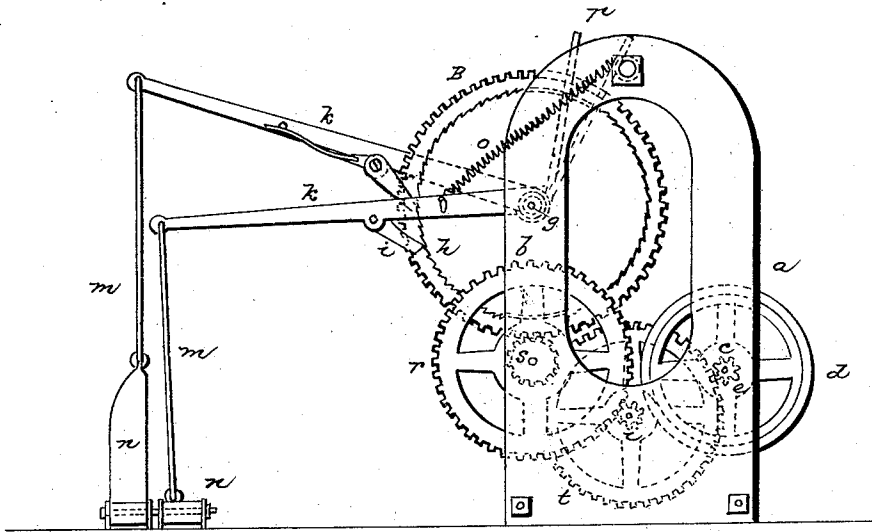


W. S. HALL.

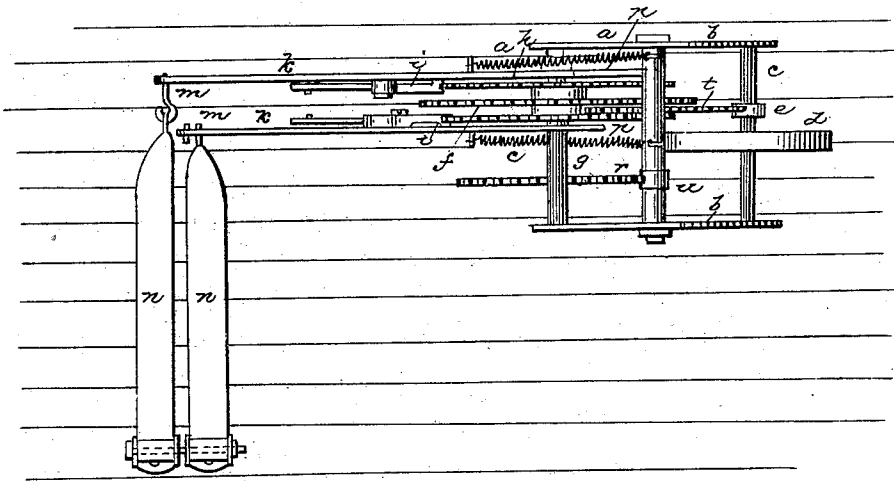
Treadle Mechanism for Sewing Machines.

No. 65,665.

Patented June 11, 1867.



A



WITNESSES:

*S. W. Heddlet.*  
*L. H. Latimer.*

INVENTOR.

*W. S. Hall*  
*Crosby Gould*  
*Attys.*

# UNITED STATES PATENT OFFICE.

WILLIAM SMITH HALL, OF QUINCY, MASSACHUSETTS.

IMPROVEMENT IN TREADLE MECHANISMS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 65,665, dated June 11, 1867.

*To all whom it may concern:*

Be it known that I, WILLIAM S. HALL, of Quincy, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Treadle Mechanisms for Sewing-Machines, &c.; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

The invention relates to a construction and arrangement of mechanism by which power applied through a treadle to drive a sewing-machine or other apparatus may be more practically exerted than with the connection between a treadle and driving-shaft, as ordinarily made.

The invention consists, primarily, in connecting the machine-shaft with the treadle by a train of gears, a spring-lever, and a ratchet-and-pawl mechanism; also, in combination with the machine-shaft, a double set of spring-levers, ratchet-pawls, and treadles, through which power may be applied through both treadles at once, or through one alone, or through each alternately.

The drawings represent a mechanism embodying the invention, A showing a plan, and B a side elevation, of the same.

*a* denotes a frame, in the uprights *b* of which are made the bearings for the gear-shafts. *c* denotes the machine-shaft, or that through which motion is directly imparted to the sewing-machine mechanism or other apparatus to be driven. This shaft is shown as carrying a fly-wheel, *d*, and a gear-pinion, *e*, which, through suitable gears and pinions, is connected with a driving-gear, *f*, on a shaft, *g*. This gear has upon one or each side of it a ratchet-wheel, *h*, (which may be cast integral with the gear, or may be simply fixed upon the same shaft therewith,) and with each ratchet-wheel a pawl, *i*, engages, said pawl being hung upon a pawl-lever, *k*, fulcrumed on the gear-shaft *g*, and being held up to the ratchet by a spring, or being so formed as to be so held by gravity.

Each lever *k* extends back from its pawl, as seen in the drawings, and is connected to the end of a treadle-lever, *n*, by a link, *m*, each pawl-lever *k* being depressed by appli-

cation of the foot to the treadle, and being raised by a spring, *o*, its upward motion being limited by a projecting rod, *p*, on the lever, which, as the lever flies up, strikes any suitable stop on the frame *a*.

The wheel *f* is shown as connected to the machine-shaft *c* by intermediate connecting-wheels *r s* on one shaft, and *t u* on another; but it may, of course, be geared directly to the pinion *e* on such machine-shaft, or through only the intermediates *r s*, the diameter of the driving-wheel and of the pinion, and the diameter of the ratchet-wheel and the length of the pawl-levers in connection with the position of the pawls thereon, having for a sewing-machine preferably such relation that at each descent of either treadle the movement thereby imparted to the driving-gear effects ten or more complete rotations of the machine-shaft. This relation, however, may, of course, be modified in accordance with the speed at which the particular mechanism to which the invention is applied is to be run or the power required to operate it.

Each treadle *n* is independent from the other, and each has its own connecting-rod, pawl-lever, pawl, and ratchet; and by this double arrangement it will readily be seen that the driving-gear *f* may be driven by one foot or by both, and that when both are used they may act alternately or together, as may be desirable.

It will also be seen that while each treadle-lever is being depressed by the foot, and the pawl connected thereto thereby actuates its ratchet-wheel, it is raised to its normal position, when released by the foot, by the action of the spring *o*. Now, while with two sets of ratchets, pawls, levers, and treadles the ratchet-wheel might be continuously rotated by depressing one treadle as the other is raised, it will readily be seen that with one treadle such would not be the result, unless the motion of the ratchet-wheel were kept up by some other means, as the pawl communicates no motion to the ratchet in its rise. To obviate such tendency to impart intermittent rotative motion to the machine-shaft the fly-wheel *d* is placed thereon, to equalize the motion (continuing it when the treadle is ascending) and to accumulate the force. Thus, in starting the machine, or in doing heavy work, both feet

may be applied to the treadle, while when the machine is upon light work, or after being run a few seconds, the machine may be run by one treadle alone.

It will also be seen that the shafts have no "dead-centers," and that each can only run in one direction—a matter of much importance in many light mechanisms run by foot-power, and which, as now operated, have always to be guided by hand in starting, and often have also to be started by hand when the shaft is upon the dead-center.

I claim—

1. Combining a machine-shaft with a treadle by a ratchet, pawl-lever, pawl, and connecting-rod, arranged to operate together, substantially as described.

2. The double sets of treadle-levers, pawl-levers, pawls, and ratchets, arranged to operate both independently or in conjunction, substantially as set forth.

Witnesses: WM. SMITH HALL.  
FRANCIS GOULD,  
S. B. KIDDER.