

(No Model.)

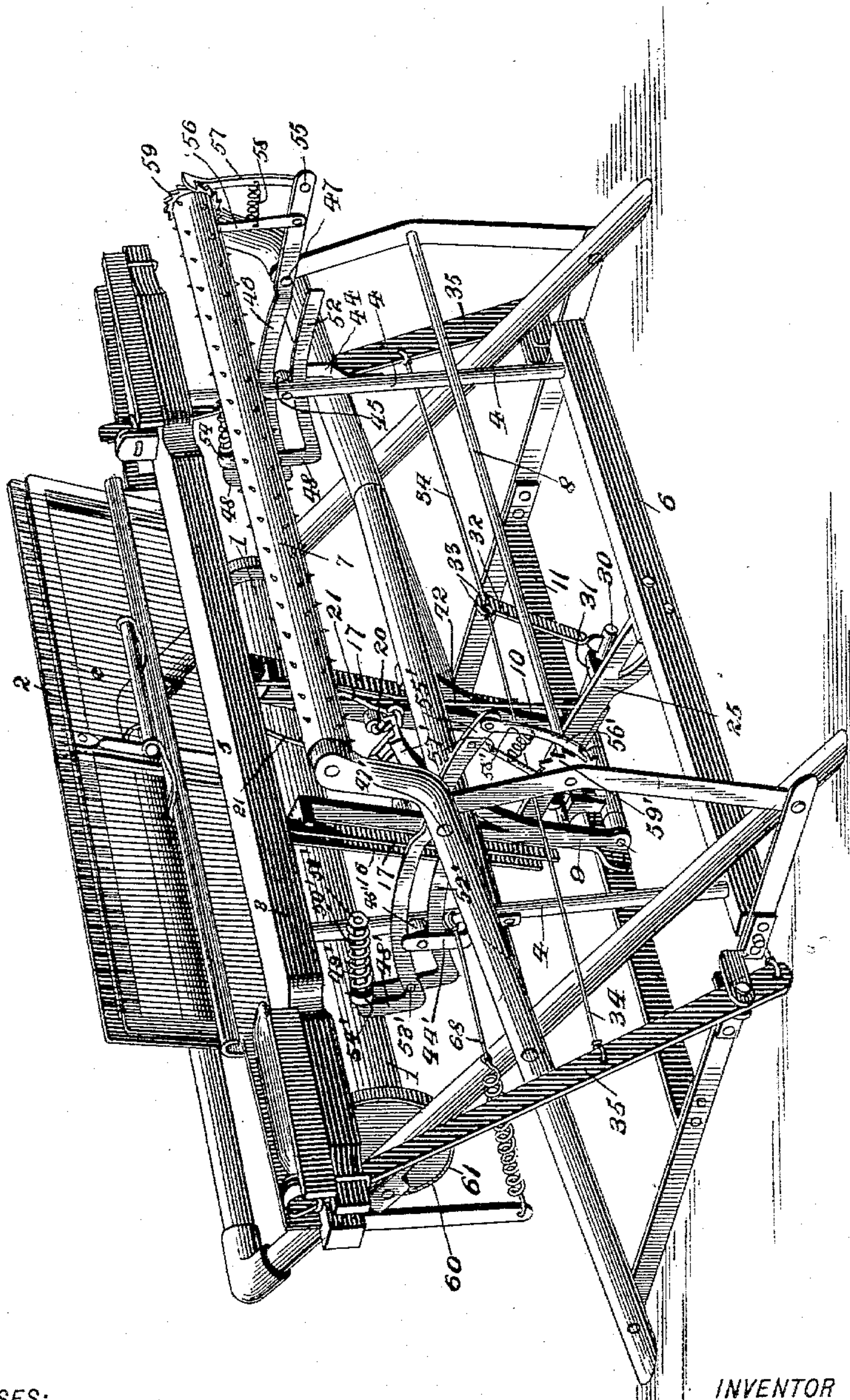
3 Sheets—Sheet 1.

J. M. DEEN.
HAND LOOM.

No. 597,763.

Patented Jan. 25, 1898.

Fig. 1.



WITNESSES:

W. S. Bloudek
Chas. E. Brock

INVENTOR

James M. Deen.

BY

R. H. Lacey
ATTORNEYS

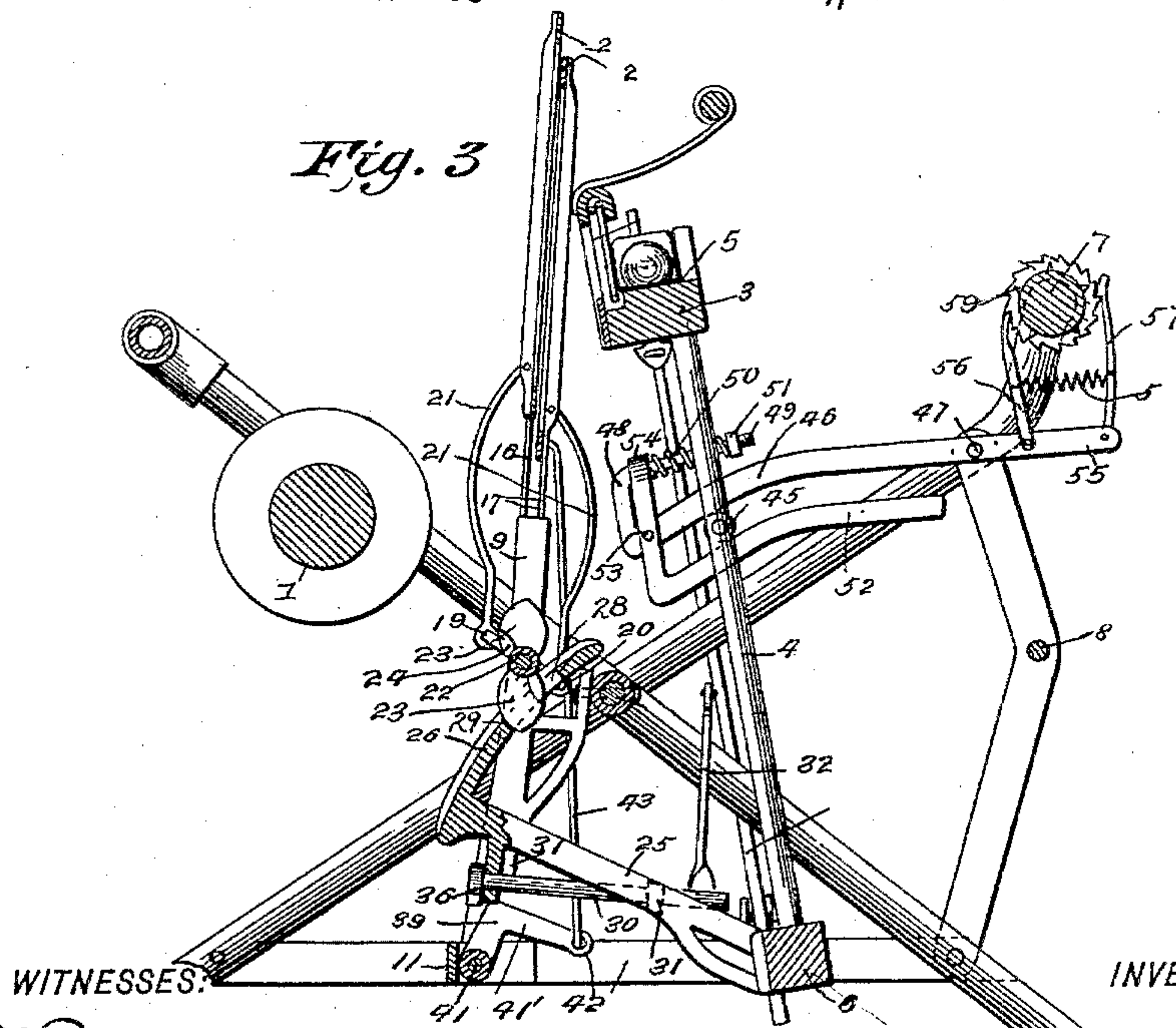
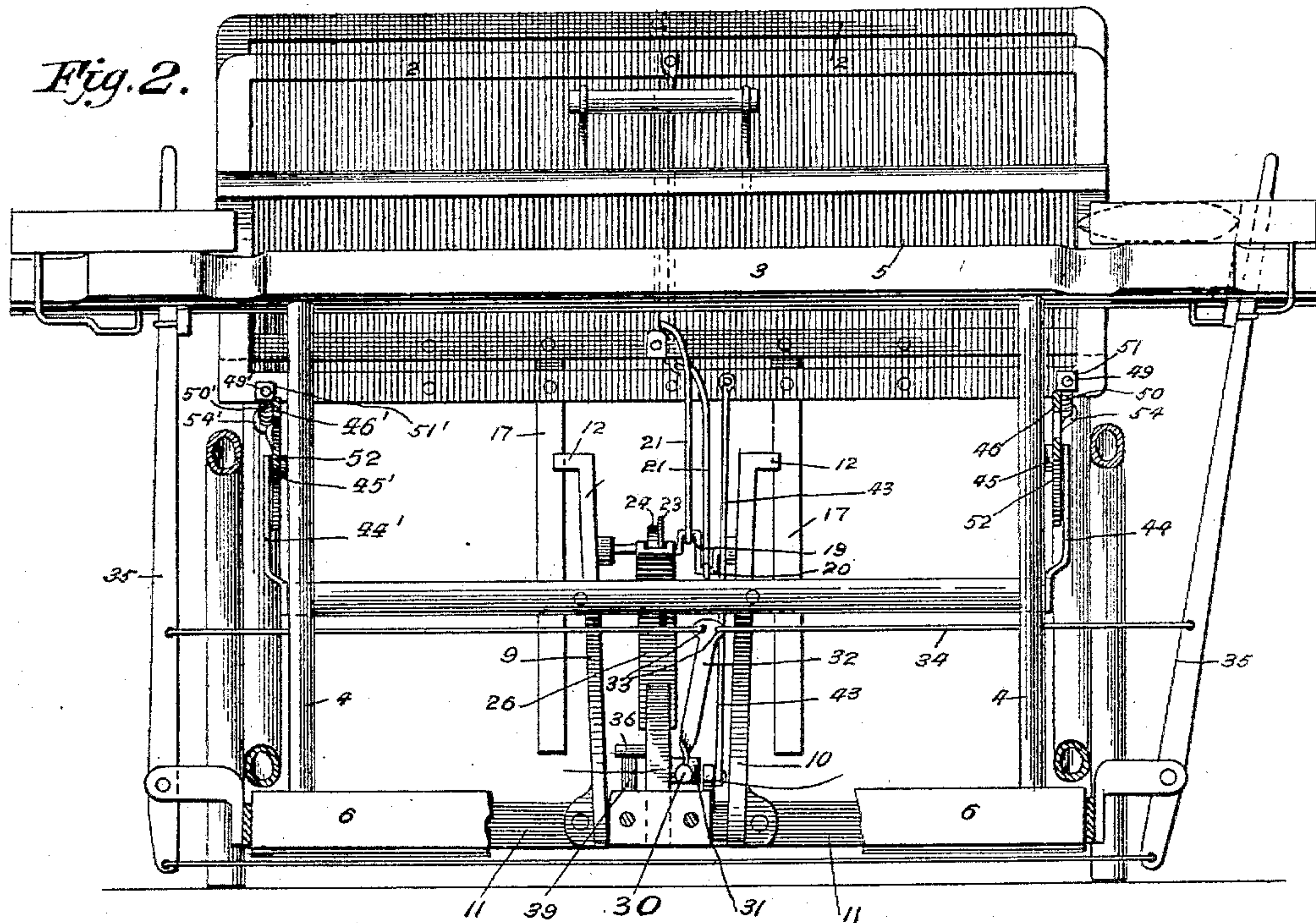
(No Model.)

3 Sheets—Sheet 2.

J. M. DEEN.
HAND LOOM.

No. 597,763.

Patented Jan. 25, 1898.



WITNESSES:

INVENTOR

W. D. Blouet
Chas. Brock

James M. Deen.
BY *R. W. P. Lacey*
ATTORNEYS

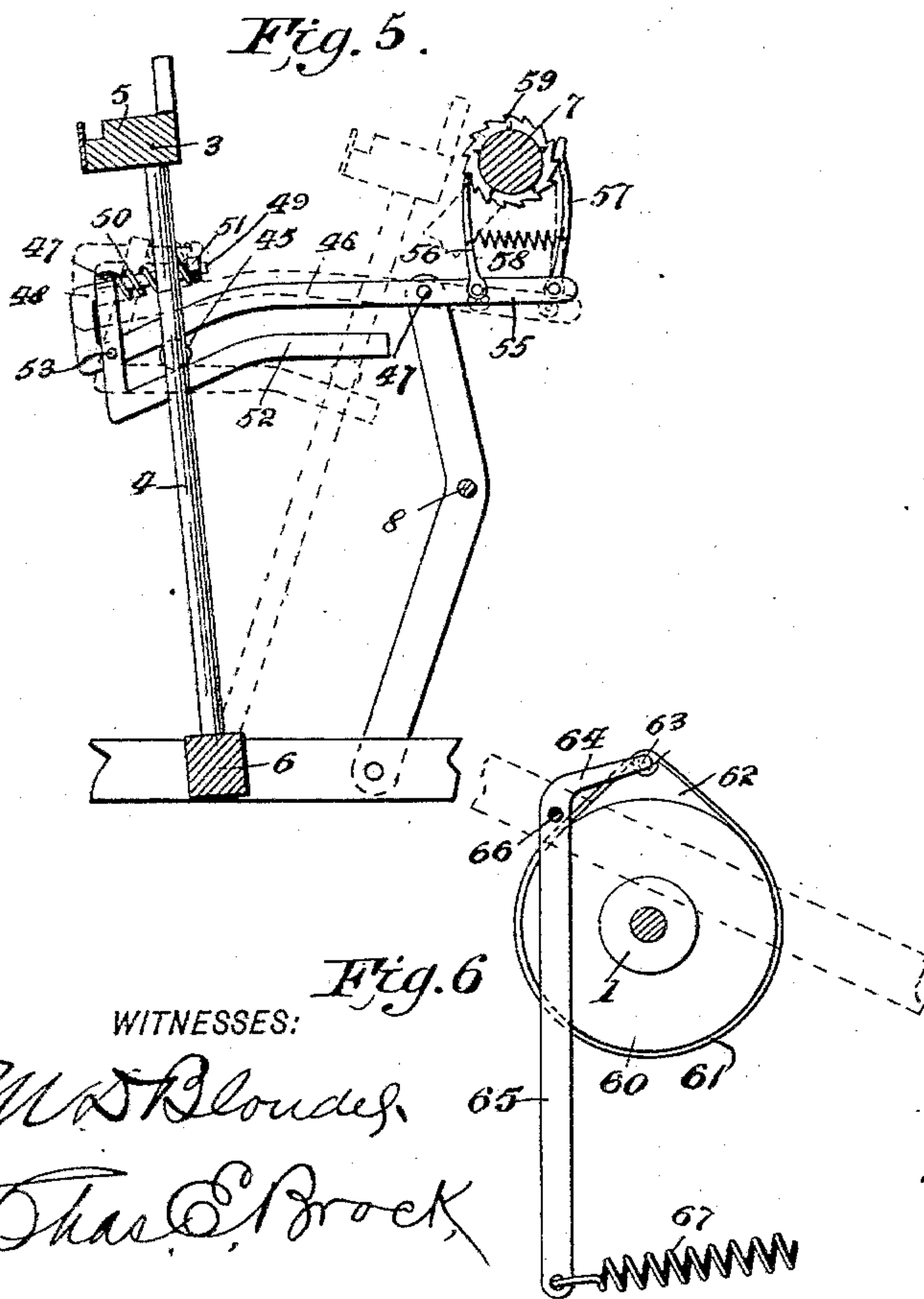
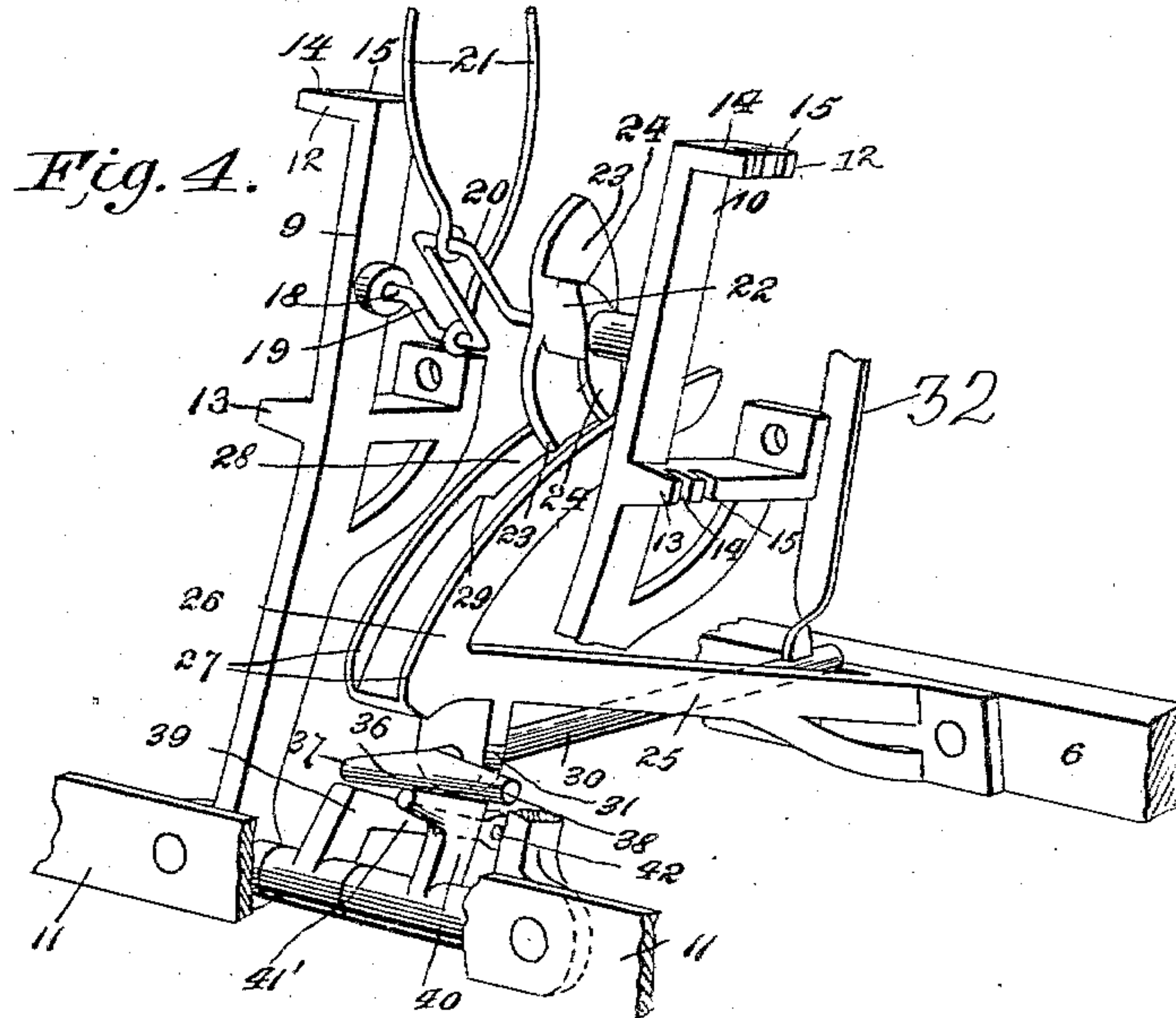
(No Model.)

3 Sheets—Sheet 3.

J. M. DEEN.
HAND LOOM.

No. 597,763.

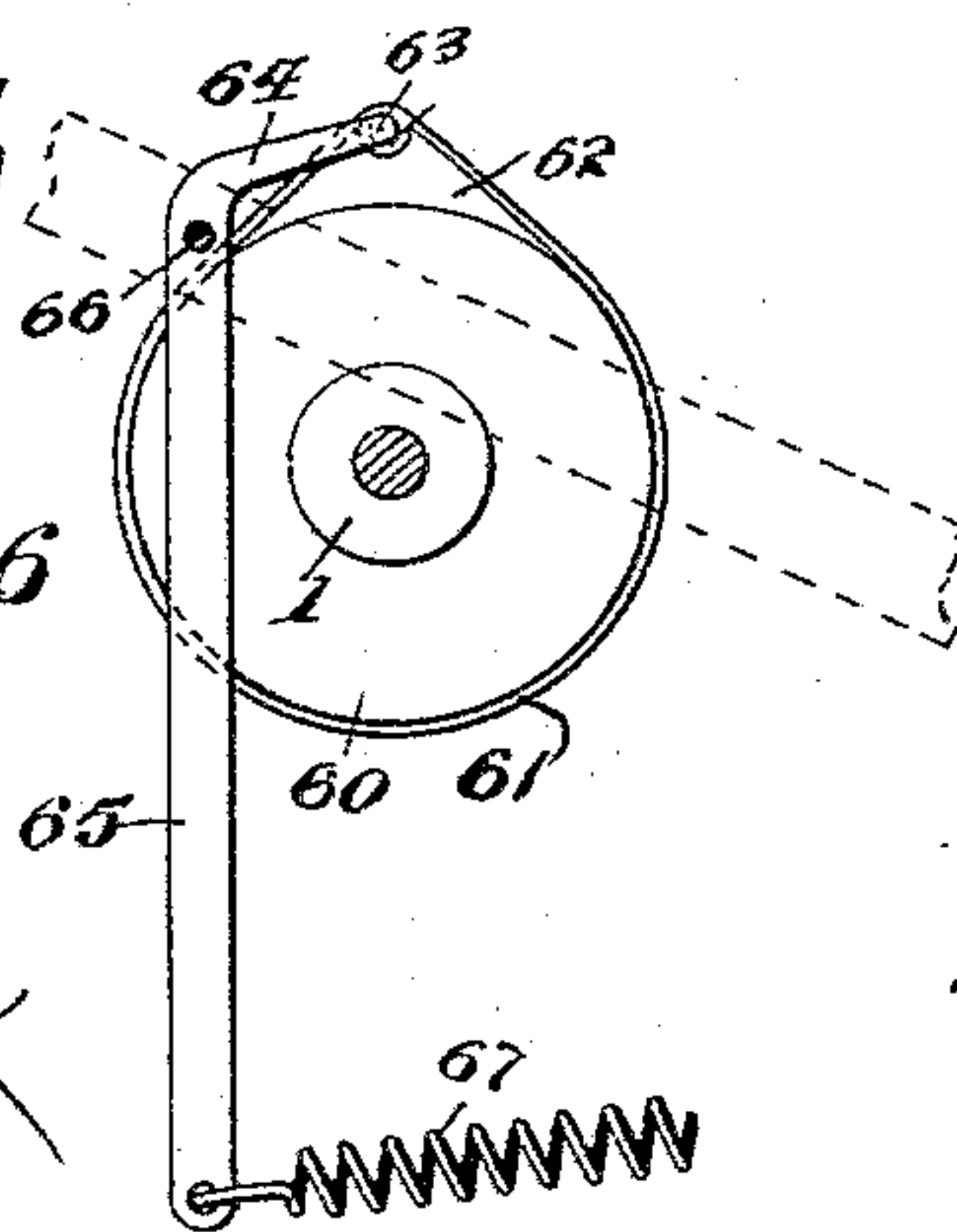
Patented Jan. 25, 1898.



WITNESSES:

M. S. Bloude,
Chas. E. Brock,

Fig. 6



INVENTOR

James M. Deen.

BY

R. S. W. Lacey
ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES M. DEEN, OF HARLAN, IOWA.

HAND-LOOM.

SPECIFICATION forming part of Letters Patent No. 597,763, dated January 25, 1898.

Application filed March 28, 1895. Serial No. 543,476. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. DEEN, a citizen of the United States, and a resident of Harlan, in the county of Shelby and State of Iowa, have invented certain new and useful Improvements in Hand-Looms; and I do hereby declare the following to be a full, clear, and exact description of the same, 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, which form a part of this specification.

My invention has relation to improvements in hand-loom for weaving rag carpets; and the object is to provide a simple, effective, and durable device for this purpose.

To this end the novelty consists in the construction, combination, and arrangement of the several parts of the same, as will be hereinafter more fully described, and particularly pointed out in the claim.

In the accompanying drawings the same reference characters indicate the same parts of the invention.

Figure 1 is a perspective view of my improved hand-loom. Fig. 2 is a front elevation of the same with the central portion of the sword-bar broken away. Fig. 3 is a transverse section through the loom. Fig. 4 is a detail perspective of the harness mechanism. Fig. 5 is a detail view of the take-up mechanism for operating the breast-roller. Fig. 6 is a similar view of the let-off mechanism of the warp-beam.

In general appearance the loom is as usual with other looms of its class.

1 is the warp-beam; 2 2, the heddle-frames; 3, the vibrating lay comprising the swords 4 4, carrying the bed 5 and having the lower ends of the swords fixed to a longitudinal bar 6, pivoted in the ends of the frame.

7 is the front or breast roller, and 8 the cloth-roller.

9 10 represent fixed standards secured to a longitudinal brace 11, and their opposite sides are provided with lateral lugs 12 13, formed with vertical parallel guide-slots 14 15, in which the heddle-frame guide-bars 16 17 reciprocate.

18 represents a double crank-shaft horizontally journaled in the vertical standards 9 10 and formed with oppositely-disposed

cranks 19 20, their outer ends being independently pivoted to the vertical connecting-rods 21 21, which are connected to the heddle-frames 2 2 to give them an alternating vertical reciprocating movement at each half-revolution of the crank-shaft.

22 represents a double-acting cam-dog fixed on the shaft 18, provided with integral vertical flanges 23 23, and each flange is provided on one side with an integral tooth or toe 24, said toes being arranged at diametrically opposite sides of the cam, as shown.

25 represents a transverse diagonal bracket fixed on the vibrating bar 6, and its projecting end is formed with an integral curved arm 26, the curvature of which corresponds to the radius of the bracket 25. The outer curved face of this arm 26 is provided with two parallel side rails 27 27, which form guides for the cam-dog 22, and 28 represents a slot extending through the body of the arm 26, between the flanges 27. This slot 28 has a shoulder 29 arranged midway of its length, located in the path of the projecting toes 24 on the cam-dog 22, and as the arm 26 is reciprocated the point of the contiguous toe engages the shoulder 29 and rotates the cam-dog, the crank-shaft, and the cranks one half-revolution, so as to bring the diametrically opposite toe into position for engagement with the shoulder 29 and cause the adjoining flange to enter the slot, and by means of the connecting-rods 21 21 reverses the position of the heddle-frames 2 2. It will be seen, therefore, that first one flange of the cam enters the slot and its toe engages the shoulder 29, and then, upon the forward movement of the arm 26 toward the breast-roller 7, the cam has imparted to it a half-revolution, which causes the flange and toe at the diametrically opposite side of the cam to take position to engage the slot and shoulder of the arm 26, when the latter is moved forward again, the cam being at rest during the reverse or backward movement of the said arm. When the shoulder 29 is engaged with the toe 24, the contiguous flange 23 on the cam-dog 22 projects through the slot 28 to allow the dog to make a half-revolution; but during the backward or reverse movement of the arm 26 the corresponding edges of both of the radial flanges 23 23 have a bearing on the face of said arm be-

tween the guide-rails 27 27 and on opposite sides of the crank-shaft and retain it stationary during the continuation of the reciprocating movement of the arm 26 and backward or reverse movement of said arm until the shoulder 29 engages the toe 24 in juxtaposition to it during its forward or operative movement.

30 represents a short transverse shaft journaled in lugs 31 31, fixed on the bracket 25, its forward end being provided with a vertical lever 32, its free end terminating in eyes 33 33, to which are secured the inner ends of two cords 34 34, the outer ends of which are fixed to the picker-sticks 35 35. The outer end of this shaft 30 carries a longitudinal rock-lever 36, the opposite arms 37 38 of which project into the path of two dogs 39 40, fixed on a short horizontal oscillating shaft 41, journaled in the lower inner ends of the standards 9 10. The outer ends of these dogs 39 40 are located in different vertical planes, so that when one is projected into the path of one arm of the rock-lever the other dog is out of the path of the other arm of said rock-lever, and vice versa. The upper end of the dog 40 is provided with an integral forwardly-projecting arm 41', terminating in an eye 42, to which is pivoted the lower end of a connecting-rod 43, the upper end of which is pivoted to one of the heddle-frames 2 2, and as the heddles are reciprocated the dogs 39 and 40 are alternately projected into the path of the rock-lever 36, which oscillates its shaft 30 and, through the medium of the lever 32 and cords 34 34, transmits the proper intermittent reciprocating movement to the picker-sticks.

44 represents a guide-bracket fixed on the right-hand sword 4, and 45 is a friction-roller journaled on one of the bolts which secures said bracket to the sword.

46 represents a lever fulcrumed on a fixed bolt 47 in the frame, and its longer arm extends through the guide-bracket 44 and rests on the roller 45, its rear end being turned upwardly to form the arm 48, which is then turned forwardly parallel with the lever proper and terminates in a screw-threaded rod 49, on which is mounted the spiral spring 50, the tension of which is adjusted by the nut 51 on the end of the rod. A short lever 52 is fulcrumed on a stud 53, fixed in the main lever 46, its longer arm extending through the guide-bracket 44 below the roller 45, and its shorter vertical arm extends upward parallel with the arm 48 of the main lever and terminates in an integral eye 54, which encompasses the threaded rod 49 between the arm and the inner end of the spring 50. This peculiar construction permits the levers 46 and 52 to rise and fall with each oscillation of the lay, the forward movement of the lay causing the roller to depress the lever 52 and carry the lever 46 down with it, and while the downward movement of the lever 52 is always positive the degree of movement of the main lever 46, following it,

depends entirely on the tension to which the spring 50 is adjusted, so that if the main lever meets with a resistance the spring 50 may be adjusted to overcome the resistance or partially or wholly give way to it, as occasion requires. On the return movement of the lay the roller 45, riding under the main lever, raises it positively and returns it to its first position, the short lever having no function whatever during the return movement of the lay.

The forward end of the main lever 46 has a projecting arm 55, to which is pivoted a push-pawl 56 and a pull-pawl 57, connected by a spiral spring 58, their free ends in operative engagement with the opposite edges of a ratchet-wheel 59, fixed on one end of the breast-roller 7, and by means of the lever mechanism just described said breast-roller is automatically and intermittently or continuously operated, as the case may be, to keep the proper tension on the warp while the loom is working. The opposite sword 4 is also provided with a bracket 44' and a friction-roller 45', while a main lever 46' is also fulcrumed on a fixed bolt 47' in the contiguous end of the frame, and the longer arm of said lever extends through said guide-bracket on the sword and above the roller, its rear end being formed with the arm 48' and the threaded rod 49', carrying the spring 50' and adjusting-nut 51'.

An auxiliary lever 52' is pivoted to the stud 53' on the main lever 46', and it extends through the guide-bracket 44', below the roller 45', and its opposite end extends upward parallel with the arm 48' of the main lever and terminates in an integral eye 54', encompassing the threaded rod 49', and the operation of these levers is exactly the same as that described for the similar levers 46 and 52 at the opposite end of the lay.

The forward end of the main lever 46' has an integral projecting arm 55', from which depends a push-pawl 56' and a pull-pawl 57', connected by a spiral spring 58', their free ends engaging the teeth on the opposite edges of the ratchet-wheel 59', fixed on the contiguous end of the cloth-roller 8, so as to operate the same to take up the cloth as woven.

60 represents a friction-disk on the warp-beam 1, and said disk is encompassed by a continuous strap 61, formed with a loop 62, into which a rod 63, fixed on the horizontal arm 64 of a depending lever 65, projects. This lever is fulcrumed on a bolt 66, fixed in the frame, and to its lower end is secured one end of a spiral spring 67, to which is connected a flexible cord 68, the free end of which is adjustably secured to a convenient point on the frame to maintain the proper degree of tension on the warp-beam.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

A hand-loom, comprising the fixed stand-

ards 9 10 formed with integral lateral lugs 12 13 having parallel guide-slots 14 15, the double crank-shaft 18 journaled in said standards and provided with the oppositely-disposed cranks, the heddle-frames reciprocating in said standards, and the rods 21 21 connecting said heddle-frames with the oppositely-disposed cranks, and the cam-dog 22, fixed on the crank-shaft, and provided with the oppositely-arranged flanges 23 23, each flange having an integral tooth or toe 24, in combination with the vibrating lay-bar 6, the bracket 25 fixed thereon and having its outer end provided with an integral curved arm 26

formed with side rails 27 27 and a vertical slot 28 having a shoulder 29 arranged about midway of the curved arm and in the path of the toes 24 and the flanges 23 on said cam-dog, and adapted to alternately engage the same and impart a half-revolution to said crank-shaft at each complete movement of the lay, substantially as shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

JAMES M. DEEN.

Witnesses:

J. E. BEEBE,

W. N. CASEY.