

No. 724,080.

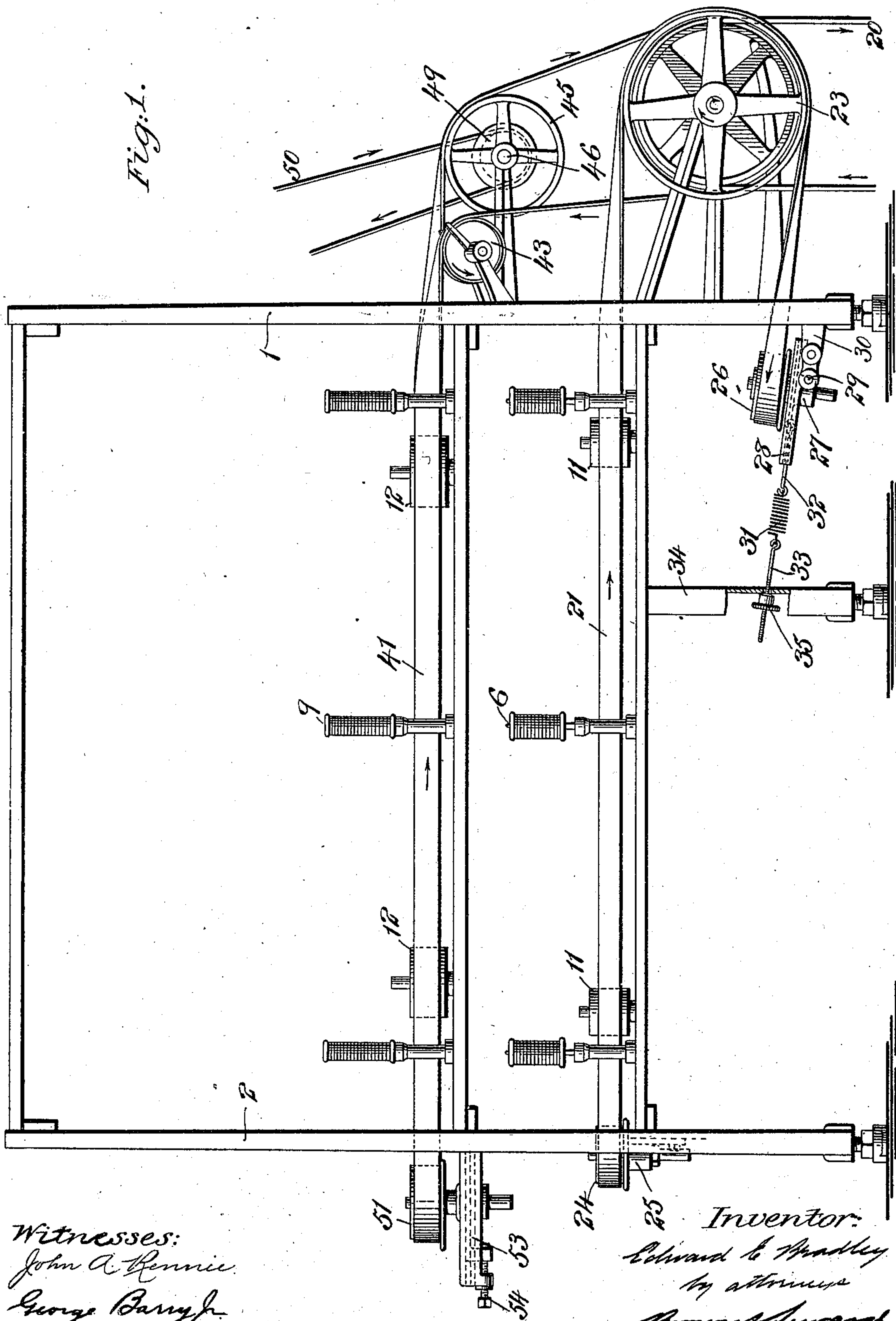
PATENTED MAR. 31, 1903.

E. E. BRADLEY.
SPINDLE DRIVING MECHANISM.

APPLICATION FILED MAY 13, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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Inventor:
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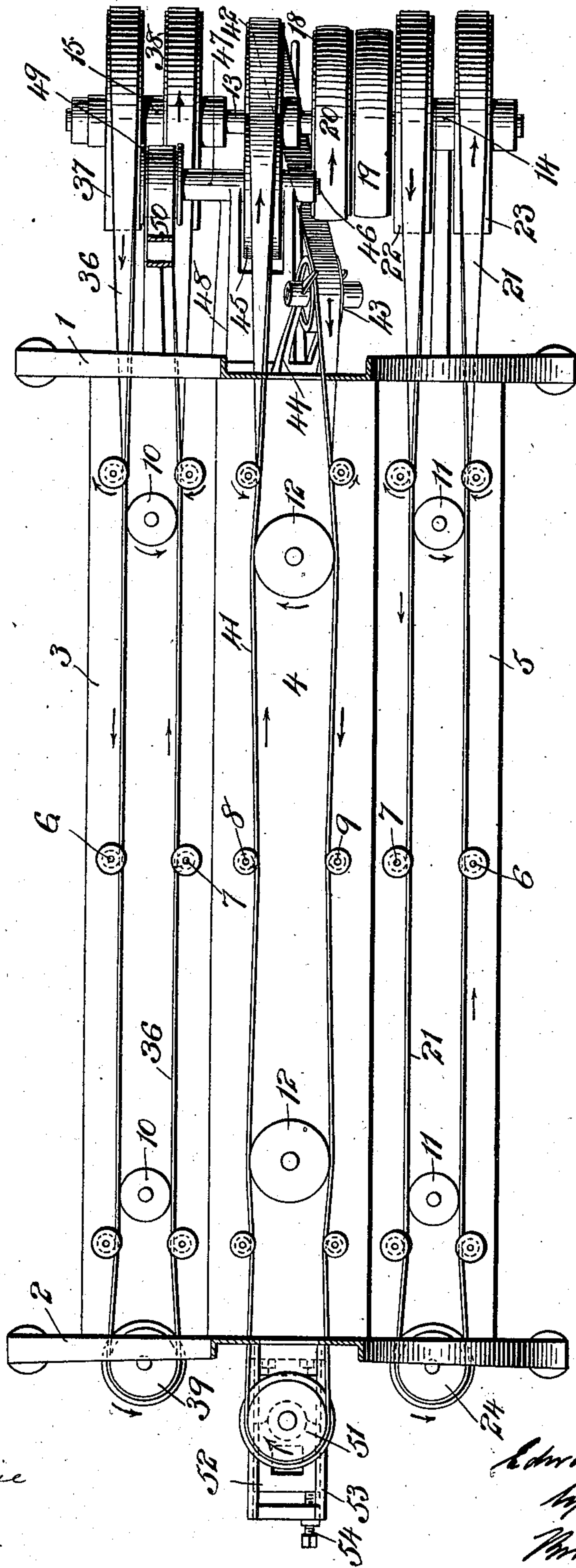
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

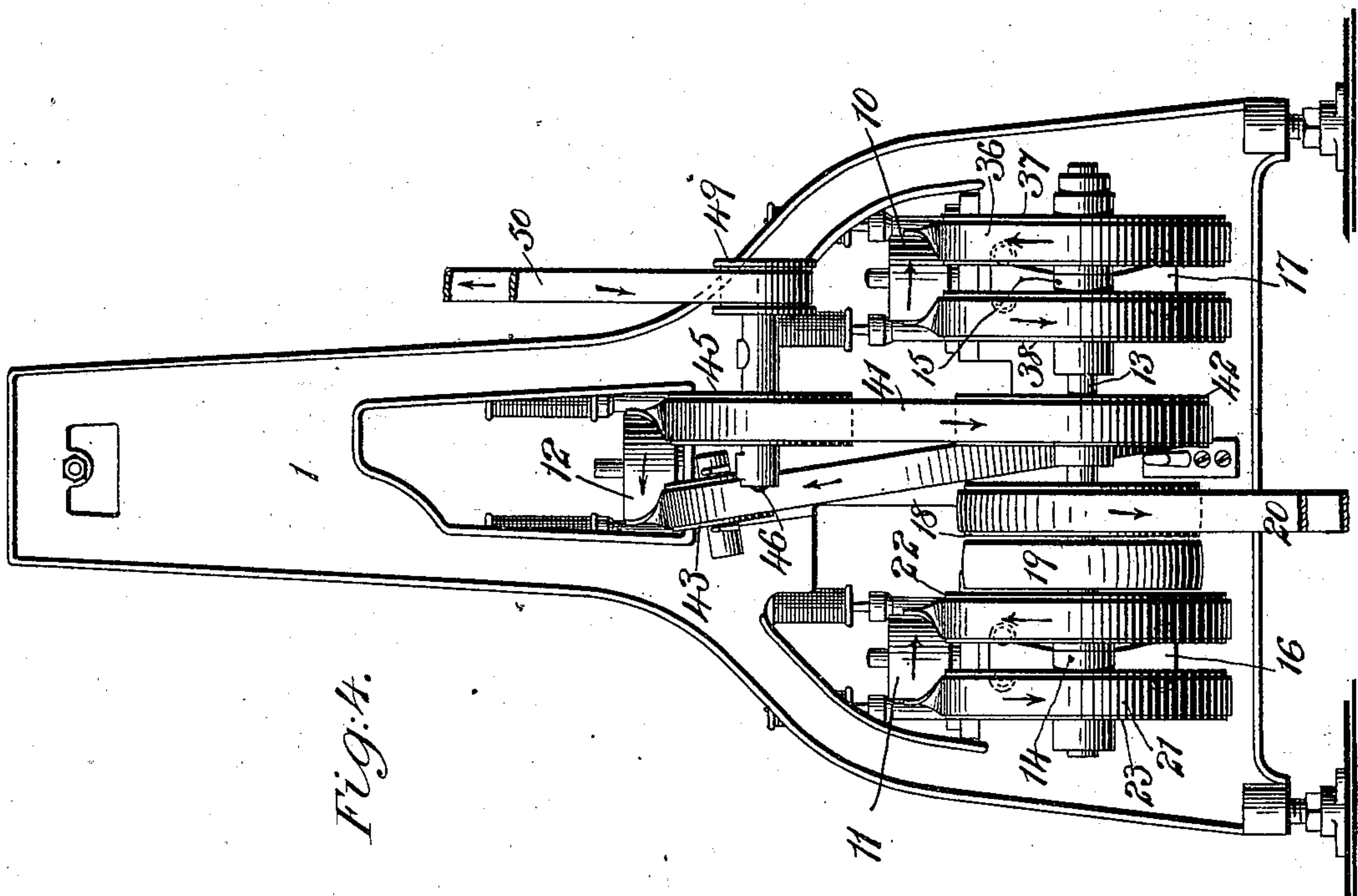


Fig. 4.

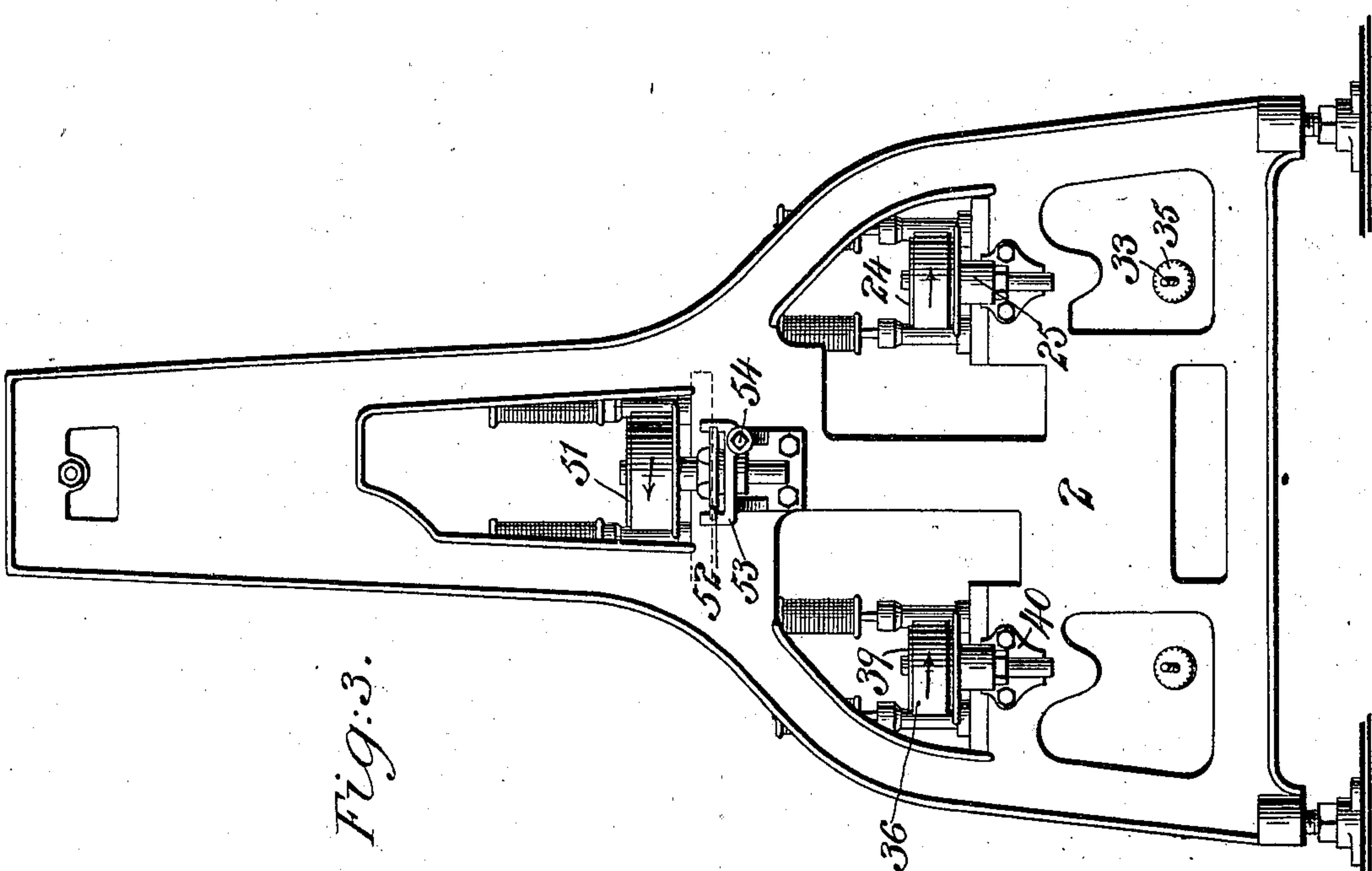


Fig. 3.

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UNITED STATES PATENT OFFICE.

EDWARD E. BRADLEY, OF STONINGTON, CONNECTICUT, ASSIGNOR TO THE
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SPINDLE-DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 724,080, dated March 31, 1903.

Application filed May 13, 1902. Serial No. 107,087. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. BRADLEY, a citizen of the United States, and a resident of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Spindle-Driving Mechanism for Combined Spinning and Twisting Machines, of which the following is a specification.

10 My invention relates to an improvement in spindle-driving mechanism for combined spinning and twisting machines, and has for its object to provide a very simple, complete, and effective driving mechanism for driving
15 the first-time or spinning spindles and the second-time or twisting spindles from a single horizontal head-shaft.

A further object is to provide a driving mechanism in which the belts are so arranged
20 that they will drive all the spinning-spindles in the double rows upon the opposite sides of the machine in the same direction and the twisting or take-up spindles in the third double rows in the opposite direction.

25 A still further object is to provide means for keeping the belts under the required tension without affecting the position of the belts with respect to the spindles which they are driving.

30 The driving mechanism which I have shown herein is arranged for driving a double row of spinning-spindles on each side of the machine and a third double row of twisting or take-up spindles intermediate the two double
35 rows of spinning-spindles and above the same.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

40 Figure 1 is a side view of so much of a combined spinning and twisting machine as will clearly illustrate the position and operation of the spindle-driving mechanism. Fig. 2 is a top plan view of the same. Fig. 3 is a rear
45 end view of the driving mechanism and its supporting parts, and Fig. 4 is a front end view of the driving mechanism and its supporting parts.

50 The framework of the combined spinning and twisting machine which is illustrated

herein comprises a front end upright 1 and a rear end upright 2, connected by three spindle-supporting rails 3 4 5, the side rails 3 and 5 being each adapted to support a double row of spinning-spindles, the two rows 6 and 7 of
55 which are spaced a short distance apart. The intermediate rail 4 is located between the side rails 3 and 5 a distance above the same, which intermediate rail 4 is fitted to support a double row of twisting-spindles, 60 the two rows 8 and 9 of which are spaced apart along the same.

In the accompanying drawings I have represented for illustrating the operation of the driving mechanism three spindles in each of
65 the rows above referred to.

A plurality of idler-pulleys 10 are mounted on the side rail 3 in position to hold the belt to be hereinafter described against the spindles 6 and 7. A plurality of idler-pulleys 11
70 are mounted on the side rail 5 in position to hold the belt to be hereinafter described against the spindles 6 and 7 carried by said side rail. A plurality of idler-pulleys 12 are mounted on the intermediate rail 4 for the
75 similar purpose of holding the driving-belt therefor against the spindles 8 and 9.

A horizontal head-shaft 13 is mounted to rotate in suitable bearings 14 15 in the ends of brackets 16 17, bolted or otherwise secured
80 to the front end upright or frame 1. This head-shaft 13 is provided intermediate the brackets 16 and 17 with a fast pulley 18 and a loose pulley 19, which may be engaged at pleasure by a driving-belt 20, leading to a
85 source of power, (not shown herein,) which drive-belt is constantly driven in the direction indicated by the arrow thereon.

The belt for driving the two rows of spindles 6 and 7, carried by the side rail 5, is de-
90 noted by 21. This belt passes between the two rows of spindles and is held against the same by the drums or pulleys 11, hereinbefore referred to. At the front end of the machine this belt passes around two pulleys 22
95 23, located on the head-shaft 13 upon opposite sides of the bearing 14, the pulley 23 being fixed to rotate with the shaft, while the pulley 22 is free to rotate in the opposite direction thereon. At the rear end of the ma-
100

chine the drive-belt 21 passes around the idler-pulley 24, mounted in a bracket 25, secured to the rear end upright or frame 2. After the belt leaves the under sides of the fast and loose pulleys 23 22 on the head-shaft 13 it passes around an idler tightening-pulley 26, which is mounted in a bracket 27, fitted to slide in a rocking frame 28, hinged at 29 to a bracket 30, secured to the front end frame or upright 1. The idler-pulley 26 is held under adjustable spring tension to keep the required tension on the belt 21 by means of a spring 31, connected at one end through a rod 32 to the sliding bracket 27 and at its other end provided with a screw-threaded rod 33, which passes through an intermediate upright or frame 34. This screw-threaded rod 33 is provided with an adjusting-nut 35, which bears against the rear face of the upright 34. By turning this adjusting-nut 35 the tension of the belt may be accurately adjusted.

The two rows of spindles 6 and 7, carried by the side rail 3, are similarly driven to those carried by the side rail 5 by means of a driving-belt 36, which passes between the two rows of spindles and is held in driving contact therewith by the intermediate pulleys or drums 10. At the front of the machine the driving-belt 36 passes around two pulleys 37 38, located on the head-shaft 13 upon opposite sides of the bearing 15, the pulley 38 being fixed to rotate with the said shaft, while the pulley 37 is loose thereon, so as to permit it to be rotated by the belt in the reverse direction to the shaft. At the rear end of the machine the belt 36 passes around an idler-pulley 39, mounted in a stationary bracket 40, bolted or otherwise secured to the rear end frame or upright 2. After the belt 36 leaves the under sides of the pulleys 37 38 it passes around a tension device, (not shown herein,) which is constructed, arranged, and operated quite similar to the tension device hereinbefore described in connection with the driving-belt 21.

The two rows of twisting-spindles 8 and 9, carried by the intermediate rail 4, are driven in the opposite direction to the spinning-spindles 6 and 7 by a belt 41, which passes between the two rows of spindles 8 and 9 and is held normally in engagement therewith by the intermediate idler pulleys or drums 12. At the front end of the machine the belt 41 passes around a driving-pulley 42, fixed to the head-shaft 13 intermediate the main driving-pulley 18 and the fast pulley 38. The belt 41 is led in the proper direction between the twisting-spindles to drive the spindles in the reverse direction to the spinning-spindles in the following manner: As the belt 41 leads upwardly from the lower side of the driving-pulley 42 it passes around an idler guide-pulley 43, mounted at an angle to the horizontal shaft 13 in a bracket 44, bolted or otherwise secured to the front face of the end frame or upright 1. This pulley 43 is utilized for directing the belt 41 into engagement with the

row 9 of twisting-spindles. As the belt leaves the row 8 of twisting-spindles at the front end of the machine it passes partially around a large guide-pulley 45, fixed to rotate with a horizontal shaft 46, mounted in suitable bearings 47 in the forward end of a bracket 48, bolted or otherwise secured to the front face of the end upright or frame 1. The belt 41 then passes downwardly from the guide-pulley 45 into engagement with the pulley 42, fixed to the head-shaft. A pulley 49 is fixed to the shaft 46, to which the guide-pulley 45 is fixed, which pulley 49 is engaged by a belt 50, which is used for driving the stop-motion-controlling mechanism. (Not shown herein.) At the rear end of the machine the driving-belt 41 passes around an idler-pulley 51, mounted in a block 52, fitted to slide longitudinally in a bracket 53, bolted or otherwise secured to the back face of the rear upright or frame 2. This block 52, and thereby the pulley 51, may be adjusted longitudinally for tightening and loosening the belt 41 by means of an adjusting-screw 54, which engages the said block 52 and bracket 53. It will thus be seen that the driving-belt 41 may be adjusted to the required tension at the back of the machine.

If it be desired for certain classes of work that all of the spindles be driven in the same direction, it may be done—as, for instance, by reversing the positions of the fast and loose pulleys 23 22 and the fast and loose pulleys 38 37.

The driving mechanism constructed and arranged as hereinbefore set forth is extremely simple and one in which the belts can be readily and accurately adjusted to perform to a nicety the work required. Furthermore, the structure is materially simplified by utilizing the horizontal head-shaft with the fast and loose pulleys mounted thereon, as hereinabove described.

What I claim is—

1. In combination, a suitable frame, two rows of spinning-spindles upon each side of the frame, and two rows of twisting or take-up spindles supported by the frame, a horizontal head-shaft, belts driven by the head-shaft, arranged to drive the spinning-spindles in one direction and a separate belt also driven by the head-shaft, arranged to drive the twisting or take-up spindles in the reverse direction, substantially as set forth.

2. In combination, a suitable frame, two rows of spinning-spindles located along each side of the frame, two rows of twisting or take-up spindles carried by the frame, a horizontal head-shaft, driving-belts for the spindles, fast and loose pulleys carried by the head-shaft for the belts for driving the side rows of spindles and a fast pulley carried by the head-shaft for driving the two rows of twisting or take-up spindles, substantially as set forth.

3. In combination, a suitable frame, two rows of spinning-spindles along each side of

the frame, two rows of twisting or take-up
spindles along the middle of the frame, a hori-
zontal head-shaft, a belt for each two rows of
spindles, fast and loose pulleys on the head-
5 shaft for each of the side belts, a fast pulley
on the head-shaft for the intermediate belt,
guide-pulleys for directing the intermediate
belt between the rows of twisting or take-up
spindles, and idler-pulleys arranged to hold
10 the belts in engagement with their respective
spindles, substantially as set forth.

4. In combination, a suitable frame, two
rows of spindles along the middle of the frame,
a horizontal head-shaft, a driving-belt for the
15 two rows of spindles, a fast pulley on the head-
shaft engaged by the said belt and a second
shaft carrying a stop-motion driving-belt pul-
ley and a guide-pulley engaged by the said
belt, substantially as set forth.

20 5. In combination, a suitable frame, two

rows of spindles located along one side of the
frame, a horizontal head-shaft, fast and loose
pulleys thereon, a spindle-driving belt engag-
ing the fast and loose pulleys, an idler-pul- 25
ley at the rear end of the frame around which
the belt passes, a belt-tightening pulley at the
other end of the frame around which the belt
passes for adjusting the tension of the belt
and a plurality of idler-pulleys for holding
the belt in engagement with the spindles, sub- 30
stantially as set forth.

In testimony that I claim the foregoing as
my invention I have signed my name, in pres-
ence of two witnesses, this 21st day of April,
1902.

EDWARD E. BRADLEY.

Witnesses:

H. W. LANPHEAR,
FRED A. ALLEN.