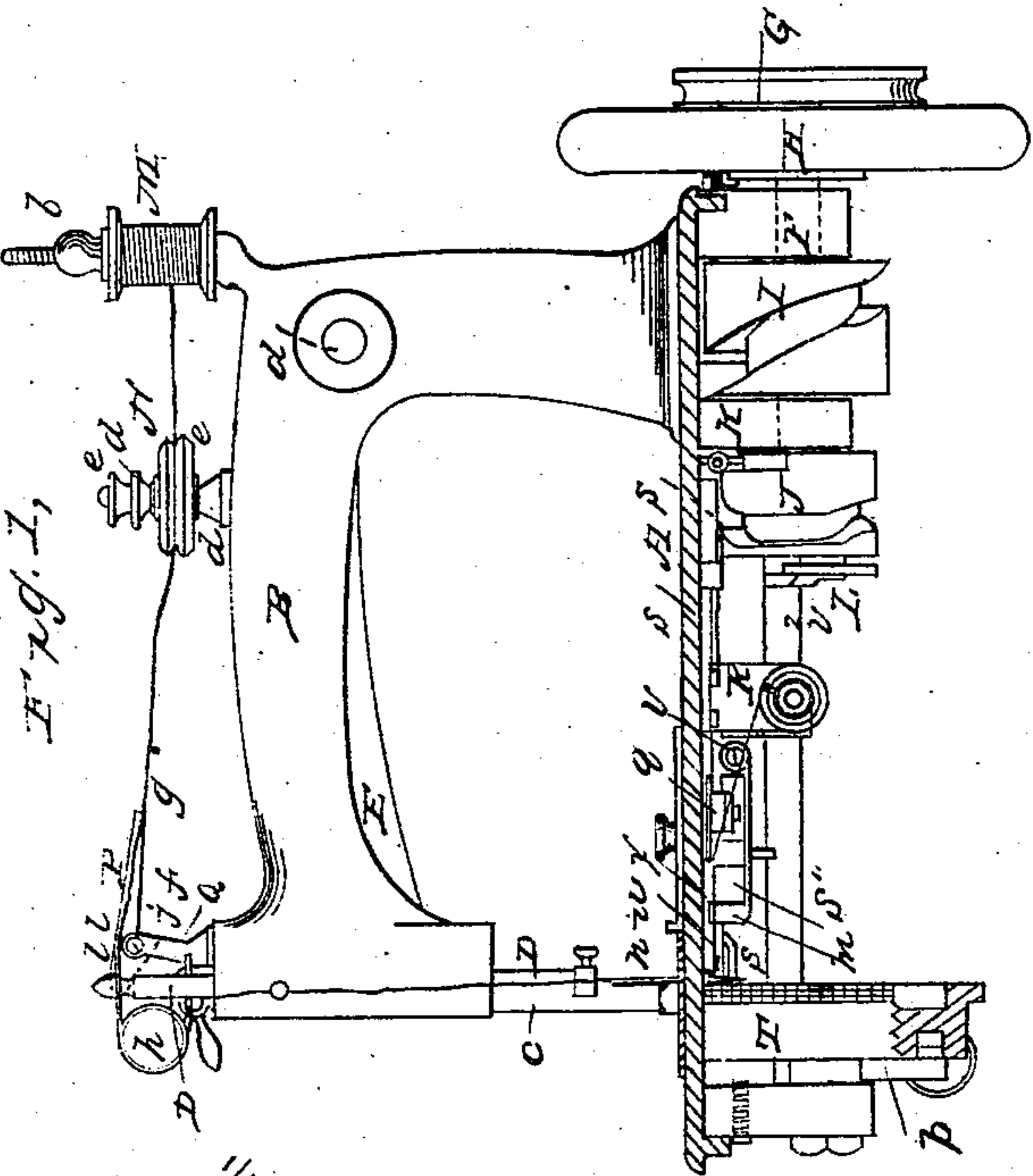
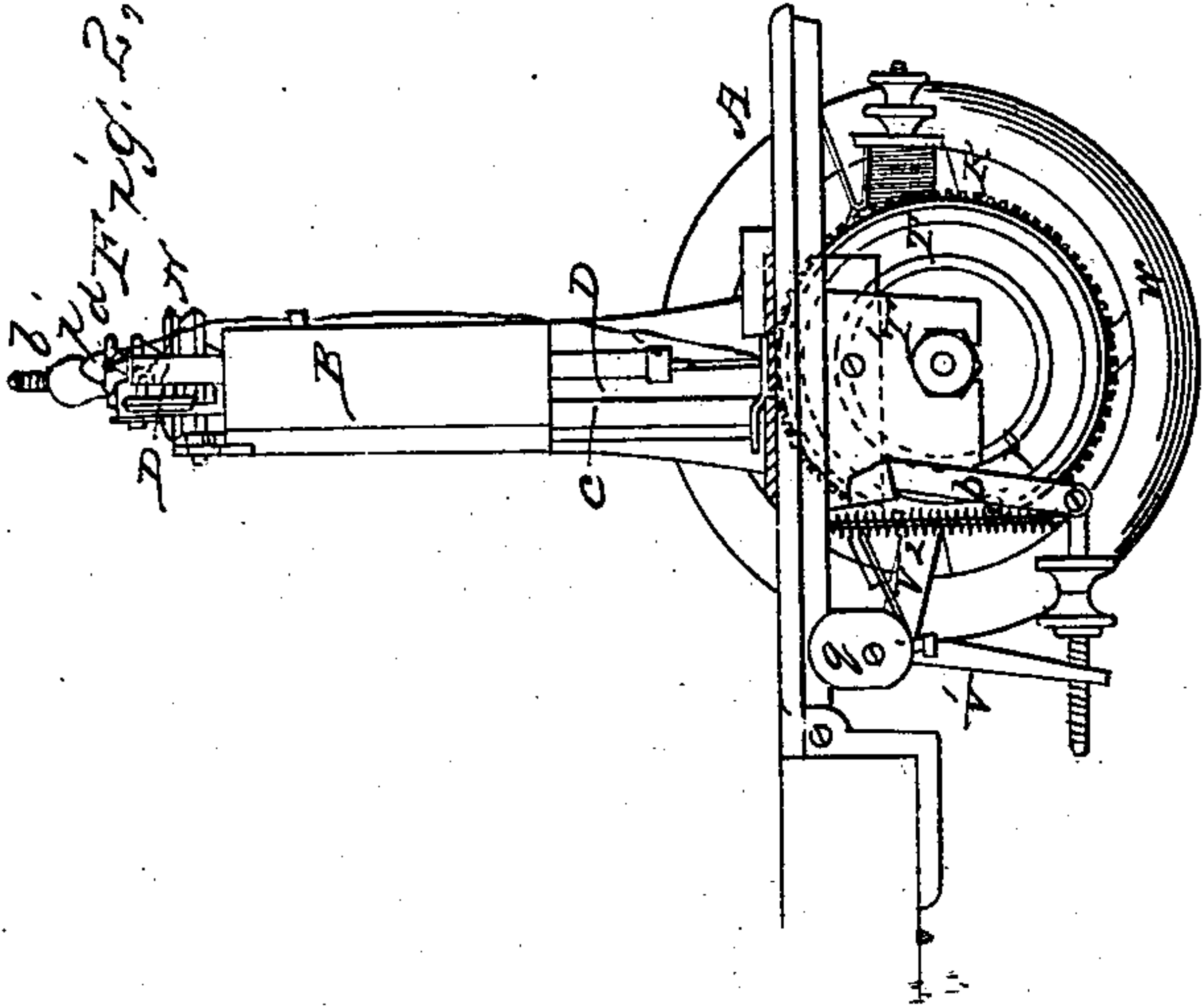


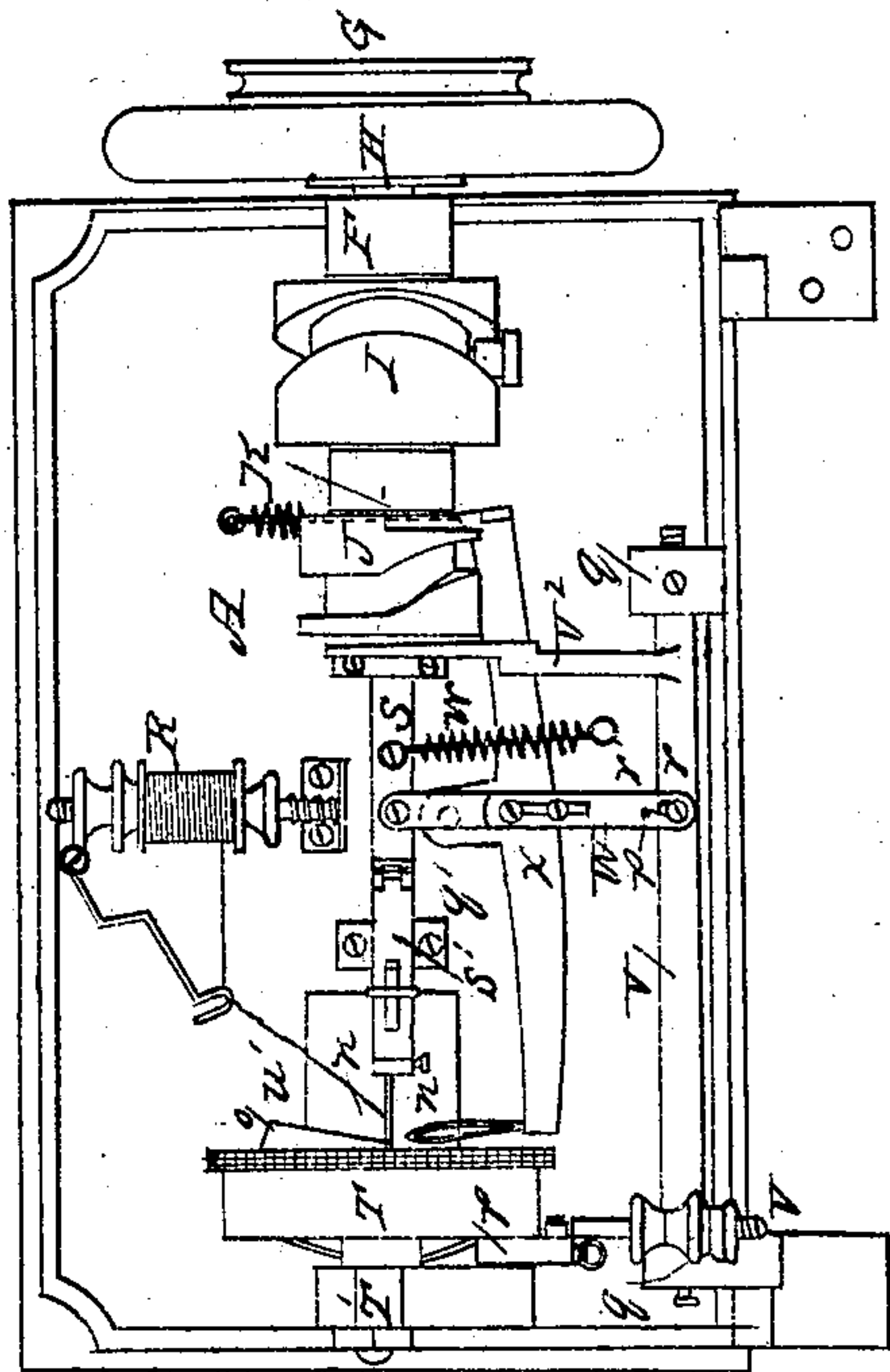
W. H. SMITH.
Sewing Machine.

No. 28,785.

Patented June 19, 1860.



Witnesses:
R. S. Smith
J. W. Crowley



Inventor:
Wm. H. Smith
per my atty. John

UNITED STATES PATENT OFFICE.

WILSON H. SMITH, OF BIRMINGHAM, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 28,785, dated June 19, 1860.

To all whom it may concern:

Be it known that I, WILSON H. SMITH, of Birmingham, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front view of a machine with my improvements, showing the bed in section. Fig. 2 is a side view of the same. Fig. 3 is an inverted plan of the same.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in a novel arrangement of the parts for producing the double-looped stitch.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the bed of the machine, and B the stationary arm holding the presser C, and containing the guides for the needle-bar D and the fulcrum *a* of the needle-operating lever E.

F is the main shaft, arranged in bearings below the bed-plate, furnished with a pulley, G, to receive a driving-band, a fly-wheel, H, a cam, I, two cams, J and K, made in one piece, and a short crank, L, whose several duties will be presently explained.

M is the spool which supplies the needle-thread, arranged to turn freely on a fixed pin, *b*, on the top of the arm B.

N is a horizontal grooved roller, made of vulcanized india-rubber or other moderately-yielding elastic material, arranged to rotate upon a stationary upright central pin, *c*, situated on the top of the arm B, at a convenient distance from the spool M. This roller is clamped between nuts *d d*, fitted to a screw-thread cut on the pin *c*, and washers *e e* are applied between the nuts and the roller. The needle-thread, on its way from the spool M toward the needle, passes one or more times round within the groove of this roller N, which is made to rotate between the clamping-nuts as the thread is drawn from the spool by the sewing operation. The thread, in passing round the india-rubber roller, is made to adhere to it more or less tightly, according as more or less friction is produced upon the

roller by its clamping-nuts, and so a greater or less degree of tension is produced. The tension produced in this way is more uniform than that produced by the thread passing between surfaces of india-rubber, and in passing between two surfaces its tension is caused to vary with variations of its thickness.

P is the thread-controlling lever, arranged to work easily on a fulcrum-pin, *f*, that is fixed in a small standard, Q, erected on the stationary arm B, near the needle-bar. One arm of this lever—viz., the one toward the tension apparatus—is longer than the other, and has an eye, *g*, at its end for the thread to pass through, and the other arm contains several holes *l l*, either of which receives the end of a coiled spring, *h*, the other end of which is secured to the arm B, and which exerts a tendency to depress the eye *g* of the lever, but is prevented doing so beyond a certain point by means of a stop, *j*, provided on one side of the lever to come in contact with the standard Q. The thread passes from the tension apparatus to the eye *g* of the thread-controlling lever P, and from thence through an eye, *i*, in the upper part of the needle-bar. As the needle-bar rises and the distance between the cloth and the tension device (measured through the eye *i*) increases, the consequent tension that is produced on the thread overcomes the force of the spring *h* to a certain extent, and makes the thread, in attempting to straighten itself, draw up the arm of the lever P, to which the eye *i* is attached, and as the needle descends again and the tension on the thread diminishes the spring *h* keeps depressing the eye *g* of the lever, and so prevents the thread getting slack till the point of the perforating-needle *n* is entering the cloth, when the stop *j* comes in contact with the standard G, and so prevents the further movement of the lever, which then ceases to take up the slack as the needle *n* continues its descent, and so leaves plenty of slack thread to form the loop. The face of the spring may be adjusted by shifting it from one to another of the holes *l l*, for the purpose of enabling the stitches to be drawn up more or less tightly by the ascent of the needle *n*.

T is the feed-wheel, arranged to work on a fixed pin, T'. Below the bed *p* is a dog for operating the said feed-wheel, attached to the arm V' of the rock-shaft V, which is arranged parallel with the main shaft F, near the back

of the machine, in fixed bearings $q\ q$, secured to the bottom of the bed. This rock-shaft is furnished with another arm, V^2 , which is slotted to receive the wrist of the crank L , and by the rotary motion of the crank within the slot of this arm the rock-shaft is caused to receive the necessary motion to operate the dog.

m is the under needle, which carries the locking-thread supplied by the spool R , arranged below the bed. This needle is carried by a slide, S , which is fitted to work longitudinally in a direction transverse to the feed movement of the cloth in guides $q'\ q'$, secured to the bottom of the bed. The said slide receives a reciprocating longitudinal movement and a lateral movement, as in many other sewing-machines for making the double-looped stitch, to take the under needle, m , into and withdraw it from the loops of the upper needle-thread, and to make the said needle carry its own thread, in the form of a loop, round the upper needle. The longitudinal movement is produced by the cam I on the main shaft, and the lateral movement in one direction by a link, W , Fig. 3, connecting it with a stud, r , on the feed rock-shaft V , and in the other direction by a spring, W' . The stud r is received in a slot, r' , in the link W , so that it does not impart the whole of its own movement to the slide S , and provision is made for regulating the amount of movement that it does impart by making the link in two pieces adjustable lengthwise that it may be lengthened or shortened. To permit this lateral movement of the slide S the guide q' is made wider than the said slide.

$s\ s$ are a pair of elastic nippers—such as are used in some other sewing-machines—for draw-

ing the needle-thread away from the side of the needle to allow the under needle or looper to pass between them without fail. These nippers are carried by a horizontally-working lever, X , which is attached to the back part of the under side of the bed by a fulcrum-pin, t , and is operated by the cam K and a spring, K' , which keeps it in contact with the said cam.

u is a stationary tooth, secured by a screw, u' , to the bottom of the bed in such relation to the lines of movement of the two needles that its point may be made to catch the lower thread by the lateral movement of the needle m , and to retain it till the needle n , in its descent, has passed it, and so cause the said thread to be drawn round the needle n in the form of a loop by the retreat of the needle m .

To afford facility for threading the needle it is not attached directly to the slide S , but to a piece, S' , which is hinged at v to the said slide, so that it can be turned away from the said slide, and thus, when the bed is turned up to a vertical position, bring the needle to a convenient position for being threaded.

I do not claim the giving to the under needle, m , a movement such as is herein described; but

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

Obtaining the lateral portion of such movement by means of a link, W , connecting the needle-carrier S with the feed rock-shaft, and acting in combination with a spring, W' , as described.

WILSON H. SMITH.

Witnesses:

GEORGE DANA RUSSELL,
FRANK HAWKINS.