

(Model.)

2 Sheets—Sheet 1.

S. W. WARDWELL, Jr.

THREAD CONTROLLING DEVICE FOR SEWING MACHINES.

No. 482,215.

Patented Sept. 6, 1892.

Fig. 1.

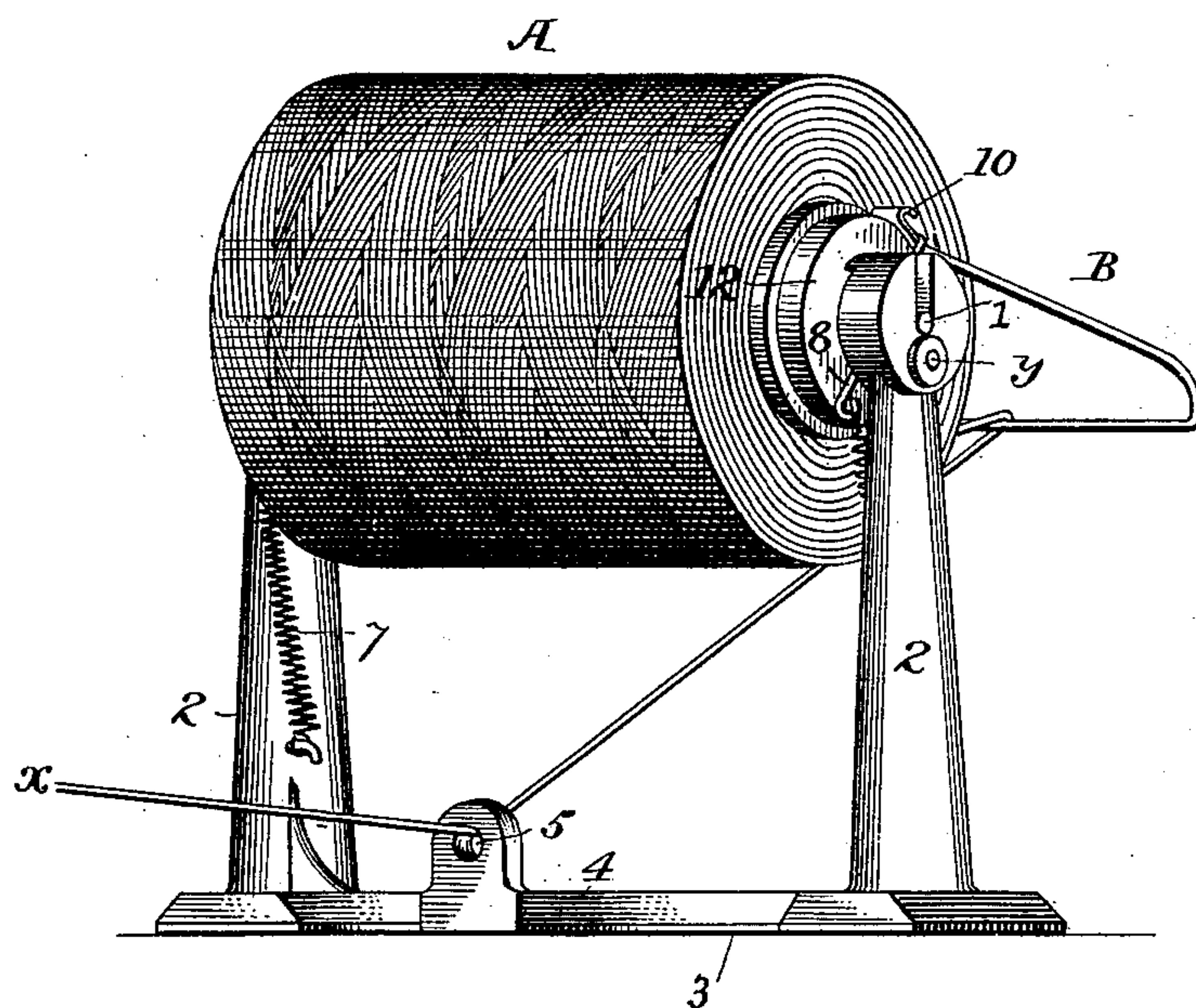
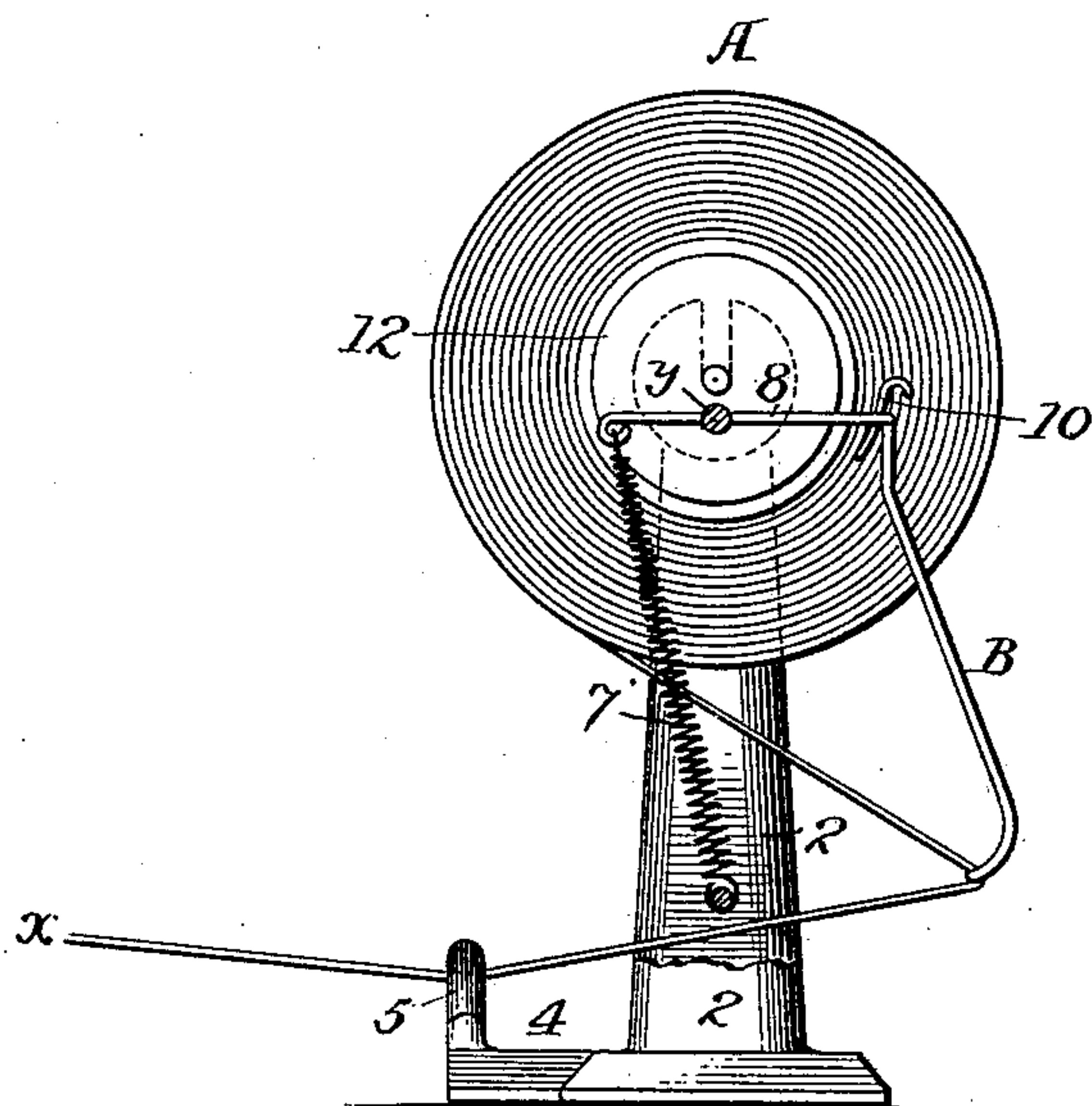


Fig. 2.



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(Model.)

2 Sheets—Sheet 2.

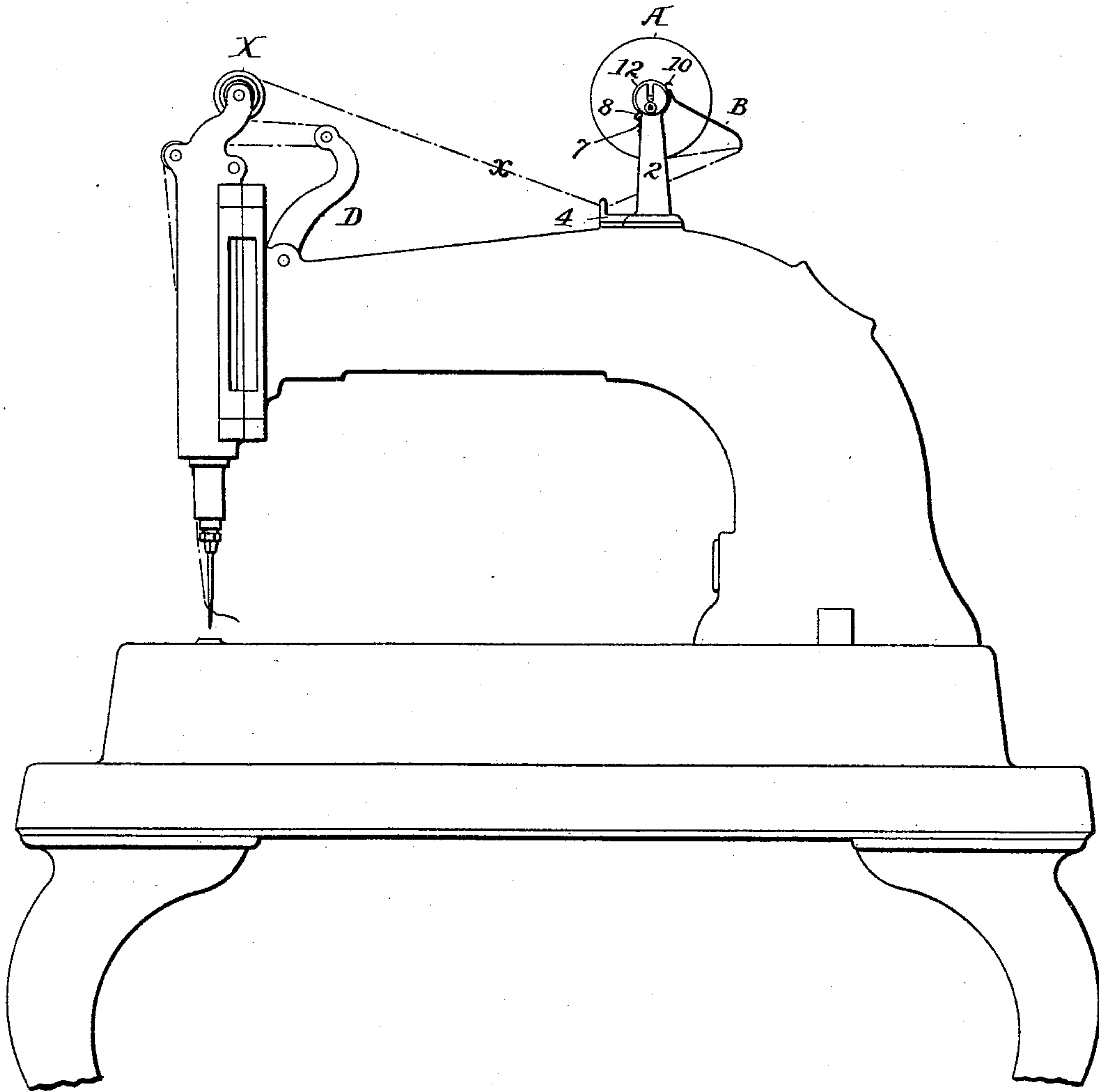
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Fig. 3.



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UNITED STATES PATENT OFFICE.

SIMON W. WARDWELL, JR., OF BOSTON, MASSACHUSETTS.

THREAD-CONTROLLING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 482,215, dated September 6, 1892.

Application filed February 26, 1892. Serial No. 422,921. (Model.)

To all whom it may concern:

Be it known that I, SIMON W. WARDWELL, Jr., a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Spool-Controlling Devices, of which the following is a specification.

My invention relates to means for controlling the movements of thread drawn from bobbins or spools; and my invention consists of a spool or cop, substantially frictionless bearings therefor, a swinging controlling-arm having a bearing for the thread and supported to move in one direction under the draft of the thread, and a spring arranged to swing the arm in the other direction and cause it to draw the thread from the spool, as set forth hereinafter, and as illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a thread-controlling device embodying my invention; Fig. 2, a side view, one of the posts being removed; Fig. 3, a view illustrating the device applied to a sewing-machine.

A represents a spool or cop of suitable form and dimensions mounted so as to turn freely upon a proper support, preferably upon a horizontal shaft 1, detachable from seats in arms or brackets 2 upon a base 3. An arm 4 of the base terminates in a projection having an eye 5, through which the thread can pass toward the device which draws upon the thread. For instance, it may pass to a tension device X of a sewing-machine, and thence to a take-up arm D—that is, an arm that vibrates intermittently to draw off the thread—and thence downward through suitable guide-eyes to the needle of said machine. It is my intention, however, to make use of my improved thread-controller in connection with any kind of machines or devices which require to be fed with thread and which draw the same by intermitting or pulsating action from the spools or cops.

Between the spool or cop A and the machine to which the thread is supplied I interpose a controller B, which may be of any suitable form or construction, preferably in the form of a pivoted arm or yoke, as shown, and which is so mounted that the thread α shall bear upon said controller in passing from the

spools to the machine and shall tend to swing or move the controller to a position which is resisted by a spring or springs 7.

One of the main features of my improvement is the relative proportioning of the parts described, so that the spool A will turn readily not only under the draft of the machine, but also under the draft exerted by the controller B to recover its normal position whenever the thread after being drawn forward by the take-up and swinging the controller is held for an instant stationary.

In the construction shown in the drawings the controller B is in the form of a yoke, the two side pieces 8 8 of which are pivoted to the arms or brackets 2 2 at the point y , and the springs 7 7 are connected each to one end of one of the arms 8 and at the other end to the base, while the loop of the yoke is connected to the two arms 8 8. Assuming that the machine is in operation and that the thread is being repeatedly drawn forward and then stopped, it will be seen that at each draft of the thread the controller B will be swung forward, yielding to the said draft, but that then if said draft ceases for an instant the controller will swing backward, and in its backward motion will exert a draft upon the thread that will unwind it more or less from the spool, starting the spool in rotation, so that at the next pull upon the thread the spool will not be stationary but already rotating, and thereby relieved from the jerk which would result from drawing by a jerking action from a stationary spool. It will be seen that as the controller moves back it unwinds from the spool an additional portion of the thread, so as to supply the slack or a portion of the slack that is required for the next motion of the take-up of the machine without any sudden draft or jerk upon the thread and upon the spool and without drawing the thread taut for more than a single moment. As the spool is upon practically frictionless bearings—that is, it is free or practically free from friction, being mounted to turn readily in its bearing—it will under ordinary circumstances continue to move at a greater or less speed during the entire operation of the machine. There is therefore no stopping and starting and no jerking of the thread, and from this cause no tendency to make the spool overrun the

thread. One of the uses of the controller operating to turn the spool as soon as the draft upon the thread ceases is that the thread is under no tension by the controller, so that the action of the controller does not in any way modify the tension upon the thread, which may therefore be kept uniform by any of the usual tension devices between the controller and the machine. By this means I secure a uniform movement of the spool and unwinding of the thread without twisting, kinking, straining, or breaking the same, the controller maintaining a perfect control of the thread at all times.

When a machine to which the above-described controller is attached is driven at a high rate of speed, taking up a large quantity of thread at each movement, and especially when the spool is large or heavy, there may be a tendency of the latter to increase its speed of rotation, acquiring a momentum that overruns the thread, causing tangling and breakage. To overcome this defect, I combine with the spool or cop an automatic brake device of any suitable character, either positively-acting or a friction-brake so controlled by the controller that it will be applied to arrest the movement of the spool or cop whenever the thread slackens for any reason. In the construction shown in the drawings the brake is in the form of two shoes 10, one of the said shoes being carried by each arm 8, and as the arms are pivoted eccentrically to the shaft of the spool the thread-shoes 10 will be brought against the end 12 of the spool when the arm is swung to an upward position caused by relaxing the draft upon the thread, as shown in Fig. 1. This causes the shoes to be applied whenever the controller swings to the limits of its backward position, thereby stopping the rotation of the spool entirely or applying sufficient force to decrease its rate of

motion. Although I have shown the controller in the form of a yoke, it will be evident that such a controller may be constructed in various ways to move under the draft of the thread and to swing back under the action of a spring or equivalent power to thereby exert a draft tending to turn the spool. It will also be evident that the spool may be supported in many different ways and that brake devices of different forms may be employed.

Without limiting myself to the precise construction and arrangements of parts shown and described, I claim—

1. The combination, with the sewing-machine and with the thread-take-up thereof, of a spool or cop containing the thread, substantially frictionless bearings for the said spool, a movable controller having a bearing for the thread between the spool and the take-up and supported to move in one direction under the draft upon the thread, and means for positively swinging the controller in the opposite direction and causing it to draw the thread from the spool, substantially as set forth.

2. The combination, in a thread-controlling device, of a spool or cop, substantially frictionless bearings therefor, a swinging controlling-arm having a bearing for the thread and supported to move in one direction under the draft of the thread, and a spring arranged to swing the arm in the other direction and cause it to draw the thread from the spool, as set forth.

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

SIMON W. WARDWELL, JR.

Witnesses:

CHARLES E. FOSTER,
MYER COHEN.