

2 Sheets—Sheet 1.

STOP MOTION MECHANISM FOR KNITTING MACHINES.

Patented June 5, 1883.

Fig: 1.

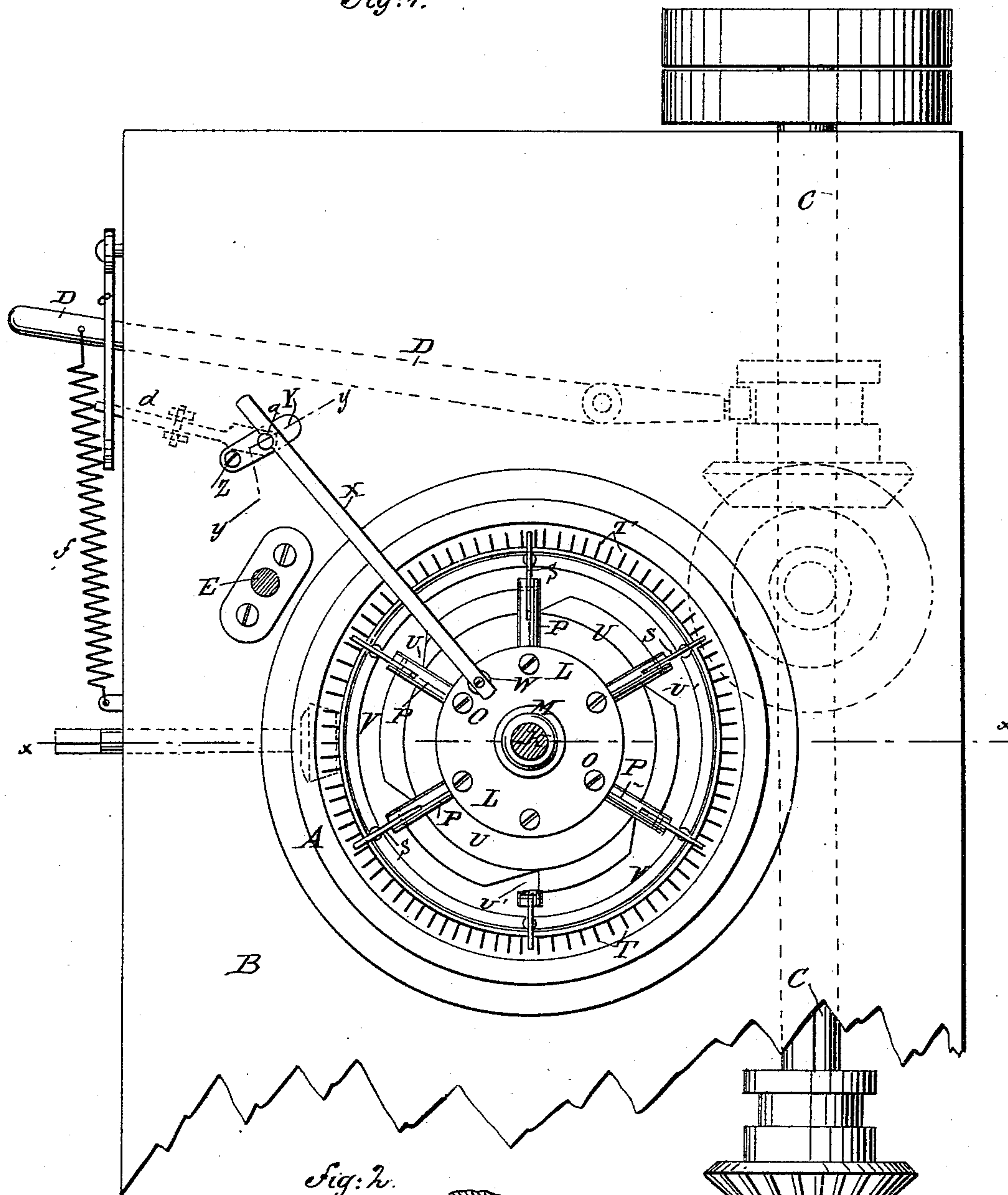
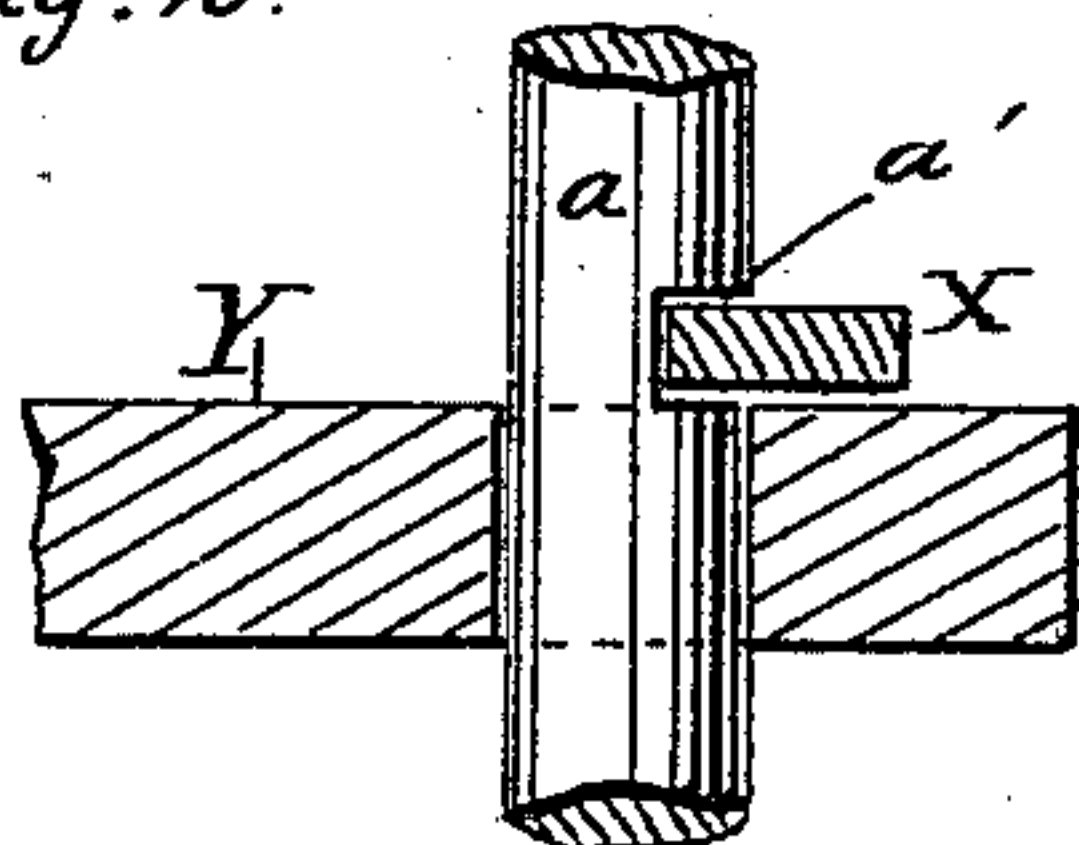


Fig: 2.

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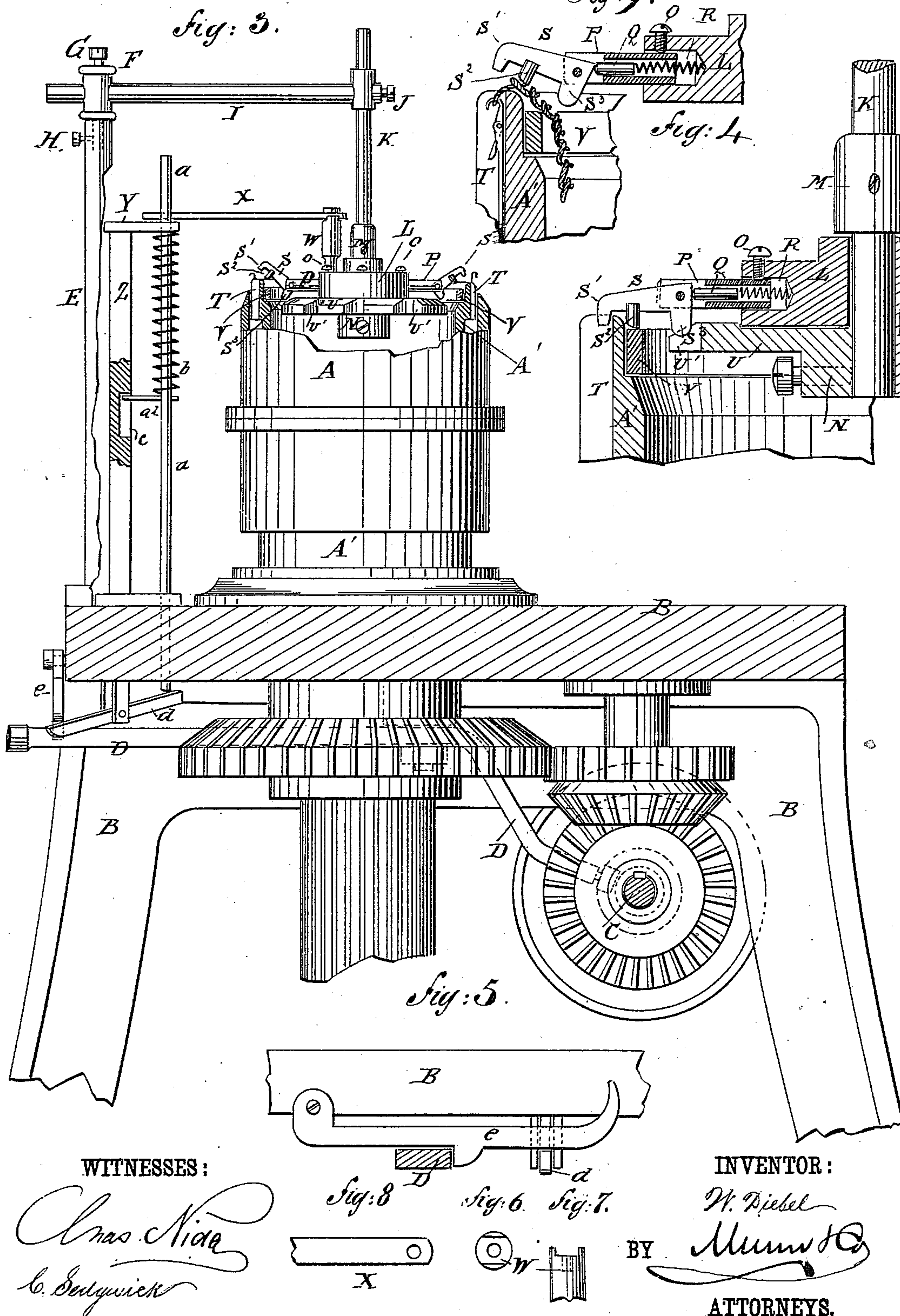
ATTORNEYS.

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STOP MOTION MECHANISM FOR KNITTING MACHINES.

No. 278,894.

Patented June 5, 1883.



UNITED STATES PATENT OFFICE.

WILLIAM DIEBEL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
SARAH A. GUNN, OF SAME PLACE.

STOP-MOTION MECHANISM FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 278,894, dated June 5, 1883.

Application filed October 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DIEBEL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Stop-Motion Mechanism for Knitting-Machines, of which the following is a full, clear, and exact description.

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

Figure 1, Sheet 1, is a plan view of my improvement, partly in section. Fig. 2, Sheet 1, is a sectional elevation of a part of the same, taken through the line *y y*, Fig. 1. Fig. 3, Sheet 2, is a side elevation of the same, parts being broken away and parts being shown in section through the line *x x*, Fig. 1. Fig. 4, Sheet 2, is a sectional side elevation of a part of the same enlarged. Fig. 5, Sheet 2, is a side elevation of the clutch-lever catch and other parts immediately connected or operating therewith, and showing the clutch-lever in section. Fig. 6, Sheet 2, is a plan view of the trip-bar standard. Fig. 7, Sheet 2, is a side elevation of the upper part of the same. Fig. 8, Sheet 2, is a plan view of the inner end of the trip-bar. Fig. 9, Sheet 2, is a sectional side elevation of a part of the invention, showing the relative position of the fingers to the fabric when the machine is in operation.

The object of this invention is to stop knitting-machines automatically should a hole occur in the fabric; and to this end it consists in the peculiar construction and arrangement of parts, as hereinafter fully described, and pointed out in the claims.

A represents the cam-cylinder, and A' is the needle-cylinder, which is connected with the table B and the drive-shaft C by the ordinary gearing.

D is the ordinary lever for throwing the gearing into and out of gear. The lever D is fulcrumed to a bolt attached to the table B or to the frame of the machine. The inner end of the lever D, or a small roller pivoted to the said end, enters an annular groove in the hub of a gear-wheel placed upon the drive-shaft C, and connected therewith by a tongue and

groove or other suitable means, so that the said gear-wheel can be thrown into and out of gear with its corresponding gear-wheel by operating the said lever D.

To the table B is secured the lower end of a post, E, to the upper end of which is adjustably secured by a stud, F, and set-screws G H, or other suitable means, the end of an arm, I, which is made of such a length that the eye formed in its other end will be directly over the center of the needle-cylinder A'.

In the eye of the arm I is secured, by a set-screw, J, the upper part of a vertical rod, K, to the lower end of which is journaled a circular plate, L, which is kept in place by collars M and the plate U, attached to the said rod, or by other suitable means. The collar M is secured to the rod K by a set-screw, and the plate U has a collar, N, formed upon or attached to it, through which the set-screw passes that secures the said plate and collar to the said rod K.

In radial holes in the edge of the plate L are secured by set-screws O a number of radial tubes, P, in each of which is inserted a pin, Q, which is held outward by a spiral spring, R, inserted between its inner end and the inner end of the hole in the plate L. The outer end of the pin Q rests against the square inner end of the finger S inserted in a vertical longitudinal slot in the outer part of the tube P, and hinged in place by a cross-pin passing through the said tube P near the upper corner of its inner end.

Upon the lower side of the finger S is formed a downward projection, S', which, when the said finger S drops down, enters between and engages with the needle-guides T of the needle-cylinder A'. Upon the lower side of each finger S, at a little distance from its outer end, is formed a short projection or stud, S'', which I prefer to make cylindrical in form and with a beveled end, as shown in Fig. 4, and which, when the machine is in use, rests and slides upon the inner surface of the fabric, so as to drop through any hole that may occur in the said fabric, and thus cause the projection S' to engage with the needle-guides T, so that the needle-cylinder A' will carry the plate L around with it in its revolution.

Upon the lower side of the inner end of each finger S is formed a downward projection, S³, which, when the projection S² drops through a hole in the fabric, drops into a notch, U', in a plate, U, attached to or formed upon the collar N, or otherwise secured to the rod K, so as to be held stationary. The notches U' are made with their rear sides radial and their forward sides inclined, as shown in Fig. 1, so that as the plate L and fingers S are carried around by the cylinder A the projection S³ of the engaging finger will slide along the inclined side of the notch U', and will thus raise the said finger away from the fabric and from the needle-cylinder A'.

The hinged fingers S can be held away from the needle-cylinder A' by turning the said fingers into a vertical position, so that the ends of the pins Q will rest against the upper side edges of the said fingers, and thus hold the fingers in a vertical position.

To the inner surface of the cylinder A, at a little distance from its upper edge, is secured a band, V, in such a position that its upper edge will be a little below the upper edge of the said cylinder to support the fabric, limit the downward movement of the finger S, and form a track for the projection S² of the hinged finger to move upon.

To the upper side of the circular plate L is attached a short post, W, the upper end of which has a wide groove formed across it to receive the end of the bar X and prevent the said bar from turning upon the said upper end of the standard. The bar X is secured to the end of the standard W by a screw-bolt, as shown in Figs. 1 and 3. The outer end of the bar X rests upon a cross-head, Y, attached to or formed upon a post, Z, secured to the table B.

a is a rod which passes up through a hole in the cross-head Y, and has a notch, a', formed in its side to receive the bar X, so that it will be held up by the said bar X.

Upon the rod a is placed a spiral spring, b, the upper end of which rests against the lower side of the cross-head Y. The lower end of the spiral spring b rests against an arm or pin, a², attached to the rod a, and which projects so that its end will enter a groove, c, in the side of the post Z, and thus limit the movements of the said rod a. The rod a passes down through a guide-hole in the table B, and its lower end rests upon the inner end of the trip-lever d,

which is pivoted to a support attached to the under side of the said table B.

The outer end of the trip-lever d projects at the side of the table B and rests beneath the free end of the catch e, which is pivoted to the edge of the said table B, or to some other suitable support, in such a position as to engage with and hold the lever D, and thus hold the driving mechanism in gear. The lever D, when released from the catch e, is moved to throw the driving mechanism out of gear by a spiral spring, f, one end of which is attached to the said lever and its other end is attached to the table B or some other suitable support. With this construction, when the projection S² of one of the fingers S enters a hole in the fabric, allowing the projection S' of the said finger to engage with the needle-guides T, so that the needle-cylinder A' will carry the plate L around with it, throwing the bar X out of engagement with the rod a, the said rod is forced downward by its weight, and by the action of the spring b, and operates the lever d to trip the catch e and release the lever D, which is instantly moved by the spring f to throw the machine out of gear and stop it, so that the defect in the fabric can be remedied.

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

1. The combination, with the needle-cylinder, the plate L, adapted to be rotated, the hinged fingers S, provided with the projections S' S² S³, and the springs R, for holding the fingers in the desired position, of the stationary plate U, having angular notches U' in its rim, and means, substantially as herein shown and described, for rotating the needle-cylinder and supporting the plates U L, as set forth.

2. The combination, with the cylinder A' and the hinged fingers S, having projections S' S² S³, of the band V, the plate L, and means for supporting the same, substantially as herein shown and described.

3. The hinged fingers S, made substantially as herein shown and described, with the projections S' S² S³, as set forth.

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Witnesses:

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