

No. 749,521.

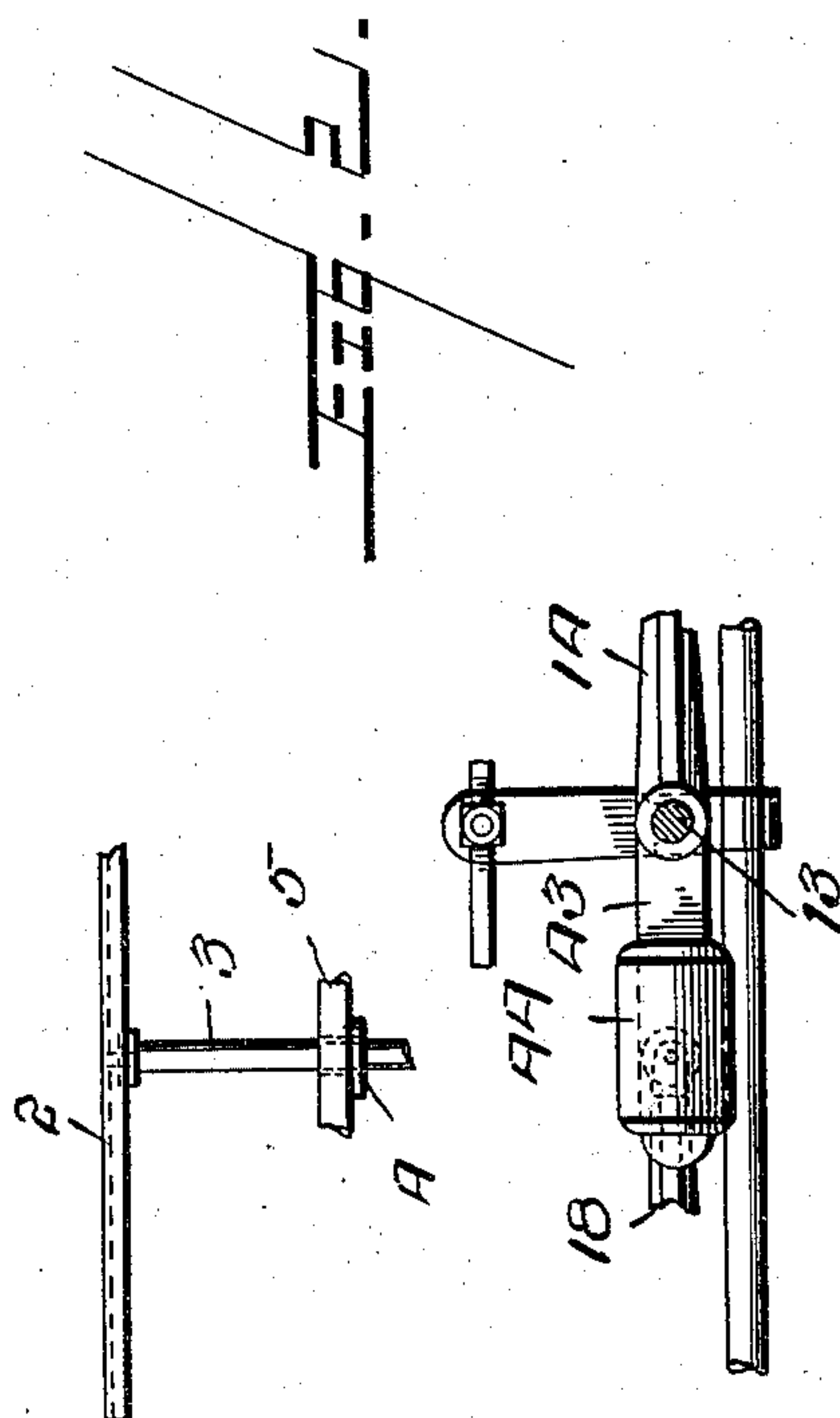
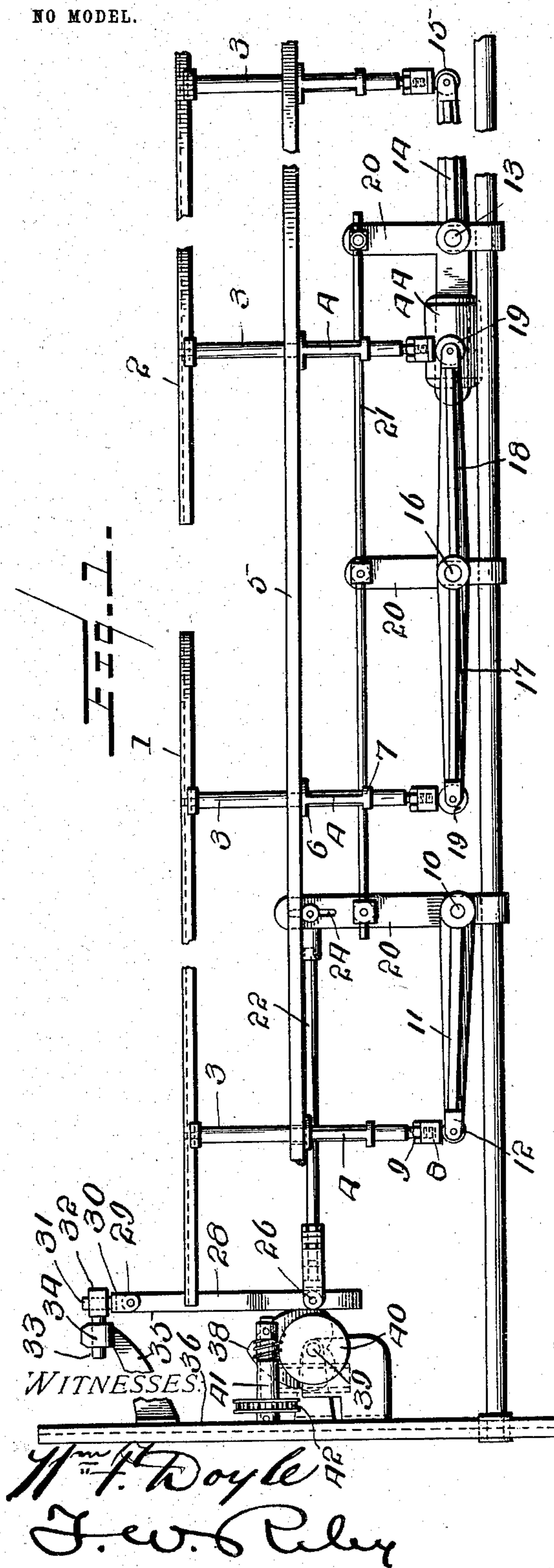
PATENTED JAN. 12, 1904.

M. T. BENTLEY.
RING RAIL MOTION FOR SPINNING MACHINES.

APPLICATION FILED AUG. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:
33 34 31
35 32 30
36 29
37 28
38 27
39 26
40 25

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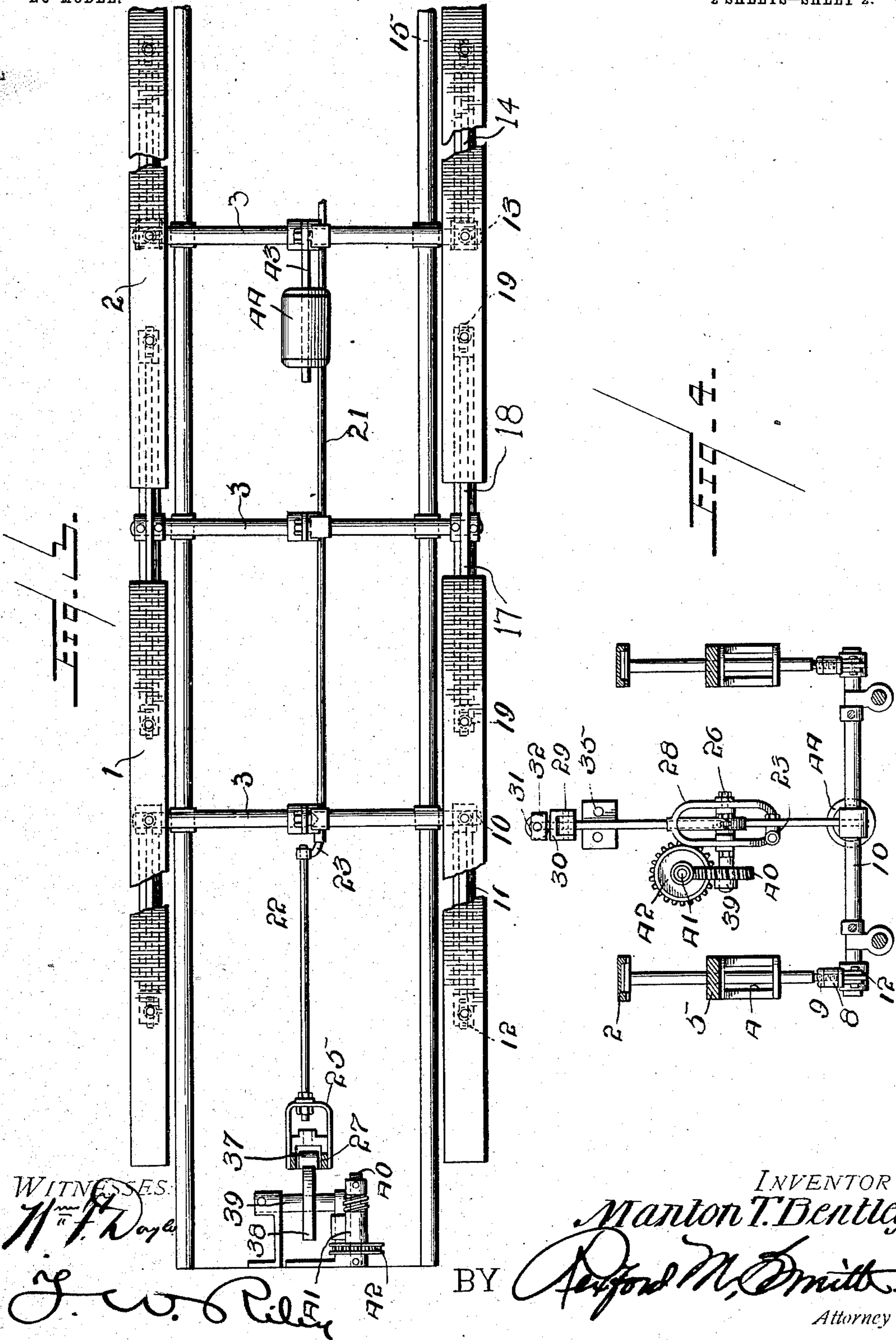
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

MANTON T. BENTLEY, OF YORK, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO YORK SILK MANUFACTURING COMPANY, OF YORK, PENNSYLVANIA.

RING-RAIL MOTION FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 749,521, dated January 12, 1904.

Application filed August 12, 1903. Serial No. 169,268. (No model.)

To all whom it may concern:

Be it known that I, MANTON T. BENTLEY, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Ring-Rail Motions for Spinning-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to ring-rail motions for ring-spinning machines.

In the spinning and twisting of threads or yarns of different descriptions on so-called "ring-spinning machines" the uniform movement of the rails which carry the rings and travelers (called "ring-rails") back and forth along the length of the spools or bobbins is necessary in order to obtain the proper distribution of threads on said spools or bobbins.

The object of this invention is to provide a simple and smooth working mechanism for the above purpose, so that by dividing each ring-rail into a plurality of sections said sections may be simultaneously moved upward and downward, one section serving to counter-balance another section, and thereby reducing to a minimum the strain, tension, or friction on the mechanism from which the ring-rail derives its motion.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination, and arrangement of parts, as hereinafter fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a front elevation of a sufficient portion of a ring-spinning machine to illustrate the construction and operation of the present invention. Fig. 2 is a detail elevation showing the balance-weight which serves to maintain the operative relation between the parts of the mechanism by which motion is transmitted to the ring-rail. Fig. 3 is a plan view of the parts shown in Fig. 1. Fig. 4 is a vertical cross-section taken a little to one side of the center of the machine.

Like reference-numerals designate corresponding parts in all figures of the drawings.

In carrying out the present invention the ring-rail at each side of the machine is divided into a plurality of sections 1 and 2. For the purposes of illustration and disclosure of this invention said ring-rail is illustrated and will be described as composed of two sections, although it will be apparent that the sections may be increased to any desired extent in accordance with the size and capacity of the machine.

Each ring-rail section is carried by and mounted upon the upper ends of a plurality of vertical lift-rods 3, two of said rods being shown for each ring-rail section. The lift-rods 3 play vertically in guides 4, secured to one of the stationary rails 5 of the machine-frame, each guide by preference consisting of an upper ring or sleeve 6, a lower ring or sleeve 7, and a connecting-bar interposed between and rigidly connecting said rings, whereby two distantly-located bearing-points are provided with each lift-rod 3, thus causing the same to work steadily in its movements up and down.

Each lift-rod 3 is provided at its lower end with a foot-piece 8, which is internally threaded and screwed upon the threaded lower end of said rod, as shown, and held when adjusted by means of a jam-nut 9, thus providing for increasing or diminishing the distance between the ring-rail section and the lever which co-operates with the lift-rod. In this way the ring-rail section may be leveled up and the extent of motion up and down regulated to suit the spool or bobbin upon which the thread or yarn is being wound.

10 designates a rock-shaft, which extends transversely across the machine and has rigidly mounted thereon a single-arm lift-lever 11, which carries at its end an antifrictional roller 12, which lies under and bears against the foot-piece 8, so that as said lever-arm oscillates the lift-rod is moved up and down, carrying the ring-rail section with it. Another rock-shaft, 13, is provided with a single-arm lift-lever 14, rigidly connected therewith and provided at its end with an antifrictional roller 15, which works under the foot-piece of

another lift-rod, which supports the adjoining ring-rail section. Between the rock-shafts 10 and 13 is another rock-shaft, 16, to which is rigidly secured a double-arm lift-lever comprising oppositely-extending arms 17 and 18, each of which is provided at its extremity with an antifrictional roller 19, which works in connection with the foot-piece of another lift-rod, 3.

Each of the rock-shafts 10 and 13 and 16 is provided with an upwardly-extending crank-arm 20, and all of said crank-arms are connected together for simultaneous movement by a coupling-rod 21, which is pivotally attached to each crank-arm, so that as one crank-arm is vibrated the other crank-arms are simultaneously vibrated, thereby giving an equal throw to each of the lift-levers 11, 14, 17, and 18, which are of equal length, the arms or levers 11 and 17 extending in one direction and the levers 14 and 18 extending in the reversed direction. In this way as the ring-rail section 1 is raised the adjoining ring-rail section 2 is lowered, and vice versa.

22 designates a connecting-rod which is provided at one end with a clip or elbow 23, to which it is threaded, said clip or elbow being adjustable vertically in a slot 24 in one of the crank-arms 20, as shown in Fig. 1. To the opposite end of the connecting-rod 22 is adjustably attached by threading or otherwise a yoke 25, which is pivotally attached at 26 to the lower bifurcated end 27 of a cam-operated lever 28, which is fulcrumed at its upper end, as at 29, in a fork 30, provided with a shank 31, adjustable up and down in a sleeve 32, which is also provided with a shank 33, adjustable horizontally in a sleeve 34 of a bracket 35, attached to and projecting from a part 36 of the machine-frame, as shown in Fig. 1. Between the branches of the fork 27 is journaled an antifrictional roller 37, which operates in contact with the cam 38, mounted on the shaft 39, which also carries a worm-gear 40, driven by a worm-shaft 41, provided with a driving-wheel 42. The wheel 42 is preferably provided with sprocket-teeth or their equivalent in order that it may derive its motion from a sprocket-driving chain.

From the foregoing description it will be understood that as the shaft 41 is rotated by the means described rotary motion will also be imparted to the shaft 39, causing the cam 38 to act on the lever 28, vibrating the latter and by means of the connecting-rod 22 imparting a vibratory movement to the crank-arm 20, to which the connecting-rod is attached. As said crank-arm is coupled up with all the other crank-arms, which are of equal length, uniform rocking movement is imparted to all of the shafts 10, 13, and 16, and consequently to all of the lift-levers carried by said rocking shafts. In this way the lift-rods 3 are reciprocated vertically in their

guides and the ring-rail sections are uniformly moved up and down simultaneously and equally, one ring-rail section serving to counterbalance another.

In order that an operative engagement may be maintained between the cam 38 and the lever 28, one of the rock-shafts—for instance, the rock-shaft 13—is provided with a weighted arm 43, carrying a balance-weight 44, which may be adjusted in and out on said arm. By means of the weight 44 the ring-rail sections may be said to be overbalanced to an extent sufficient to hold the lever 28 against the cam 38, thereby insuring the proper action of the mechanism by means of which motion is imparted to the ring-rail sections.

It will be apparent that the construction hereinabove described is susceptible of considerable modification in the form, proportion, and minor details, and I therefore reserve the right to make such changes as properly fall within the scope of the appended claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a ring-spinning machine, a ring-rail made in counterbalancing sections, in combination with means for moving the sections simultaneously in opposite directions.

2. In a ring-spinning machine, a ring-rail made in sections, one serving to counterbalance another, and means for moving the sections up and down.

3. In a ring-spinning machine, a ring-rail comprising a plurality of counterbalancing sections, in combination with means operatively connected with the sections in such manner that one section moves upward as the other moves downward and vice versa.

4. In a ring-spinning machine, a ring-rail comprising a plurality of counterbalancing sections, lift-levers connected with the sections, a connection between the levers whereby they are caused to operate simultaneously, and means for vibrating one of said levers.

5. In a ring-spinning machine, a ring-rail comprising a plurality of counterbalancing sections, lift-rods connected therewith, a series of lift-levers operatively associated with the lift-rods, a rod connecting all of said levers, and means for vibrating one of said levers.

6. In a ring-spinning machine, a ring-rail comprising a plurality of sections, lift-rods connected with said sections, single and double arm lift-levers operatively associated with the lift-rods, connections between said levers for causing them to swing simultaneously, and means for vibrating one of said levers.

7. In a ring-spinning machine, a ring-rail comprising a plurality of sections, lift-rods connected therewith, reversely-disposed lift-levers operatively associated with said lift-

rods, and means for simultaneously and equally vibrating all of said levers, some of which move upward as the others move downward.

8. In a ring-spinning machine, a ring-rail comprising a plurality of counterbalancing sections, lift-rods connected therewith, a series of rock-shafts, reversely-disposed lift-levers fixed to said rock-shaft and operatively associated with the lift-rods, crank-arms on said rock-shafts, a coupling-rod connecting all of the crank-arms, and means for vibrating one of said levers.

9. In a ring-spinning machine, a ring-rail comprising a plurality of counterbalancing sections, lift-rods connected therewith, reversely-disposed lift-levers operatively associated with the lift-rods, crank-arms connected with said levers, a coupling-rod connected with all of the crank-arms for causing them to swing simultaneously, driving mechanism, and a connecting-rod operatively associated with the driving mechanism and adjustably connected to one of the crank-arms.

10. In a ring-spinning machine, a ring-rail comprising a plurality of counterbalancing sections, reversely-disposed lift-rods connected therewith, lift-levers operatively associated with the lift-rods, means coupling said levers together for simultaneous operation, a driving-cam, a cam-operated lever actuated thereby, and a connecting-rod interposed between the cam-operated lever and one of the lift-

levers and provided with an antifriction-roller which operates in contact with the cam.

11. In a ring-spinning machine, a ring-rail comprising a plurality of counterbalancing sections, a series of reversely-disposed levers operatively associated therewith and adapted to raise and lower the sections simultaneously in opposite directions, driving mechanism for imparting movement to said levers, and a weight connected with one of the ring-rail sections in such manner as to maintain an operative relation between the driving mechanism, and the ring-rail section which is operatively connected therewith.

12. In a ring-spinning machine, a ring-rail comprising a plurality of counterbalancing sections, lift-rods connected therewith, reversely-disposed lift-levers operatively associated with the lift-rods, rock-shafts to which said lift-levers are connected, crank-arms on said rock-shafts, a coupling-rod connecting all of said crank-arms, a weighted arm connected to one of said shafts, and driving mechanism operatively connected with one of the crank-arms.

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

MANTON T. BENTLEY.

Witnesses:

J. E. PHILLIPS,

J. HARRY WOOLRIDGE.