

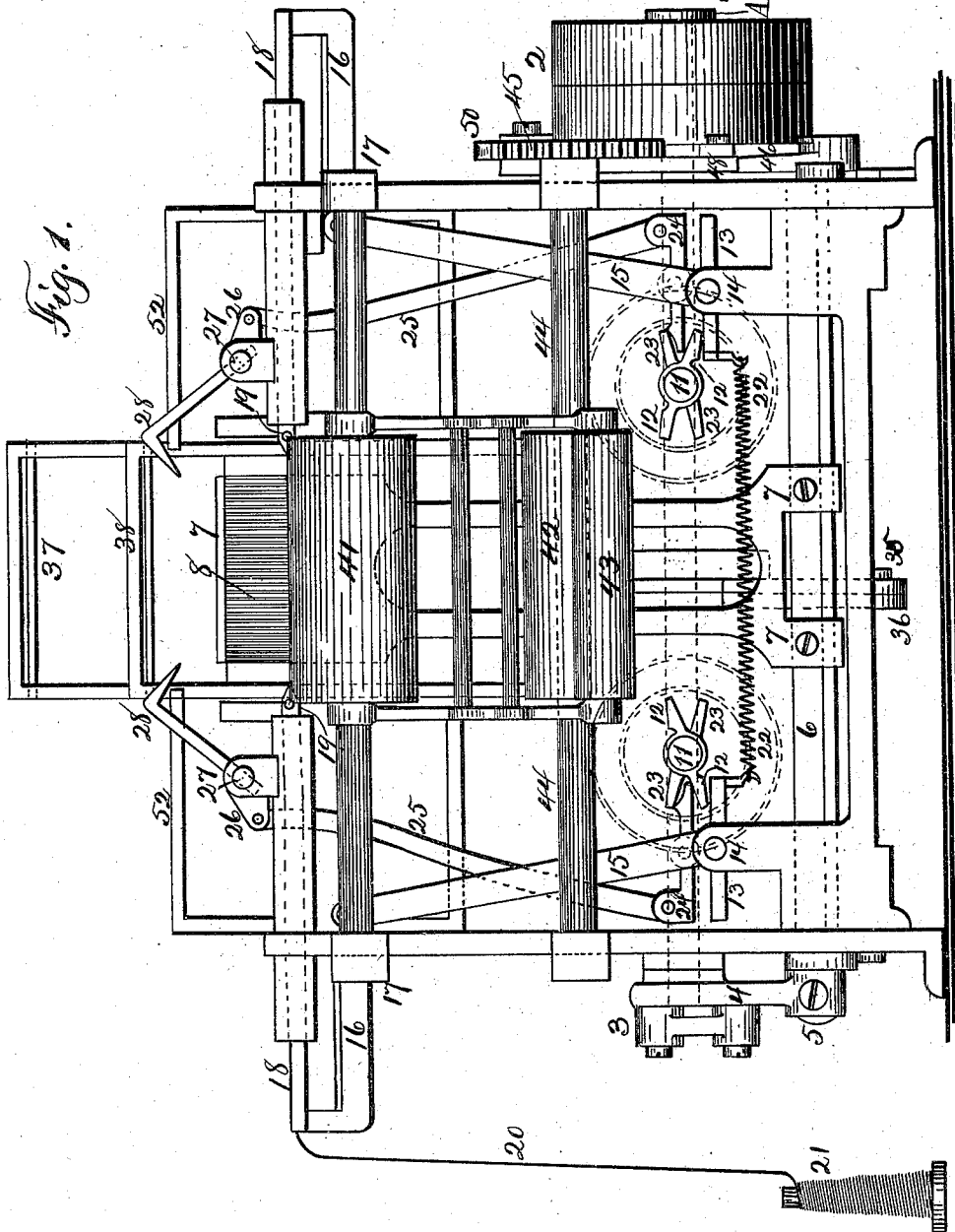
(No Model.)

4 Sheets—Sheet 1.

G. H. CUMMINGS.
NEEDLE LOOM.

No. 558,721.

Patented Apr. 21, 1896.



WITNESSES:

Chas. W. Marvin.
Jessie E. Murray.

INVENTOR

George H. Cummings
BY
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ATTORNEYS.

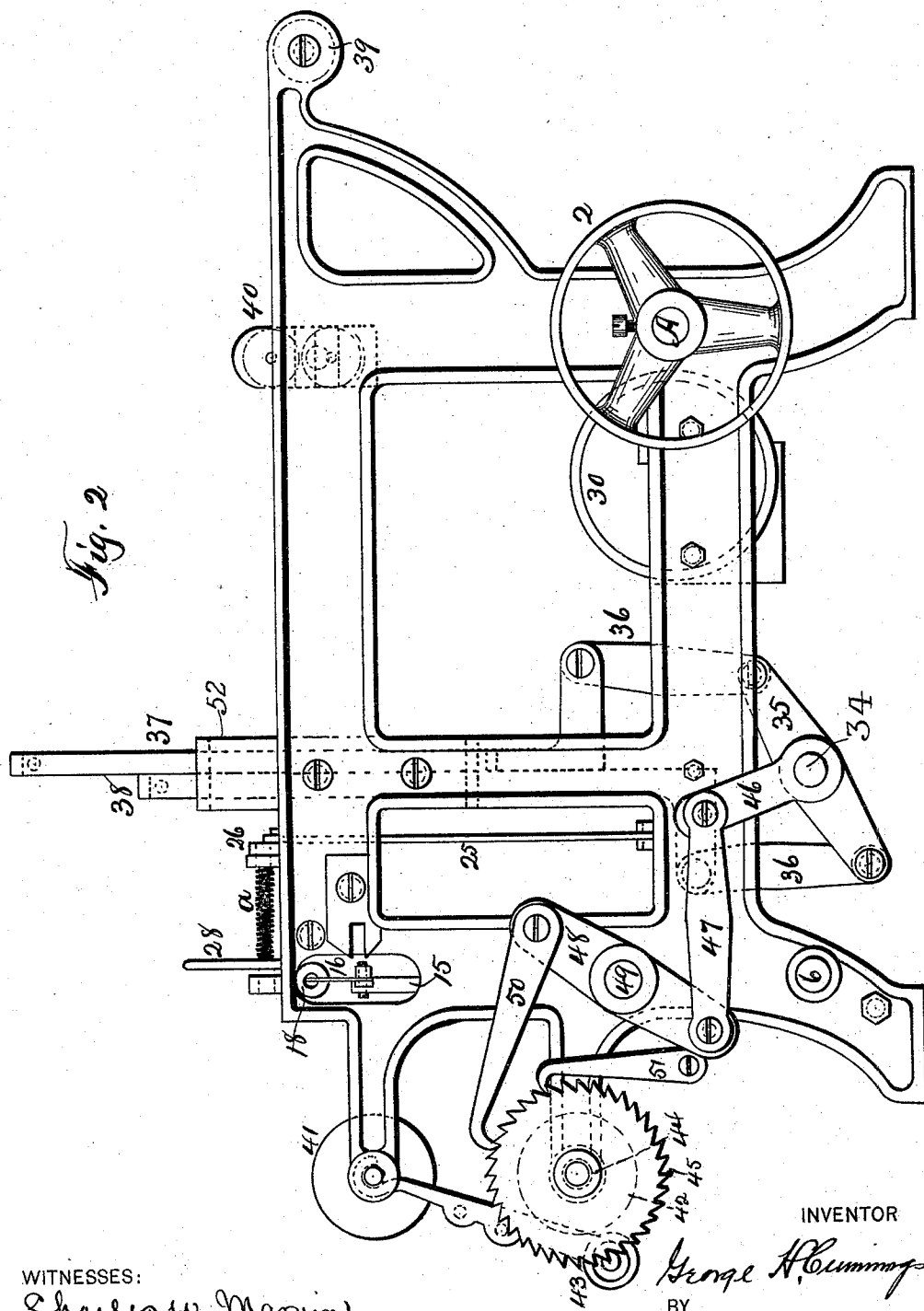
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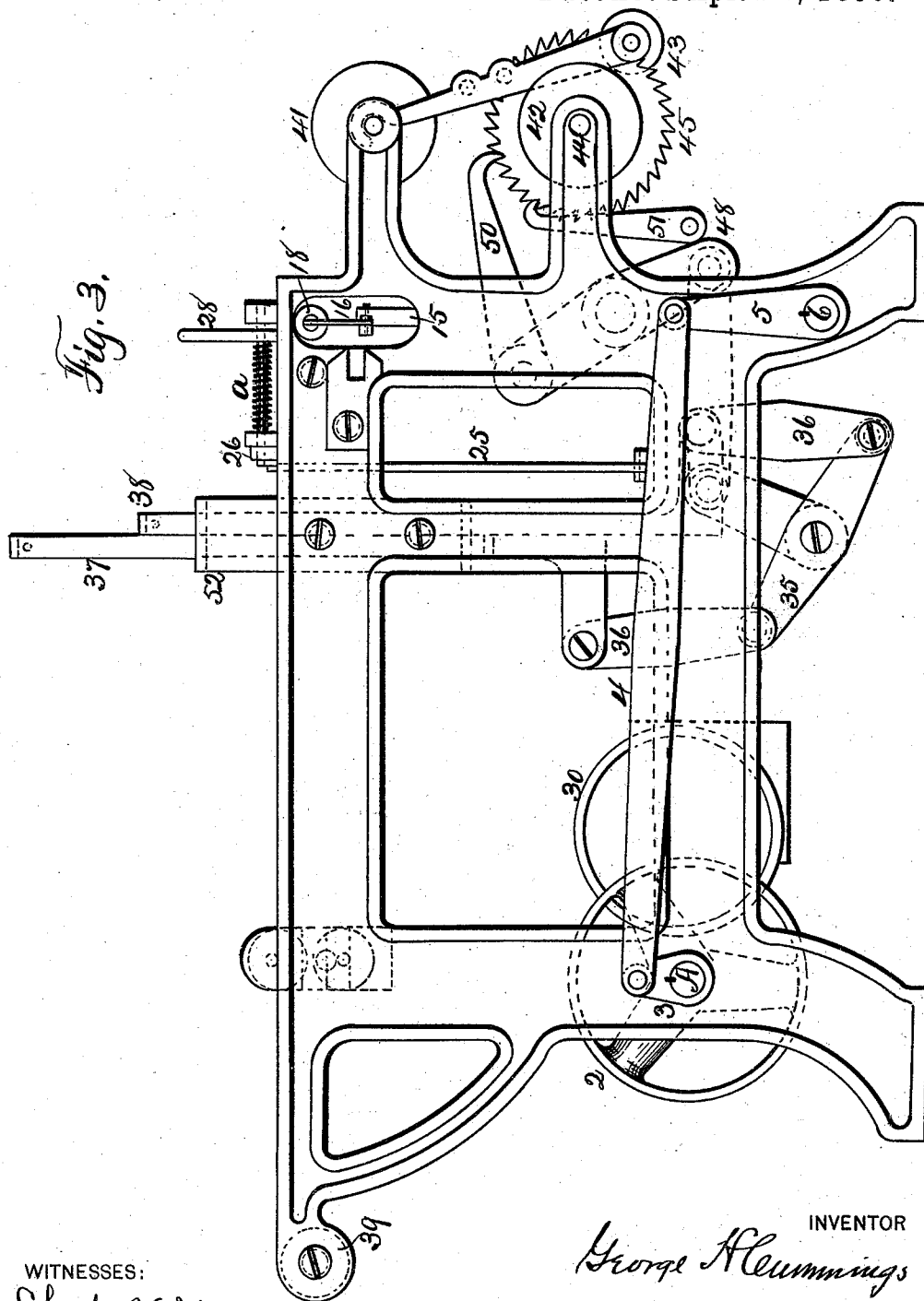
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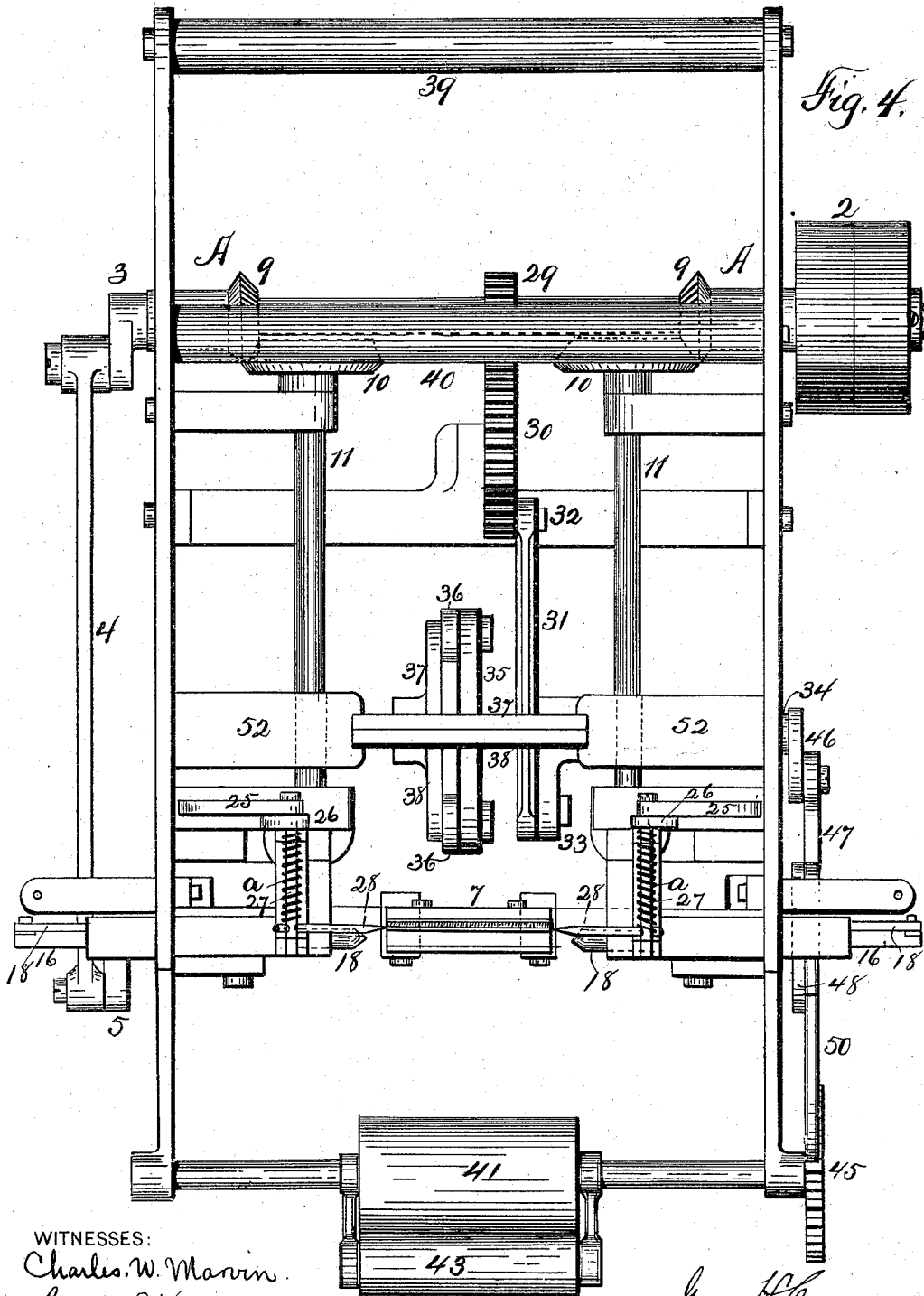
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WITNESSES:

Charles W. Marvin.
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UNITED STATES PATENT OFFICE.

GEORGE H. CUMMINGS, OF MYSTIC, CONNECTICUT.

NEEDLE-LOOM.

SPECIFICATION forming part of Letters Patent No. 558,721, dated April 21, 1896.

Application filed February 23, 1895. Serial No. 539,322. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. CUMMINGS, of Mystic, in the county of New London, in the State of Connecticut, have invented new and useful Improvements in Needle-Looms, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to looms, and particularly to that class adapted to weave narrow goods, as material for surcingles.

My object is to produce such a loom in which needles are reciprocated through the warp simultaneously from opposite directions and each needle by its reciprocation leaves a double thread of filling therein between each shift of the harness, at the same time making a selvage upon both edges, reciprocating hooks catching the bight of the filling-thread of each needle and holding it while the needle returns and until the beater has operated and the harness shifted, whereby four threads of filling are put in for each change of the harness, and the goods are woven very rapidly.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims hereunto annexed.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of a loom. Fig. 2 is a side elevation thereof. Fig. 3 is a side elevation of the opposite side. Fig. 4 is a top plan.

The frame consists of side pieces constructed substantially as shown, having suitable transverse connections between them to support them in parallelism and upright.

A is the main drive-shaft, upon which is the drive-pulley 2 upon one end, and 3 is a crank upon the other end, 4 being a pitman connected to the crank-arm 5 upon the rock-shaft 6, so that it is oscillated by the rotation of the drive-shaft, and 7 is the beater-frame secured to said rock-shaft and carrying the reed 8 and which is vibrated by the oscillation of said shaft. This comprises the beating mechanism.

The filling mechanism comprises the miter-gears 9 and 10, shaft 11, cam-strikers 12, secured thereon and rotated thereby and alternately engaging with the arms 13, pivoted at

14, and 15 are the vibratory needle-throwers secured to said arms and having their upper and free ends pivoted to the angular bars 16, mounted in guides 17, and 18 are the needles detachably secured to said bars, said needles being preferably tubular and cone-pointed and provided with transverse eyes 19, through which the threads 20 pass, said threads running off from bobbins 21, which may stand upon the floor, only one bobbin being shown. A spring 22, connected to the arms 13, operates to retract the needles and to return said arms to proper position to be again operated to throw the needles by the reengagement of the strikers therewith.

Each needle when thrown carries the thread to substantially the opposite edge of the reed, the needles moving side by side through the warp-threads, and when in this position another mechanism operates to catch both threads of filling and to hold them while the needle is retracted, so that each needle leaves a double thread in the warp, the bights of the thread forming the selvage, and the beater then beats up the four threads before the harness reverses. This thread-doubling mechanism consists of another set of strikers 23 upon the shaft 11, rock-arms 24, connecting-rods 25, connected thereto and to crank-arms 26, connected to rock-shafts 27 and angular catchers 28, the points of which are lowered to catch into the bights of the threads and hold them doubled around said points while the needles are being retracted. Then as soon as said strikers pass said arms said catchers are lifted by the gravity of the parts or by suitable springs *a* on the shafts 27 back to their normal position, as shown in Fig. 1. Then the beater operates.

The harness mechanism is constructed and operated as follows: Upon the drive-shaft a gear 29 is secured, meshing with and driving a gear 30. 31 is a pitman connected to a crank-pin 32 thereon and to a crank 33 upon a shaft 34, and 35 is a walking-beam secured upon said shaft, the ends of which are connected by links 36 to the arms upon the lower ends of the harness-sections 37 38, so that when said pitman rocks said shaft said walking-beam is oscillated and said harness-sections are alternately reciprocated vertically to reverse the warp in the usual manner. Across

the rear of the loom a shaft or roller 39 is mounted, which can be used to carry the warp-reel, or the warp-threads can be carried from the reel in some other place over it through between the rolls 40, (partly in dotted lines in Fig. 2,) thence through the harness and the reed over the roller 41, down to the wind-up roll 42, also passing partly around the tension-roller 43, said wind-up roll being mounted upon a shaft 44, journaled in the sides of the main frame, and 45 is the feed-ratchet upon said shaft. This ratchet is actuated to rotate the roll by the following mechanism: An arm 46 is secured upon the shaft 34, a link 47 to said arm and to one end of the oscillating bar 48, pivoted at 49, and a pawl 50, connected to the other end of said bar and engaging with said ratchet. A stop-pawl 51 also engages with said ratchet to prevent the backward rotation of said roll, to unwind the web wound thereon, or reduce the tension. At 52 are shown the guides which guide the harness-sections in their vertical movements.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The driving-shaft the shaft 11, extending at an angle to and driven thereby, the

strikers 12, secured to the shaft 11, pivoted levers 13, operated in one direction by the strikers 12, the spring 22, connecting the ends of the levers, and returning them to position after having been moved by the strikers; vibratory needle-throwers 15, angular bars 16, pivoted to the upper ends of the throwers, guides 17 for the bars; the needles carried by the said angular bars, the catchers for the doubled threads, and a mechanism for operating the catchers, substantially as described.

2. The combination with the reed and harness of a loom, of tubular needles provided with eyes adjacent to their points through which the filling-threads pass, and means to reciprocate said needles through the warp-threads simultaneously from opposite sides, and vertically-oscillated catchers engaging with said threads when the needles are projected and holding the thread while they are retracted, substantially as described.

In witness whereof I have hereunto set my hand on this 16th day of January, 1895.

GEORGE H. CUMMINGS.

In presence of—

J. O. FISH,

A. H. SIMMONS.