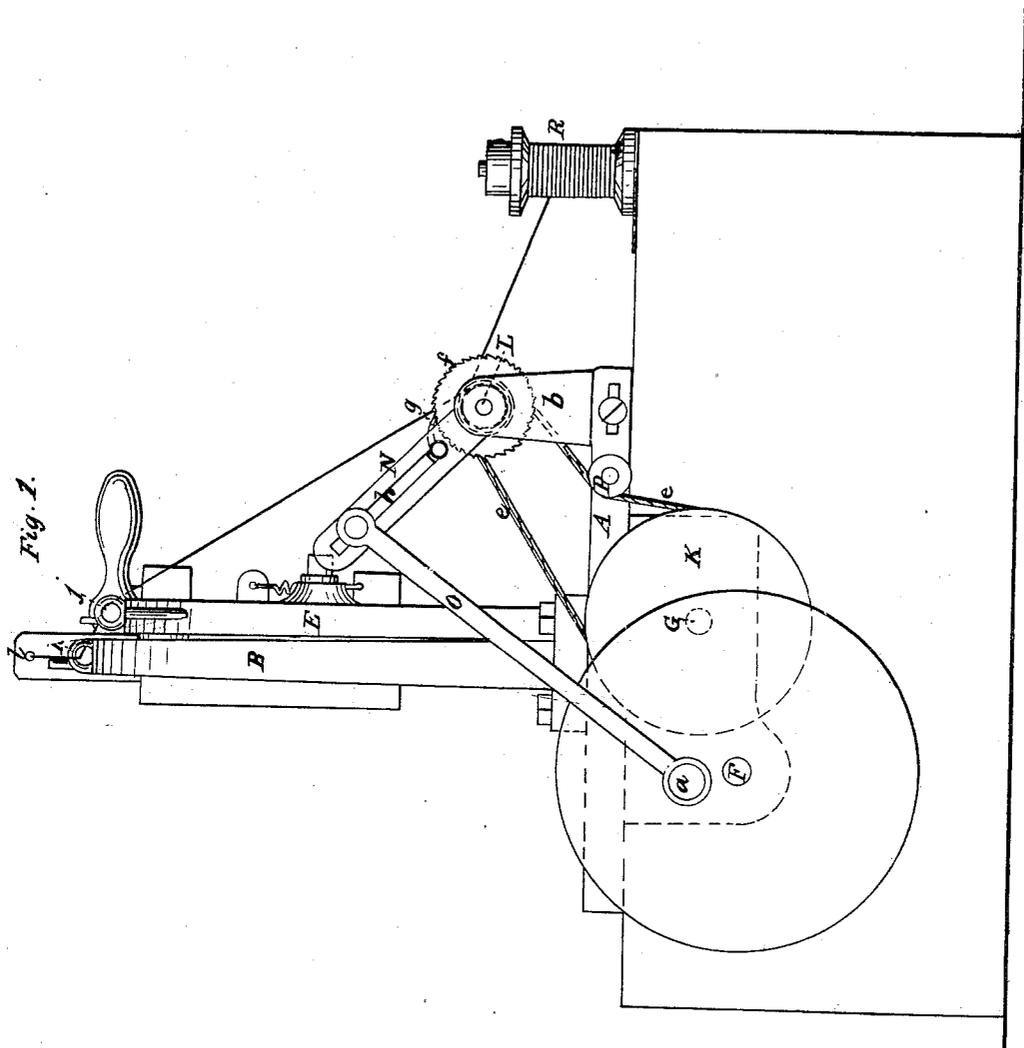


R. WELCH.
SEWING MACHINE.

No. 34,081.

Patented Jan. 7, 1862.



Witnesses.

J. L. Lamb
G. W. Reid

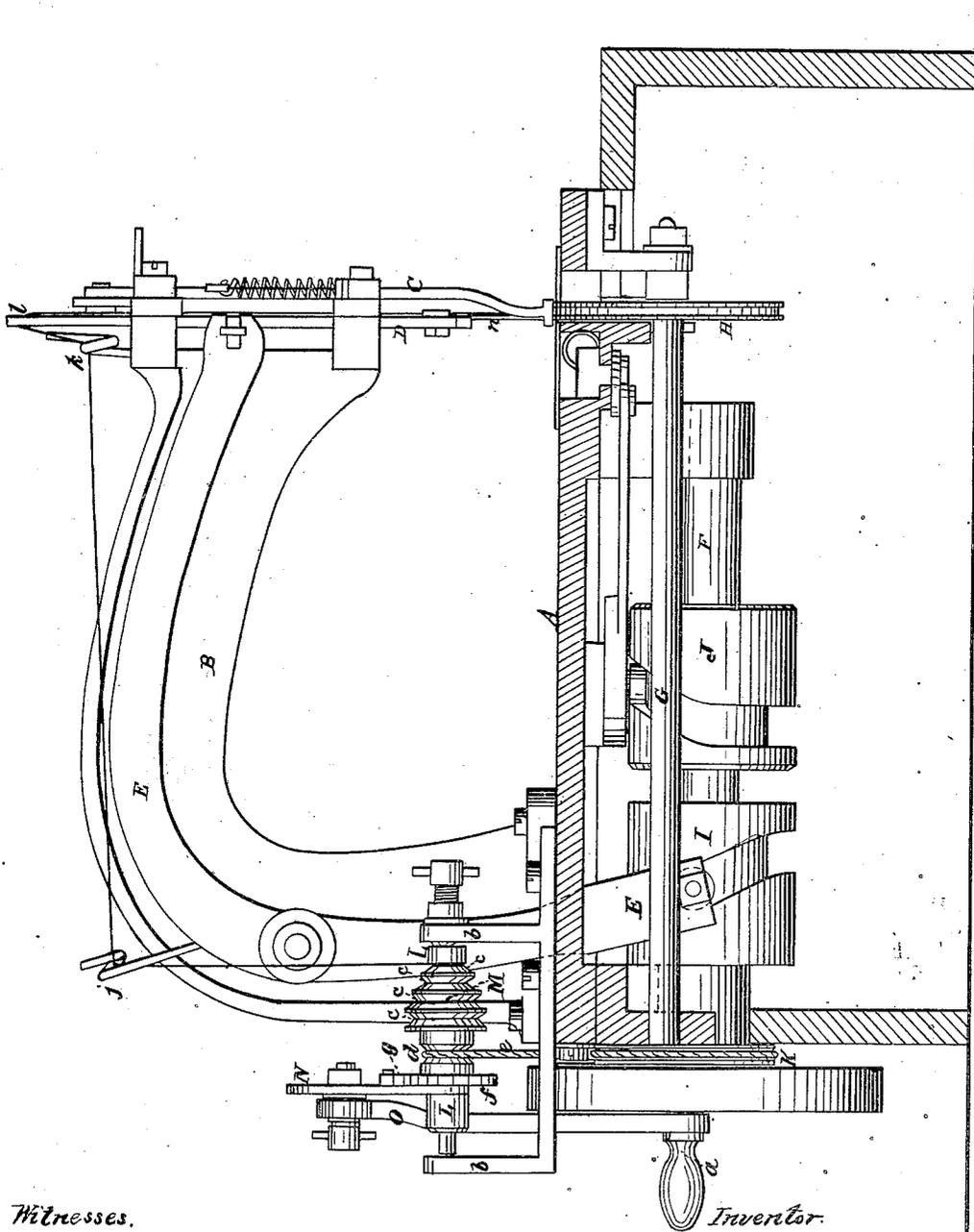
Inventor.

Robt Welch
per Munn & Co.
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UNITED STATES PATENT OFFICE.

ROBERT WELCH, OF FRANKFORD, PENNSYLVANIA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 34,081, dated January 7, 1862.

To all whom it may concern:

Be it known that I, ROBERT WELCH, of Frankford, in the county of Philadelphia and State of Pennsylvania, 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 an elevation of that end of a sewing-machine farthest from the needle. Fig. 2 is a vertical section of the machine at right angles to Fig. 1.

Similar letters of reference indicate corresponding parts in both figures.

My invention relates to the use of a thread-feeding apparatus for feeding the thread to the perforating-needle, so combined with the cloth-feeding apparatus that the quantity of thread supplied for each stitch will always be in proportion to or will correspond with the length of that stitch; and the invention particularly consists in a device, hereinafter described, which adapts the improvement to various descriptions of feed in common use and admits of ready adjustment to suit various thicknesses of material being sewed.

To enable those 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. B is the stationary arm, C the presser, D the needle-bar, and E the needle-operating lever, all constructed and applied as in many other well-known sewing-machines.

F is the main shaft, and G the shaft of the cloth-feed wheel H, arranged parallel with each other in bearings below the bed-plate, the main shaft carrying a needle-operating cam, I, a shuttle-operating cam, J, and a crank or eccentric wrist, *a*, for producing the feed movement, and the feed-shaft carrying, besides the feed-wheel, a pulley, K.

L is a shaft arranged between centers in standards *b b*, above the bed A, in a position parallel with the main and feed shafts for the purpose of carrying a cone, M, having several grooves, *c c*, running round its periphery, the said cone being either made of the same piece of metal with the said shaft or being otherwise constructed and secured firmly to the shaft concentric therewith. This many-grooved

cone constitutes the principal portion of the thread-feeding apparatus, as will be presently explained. The shaft L has also formed upon or secured to it a grooved pulley, *d*, for the reception of a band, *e*, to run round it and round the pulley K of the feed-shaft, and the said shaft L has also secured to it a ratchet-wheel, *f*, and has fitted loosely to it a lever, N, carrying a pawl, *g*, which works in the said ratchet-wheel. The lever N is connected by a rod, O, with the crank-wrist *a*, from which, when the machine is in operation, the said lever derives an oscillating movement sufficient to carry its pawl over one or more teeth of the ratchet-wheel, by which means it is made to impart to the shaft L and cone M an intermittent rotary motion, giving them one movement for every operation of the needle and shuttle, and the shaft L, by means of the pulley *d*, band *e*, and pulley K, is made to impart a corresponding movement to the feed-shaft for the purpose of feeding the cloth. *h* is a slot provided in the lever N for shifting the connection of the rod O to vary the feed.

P is a movable tightening-pulley for tightening the band *e*. A pair of spur-gears may be substituted for the band *e* and pulleys *d* and K, and in that case it will be desirable to arrange the shaft L nearer to the feed-shaft than is represented in the drawings.

The spool R, carrying the needle-thread, may be arranged in any convenient relation to the cone M for the thread to pass once or more times round the said cone, in one of the grooves thereof, on its way to the needle *n*. I have represented the said spool as placed upon a pin, *i*, secured in the table of the machine. The thread is directed from the said cone to the needle *n* by guides *j k l*, arranged in any suitable manner, according to the form and construction of the machine. The thread is represented in red color.

The thread in passing round the cone M is subject to such a degree of friction that it will not slip thereon under any of the ordinary circumstances of the operation of the machine, but will be drawn off the spool and fed toward the needle in every movement of the said cone produced by the action of the wrist *a*, rod O, lever N, pawl *g*, and ratchet-wheel *f*, as hereinbefore described, the quantity thus drawn from the spool being greater or less, according as the movement of the pawl *g* is greater or

less. The said quantity must always correspond with the feed movement of the cloth, for the shaft G of the cloth-feed wheel is driven by the shaft L of the cone M, and as no thread passes the cone except while the feed takes place, the tension of the needle-thread in the several stitches must be uniform if the thickness of the cloth is uniform. The thread-feed and the cloth-feed operating simultaneously causes the quantity to be regulated for every separate stitch, so that if the cloth-feed is altered the thread-feed is altered to accommodate the very first stitch made after the alteration. In case of a sudden increase of the thickness of the cloth, as in the crossing of a seam, the thread will slip on the cone. The several grooves in the cone are to adapt the operation to different thicknesses of cloth, more or less thread being fed, according as it passes round a larger or smaller portion of the cone. In a machine which would always be required to sew the same thickness of cloth a simple grooved or plain cylindrical roller may

be used in place of and would be equivalent to a cone with many grooves.

I will remark that, though the sewing-machine represented is a shuttle-machine, my invention is not limited in its application to that class of machines, but may be used in all kinds of sewing-machines.

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

1. Feeding the thread to the needle of the sewing-machine by means of a shaft, L, rotated by positive connection with the cloth-feeding mechanism, substantially as and for the purposes set forth.

2. The use, in connection with a shaft, L, actuated as above set forth, of a cone, M, provided with a number of grooves, *c c*, to vary the feed of the thread in accordance with varying thicknesses of material to be sewed.

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Witnesses:

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