

(No Model.)

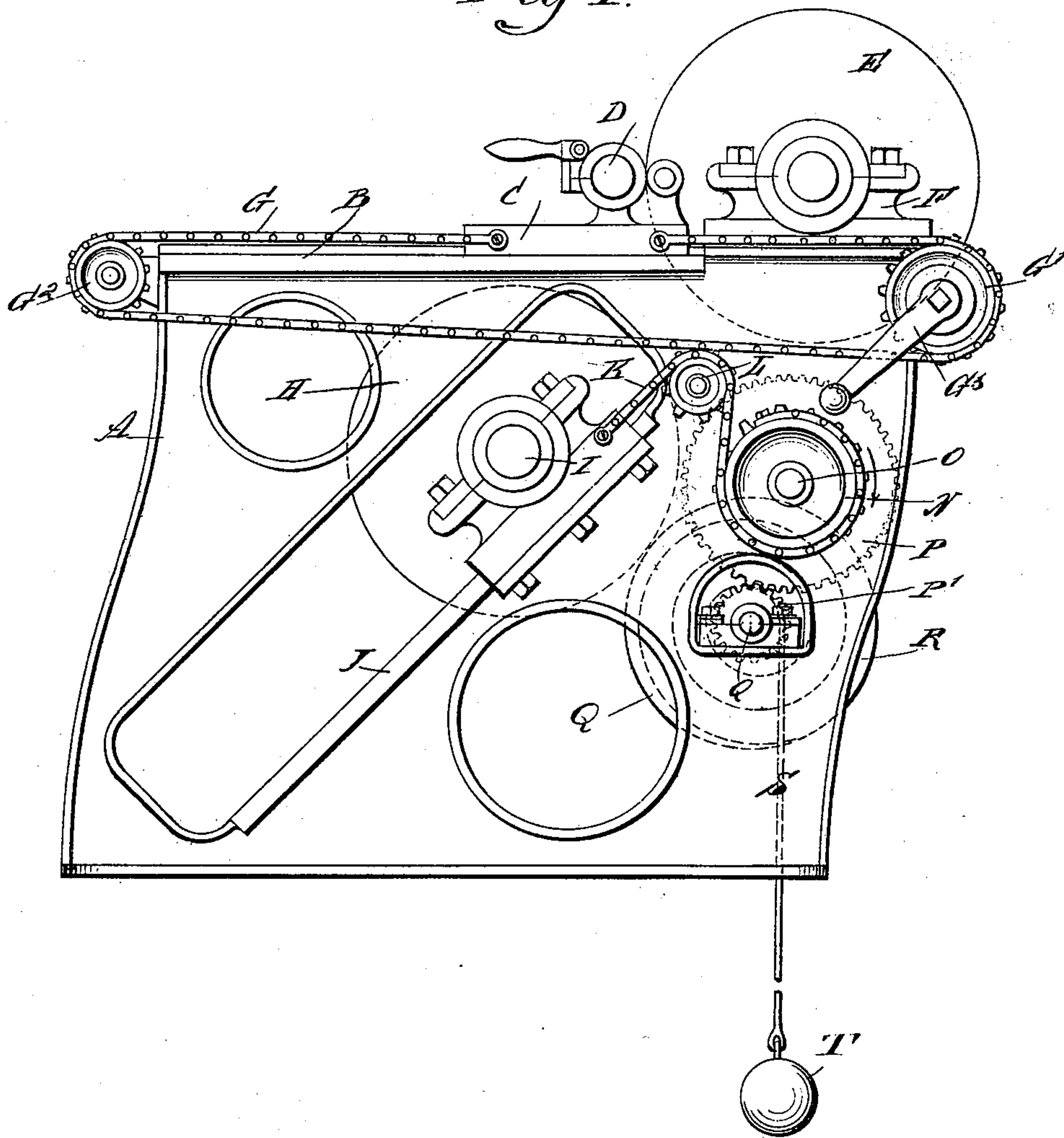
2 Sheets—Sheet 1

W. H. DECKER.
PAPER WINDING MACHINE.

No. 594,780.

Patented Nov. 30, 1897.

Fig 1.



WITNESSES:
Paul J. J. J.
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INVENTOR
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(No Model.)

2 Sheets—Sheet 2.

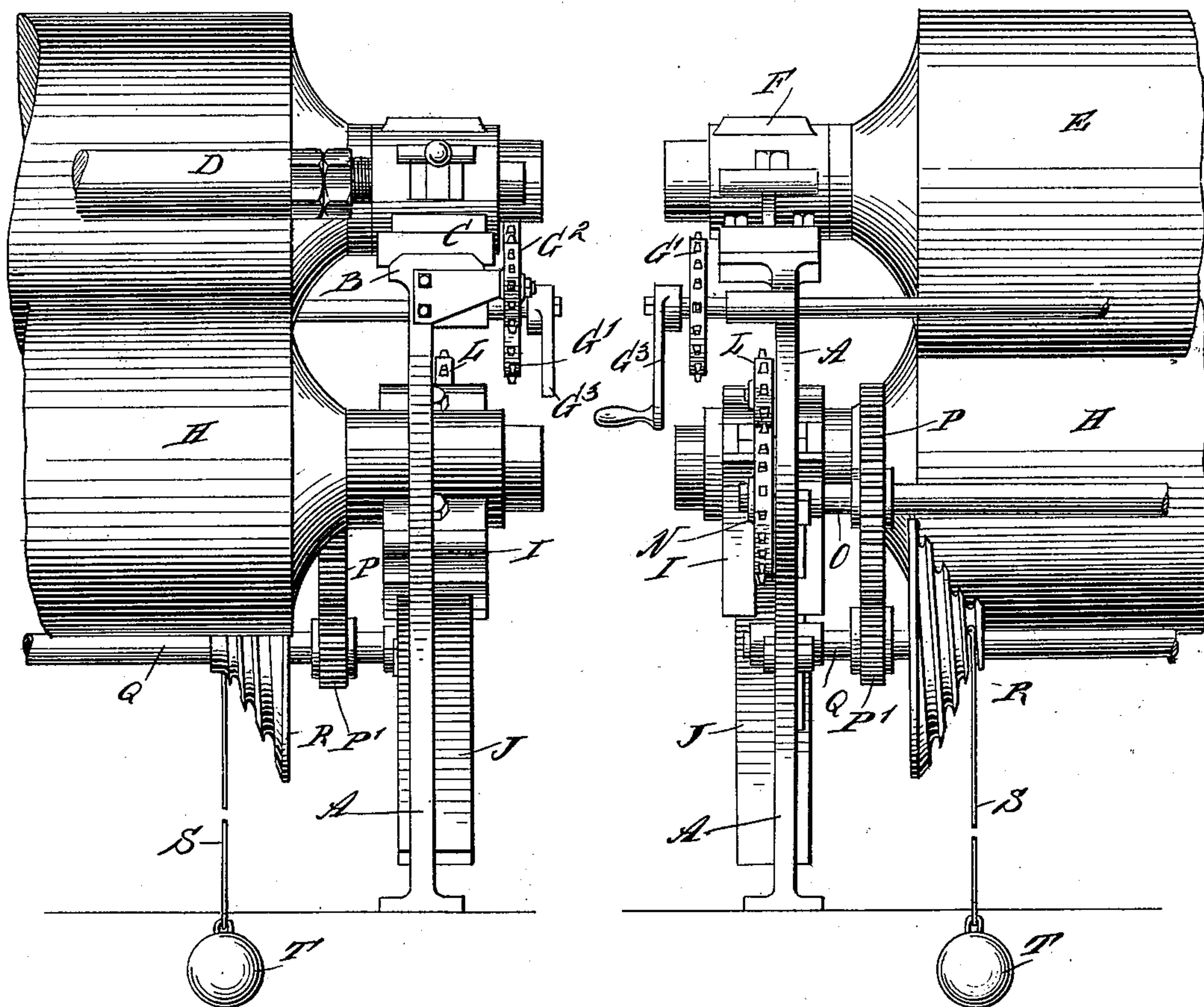
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Fig 2.

Fig 3.



WITNESSES:
Paul J. [Signature]
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UNITED STATES PATENT OFFICE.

WILLIAM H. DECKER, OF RUMFORD FALLS, MAINE.

PAPER-WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 594,780, dated November 30, 1897.

Application filed February 27, 1897. Serial No. 625,311. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DECKER, of Rumford Falls, in the county of Oxford and State of Maine, have invented certain new and useful Improvements in Paper-Winding Machines, of which the following is a full, clear, and exact description.

The invention relates to paper-making machinery; and its object is to provide a new and improved winding-machine more especially designed for use with machines for making very wide paper and arranged to relieve the winding-shaft of its load, so as to prevent the shaft from springing, and consequently prevent irregular winding of the paper.

The invention consists principally of a shaft on which the paper is wound, sliding bearings for the said shaft, and a supporting-drum adapted to support the paper on the said shaft and journaled in bearings fitted to slide at an angle to the line of movement of the said shaft.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement. Fig. 2 is a front end elevation of the same, and Fig. 3 is a rear end elevation of the same.

The improved paper-winding machine is mounted on a suitably-constructed frame A, provided on its top with longitudinally-extending guideways B, on which are fitted to slide the bearings C for the journals of the shaft D, on which the paper is to be wound as a core. The paper wound on the shaft D is in frictional contact with the winding-drum E, journaled in bearings F, secured to the rear end of the frame A, the said winding-drum being connected with suitable machinery for imparting a rotary motion to the drum, so as to cause the shaft D to be rotated to wind the paper thereon, and as the roll of paper on the said shaft increases in size the bearings C slide forward.

The ends of the bearings C are connected with a sprocket-chain G, passing at its rear

end over a sprocket-wheel G' and at its forward end over a sprocket-wheel G², both being journaled on the frame A, and the shaft of the sprocket-wheel G' carries a crank-arm G³ for conveniently turning the sprocket-wheel G' to return the bearings C to their innermost position when beginning to wind up the paper.

In the lower portion of the frame A is arranged a supporting-drum H, adapted to engage with its peripheral surface the paper wound upon the drum E, so as to support the paper as the winding progresses, and thereby relieve the shaft D of the weight of the paper. This drum H is journaled in bearings I, fitted to slide on inclined guideways J, formed or secured on the frame A, and the upper end of each bearing I is connected with one end of a sprocket-chain K, passing over a sprocket-pulley L, journaled on the side of the frame, the chain then passing around a portion of a sprocket-wheel N, with one end of the chain firmly secured to the said sprocket-wheel, as is indicated in Fig. 1. The sprocket-wheel N is secured on a shaft O, journaled in suitable bearings on the frame A and provided with a gear-wheel P in mesh with a pinion P', secured on a shaft Q, likewise journaled in the frame A. On this shaft Q is secured a pulley R, having a spiral peripheral groove for a rope S, supporting a weight T, the said pulley, rope, and weight forming a compensating device for counterbalancing the drum H, so as to increase the resistance to the sliding of the bearings I as the weight of the paper on the shaft D increases.

Now it is evident that when the machine is in operation and sufficient paper has been wound upon the shaft D to make a roll, say, a foot in diameter, then the paper on the shaft rests on the top surface of the supporting-drum H, held against downward movement by the counterbalancing weight T. As the roll of paper increases in size it exerts a pressure on the drum H, so that the bearings I thereof slide downward on the inclined guideways J, and this downward movement of the bearings I causes a pulling on the sprocket-chain K, so as to rotate the sprocket-wheel N, the shaft O, the gear-wheel P, the pinion P', the shaft Q, and the pulley R, to cause a winding up of the rope on the said

pulley, owing to the increased radius of the spiral groove containing the said rope.

Now it will be seen that by the arrangement described the supporting-drum H is revolved by the paper and supports the same, and the drum with its bearings I is caused to slide downward when the roll of paper on the shaft D increases, and by this movement of the bearings the compensating device is actuated so as to increase the resistance to the downward-sliding movement of the bearings, according to the increase in the weight on the drum H.

When the pressure is removed from the drum H, which occurs when the paper-roll with its shaft D is lifted from the machine, then the rope S unwinds, owing to the weight T, to draw the drum H back to its uppermost position.

The device is very simple and durable in construction, not liable to get out of order, and is entirely automatic in its operation.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A paper-winding machine, comprising a shaft on which the paper is wound, sliding bearings for the said shaft, a supporting-drum adapted to support the paper on the said shaft and journaled in bearings fitted to slide at an angle to the line of movement of the said shaft-bearings, and a compensating counterweight device for the said drum, substantially as shown and described.

2. The combination with a frame, a winding-drum thereon, bearings slidable horizontally on the frame and adapted to carry the shaft of a paper-roll so that the bearings will be moved by the action of the winding-drum

against the paper, a supporting-drum located below the bearings, bearings for the supporting-drum, the supporting-drum bearings being movable in a line inclined toward the direction in which the bearings of the paper-roll move during the winding of the paper, and a counterweight device for the supporting-drum.

3. The combination with a frame, of bearings movable thereon, and capable of carrying the shaft of a paper-roll, additional bearings carried by the frame and movable at an angle to the line of movement of the first-named bearings, a supporting-drum carried by the second-named bearings, and a compensating device for the supporting-drum.

4. The combination of bearings capable of carrying a paper-roll and movable to suit the growth of the roll, and a supporting-drum movable in a line diagonal to the line of movement of the said bearings and diverging from the said line of movement of the bearings, the diversion being in the direction of the movement of the bearings as the roll of paper increases.

5. The combination of means for carrying a roll of paper, such means being movable to suit changes in the size of the roll of paper, and means for bearing against the roll of paper, such latter means being movable in a line diverging from the line of movement of the first-named means whereby the means for bearing against the roll of paper may move diagonally toward and from the means for carrying the paper.

WILLIAM H. DECKER.

Witnesses:

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GEORGE H. MARDEN.