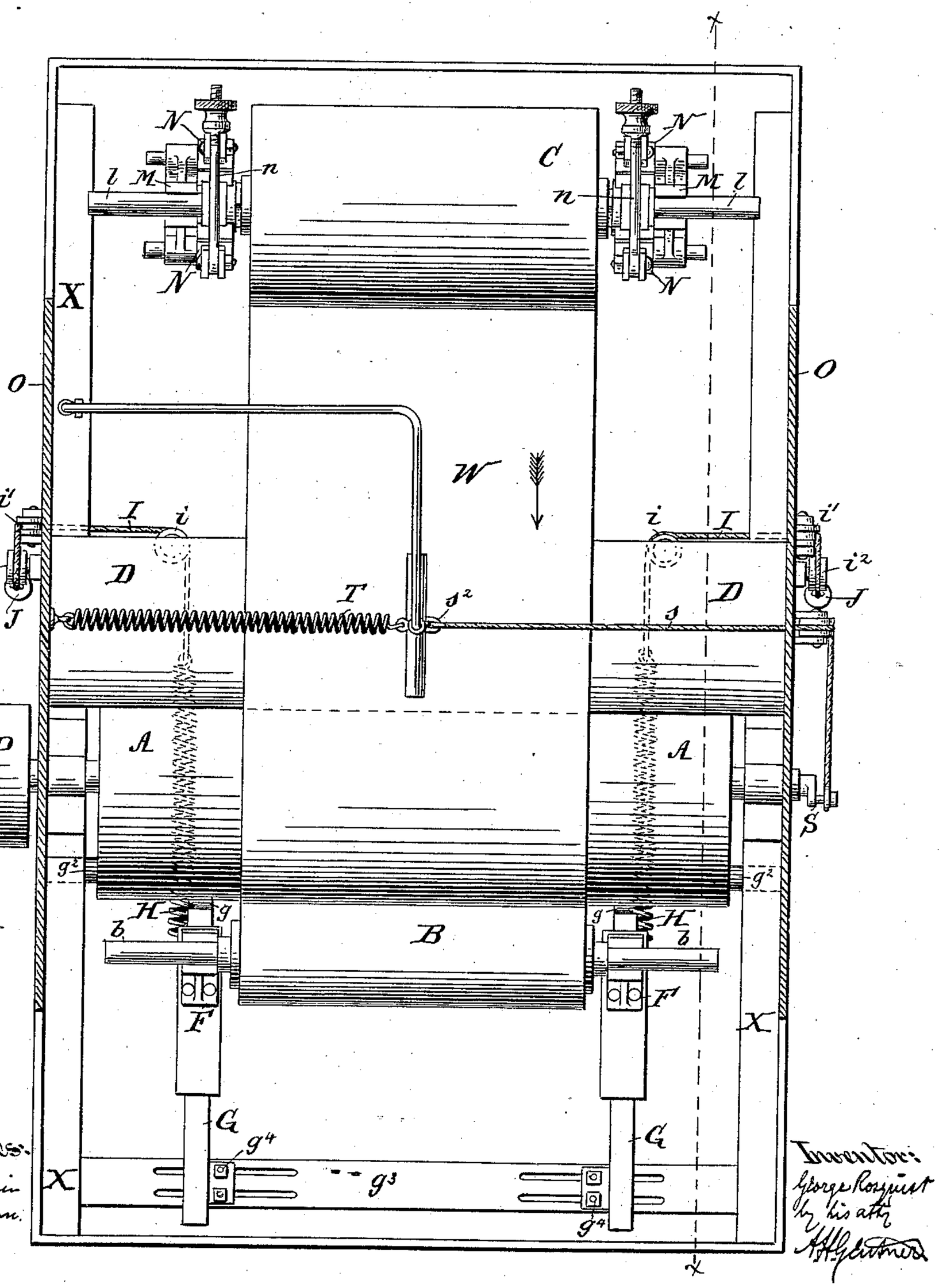
(No Model.) 4 Sheets—Sheet 1.

G. ROSQUIST.

MACHINE FOR DAMPENING WEBS OF PRINTING PAPER.

No. 311,261. Patented Jan. 27, 1885.

Figure 1.



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(No Model.)

4 Sheets—Sheet 2.

G. ROSQUIST.

MACHINE FOR DAMPENING WEBS OF PRINTING PAPER.

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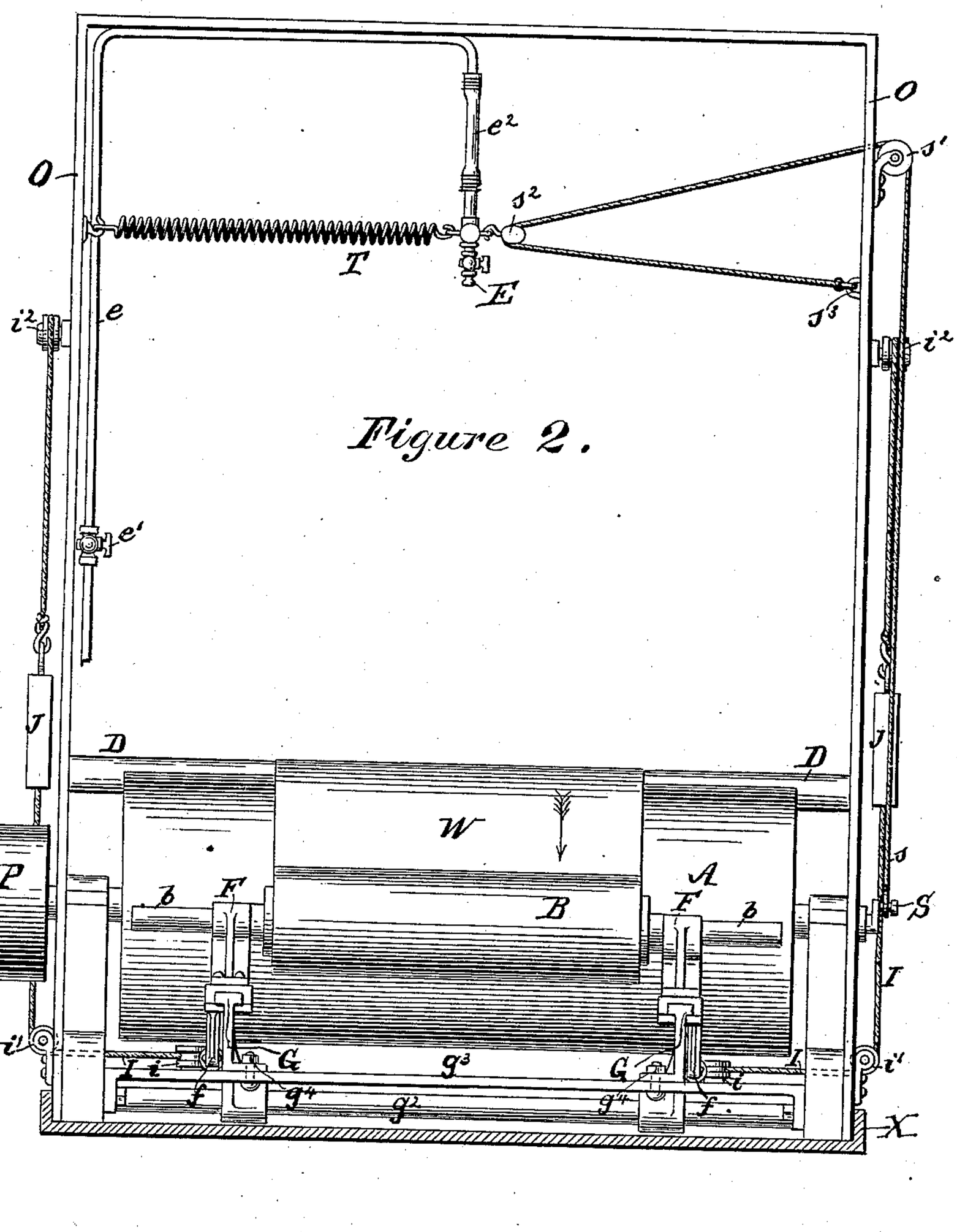

Figure 2.

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(No Model.)

4 Sheets—Sheet 3.

G. ROSQUIST.

MACHINE FOR DAMPENING WEBS OF PRINTING PAPER.

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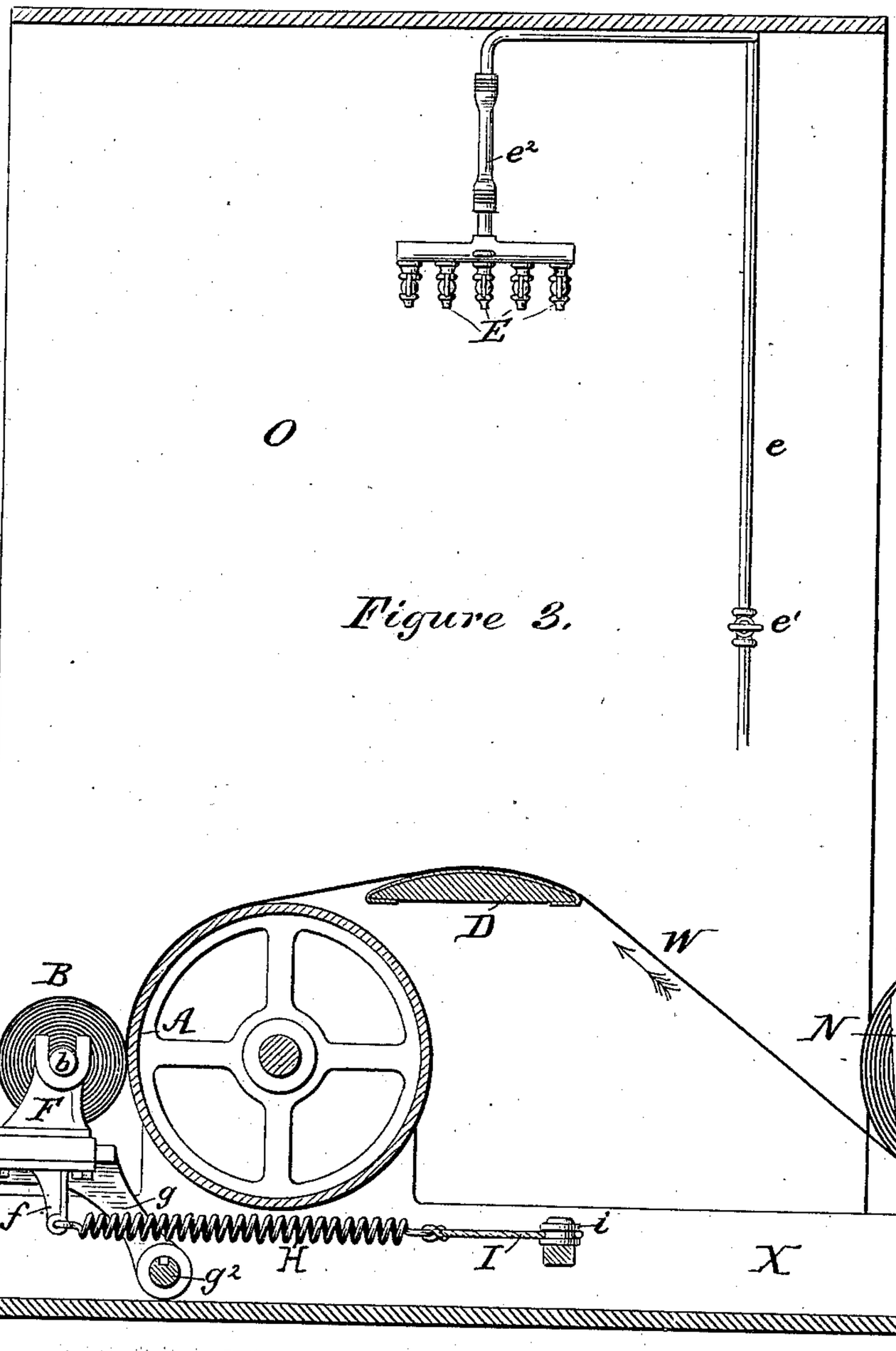


Figure 3.

Figure 4.

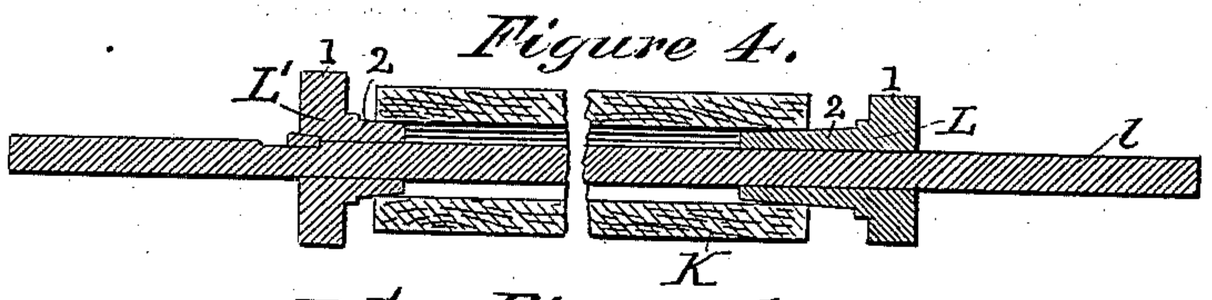
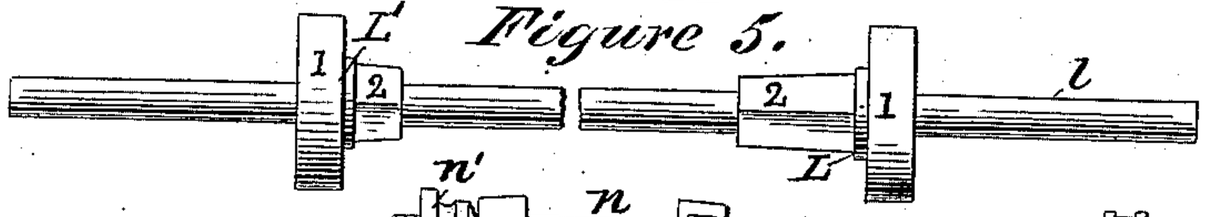


Figure 5.



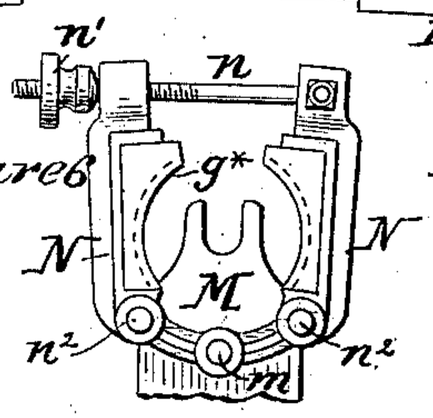


Figure 6.

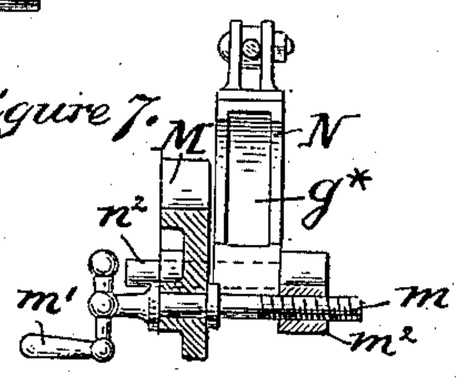


Figure 7.

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4 Sheets—Sheet 4.

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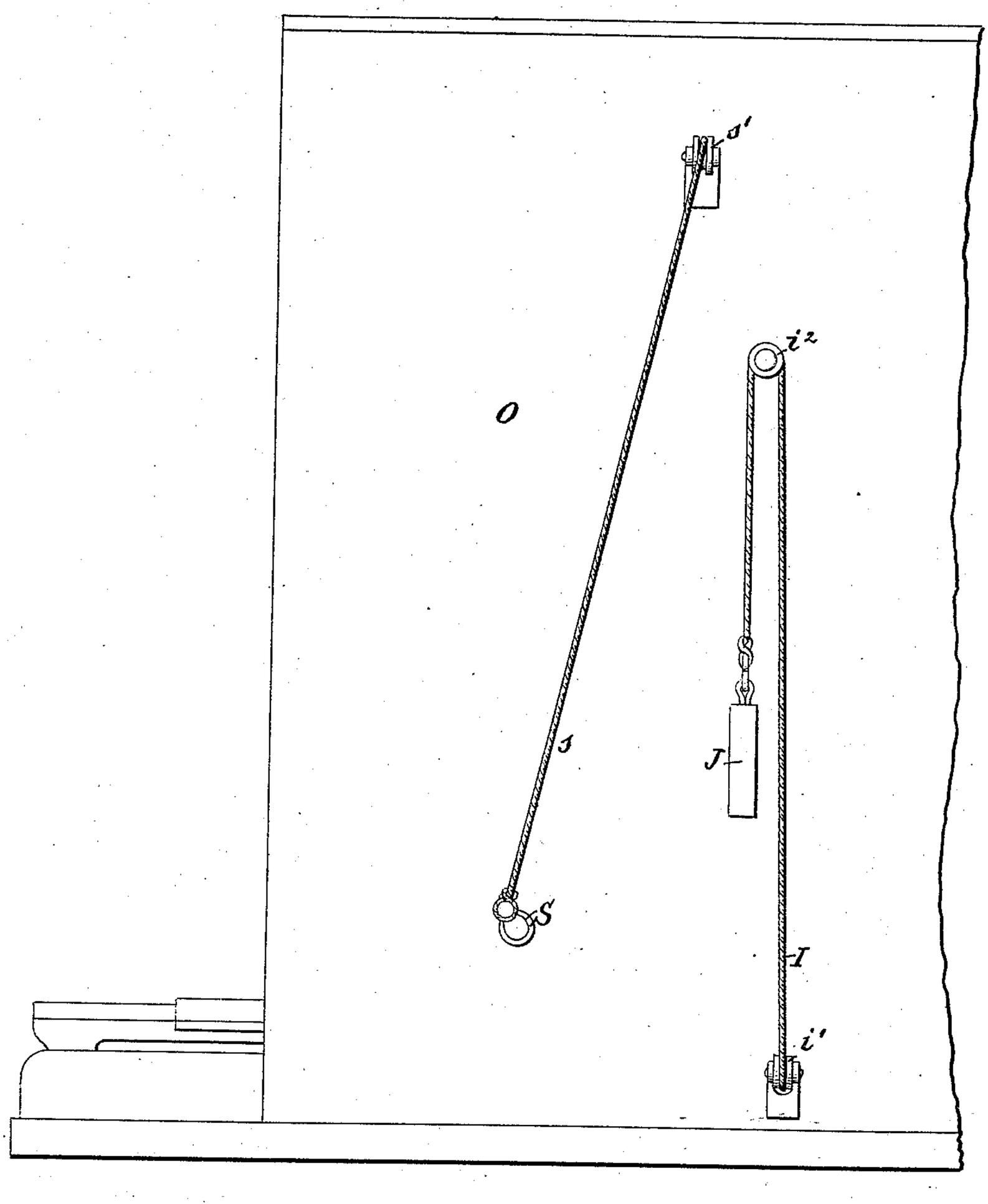
MACHINE FOR DAMPENING WEBS OF PRINTING PAPER.

No. 311,261. Patented Jan. 27, 1885.

Figure 8.



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UNITED STATES PATENT OFFICE.

GEORGE ROSQUIST, OF BROOKLYN, NEW YORK.

MACHINE FOR DAMPENING WEBS OF PRINTING-PAPER.

SPECIFICATION forming part of Letters Patent No. 311,261, dated January 27, 1885.

Application filed February 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ROSQUIST, a citizen of the United States, and a resident of the city of Brooklyn, county of Kings, and State of New York, have made a new and useful Improvement in Machines for Dampening Webs of Printing-Paper, of which the following is a specification.

The class of machines to which my invention relates was first patented by William Bullock; and such machines consist, generally, of a spindle or shaft upon which the dry paper is rolled, a table or platform over which the paper is passed, and above which is located water-spraying devices for dampening the paper, a power or driving roll over a portion of whose circumference the dampened paper passes, and, finally, a shaft or spindle upon which the dampened paper is coiled, the motion of such shaft or spindle being effected by the contact of the roll being made with the rapidly-revolving surface of the power or driving roll, whose sole function is to cause the paper to be thus wound or rolled up always at the same speed without regard to the gradually-increasing size of the dampened roll. The shaft of the dampened roll has usually been held in the ends of pivoted arms or in sliding boxes, which latter moved in ways. Thus as the roll of dampened paper increases in size the upper ends of the arms or the sliding boxes were gradually moved away from the surface of the power roll till the entire length of the paper web was dampened and all rolled upon the spindle or shaft of the dampened roll. It is necessary to keep up the requisite pressure between the paper surface of the dampened roll and the surface of the power or driving roll, so that the latter may satisfactorily be revolved without slipping upon the surface of the former. Weights have been used attached to a rigid arm projecting from the shaft of the damp roll of paper, to give pressure between the wet-paper roll and the driving or power roll; but such arrangement was found to so act as to reproduce, and generally in a greater degree, in the wet roll the various inequalities of the dry roll, and the result was that a wet roll was formed which was less even than the dry roll, and this was particularly true if the machine was driven at any considerable speed. After this it was found out that if the movement of the shaft of the wet roll away from the driving or power roll was resisted by friction, and pressure was thus created, that the result would be an even smooth and truly cylindrical roll, even though the dry roll was unevenly formed. This method was used both with arms and with sliding boxes, and has given good satisfaction in use. I have found that the combination of a weight and spring as means of making the required pressure between the wet roll being formed and the surface of the power or driving roll is better than either of the older methods mentioned before, while it is cheaper and simpler.

Referring to the accompanying drawings, Figure 1 represents a top view of a dampening-machine made in accordance with my invention. Fig. 2 shows an end view of the apparatus. Fig. 3 shows a side view partly in section on the line *x x* of Fig. 1. Fig. 4 shows in section the shaft and wooden spindle upon which the paper is usually wound when it comes from the mill, and also the sliding clamps by means of which I fasten the wooden spindle upon the iron shaft. Fig. 5 shows a side view of the same device, without the wooden spindle. Fig. 6 shows the bearing for the shaft of the dry roll, and the brake which keeps the shaft from rotating too rapidly. Fig. 7 shows in cross-section the same parts. Fig. 8 shows a partial side view of my apparatus, indicating clearly the arrangements of the ropes, &c.

At A is shown the driving or power roll, through the operation of which the dampened roll is formed and the dry roll unrolled. This roll is preferably made of iron with a smooth surface.

At B is shown the dampened roll formed of the paper unrolled from the dry roll C, from which latter the paper passes over the table D, where it is dampened by a spray of water falling from the nozzles E, which are supplied by water flowing up through a pipe, *e*, provided with a cock, *e'*.

W shows the web of paper as it passes from the dry roll C to be rolled up after being dampened onto the roll B, and the arrows indicate the direction of its motion. The shaft *b* of the dampened roll B is journaled in supports F, which slide on ways G. The latter

are made adjustable transversely, so that they, together with the supports F, may be moved toward or from each other to accommodate dry rolls of varying lengths. For this purpose each slide G is formed with two arms, $g g'$, projecting downward. (See Fig. 3.) The arms g at their extremities are formed with hubs which embrace a transverse rod, g^2, so that they are capable of sliding on such rod longitudinally, but are preferably prevented from turning thereon by a spline, as shown. The arms g' are formed with lugs which slide upon the transverse rail g^3, both the latter and the rod g^2 being fixed to the stationary framework X of the machine. The rail g^3 is formed with slots, as represented in Fig. 1, through which extend bolts g^4, which serve to clamp the arms g' to the rail g^3 in any desired position, so as to positively prevent the displacement of the ways G and supports F after the same have been adjusted for any particular length of damp roll.

Projecting downward from each support F is a fixed arm, f, to which is fastened one end of the spring H. The other end of the spring is attached to a cord or piece of flexible wire, rope, or chain, I. These cords—one on each side of the machine—are then passed, after they leave the springs H H, over the pulley i, thence over the pulley i', thence upward and over the pulley i^2, and downward, terminating in a weight, J. It will be seen that the weights J, through the cords and springs, continually tend to move the supports, which carry the shaft of the dampened roll up toward the driving or power roll, and thus as the dampened roll is gradually formed and increased in size the shaft b is gradually moved away from the power or driving roll, and in its movement it carries the supports F along with it, which slide upon the ways G. The pressure between the surface of the roll B and the roll A should be about three hundred to four hundred pounds, and by the means shown this pressure is kept constant during the entire formation of the roll, the springs acting as a yielding connection between the roll B and the weights J J, and causing the weights to so act as to produce an even roll, which would not be the case were the connections inflexible, as in the case of the old Bullock dampener. I have also found that my invention may be used, but not in its best form, without the weights J J. In this case I attach the ends of the springs H H firmly to fastenings, which take the place of the rollers i i, and dispense with the cords and weights. The springs in this arrangement are made longer and continually elongate as the damp roll increases in size. The trouble with this plan is that the pressure between the rolls A and B is not uniform, but is gradually increased until it reaches its maximum when the roll B is fully formed. This arrangement, however, embodies my invention in its first form and is serviceable, but not as good as the arrangement of the springs combined with the cords and weights.

At K (see Fig. 4) is shown the wooden spindle upon which the paper is wound as it comes from the mill and as is shown at C. The hole in this spindle is usually round or square.

At l is shown the metallic shaft, and at L L′ two clamp-pieces, the portions 1 of which are cylindrical, while the portions 2 are preferably square or polygonal and tapering. The clamp L′ is usually firmly fixed upon the shaft l, while the clamp L is perfectly free upon said shaft. Thus if the spindle K is placed upon the shaft l by removing the clamp L, and the clamp be then replaced and pressed with sufficient force into the end of the spindle K, the spindle will be centered and held accurately by the inclined or tapering portions 2 of the two clamps, the two clamps and the spindle forming then, practically, one rigid part, to which the shaft l is firmly fastened by means of its rigid connection with the clamp L′.

To hold the clamp L up to its work, I have devised the following arrangement: At M, Fig. 1, is shown the fixed standards, in bearings in which the shaft l turns. Each of these standards is provided with the following mechanism, which I will now described with reference to the right-hand standard, Fig. 1, it being understood that the left-hand standard is provided with similar mechanism symmetrically arranged, as shown in the said figure. Through the standard passes the screw m, (see Figs. 3, 6, and 7,) having on one end the hand-wheel m'. Pivoted by and guided by two short rods, n^2, are the brake-pieces N N, made each with a groove, g^*, as shown, upon their inner faces. At the top these brake-pieces are controlled by a screw, n, with a nut, n', by turning which latter the pieces N N are brought together, turning upon their pivots n^2, which pass through holes made in the standard M. The screw m, or at least the threaded portion thereof, works in a nut, m^2, which forms a part of the brake mechanism, and as the screw m cannot move longitudinally in the standard M, its revolution in one direction will cause the brake-pieces N N to be moved away from the standard and in the other direction toward the standard. The grooves g^* in the brake-pieces N N serve to embrace the cylindrical part 1 of the clamp-pieces. The friction between the part 1 of the clamp-pieces and the brake-pieces N serves to keep the dry roll from rotating too rapidly, and enables the desired tension to be kept upon the paper web. As the spindles K vary slightly in length, and as the clamps to hold firmly must be tightly forced into the openings of the spindle, I have adopted the means before described, and these means also allow the whole dry roll, with its shaft, to be shifted longitudinally.

The operation of placing a roll of dry paper upon the shaft l is performed as follows: The brake-pieces N N are freed by loosening the nuts n' and turning the bolts n on their pivots, so as to leave an unobstructed passage between the upper portion of the brake-pieces N, and this has to be done for the brake which

surrounds the clamp L, as well as the clamp L′. The shaft *l* is then lifted from its bearings, the clamp L is slid off, and the shaft is passed through the hole in the spindle K, when the clamp L is replaced. The shaft with its encircling-roll of paper is now replaced in the journals of the standards M, and the brake-pieces are placed around the parts 1 of the clamps. Then the screw *m* on the right-hand side or that side on which is the clamp L is turned by means of the hand-wheel *m′*, and the brake-pieces N, controlled by that screw (shown specially in Fig. 1) are forced away from the standard M, carrying with them the clamp L, which slides along the shaft *l*, and is thus forced into the wooden spindle K, and, in connection with the other and fixed clamp, L′, holds the spindle and its encircling-roll tightly and truly upon the shaft *l*. If, now, it is desired to shift the entire dry roll thus secured upon the shaft *l* longitudinally, so as to bring the center line of the web of paper to any desired position, it is only necessary to turn the screw *m* of both standards M simultaneously in the proper directions, as will be understood, so as to cause both brake mechanisms to travel with the same velocity both in one and the same direction, whereby the clamp-pieces embraced in the brakes, and consequently the entire dry roll and its shaft, are moved in the same direction.

At S is shown a crank which is mounted upon the overhanging end of the shaft of the driving-drum. To this crank is connected a cord, *s*, which, after passing over the pulley *s′*, is passed to and over the pulley s^2, which is made a part of the water-spraying nozzles E and then back to a fixed point, s^3. A spring, T, always tends to pull the nozzles E in one direction, and the cord, by reason of the motion given to it from the crank, tends intermittently to pull it in the opposite direction, thus keeping the nozzles rapidly reciprocating across the line of the paper traveling along below. At e^2 is shown a flexible section of the water-supply pipe to admit of the before-described movement of the nozzles E.

The operation of my machine is as follows: A dry roll of paper which requires dampening is placed, in the manner before described, upon the shaft *l*, and the brake-pieces are adjusted. The end of the paper web is now led over the table D and attached to the shaft *b*, and a few turns of the shaft are made by hand. The power is now applied by means of a belt around the wheel P in the usual way, when the roll A will be rapidly rotated, causing a rapid rotation of the shaft *b* and the paper B thereon. The water is now allowed to flow through the shaking nozzles, and the web of moving paper W will be dampened as it is uncoiled from the roll C and rerolled into the roll B, the side boards, O O, keeping the spray of water from spreading beyond the limits of the machine. As the roll B increases in size the supports F of the shaft *b* are gradually moved back over the ways G, the weights J keeping up always a constant pressure between the roll B and the roll A, while the springs H give to the weights a yielding or springy action, which is material, and which would not be had were merely an unyielding rope and weights used. In machines of this class the object of using a power or driving roll is to enable a like speed of web as it moves over the table D to be had, whether the roll B is large or small.

Many modifications may be made in the details without departing from the principles or sacrificing all the advantages of the invention.

Certain portions of the invention may be used without others. I can, if desired, rigidly connect the two supports F in such manner that their to-and-fro motion upon the ways G will not be impeded, and in this case I can employ a single spring, H, with or without a cord, I, and weight J, suitably arranged to produce the desired effect of holding the damp roll B up to the driving-roll A with the required amount of pressure.

The damp roll B, instead of turning in sliding supports, as F, may be supported by oscillating arms, which latter will be subjected to the action of one or more springs, corresponding to H, with or without cords and weights, as above described.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine for dampening and winding webs of paper, the combination, with the power or driving roll and movable supports for the roll on which the dampened paper is to be wound, of weights and yielding connections between said weights and said supports, whereby the dampened roll will be held in yielding contact with said driving-roll, substantially as set forth.

2. In a machine for dampening and winding webs of paper, the combination, with the power or driving roll, of movable supports for the roll on which the dampened paper is to be wound, ways on which said supports slide, said supports having projections extending below said ways, springs attached to said projections, and weights connected with said springs, substantially as set forth.

3. In a machine for dampening and winding webs of paper, the combination, with the supports for the roll of dampened paper, of laterally-adjustable ways by which said supports are sustained, substantially as set forth.

4. The combination, with the supports F and ways G, having arms *g′*, of the slotted rail g^3 and the bolts g^4, substantially as set forth.

5. In a paper-dampening machine, the combination, with the spindle or shaft for the dry roll, of a clamp immovably fixed thereto near one end, and a movable clamp near the other end, supports for said shaft and mechanism, as screw *m*, nut m^2, and brake-pieces N N, attached to one of said supports and connected with said movable clamp, for changing the position of the latter on the shaft, as set forth.

6. The combination, with the shaft *l*, a sta-

tionary clamp, L′, and a movable clamp, L, of two devices for holding said clamps, and of means for moving said holding devices laterally of the machine, all substantially as described, whereby the position of the movable clamp upon the shaft may be changed, and the shaft may be moved in the direction of its axis, as set forth.

7. The combination, with a roll-supporting shaft and a movable clamp, as L, of a brake adapted to act on said clamp, means to operate said brake, and means for changing the position of said brake to move the clamp longitudinally upon the shaft, all substantially as herein described.

8. The combination, with the standards M, of the brake-pieces N, supported thereby, but movable relative thereto, and the adjusting-screw *m*, for changing the position of said brake-pieces relative to said standard, substantially as set forth.

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