No. 711,139. Patented Oct. 14, 1902.

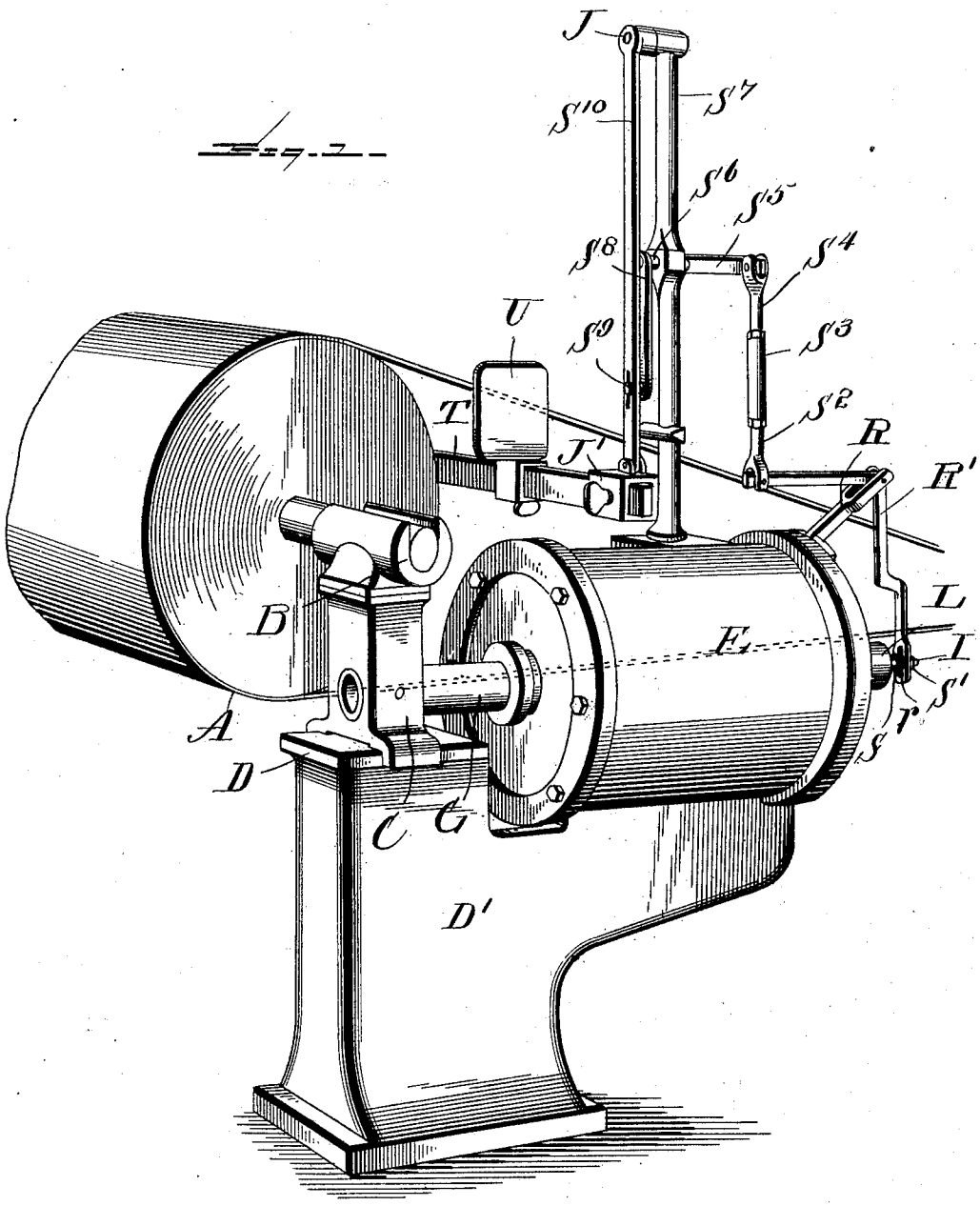
J. J. WARREN.

HYDRAULIC WIRE GUIDE.

(Application filed Jan. 18, 1902.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



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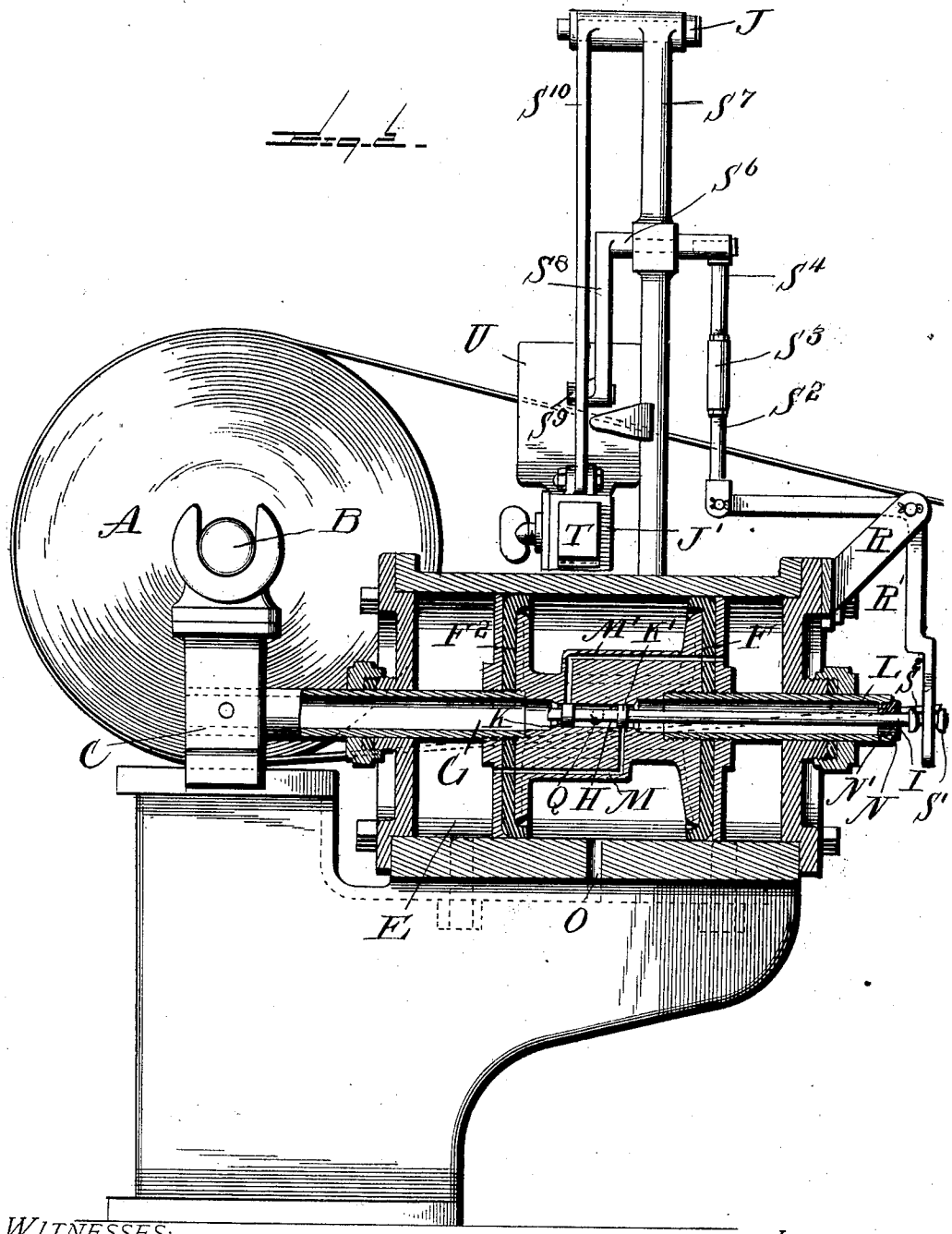
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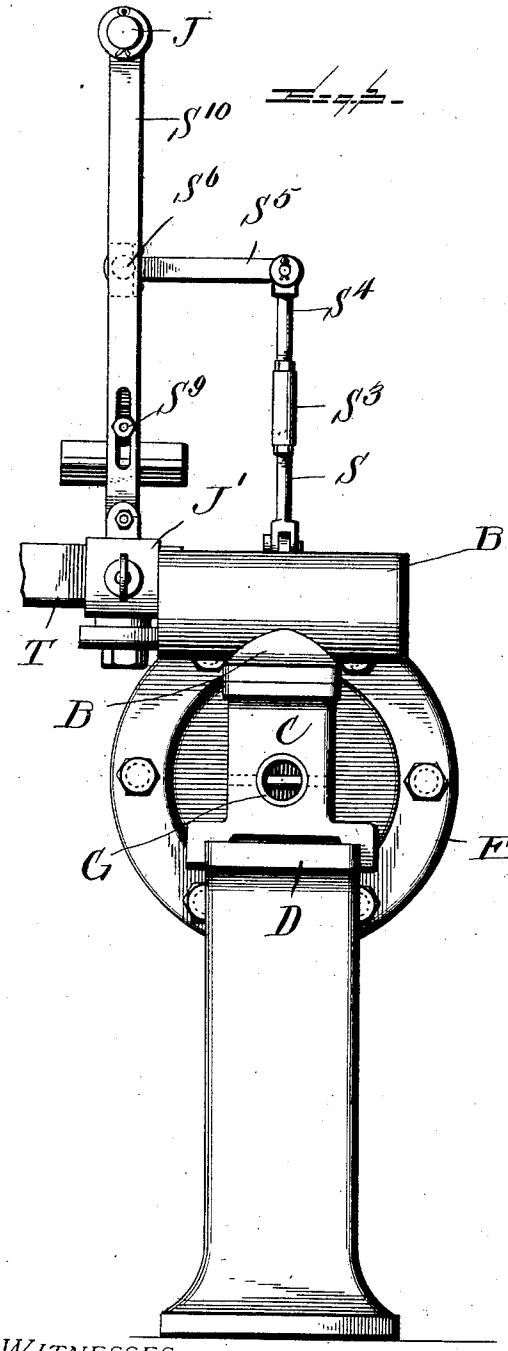
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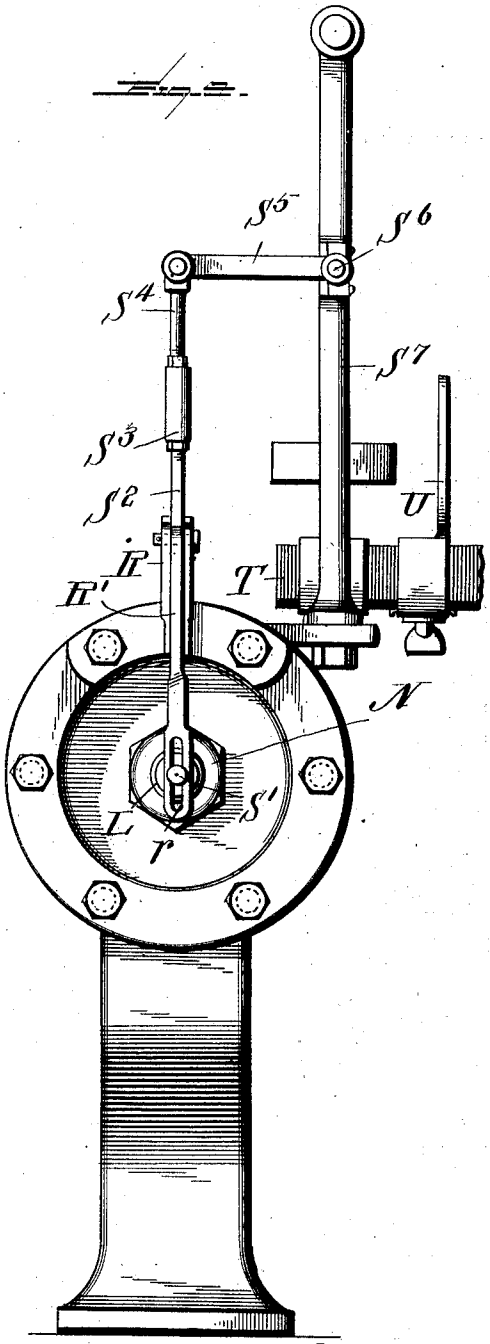
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UNITED STATES PATENT OFFICE.

JOHN J. WARREN, OF BROWNVILLE, NEW YORK.

HYDRAULIC WIRE-GUIDE.

SPECIFICATION forming part of Letters Patent No. 711,139, dated October 14, 1902.

Application filed January 18, 1902. Serial No. 90,361. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. WARREN, a citizen of the United States, residing at Brownville, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Hydraulic Wire-Guides; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in automatic wire and felt guides for paper-making machines for keeping the web of wire or felt centrally on the machine; and it consists in the provision of means whereby the guide-roll is actuated horizontally by mechanism driven by hydraulic or other power, the valves regulating the ports through which the water or steam is introduced into a cylinder having a piston and stem connected to the roll.

The invention will be hereinafter more fully described and then specifically defined in the appended claims and is clearly illustrated in the accompanying drawings, which with the letters of reference marked thereon form a part of this application, and in which drawings similar letters of reference indicate like parts throughout the several views, in which—

Figure 1 is a perspective view of a hydraulic wire-guide for use in connection with paper-machines, which mechanism embodies my invention. Fig. 2 is a central vertical sectional view through a cylinder and pistons, showing the ports and valves, parts of the mechanism being shown in side elevation. Fig. 3 is an end elevation of the apparatus. Fig. 4 is a similar view of the opposite end of apparatus.

Reference now being had to the details of the drawings by letter, A designates the guide-roll, which is mounted in suitable bearings B on the sliding post C, which latter is mounted upon the table D, the lower end of said post having flanges which fit over the edges of the table and act as guides for the post as it is caused to reciprocate. Said table is supported on a suitable frame D′, which may be positioned at any location with reference to the frame of a paper-machine. Mounted upon said frame is a cylinder E, in which is a double piston-head F, having the pistons F′ and F^2.

G designates a piston-stem, which is hollow and connected at one end to the piston F^2, while its other end is secured to the post C, which supports the roll A. Said hollow stem communicates with a duct H, which leads centrally through the piston-head, as shown, and in which duct the piston-valves K and K′ are located and which are mounted upon and travel with the stem I. A hollow piston-stem L is secured in the central bore of the piston F′ and communicates with the duct H, and N is a centrally-apertured plug in the outer end of said hollow piston-stem L, through which plug said stem I passes. An exhaust-port N′ is formed in the plug N, near its lowest portion, through which the exhaust-water is allowed to make exit from the hollow stem L.

In the body portion of the double piston-head are two ducts M and M′, which lead from the central duct H, one of said ducts leading to the space between the piston F′ and the adjacent end of the cylinder, while the other duct M′ has an outlet in the space between the piston F^2 and the opposite end of the cylinder. The water enters the cylinder through the port O, shown in the drawings as located at the lowest portion of the cylinder, and is allowed to pass under pressure through the port Q into the central duct H and from the latter through one or the other of the ducts M or M′, accordingly as one or the other of said ducts may be open for communication of the water to the end of the cylinder.

Rising from the cylinder E is a bracket-arm R, on which an angle-lever R′ is pivoted at its angled portion, one end of said lever being provided with an elongated aperture *r*, through which the outer end of the stem I passes, and mounted on the outer end of said stem are the adjusting-nuts S and S′. To the other end of said lever is pivotally connected a rod S^2, that is in turn secured to a turnbuckle S^3. A rod S^4, having screw-threaded connection with the upper end of said turnbuckle, has connection with the end

of the arm of lever S^5 which is rigidly mounted on the shaft S^6. Rising from the cylinder is a standard S^7, in which said shaft S^6 is journaled in suitable bearings. Shaft S^6 has a crank-arm S^8, which is pivotally connected to a pin S^9, carried by the swinging bar S^{10}. Said bar S^{10} is mounted on a pin J at the upper end of the standard S^7 and at its lower end is pivoted to a collar J', in which one end of the cross-piece T is held. A pan U is mounted on the cross-piece T, near one end thereof, and against which the wire or felt guide is adapted to contact with pressure, whereby mechanism will be actuated to drive the cylinder horizontally in one direction or the other.

In operation as the traveling web which passes over the roll A has a tendency to work to one side or the other it will bear with pressure against the pan U and will cause the cross-piece to move longitudinally. As said cross-piece is pivotally connected with bar S^{10}, the latter will swing on its pivot and through its connections with the angle-lever pivoted to the bracket-arm R the piston-stem I will be moved longitudinally, which will cause one or the other of the ducts M or M' to be in communication with the central duct H, allowing water to come in contact with one piston F' or F^2 and drive the piston G, and with it the roll A, which will rectify the alinement of the web. The water within the cylinder in advance of the piston will exhaust through the hollow piston G or L, accordingly as the travel of the piston is in one direction or the other.

What I claim is—

1. An apparatus for guiding a wire, web, or felt on paper-machines, comprising a sliding post, a guide-roll mounted in suitable bearings thereon, a cylinder, a piston mounted within said cylinder, a stem secured to said piston at one end, and connected to said sliding post, and means actuated by the web or felt, for regulating the valves, whereby pressure may be applied to the piston to actuate the post connected therewith, as set forth.

2. An apparatus for guiding a wire, web or felt on paper-machines, comprising a sliding post, a guide-roll mounted thereon, a cylinder, a piston mounted in said cylinder, a stem secured to said piston at one end and to the roll supporting the post at its other end, a swinging arm, a cross-piece pivoted to said arm, a reciprocating valve-stem mounted in a duct in said piston, pivotal link-and-lever connections between said sliding piston and swinging arm, and a pan secured to said cross-piece, as set forth.

3. An apparatus for guiding a wire, web or felt on a paper-making machine, comprising in combination with the frame the sliding post mounted thereon, a guide-roll journaled on said post, a cylinder, a head having two pistons within said cylinder, a hollow stem secured at one end to said piston-head, its other end fastened to said post, a sliding piston-stem and piston-valves thereon, working in a central duct in said piston-head, a pivoted angle-lever connected at one end to said sliding stem, a cross-piece, a pan carried thereby, a swinging arm, supporting said cross-piece, pivotal lever-and-link connections between said angle-lever and swinging arm, as set forth.

4. An apparatus for guiding a wire, web or felt on a paper-machine, comprising in combination with the frame, the sliding post mounted thereon, a cylinder, a double piston-head within said cylinder, a hollow piston-rod connected at one end to one head of said piston, and communicating with a central duct therein, its other end connected to said post, a second hollow piston-rod connected to the second piston-head, and passing through the end of the cylinder, a valve-stem and valves thereon, working in a central duct in said double piston-head, a cross-piece, a pan mounted thereon, a swinging arm supporting said cross-piece, a pivotal lever and link connections between said arm and valve-stem, as set forth.

5. In combination with the sliding post, and roll mounted thereon, a cylinder, a double piston-head with central duct therein, a hollow piston-stem connecting said head with said post, a piston-rod, and valves mounted thereon and working in said central duct, a hollow piston-stem about said valve-rod, and connected at one end to the double piston and passing through the cylinder-head, a cross-piece, a pan mounted thereon, a swinging arm supporting said cross-piece, angle-lever and link connections between said valve-rod and arm, as set forth.

6. In combination with the sliding post 8, the roll mounted thereon, the cylinder, the double piston-head with ducts therein, a hollow piston-stem connected at one end to said piston, its other end fastened to said post, a hollow piston-stem connected to the opposite end of the piston-head, and passing through the end of said cylinder, a valve-rod and valves mounted thereon, which work in a central duct in said piston-head, an apertured plug in which said valve-rod reciprocates, an angle-lever pivoted on a stationary bracket-arm, and adapted to actuate said valve-rod, a standard, a swinging arm supported thereby, a cross-piece having pivotal connection with said swinging arm, a pan on the cross-piece, a shaft journaled on said standard, a crank-arm of said shaft having pivotal connection with said swinging arm, and connections between said shaft and angle-lever, as set forth.

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

JOHN J. WARREN.

Witnesses:
MAY L. HAVEN,
GEORGE H. COBB.