

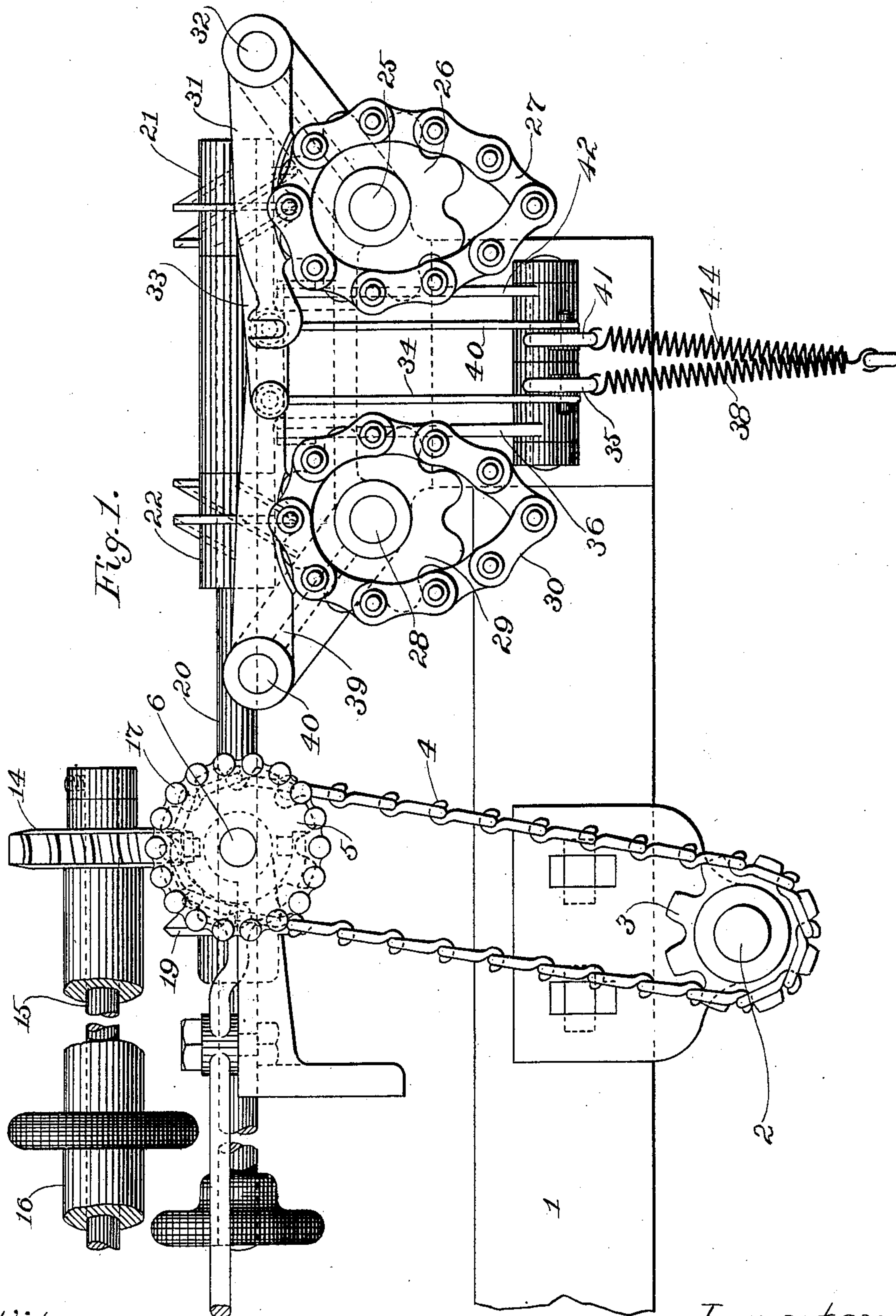
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3 Sheets—Sheet 1.

J. M. MARCO.
PATTERN MECHANISM FOR LOOMS.

No. 583,233.

Patented May 25, 1897.



Witnesses
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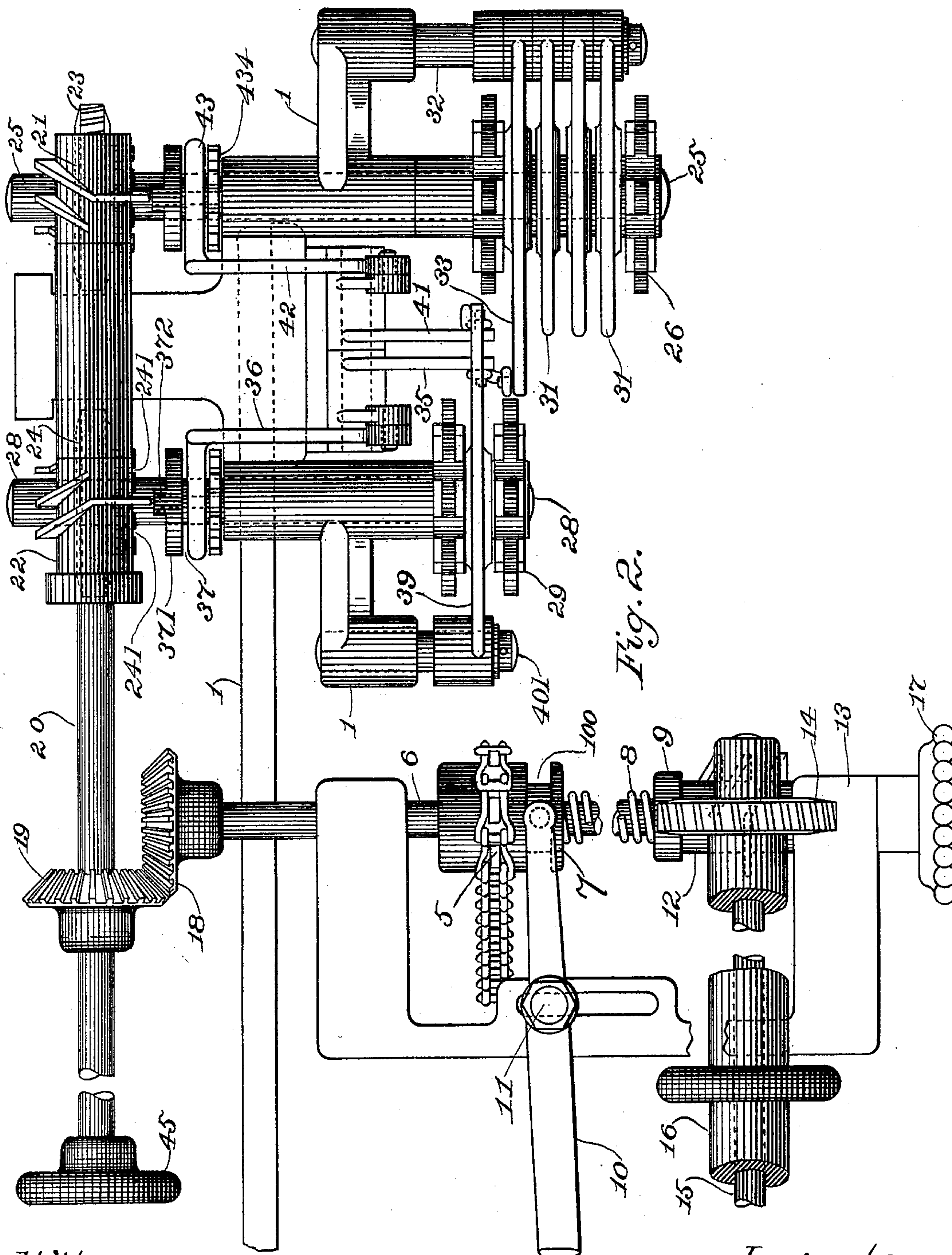
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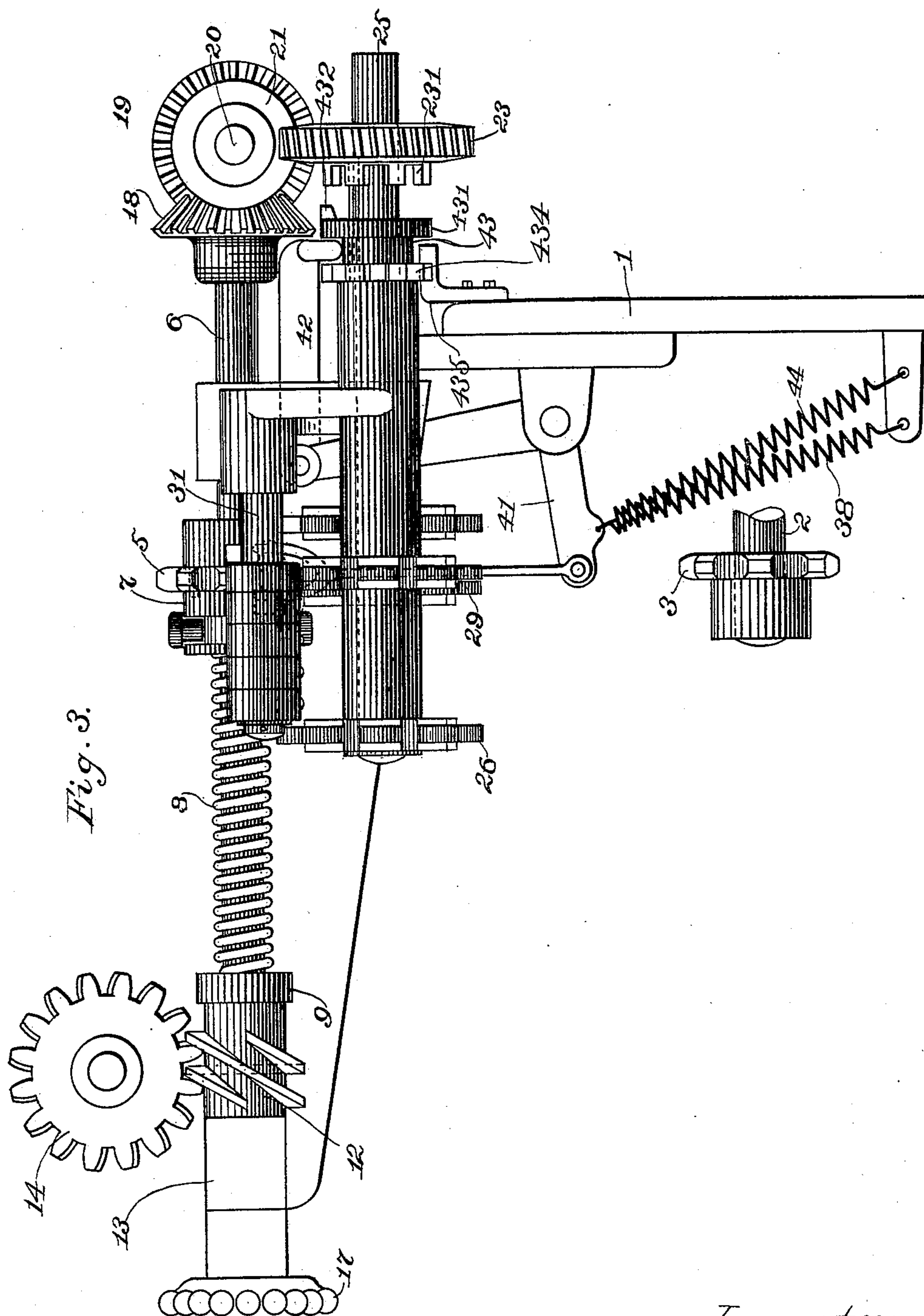
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UNITED STATES PATENT OFFICE.

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PATTERN MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 583,233, dated May 25, 1897.

Application filed February 19, 1897. Serial No. 624,131. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. MARCO, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Pattern Mechanism for Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates more particularly to the devices which are employed in looms for weaving for the purpose of operating the pattern chains or surfaces; and it has especial reference to looms in which the operation of the harnesses and shuttle-boxes is controlled from separate pattern chains or surfaces and in which, also, the usual pattern chain or surface for the shuttle-boxes has combined therewith a so-called "master-pattern" or "multiplier," by means of which to repeat, as and when required, from the respective rows of indicators of the shuttle-box pattern chain or surface in well-known manner, the said master-pattern or multiplier enabling the length of the shuttle-box pattern chain or surface to be reduced, as is well understood by those who are skilled in the art.

The invention will be described first with reference to the drawings, after which the characteristic features thereof will be pointed out more particularly and distinctly defined in the claims at the close of this specification.

In the drawings, Figure 1 is a view in side elevation of the pattern mechanism of a loom with my invention applied thereto, certain parts of the loom-framing which are required for the support of the various portions of the mechanism being shown. Fig. 2 shows in plan the parts which are represented in Fig. 1. Fig. 3 is a view in elevation from the right-hand side in Fig. 1.

1 designates supporting-framework. 2 is a rotating shaft that is mounted in suitable bearings on the said framework. 3 is a sprocket-wheel on shaft 2. 4 is a sprocket-chain which passes around said sprocket-wheel 3 and is driven thereby. 5 is a second sprocket-wheel around which said sprocket-chain passes, the said sprocket-wheel being driven by means of the said sprocket-chain.

6 is a shaft on which the said sprocket-wheel 5 is mounted loosely, the said shaft extending outwardly. 7 is a clutch-hub which is splined to the said shaft 6, so as to compel the said clutch-hub and shaft to rotate in unison while permitting the clutch-hub to be moved lengthwise along the shaft. 8 is a spiral spring which surrounds the said shaft 6 between the clutch-hub 7 and a collar 9, the said spring acting expansively to force the clutch-hub 7 into engagement with the sprocket-wheel 5, so as to cause the shaft 6 to be rotated from the shaft 2 through the sprocket-wheels and sprocket-chain, which have been described.

10 is a lever which is pivoted at 11 upon the framework 1, it having at its inner end a pin which enters the groove in the clutch-hub 7, whereby to move the latter away from the sprocket-wheel 5 whenever it is desired to disconnect shaft 6 from said sprocket-wheel.

12 is a worm fast on shaft 6.

14 is a worm-wheel that is engaged by the worm 12, the said worm-wheel being fast upon the shaft 15, the latter carrying the pattern-barrel 16 for the harnesses. Only a part of the said pattern-barrel 16 is shown in Figs. 1 and 2.

17 is a hand-wheel on the outer end of shaft 6, by means of which, after clutch-hub 7 has been moved away from the sprocket-wheel 5, as described, the shaft 6 may be rotated by hand.

18 is a bevel-gear on the inner end of shaft 6, it engaging a like gear 19 on a shaft 20, which shaft 20 extends in a direction from front to rear in a loom and at right angles to the shaft 6.

21 and 22 are worms which are fast on the shaft 20 and which engage, respectively, with the worm-wheels 23 and 24.

25 is the shaft of a pattern-barrel 26, around which latter passes the pattern-chain 27, (shown only in Fig. 1,) the latter constituting the pattern-surface by which the working of the shuttle-boxes is controlled. Worm-wheel 23 is mounted loosely upon the inner end of the said shaft 25.

28 is the shaft of the master-pattern barrel 29, around which passes the master-pat-

tern chain 30, (shown only in Fig. 1,) the latter constituting the master-pattern, by which is controlled the times of working of the pattern-chain 27. Worm-wheel 24 is mounted loosely upon the inner end of shaft 28.

31 31 are fingers or levers pivotally supported on the pin 32, which is carried by the framework 1 and connected with the operating mechanism for the shuttle-boxes, the said fingers or levers being acted upon by the indicators upon the pattern-chain 27.

33 is a finger or lever which is supported on the pin 32 and acted upon by a line of indicators upon the pattern-chain 27, the said finger or lever having connected therewith devices for throwing the pattern-barrel 29 into and out of operation.

34 is a rod joining the finger or lever 33 to the substantially horizontal outwardly-directed arm of a bell-crank 35, the upwardly-directed arm of which is connected to a shipper 36, which enters a groove 37 in the periphery of a clutch-hub 371, the latter having a tooth 372 to enter the notches 241 in the side of worm-wheel 24. When tooth 372 of the clutch-hub 371 is in one of the said notches, the worm-wheel 24 is locked to the shaft 28 of the pattern-barrel 29, so that the said shaft and pattern-barrel rotate in unison with the worm-gear. A roll or the like projection on the pattern-chain 27, on arriving beneath finger or lever 33, raises the same, and thereby, through the connections described, moves the clutch-hub 371 lengthwise on shaft 28 toward the right in Fig. 3, thereby causing said clutch-hub to engage with the worm-wheel 24 and lock the latter to the shaft 28, whereupon the shaft 28, pattern-barrel 29, and the pattern-chain 30 will be actuated through worm-wheel 24 and worm 22. A spring 38, which is connected at one end thereof to the bell-crank 35 and at the other end thereof to a fixed part of the framework, returns the parts to their former position after the passage of the said roll or other projection from beneath the finger or lever 33, and thereby disengages the clutch-hub from the worm-wheel 24, leaving the latter loose again upon the shaft 28, which will cause the shaft 28, pattern-barrel 29, and pattern-chain 30 to remain without movement until the clutch-hub is shifted into engagement with the worm-wheel 24 once more, in the manner aforesaid.

39 is a finger or lever which is supported on a pin 401, carried by the framework 1, the said finger or lever 39 resting on the pattern-chain 30 and being connected by a rod 40 to the substantially horizontal outwardly-directed arm of a bell-crank 41, the latter having its upwardly-directed arm (see Fig. 3) connected to a shipper 42, which enters a groove 43 in the clutch-hub 431, the latter having a tooth 432 to enter the notches 231 of the worm-wheel 23. When the clutch-hub 431 engages the said worm-wheel 23, the latter is locked upon the shaft 25 of the pattern-barrel 26, so that the said shaft and pattern-

barrel rotate in unison with the said worm-gear. A spring 44, connected with the said bell-crank 41 and with the framework 1, operates to move the parts so as to render the worm-wheel 23 loose again on its shaft. A roll or the like projection on the pattern-chain 30 acts to lift the finger or lever 39, and, through the connections described, lock the worm-wheel 23 upon shaft 25, thereby causing the said shaft 25, the pattern-barrel 26, and the pattern-chain 27 for the shuttle-boxes to be actuated.

45 is a hand-wheel on shaft 20, by means of which, after clutch-hub 7 has been disengaged from sprocket-wheel 5, the shaft 20 may be rotated. As will be apparent, after the said disengagement has been effected the shafts 6 and 20, which are geared together by the bevel-gears 18 and 19, may be rotated in either direction by power applied by hand to either of the hand-wheels 17 and 45, thus enabling the attendant to adjust the pattern-barrels and their pattern-chains into the desired position while standing at either the front or the rear of the loom.

The operating connections herein described provide for the operation of the pattern-barrel for the harnesses, the pattern-barrel for the shuttle-boxes, and the pattern-barrel for the master-pattern chain from the single shaft 6 through positive connections. Such connections enable the pattern-barrels to be turned backwardly by hand in finding lost picks or for other purposes, and forwardly, also, when required, without it being possible to disarrange their relative position. By keeping the pattern-chain for the shuttle-boxes always trained with the pattern-chain for the harnesses they render it impossible for the wrong shot or shoots of weft or filling to be introduced into the sheds of the warp-threads.

For the purpose of preventing accidental or undesired movement of either the shuttle-box, pattern-barrel, or the master-pattern while the operative connections between the same and the actuating-worms thereof are broken I form each of the clutch-hubs 371 and 431 with notches 434 in a flange thereof, (see Fig. 3;) also, upon the framework 1, adjacent to each clutch-hub, I mount a stop 435, having a projecting portion, as shown, shaped to enter whichever of the said notches may be presented to it. When either clutch-hub is drawn away from the corresponding worm-gear by the devices which have been described, the said stop enters a notch in the flange thereof, thus holding the clutch-hub and other parts, to and including the corresponding pattern-barrel, immovable until the clutch-hub has been moved forward into engagement with its worm-gear again.

I claim as my invention—

1. The combination with the pattern-barrel for the shuttle-boxes, its shaft, the master-pattern, its shaft, the worm-gears loosely mounted upon the said shafts, the clutch-

hubs splined to the said shafts, devices under the control of a line of indicators on the shuttle-box pattern-chain to determine the engagement between the clutch-hub of the shaft of the master-pattern with the corresponding worm-gear, devices under the control of the master-pattern to determine the engagement between the clutch-hub of the shaft of the shuttle-box pattern-barrel with the corresponding worm-gear, the worms engaging and driving the said worm-gears, and means to drive the said worms, substantially as described.

2. The combination with the pattern-barrel for the harnesses, its worm-gear, the worm engaging the said worm-gear to rotate the said pattern-barrel, the pattern-barrel for the shuttle-boxes, the worm-gear loosely mounted on the shaft of said pattern-barrel, the master-pattern, the worm-gear loosely mounted on the shaft of said master-pattern, the devices under the control of a line of indicators on the shuttle-box pattern-chain to establish and break the operative connection between the master-pattern and its worm-gear, the devices under the control of the master-pattern to establish and break the operative connection between the shuttle-box pattern-barrel and its worm-gear, the worms engaging and driving the loose worm-gears, and devices to positively actuate all the worms in unison, substantially as described.

3. The combination with the pattern-barrel for the harnesses, its worm-gear, the worm engaging the said worm-gear to rotate the said pattern-barrel, the pattern-barrel for the shuttle-boxes, the worm-gear loosely mounted on the shaft of said pattern-barrel, the master-pattern, the worm-gear loosely mounted on the shaft of said master-pattern, the devices under the control of a line of indicators on the shuttle-box pattern-chain

to establish and break the operative connection between the master-pattern and its worm-gear, the devices under the control of the master-pattern to establish and break the operative connection between the shuttle-box pattern-barrel and its worm-gear, the worms engaging and driving the loose worm-gears, the shafts 6 and 20 carrying the worms as described, gearing to connect the said shafts to rotate in unison, power-driving connections applied to one of said shafts, the said connections including a disconnectible coupling or clutch, and hand-wheels whereby to rotate the said shafts by hand, substantially as described.

4. The combination with the pattern-barrel for the shuttle-boxes, its shaft, the master-pattern, its shaft, the worm-gears loosely mounted upon the said shafts, the clutch-hubs splined to the said shafts and each having a series of notches, devices under the control of a line of indicators on the shuttle-box pattern-chain to determine the engagement between the clutch-hub of the shaft of the master-pattern with the corresponding worm-gear, devices under the control of the master-pattern to determine the engagement between the clutch-hub of the shaft of the shuttle-box pattern-barrel with the corresponding worm-gear, the fixed stops which enter the notches aforesaid to hold the clutch-hubs and connected parts stationary while such clutch-hubs are disconnected from the worm-gears, the worms engaging and driving the said worm-gears, and means to drive the said worms, substantially as described.

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

JOHN M. MARCO.

Witnesses:

WM. WAGNER, Jr.,
K. H. ROSS.