3 Sheets--Sheet 1.

D. M. SMYTH.

Sewing-Machines.

No. 141,088. Patented July 22, 1873.

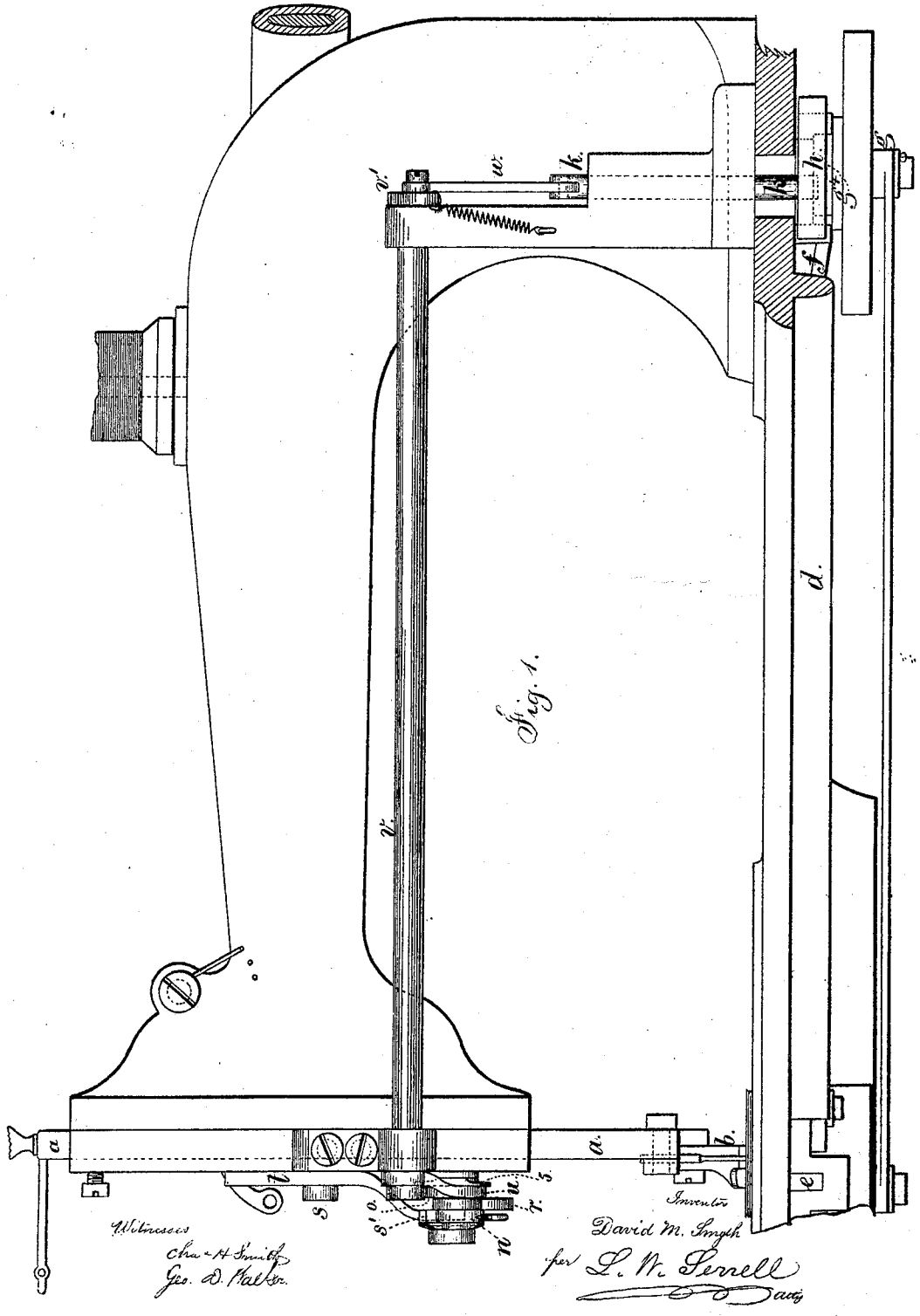

Fig. 1.

Witnesses
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Inventor
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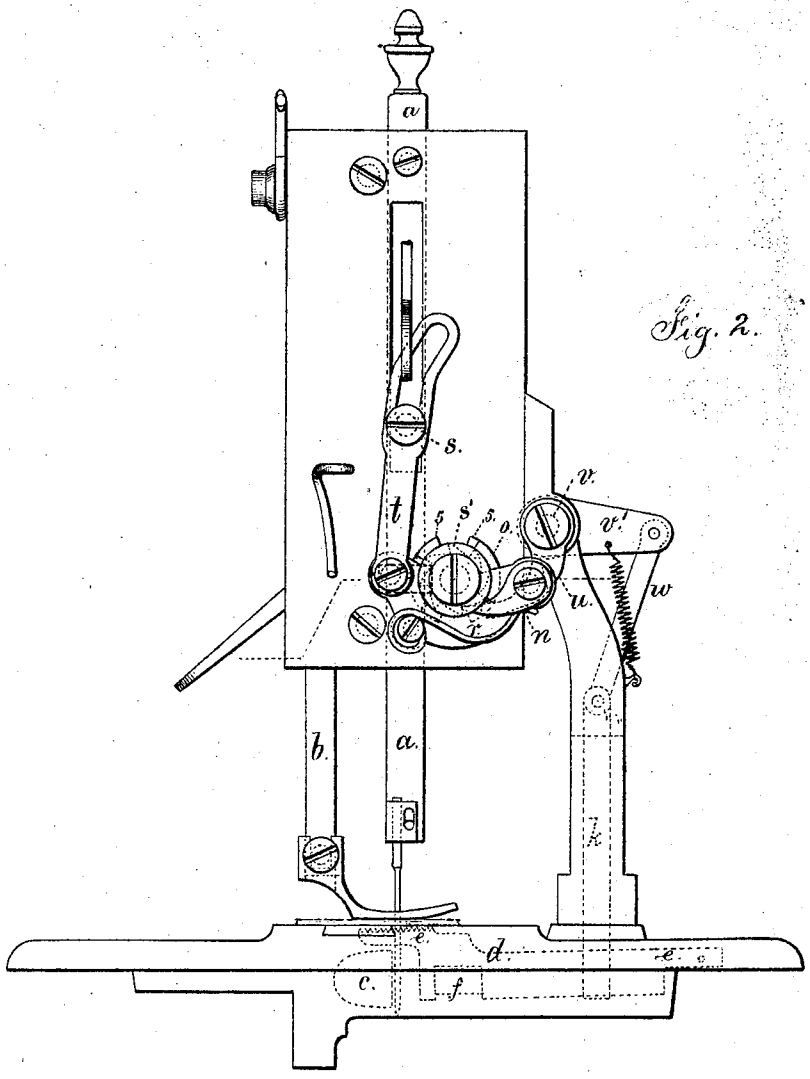

Fig. 2.

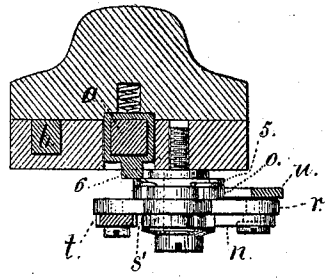

Fig. 3.

Witnesses

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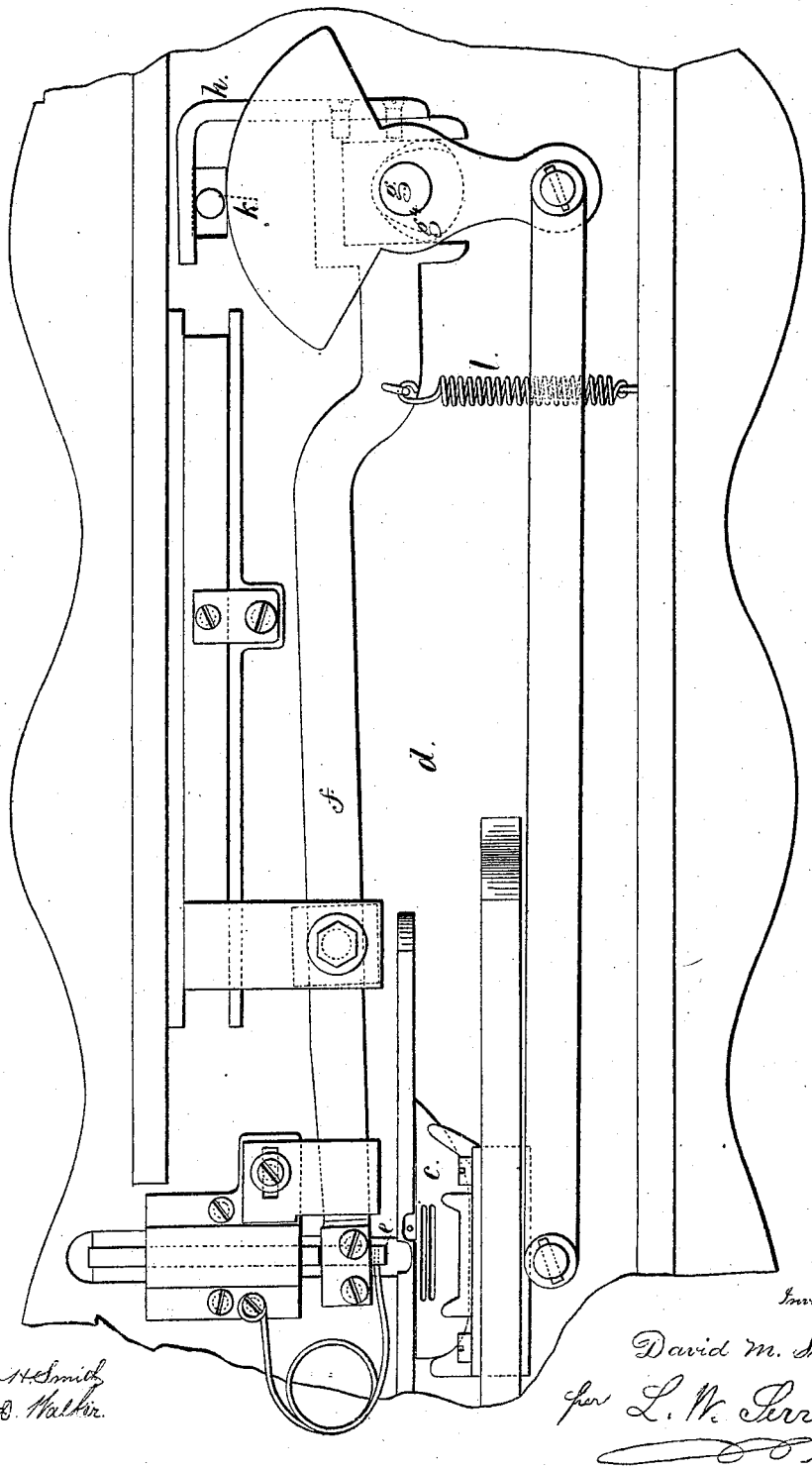

Fig. 4.

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UNITED STATES PATENT OFFICE.

DAVID M. SMYTH, OF LYNN, MASSACHUSETTS, ASSIGNOR TO STICKLER, ELLIOTT & WILSON, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **141,088**, dated July 22, 1873; application filed May 14, 1873.

To all whom it may concern:

Be it known that I, DAVID M. SMYTH, of Lynn, in the county of Essex and State of Massachusetts, have invented an Improvement in Feed-Motions for Sewing-Machines, of which the following is a specification:

Several patents have heretofore been granted to me in which devices are shown for making ornamental and zigzag lines of stitching for boots, shoes, &c. In these devices the feeding mechanism was entirely below the bed of the machine, and reference is hereby made to Letters Patent, numbered 119,246, 122,673, 126,844, 126,845, 130,324, and 130,325.

My present invention is for accomplishing the same objects, and relates to a means for locking out of action the lower feed and bringing the same into action periodically, and in means for giving a lateral stitch or lateral feed by the needle itself; and these two movements brought into action periodically or alternately produce the zigzag, waving, or other character of stitching, according to the shapes of the cams operating in the respective mechanisms.

In the drawing, Figure 1 is a side view of the machine; Fig. 2 is a front view; Fig. 3 is a horizontal sectional view through the needle-bar; and Fig. 4 is an inverted plan.

The needle-bar *a* is reciprocated by any usual mechanism; the pressure-foot *b* is of any desired character; and the shuttle *c*, moved beneath the bed *d*, is operated by competent mechanism. The feed-bar *e* is at the end of the lever *f*, and is operated by a vertical shaft, *g*, and cam, g^4. These parts, however, are all well known and used in machines already in market, and hence do not require a more detailed description. Upon the feed-bar lever *f* I connect an arm, *h*, and introduce a vertical bolt, *k*, that is operated as hereafter described. When this bolt *k* is allowed to descend and pass behind the arm *h*, as seen in Fig. 4, the spring *l* cannot draw the lever *f* toward its actuating-cam, g^4; hence said cam will revolve without operating the feed *e*. This bolt, *k*, hence locks out the feeding mechanism when it is allowed to descend, and then brings into action that feed when the bolt is drawn up.

To operate the bolt *k* I employ a cam, *o*, that is revolved by the pawl *n*, oscillating plate *r*, and link *t* that receives motion from a pin, *s*, that there is in the needle-bar *a* and projects through a slot in the front plate of the sewing-machine, and the slot in the link is of such a length that the link is moved sufficiently to cause the pawl *n* to turn the ratchet-wheel *s'*, cam *o*, and parts connected therewith around one tooth at a time. By shaping the cam *o* in the proper manner it will act through the arm *u*, shaft *v*, arm *v'*, and link *w* upon the bolt *k* to bring the feed-bar *e* into action between such stitches as may be desired, and lock it out of action between other stitches. Adjacent to the cam *o* is a second cam, 5, that acts against a block, 6, that is inserted within the front plate of the machine and projects through the same into the path of this cam 5, and it is preferable that this block project from a loop through which the needle-bar passes, as shown, and this block 6 is made to spring back and forth and follow the undulations of the cam, and the needle-bar is mounted so as to allow of its swinging, as moved by this block, and hence the needle is moved at right angles to the feed motion from the bar *e*. When the block 6 is moved back the needle is swung into a different position, and the stitch will not be in the usual line, but at right angles thereto, and by arranging to bring into action the lateral movement of the needle when the usual feed motion is locked out of action, and the reverse, or to alternate the actions, a great variety of ornamental stitches can be produced.

I claim as my invention—

1. The cams *o* and 5 revolved progressively by a ratchet and pawl, in combination with the swinging needle-bar and block 6 and the locking-bolt *k*, to lock out of action the ordinary feed motion, substantially as set forth.

2. The arrangement of the oscillating plate *r*, pawl *n*, ratchet *s'*, and link *t*, connected with the needle-bar and the arms *u* and *v'* of shaft *v* that actuates the locking-bolt *k*, in combination with the lever *f* and feed-bar *e*, substantially as set forth.

Signed this 22d day of April, A. D. 1873.

D. M. SMYTH.

Witnesses:

S. A. DANIELS,

EDWARD ARNOLD.