end, and the other end is made double or looped with a hook at its free end. The upper wire is connected at its looped end, through a cord or flexible connection, with the upper side of a harness frame, and the lower wire is connected at its looped end with the lower side of a harness frame. The upper wire draws the harness frame up, and the lower wire draws it down, the movement of the harness frame being positive in each direction.

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 harness motion with my improvements applied thereto, sufficient to enable those skilled in the art to understand the construction and operation of the same.

Referring to the drawings:—Figure 1 is a side view of a harness motion having my improvements applied thereto. Fig. 2 is a transverse section through the parts shown in the upper part of Fig. 1, back of the front stand or frame, and shows the uprights or wires, and the operating lift bars. Fig. 3 is a diagrammatical view of the harness operating mechanism. Fig. 4 corresponds to

Fig. 3, but shows some of the parts in a different position.

In the accompanying drawings, 1 is a portion of a loom side or frame, 2 is the arch, 3 is the crank shaft, having fast on its outer end the hand wheel 4. A pinion 5, fast on the crank shaft 3, meshes with and drives a pinion 6 mounted on a shaft 7, which is supported in a suitable bearing 8' on a stand 8 secured to the loom side 1.

On the outer end of the shaft 7 is fast a gear 9, which meshes with and drives a gear 10 fast on a worm shaft 11 carrying a worm 11', which meshes with and drives the worm gear 12 fast on the pattern cylinder shaft 13, having the pattern cylinder 14 thereon, carrying the pattern chain or surface 15, in this instance made up of bars 15' linked together, and carrying pattern pins 15''. 16 are the harness cords, which pass over guide sheaves 17, and are attached to the harness frames or heddles 18.

The shaft 7 has secured on its inner end a crank arm 19, connected through an adjustable rod or connector 20 with the dobby lever 21, to operate through links or connectors 22, the lift bars 23, which are guided and move in this instance in vertically extending slots 24' in the end frames 24 of the harness motion. The end frames 24 are attached to the loom side 1, and carry at their upper end a rod 17' for the guide sheaves 17.

All of the above mentioned parts may be of the usual and well known construction in a loom harness motion.

I will now describe my improvements. Each lift bar 23 is in this instance made with two blades or engaging bars 23', one blade on each lift bar 23 is for the two hooks on one upright or wire, and the other blade on each bar for the two hooks on the other upright or wire, of each pair of uprights or wires. Two uprights or wires 25 are used to operate one harness. The longer part of each upright or wire 25 extends between and is guided by two pins 26 on a longitudinally moving bar 27, which is supported on bars 28 extending transversely through the frame, and having end pieces 28' secured to the end frames 24. The bars 27 are held in proper relative position on the bars 28 by pins 28'' on said bars, and two transverse rods 29 extend over said bars 27 and are secured to the end pieces 28'. The bars 27 have a reciprocating movement, and each bar has two

pins 27^a thereon, between which extend the upper arm 30' of a pattern lever or indicator 30, which extends over the pattern chain 15 in the usual way. One pattern lever or indicator 30 operates two uprights or wires 25, or a pair of uprights or wires for the same harness frame. When the pattern lever or indicator 30 drops down by reason of a pattern pin 15'' on the pattern chain 15 in the revolution of said chain passing from under said lever, as shown in case of the front pattern lever 30 in Fig. 2, the bar 27 is moved outwardly, to move the upper hook of one upright or wire 25 into the path of the outer blade 23' of the lift bar 23, and move the lower hook of the other upright or wire of the pair out of the path of the inner blade 23'. The upward movement of the upper lift bar 23, through the engagement of the outer blade 23' thereon with the hook on the upper end of the outer upright or wire 25, will move up said upright or wire, see Fig. 2, and through the connector from the looped end thereof to the harness, will draw down the harness. When a pin 15'' on the pattern chain 15, through the revolution of said chain, comes under the pattern lever or indicator 30, as shown in Fig. 3, the bar 27 is moved inwardly, and moves the hook on the upper end of the outer upright or wire 25 out of the path of the outer blade 23' on the upper lift bar 23, and moves the hook on the lower end of the inner upright wire 25 into the path of the inner blade 23' on the lower lift bar 23, so that the downward movement of said lift bar 23 will, through the connector from the looped end of said wire to the harness, draw up said harness, as shown in Fig. 4.

The object of the hook on the looped end of each upright or wire, is to bring all the harnesses to a central position at every other pick, through the engagement of said hooks with one blade or bar of the lifter bars, said lifter bars moving toward and away from each other, and on their movement toward each other engaging the hooks on the looped ends of the wires and moving them toward each other to bring the harnesses to a central position.

The advantages of my improvements will be readily appreciated by those skilled in the

art. I do away entirely with the ordinary harness levers or jacks, and provide a simple and practical harness or shed forming mechanism.

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 harness motion for operating the harnesses of a loom, the combination with the harnesses, and with a pattern surface and pattern indicators therefor, of two wires for each harness, each of said wires having an upper and a lower hook, and connections intermediate one wire and the upper side of the harness, connections intermediate the other wire and the lower side of the harness, and reciprocating lifter bars for moving said wires, each lifter bar having two blades or bars for engagement with said hooks, and connections intermediate said wires and the pattern indicators, to cause the upper hook of one wire to be moved into engagement with one lifter bar, and the upper hook of the other wire to be moved out of engagement with the other lifter bar.

2. In a harness motion for operating the harnesses of a loom, the combination with the harnesses and with a pattern surface and pattern indicators therefor, of two uprights or wires for each harness, each of said uprights or wires having an upper and lower hook, connections intermediate one wire and the upper side of a harness, connections intermediate the other wire and the lower side of a harness, and vertically reciprocating lift bars for moving said uprights or wires, each lift bar having two blades or bars for engagement with said hooks, and connections intermediate said uprights or wires and the pattern indicators, to cause the upper hook of one wire to be moved into engagement with one lift bar, and the upper hook of the other wire to be moved out of engagement with the other lift bar.

DAVID D. MILLER.

Witnesses:

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MARY L. BARKER.