

No. 691,992.

Patented Jan. 28, 1902.

T. WATSON.
DRAG DEVICE FOR SPINNING MACHINERY.

(Application filed July 17, 1901.)

2 Sheets—Sheet 1.

(No Model.)

FIG. 1

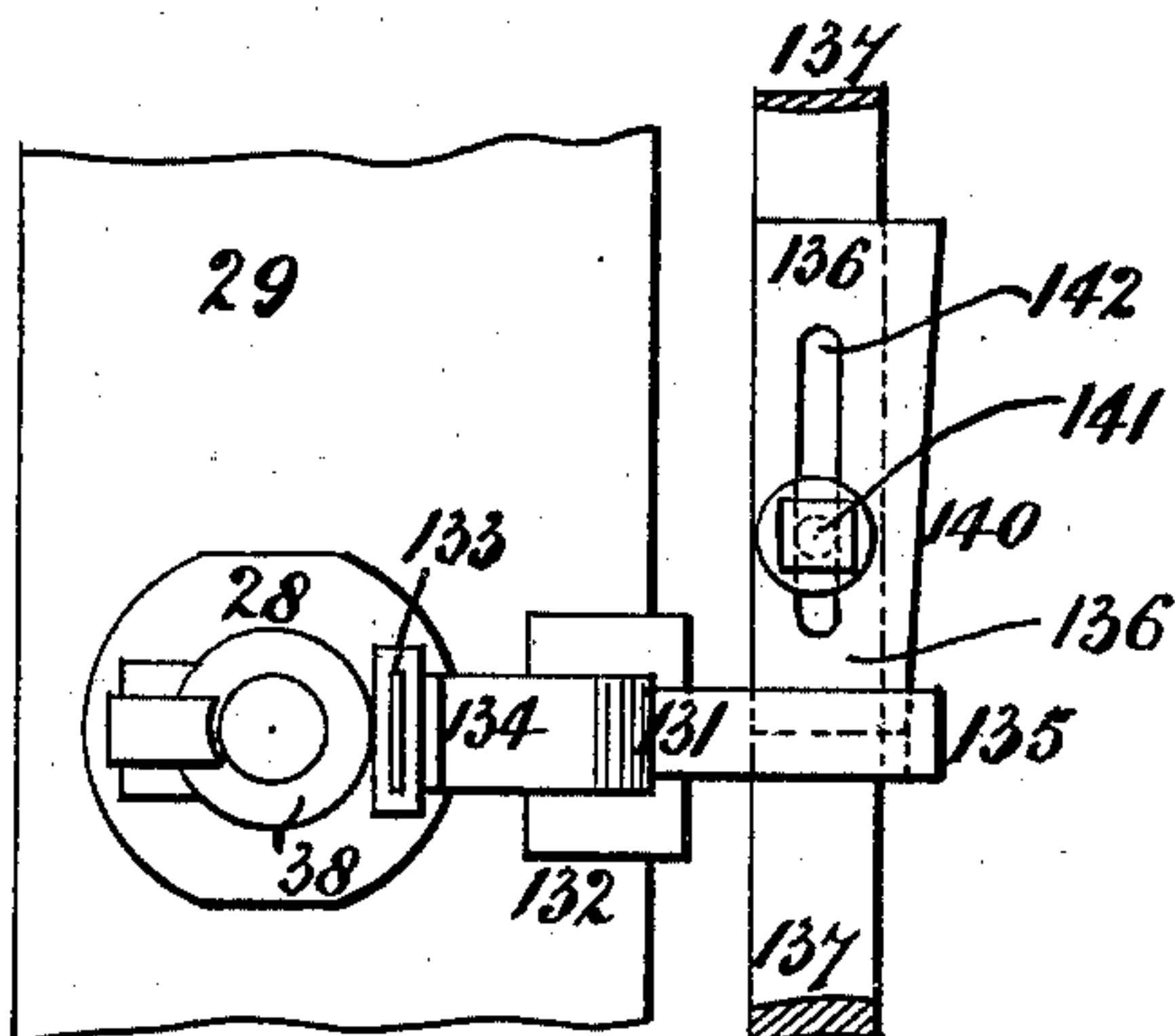
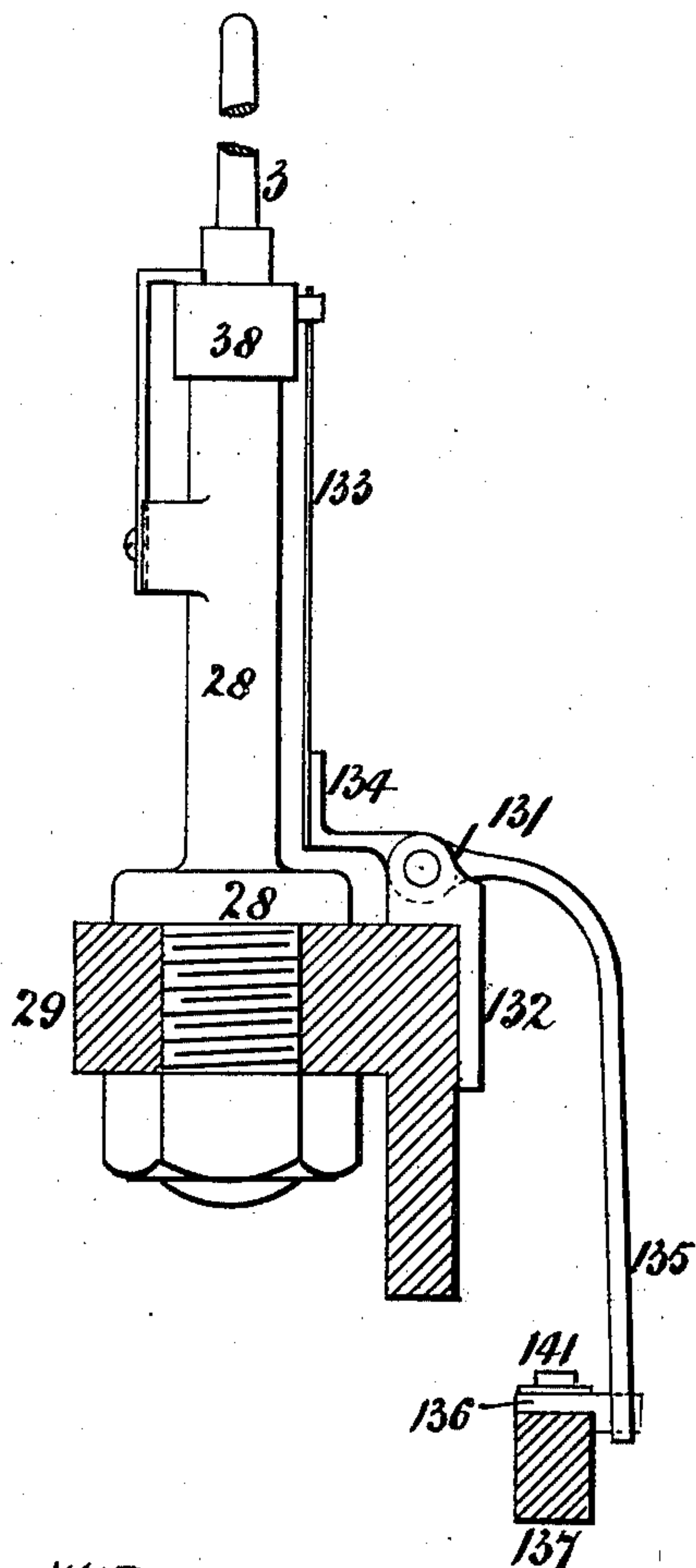


FIG. 2



WITNESSES:

P. W. Wright
S. C. Connor

FIG. 3

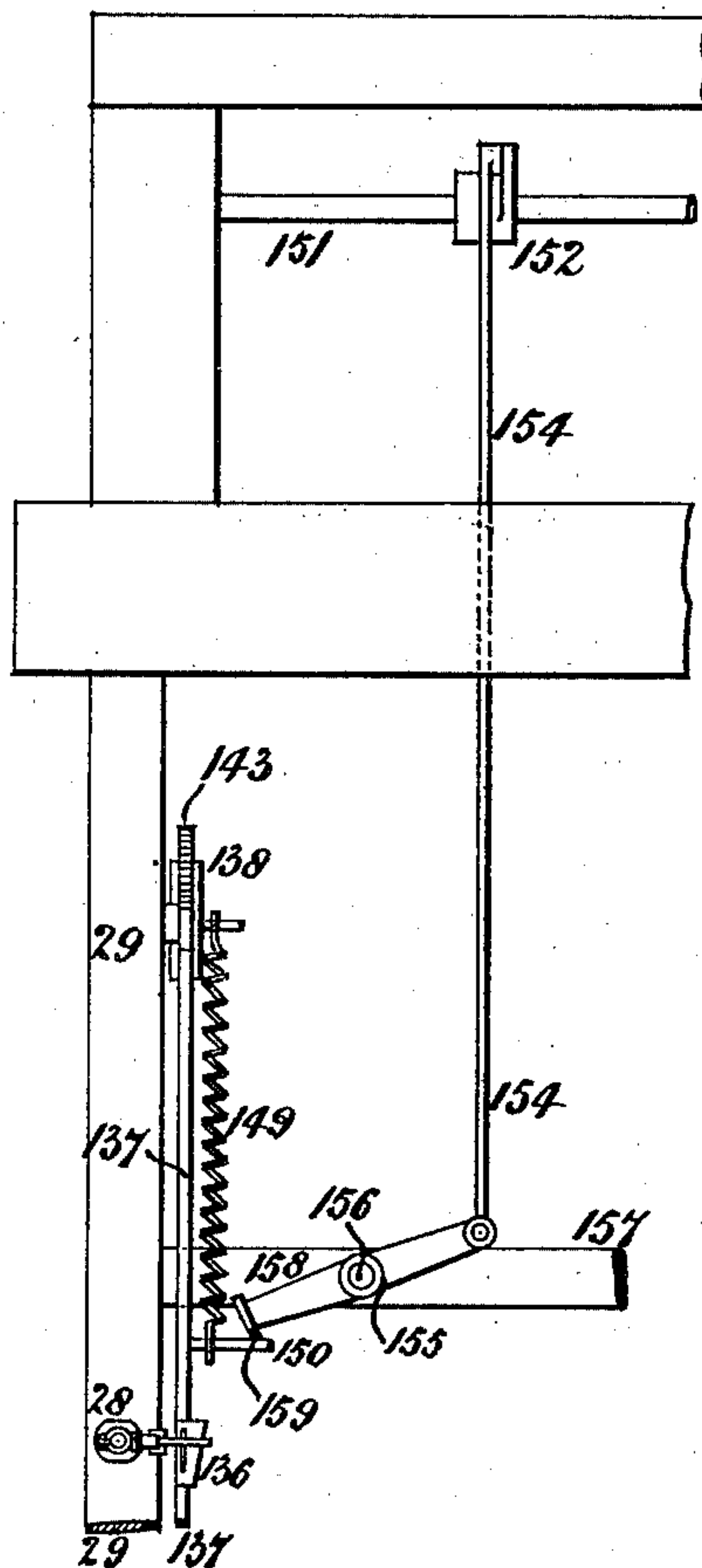
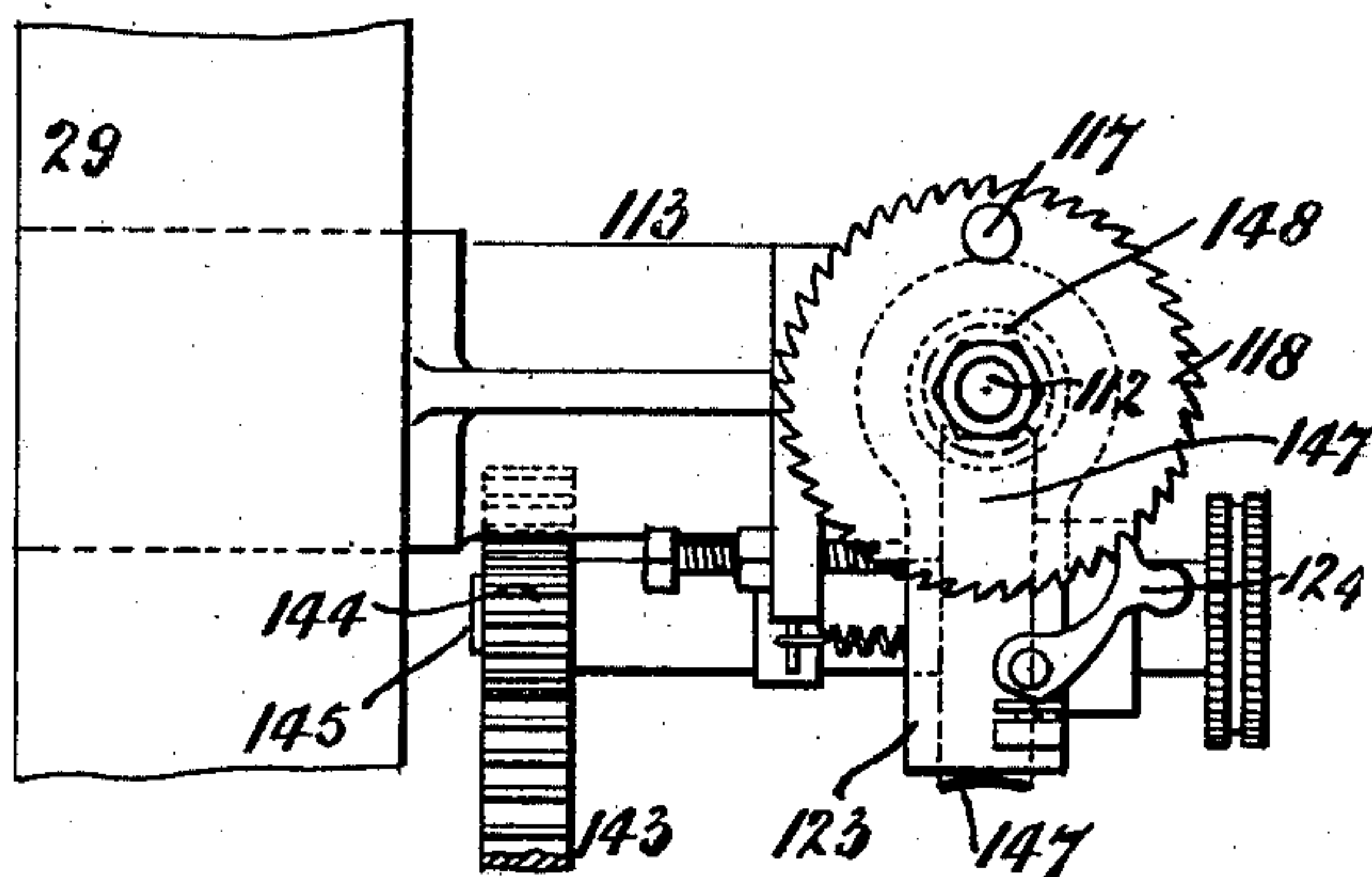


FIG. 4



INVENTOR

THOMAS WATSON

BY *Howell and Howell*
HIS ATTORNEYS

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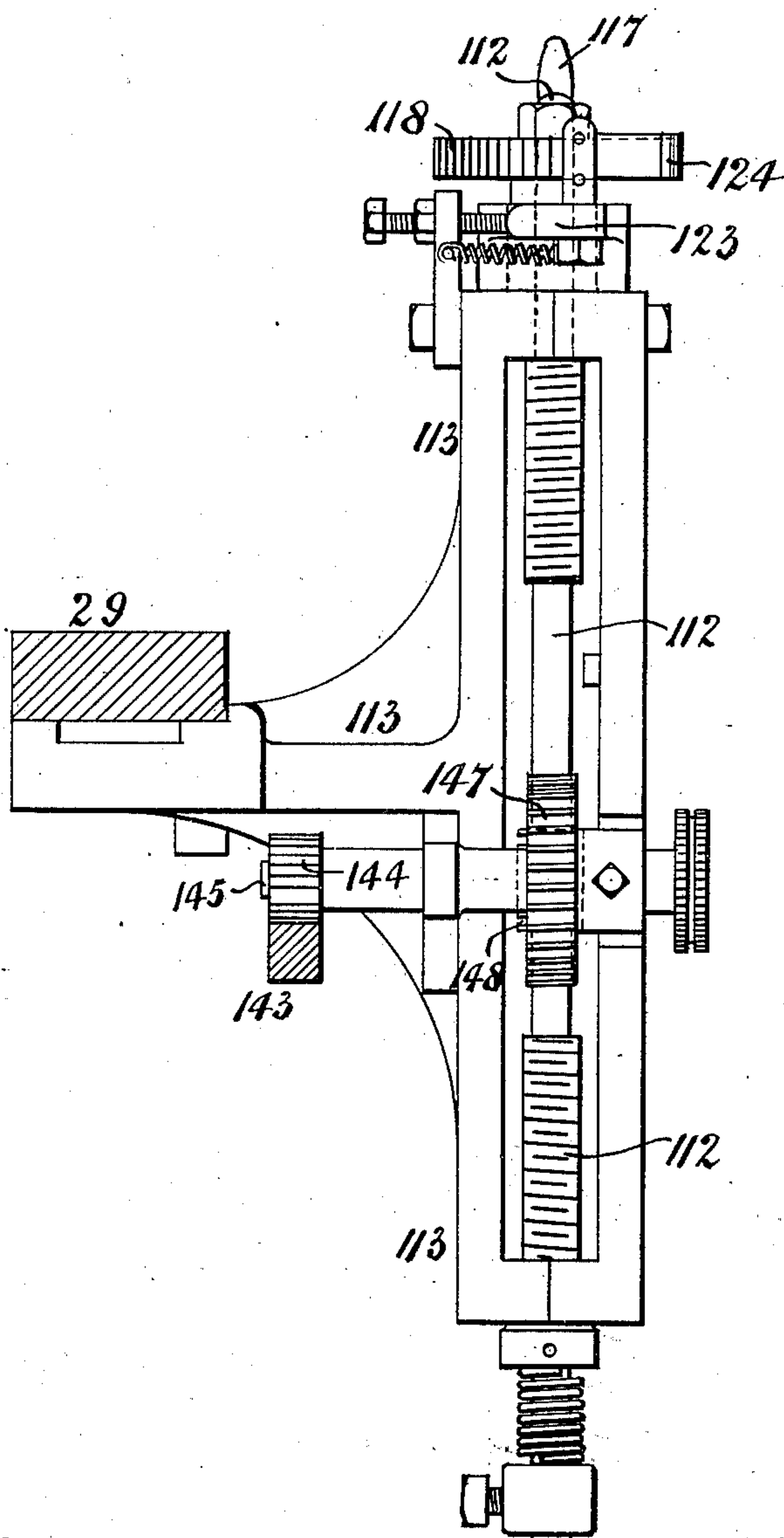
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(No Model.)

2 Sheets—Sheet 2.

FIG. 5.



WITNESSES:

P. W. Wright
J. C. Cramer

INVENTOR

THOMAS WATSON

BY

Howson and Howson

HIS ATTORNEYS.

UNITED STATES PATENT OFFICE.

THOMAS WATSON, OF BRIDGE OF WEIR, SCOTLAND, ASSIGNOR TO ERNEST SYMINGTON COATS, OF PAISLEY, SCOTLAND.

DRAG DEVICE FOR SPINNING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 691,992, dated January 28, 1902.

Original application filed April 12, 1901, Serial No. 55,514. Divided and this application filed July 17, 1901. Serial No. 68,667. (No model.)

To all whom it may concern:

Be it known that I, THOMAS WATSON, a subject of the King of Great Britain and Ireland, and a resident of Bridge of Weir, in the county of Renfrew, Scotland, (whose postal address is Glenapp, Bridge of Weir, Scotland,) have invented a certain Improved Drag or Brake Device for Spinning and Doubling Machinery, (for which application for a British patent has been made, No. 16,816, dated September 21, 1900,) of which the following is a specification.

My said invention has for its object to provide an improved drag or brake device for a yarn-spindle, so as thereby to produce a practically equal tension throughout the building of the cop or bobbin at a very high velocity.

In the accompanying drawings, Figure 1 is a plan, and Fig. 2 a side elevation, of the improved drag or brake device shown as applied to a spindle. Fig. 3 is a plan, on a reduced scale, of the drag and connected parts and showing their position on the spinning-frame. Fig. 4 is a plan of a detail in connection therewith. Fig. 5 is a side elevation of the detail of Fig. 4.

As shown in the drawings, the improved drag or brake device for each yarn-spindle consists of a two-armed lever 131, pivoted on a bracket 132, fixed to the back of the building or movable rail 29, which has a regular upward-and-downward movement imparted to it. The upper brake-arm 133 is preferably made of sheet metal and has its lower end fixed to a knee-like extension 134 of the lever. The upper end of the brake-arm 133 bears against the lower shoulder part 38 of the spindle 3, being faced with flannel or other suitable material. The end of the lower arm 135 of the lever 131 is acted on by a wedge-piece 136, fixed to a rod or bar 137, fitted to slide longitudinally in guides fixed to the movable rail 29, (one end guide 138 only being shown,) the inner side 140 of the wedge-piece having the wedge-shaped form, as shown in Fig. 1. The wedge-piece 136 is fixed to the upper side of the brake-bar 137 by means of a screwed pin 141, which passes through a long slot 142 in the wedge-piece and is then screwed into

the bar, a washer being interposed between the head of the pin and the face of the wedge-piece. By this means the wedge-piece 136 can be conveniently adjusted on the bar, as by simply slackening the pin 141 the wedge-piece can be thereafter shifted along the bar to the position required, the clearance-slot 142 permitting of this adjusting movement.

The brake-bar 137 is moved in a positive or forward direction, so as to brake the spindle 3 by the following automatic arrangement: A toothed rack-piece 143, sliding in the end guide-bracket 138, has its inner end butting up against the end of the brake-bar 137 when the bar is in its normal or working position. The rack is arranged to gear with a pinion 144 on a transverse shaft 145, mounted in a bracket-piece 113, fixed to the movable rail 29. The shaft 145 has on it a worm-wheel 147, gearing with a worm 148 on a vertical spindle 112, fitted in the bracket, the spindle having on its upper end a ratchet-wheel 118, engaging with a pawl 124 on a spring-controlled tappet-lever 123, fitted to turn loosely around the upper end of the spindle and arranged to be acted on by a projecting cam-piece or equivalent part (not shown) fitted to a fixed part of the framing. During each upward-and-downward stroke of the rail 29 the tappet-lever 123 encounters the projecting cam-piece, so that the lever is thus moved around to work the vertical spindle 112, thereby actuating the toothed rack-piece 143 and brake-bar 137 as required. With this arrangement each automatic movement of the brake-bar 137 thus causes the wedge-pieces 136 to act against the lower arms 135 of the brake-levers, so that the ends of the upper arms 133 of the levers are pressed against the yarn-spindles 3, so as to impart the requisite braking and regulating action. When the winding of the cops is completed, the rack 143 and the brake-bar 137 are returned back to their starting positions. The return of the rack 143 is accomplished by simply disengaging the pawl 124 from the ratchet-wheel 118 and thereafter turning back the vertical spindle by means of an adjusting-handle 117, fitted to the wheel. The brake-bar 137, however, is returned to its starting position by means of a spring 149, 100

Fig. 3, one end of which is fixed to the guide-bracket 138, the other end being fixed to an inwardly-projecting pin 150 on the brake-bar. The positive or wedging movement given to the brake-bar 137 by the rack-piece 143 is made against the tension action of the spring 149; but when the rack is moved back from the brake-bar the pressure on the spring is removed, so that the spring recovers itself, and thereby draws back the brake-bar to its starting position, as required. The drag action on the yarn-spindles 3, as hereinbefore described, increases in proportion to the increase in the diameter of the cop being formed, and this desirable action has the effect of producing an even drag at a very high velocity. The drag or brake device is also arranged to impart an extra braking action to the yarn-spindles 3, so as to prevent the possibility of the spindles overrunning themselves and so not stopping simultaneously with the fliers when the spinning-frame is stopped. In carrying out this arrangement, which is clearly shown in Fig. 3, for one side of the frame the driving-belt shifter or stop-handle (not shown) is connected by a lever (not shown) to a cross-shaft 151, mounted on the framing, this shaft having fixed to it a vertical lever 152, connected by a rod 154 to a lever 155, working on a vertical stud 156, fixed to a cross-bar 157, secured to a fixed part of the framing. The outer arm 158 of the horizontal lever 155 is arranged to act against the inwardly-projecting pin 150, fixed to the brake-bar 137, the end of the arm being made with a sufficient vertical extension 159 so that it can always act on the projecting pin 150 at any point in the stroke of the movable rail 29. With this arrangement when the belt-shifter or stop-handle is moved to stop the frame it imparts movement to the horizontal lever 155, which then acts on the brake-bar 137, so as to give it a further positive movement and force each wedge-piece 136 farther in against the lower arm 135 of each brake-lever 131, thereby imparting the requisite extra braking action to the yarn-spindles 3 and arresting their motion, so as to cause them to stop simultaneously with the fliers, as required. When the frame is started again by a return movement of the belt-shifter or stop-handle the brake-bar 137 is pulled back to its former position by the action of its tension-spring 149.

What I claim as my invention is—

1. An improved drag or brake device for spinning and doubling machinery, comprising a building-rail, a two-armed lever centered at the back of the rail, spindle-bolsters and spindles on the rail, the end of the upper

arm of the lever being adapted to bear on the spindle, in combination with a spring-controlled brake-rod having an adjustable wedge-piece and guides for the rod carried by the rail, said wedge-piece being adapted to bear against the lower arm of the lever, substantially as described.

2. An improved drag or brake device for spinning and doubling machinery, comprising a building-rail, a two-armed lever centered at the back of the rail spindle-bolsters and spindles on the rail, the end of the upper arm of the lever being adapted to bear on the spindle, in combination with a spring-controlled brake-rod having an adjustable wedge-piece, and guides for the rod carried by the rail, said wedge-piece being adapted to bear against the lower arm of the lever, a toothed rack adapted to slide in said guide and abut against the inner end of the brake-rod, a pinion engaging the rack, a shaft for the pinion, a worm-wheel on the shaft, a vertical spindle, a worm thereon engaging said worm-wheel, a ratchet-wheel and pawl to operate the vertical spindle, and a frame carrying such mechanism carried by the building-rail, substantially as described.

3. An improved drag or brake device for spinning and doubling machinery, comprising a building-rail, a two-armed lever centered at the back of the rail, spindle-bolsters and spindles on the rail, the end of the upper arm of the lever being adapted to bear on the spindle, in combination with a spring-controlled brake-rod having an adjustable wedge-piece, and guides for the rod carried by the rail, said wedge-piece being adapted to bear against the lower arm of the lever, a two-armed lever to act on the brake-rod, a cross-shaft, and a rod from the cross-shaft to operate said lever, as and for the purpose described.

4. An improved drag or brake device for spinning and doubling machinery, comprising a building-rail, a two-armed brake-lever thereon, a spring-controlled brake-rod, a wedge-piece thereon, a rack to operate the rod, suitable gearing to operate the rack, and a ratchet to operate said gearing in combination with a cross-shaft and means for operating the wedge-piece from the cross-shaft, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS WATSON.

Witnesses:

DAVID FERGUSON,
GEORGE PATTERSON.