P. WATERSTON.

Sewing Machine.

No. 201,966. Patented April 2, 1878.

FIG. 3.

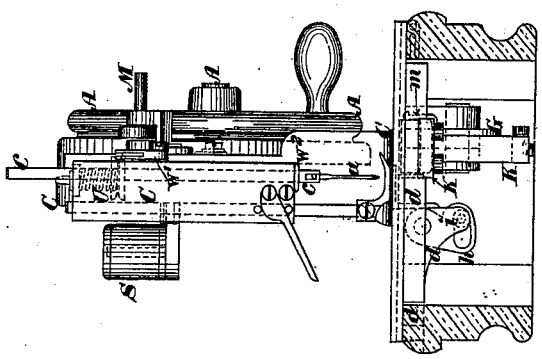


FIG. 1.

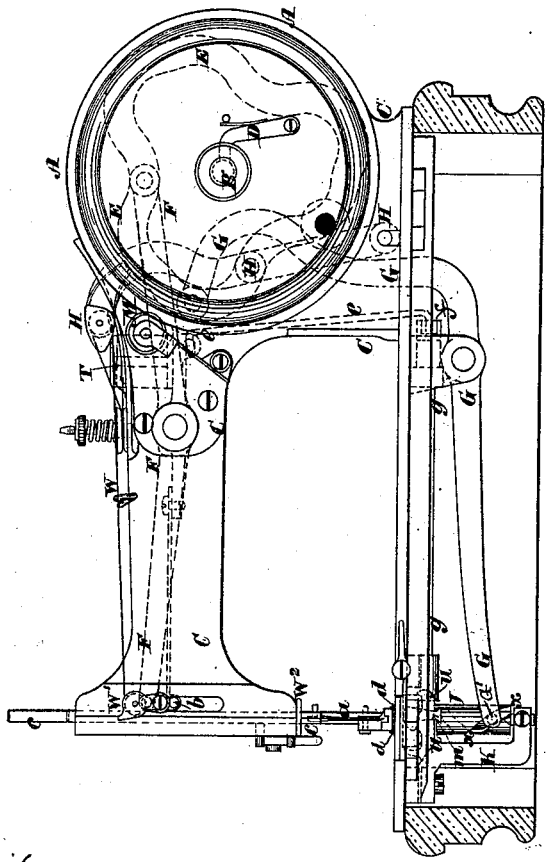
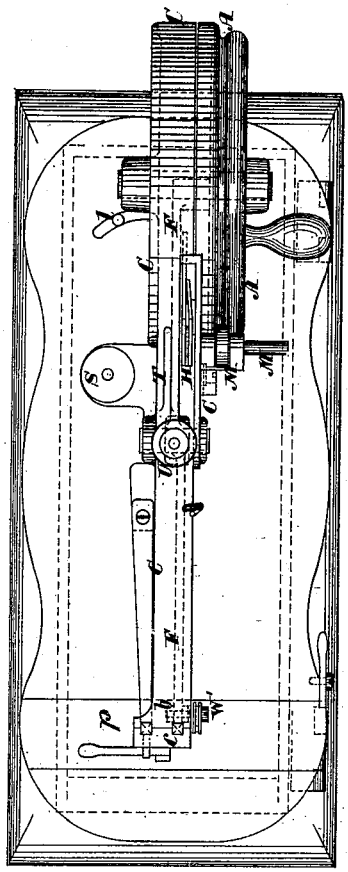


FIG. 2.



Witnesses:—
Chas. J. Gooch
Alex. H. Galt

Inventor:—
Peter Waterston
By Knight Bros
Attorneys

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FIG. 5.

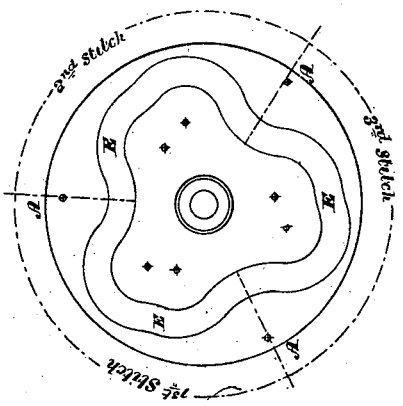
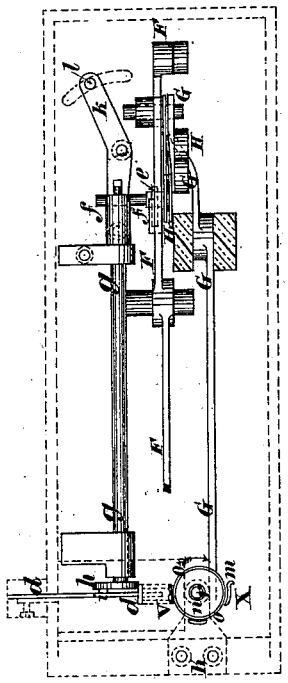


FIG. 4.



Witnesses
Chas. J. Gooch
A. F. Galt

Inventor:
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Attorneys

UNITED STATES PATENT OFFICE.

PETER WATERSTON, OF EDINBURGH, SCOTLAND.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **201,966**, dated April 2, 1878; application filed August 24, 1877; patented in England, January 17, 1877.

To all whom it may concern:

Be it known that I, PETER WATERSTON, of Edinburgh, in the county of Mid-Lothian, North Britain, have invented new and useful Improvements in Sewing-Machines, of which the following is a specification:

This invention, which is described in English Letters Patent No. 220 of 1877, granted to me, has for its object improvements in lock-stitch sewing-machines, and relates to an improved wheel or driver, from which motion is communicated to all the working parts of the mechanism.

Figure 1, Sheet 1, is a side elevation of the machine. Fig. 2, Sheet 1, is a plan of the same. Fig. 3, Sheet 1, is a front end-elevation. Fig. 4, Sheet 2, is a plan view of some of the working parts not seen at Fig. 2, Sheet 1. Fig. 5, Sheet 2, is a rear view of the driving-wheel.

The driving-wheel A is a plain disk, centered loosely on the pin or stud B, fixed in the frame C of the machine, the wheel being retained in position by a spring-catch, D, the point of which enters a groove or channel made round the pin. Two grooves or channels are made in the pin B, and when the catch D enters the inner one the wheel A is in position for sewing. When it enters the outer one the wheel is in position for driving the winder M by frictional contact, the sewing mechanism being meanwhile out of gear.

Under a modification of this arrangement the wheel A may be fixed on the shaft B, the said shaft being loose in the frame and held in driving or winding position by a spring-catch attached to the frame. In the inner side of the wheel A an endless cam-groove, E, is cut, as seen at Fig. 1, Sheet 1, and Fig. 5, Sheet 2, from which motion is communicated to all the working parts of the machine by means of levers F, G, and H, these latter being provided with rollers, which enter the cam-groove, as indicated in dotted lines at Fig. 1, Sheet 1.

The cam-groove E, as it is illustrated on the drawings, has its essential parts so reduplicated or repeated in a continuous groove that for every complete revolution of the wheel A three complete stitches or actions of the sewing parts of the machine are produced. The groove, however, may be so modified that for every complete revolution of the wheel A one stitch only will be produced, or its essential parts may be twice repeated, so as to make two stitches for every revolution; or any other number of stitches greater than three may be performed at each revolution of the wheel, according to the number of times the essential parts of the groove are repeated, such number of times being limited only by the size of the wheel. By this means the sewing speed of the machine may be raised to any desired extent.

The lever F operates the needle *a*, being attached by a link, *b*, to the needle-bar *c*, and the said lever also actuates the feed *d* by means of a link, *e*, which is at its lower end attached to a cross-bar, *f*, Fig. 4, Sheet 2, held in a slot made across the rearward extremity of the shaft *g*. A crank, *h*, formed with a slot in its lower end, is fixed on the forward extremity of the shaft *g*, and into the said slot a roller, *i*, carried on the feed, enters, as seen more particularly at Fig. 6, Sheet 2, of the drawings.

By means of this arrangement, as the power end of the lever F is raised and depressed by the cam-groove E, the shaft *g* is rotated through an arc, and so moves the feed backward and forward, the length of the motion and the length of the stitch being regulated by the position of the cross-bar *f* in the slot of the shaft *g*.

To adjust the bar *f* to the desired position, a lever, *k*, is provided, and by pressing on a pin, *l*, projecting from the said lever to the upper side of the sole-plate, the bar *f* is moved transversely, so as to give a greater or less throw to the feed.

The lever G, which is centered at the under side of the sole-plate of the machine, operates a vertical cylinder, J, which has the looper *m* formed at or attached to its upper end. The cylinder J turns on pivot-points in a bracket or frame, K, bolted or fixed to the under side of the sole-plate, and it has a spiral groove, *x*, cut in it, into which a roller or pin carried on the forward end of the lever G enters, as seen at Fig. 1, Sheet 1, of the drawings.

The cam-groove E, acting on the power end of the lever G, makes its forward or lower end rise and fall, and the pin or roller at this end, acting in the spiral groove *x*, turns the vertical cylinder J and the looper *m* with a recipro-

cating motion through an arc. The travel of the forward end of the lever G and the inclination of the spiral groove in the cylinder J are so adjusted relatively as to cause the cylinder and the looper *m* to turn through an arc equal to two hundred and forty degrees, or thereabout.

I claim—

The combination of driving-wheel A, constructed with a cam-groove, E, needle-lever F, looper-lever G, and take-up lever H, as and for the purpose set forth.

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

PETER WATERSTON. [L. S.]

Witnesses:

GEORGE MACAULAY CRUIKSHANK,

DAVID FULTON.