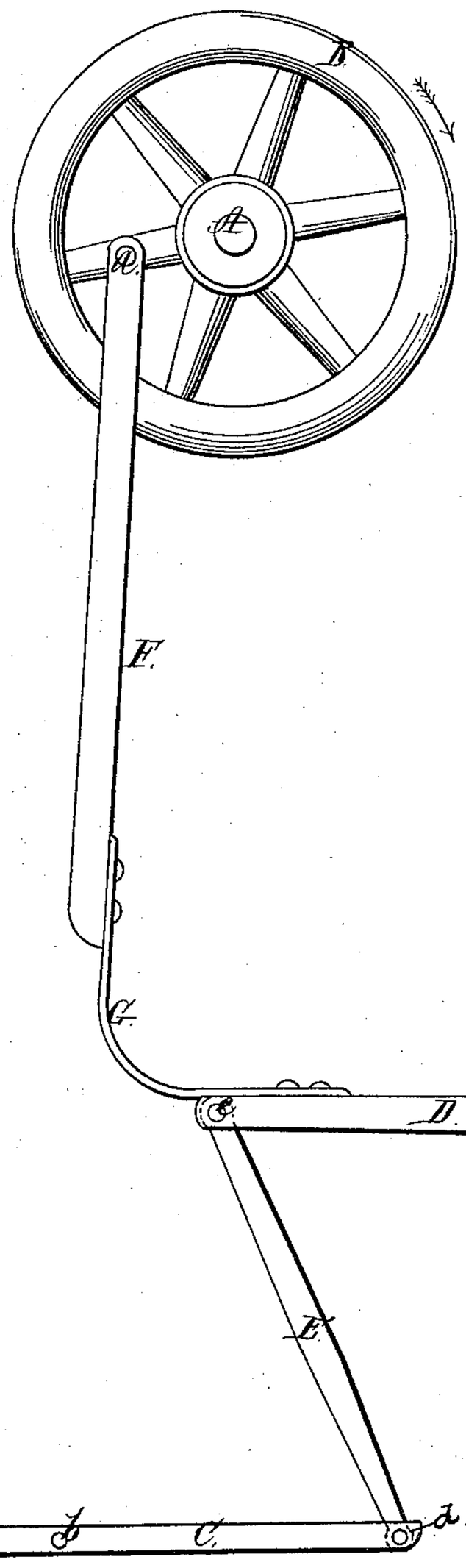
A. A. Raymond,

Treadle Connection.

No. 29,994. Patented Sep. 11, 1860.



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UNITED STATES PATENT OFFICE.

ALFRED A. RAYMOND, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN TREADLE-CONNECTIONS FOR MACHINERY.

Specification forming part of Letters Patent No. **29,994**, dated September 11, 1860.

To all whom it may concern:

Be it known that I, ALFRED A. RAYMOND, of Salem, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Treadle-Connections for Machinery; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which represents a side view of my invention.

My invention is more especially intended to be applied to sewing-machines, but is applicable with the same advantage to other machines worked by treadles.

It consists in a novel connection of a spring, a rocking bar or lever, and two connecting-rods, for transmitting motion from a treadle to its crank, whereby the crank is caused to be helped past its centers when in motion, thus rendering the operation of treading less laborious, and is prevented stopping on the centers, thus obviating all difficulty in starting it.

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

A is the crank-shaft, carrying the fly-wheel B, to which is secured the crank-pin *a*. C is the treadle, working on the fulcrum *b*. D is the rocking bar or lever, arranged some distance above the treadle, and moving upon a fulcrum, *c*. E is a rigid connecting-rod connected by a pin-joint, *d*, with the treadle, and by another pin-joint, *e*, with the rocking bar or lever D. F is another connecting-rod, having at or near its upper end a hole or box to fit the crank-pin *a*, and having its lower end connected by a curved spring, G, of the bow kind, with the rocking bar or lever D, the said spring having a rigid attachment both to the said rocking bar and to the rod F.

The movement given to the treadle C by the foot imparts, through the rod E, an oscillating movement to the lever or bar D, which, through the spring G and rod F, causes the revolution of the crank-pin *a* and the rotary motion of the wheel B and shaft A. In this operation the angle formed by the rod F and bar D is constantly changing, and in consequence the curvature of the spring G is constantly varying, and the said spring can only be in its normal condition at two nearly-opposite points in the revolution of the crank-pin. The fulcrum *c* should be so adjusted relatively to the shaft A and the curvature of the spring that the normal condition of the spring occurs just after the crank-pin has passed its "centers," and hence the adjustment will depend upon the desired direction of the revolution. With such adjustment the spring G in approaching either center is so strained that as soon as it arrives very near or at the center the elastic force thus developed tends to throw it past. In the example represented the parts are arranged to produce the rotary motion in the direction of the arrow shown near the wheel.

I do not claim, broadly, the employment, in a treadle-connection, of a spring so applied as to help the crank past the centers; but

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

The combination, with the treadle and crank-pin, of the rod E, rocking bar or lever D, spring G, and rod F, the whole applied and operating substantially as and for the purpose herein set forth.

ALFRED A. RAYMOND.

Witnesses:

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