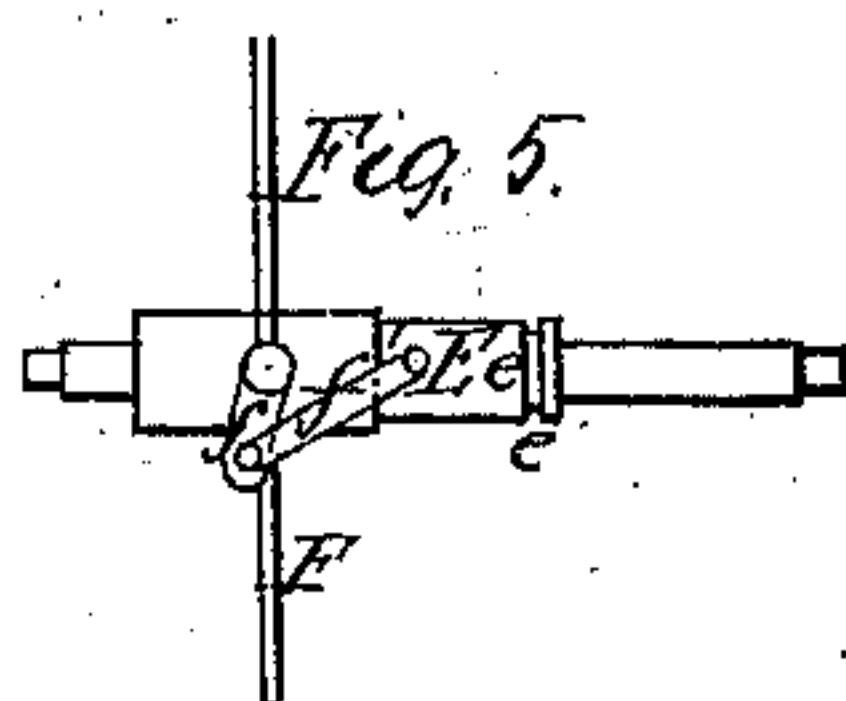
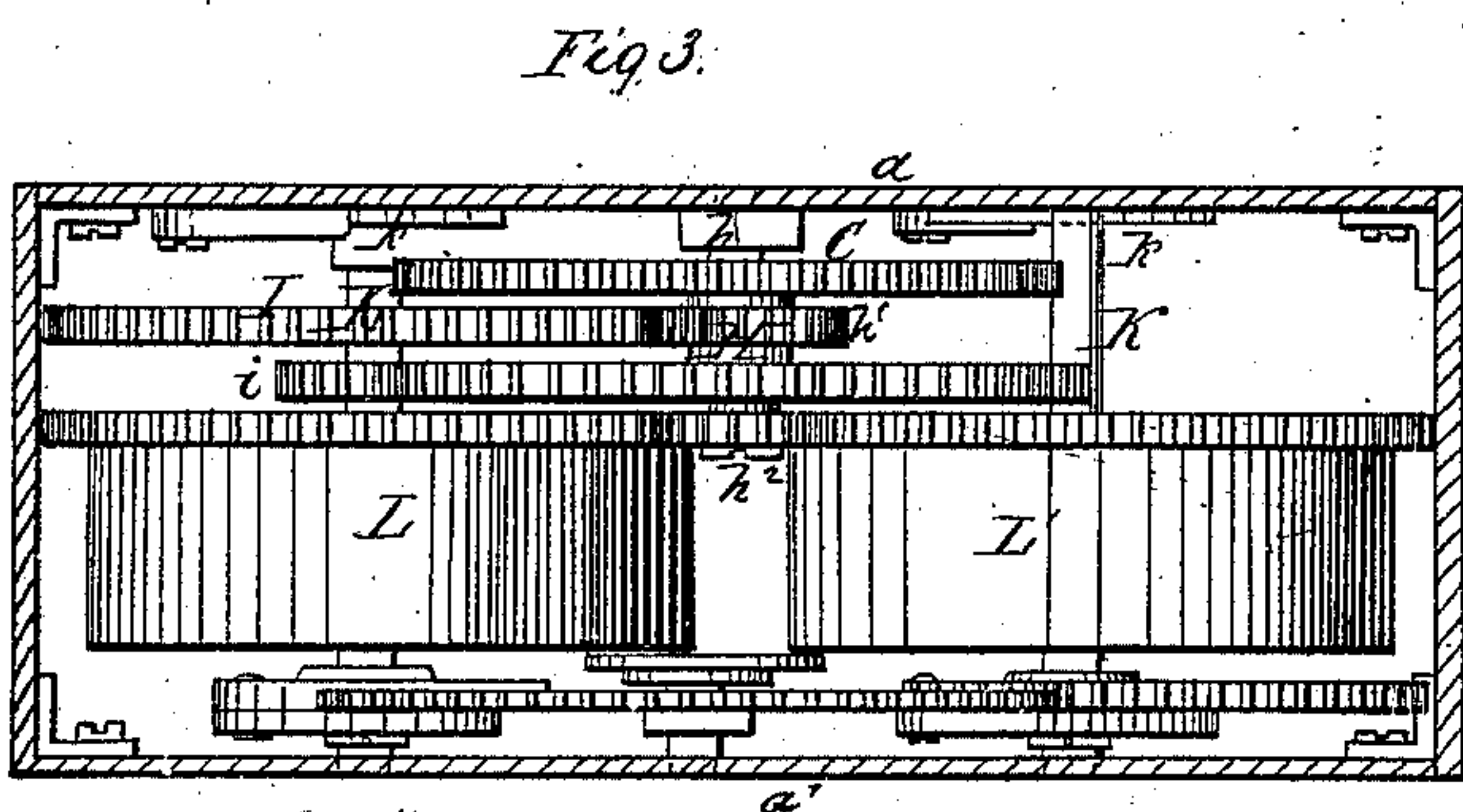
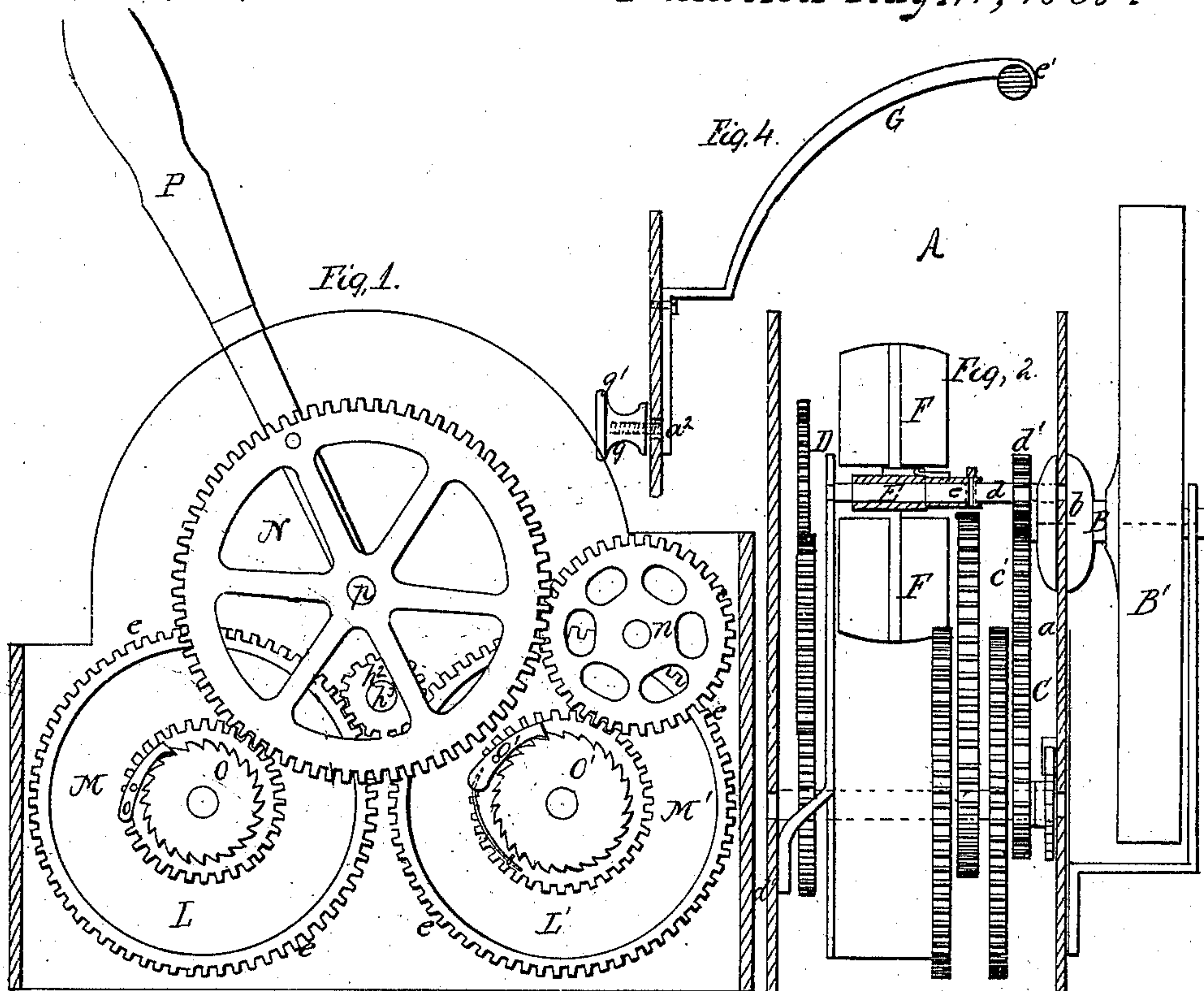


A.H. Enholm,
Motive Power for Sewing Machine,
No. 80,815. *Patented Aug. 11, 1868.*



Witnesses,
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A. H. ENHOLM, OF ST. LOUIS, MISSOURI.

Letters Patent No. 80,815, dated August 11, 1868.

IMPROVEMENT IN MOTIVE-POWER FOR SEWING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, A. H. ENHOLM, of St. Louis, county of St. Louis, and State of Missouri, have invented certain new and useful Improvements in Motive-Power for 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 drawing, and the letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a side view, showing the spur and pinion-wheels and ratchet-devices for winding the springs.

Figure 2 is an end view, showing the arrangement of the wheels, spring-boxes, and fan-regulating sleeve.

Figure 3 is a top view looking into the box, showing the longitudinal position of the spring-boxes, ratchets, and wheels.

Figure 4 is a separate drawing of the lever for regulating motion of fan.

Figure 5 is a separate drawing of the sleeve, and its levers operating the same, from the motion of the lever in fig. 4.

My invention provides sewing and other like machines with a motive-power that is simple and practical in construction, compact in form, one that will prove durable in use, and that can be manufactured at an exceedingly moderate cost.

It is an admitted fact by all who are familiar with this class of inventions, that a machine, to meet the demands of the market, must possess the foregoing prerequisites, and also that its mechanism must be of that character, and arranged in such a manner as to insure uniformity of speed in its operation; and also that the machine must be provided with the means whereby the rate of speed can be regulated, so that it can readily be increased or diminished, as occasion may require, in order that the power may be applicable to all styles of machine, and all kinds of work.

To accomplish this, and meet the public demand, is the object of my present invention, and the nature of the same is as follows:

In a suitable box or case I arrange a system of cog-gearing, so connected with the mechanism by which the power is produced, and the fly-wheel and its driving-shaft, that the power received from the former is transmitted in an accelerated form to the latter, and thence to the sewing-machine.

The motive-power consists of two coil-springs, which are arranged in suitable drums, which are attached to the main shaft of the machine.

One of the most important features of my invention is found in the means by which these springs are wound or operated. The drums are provided with a series of teeth, which are arranged around the edge of their periphery. A small pinion-wheel is so placed as to mesh with these teeth. On the face of these drums are placed two cog-wheels, one of which engages with a larger cog-wheel attached to a hand-lever, and the other with an intermediate pinion-wheel, so arranged as to also engage with the lever-wheel.

The advantage of this arrangement is this: It matters not in which direction the handle is moved, both drums are caused to make a revolution, and one or the other of the springs is wound once, thus giving the springs an intermittent motion, each spring being held, as fast as wound up, by means of a ratchet and spring-pawl attached to the shaft around which the spring works.

Another most important feature of my invention is found in the method whereby I am enabled to regulate the speed of the machine, increasing or diminishing the same at pleasure.

On an ordinary shaft, provided with a pinion-wheel, which engages with a suitable driving-wheel, works a sleeve, to which are attached two or more blades or wings of a fan. In a groove on the end of this sleeve rests the end of a lever-arm, whose position is controlled by means of a short screw-arm and head. Each of the wings or blades is provided with an angular flange-plate, to one end of which is attached a wire rod, which has its other attachment in the sleeve. Simply by shifting the lever, you change the position of the sleeve and reverse that of the blades, by means of which, it will be seen, the rate of speed can instantly be changed.

Instead of the system of springs for providing the motive-power, the well-known mechanical equivalent of the same, the cord and weight, could readily be applied to the drums, and would operate with like effect.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

A represents the frame of the box or case, which contains the entire operating-mechanism. This box or case A is constructed with a removable bottom and sliding sides, in order to facilitate access to the mechanism, should occasion require. It is made of metal, and is oblong in form, and cast with large semicircular bearing-plates, $a a'$, on its sides.

B is a shaft, to which is attached the fly-wheel, B' . This shaft has one of its bearings in a boss, b , which is attached to the side a . Its other bearing is an upright arm, b' , which is formed with an elbow, and is attached to the side of the frame. On the other end of this shaft B is attached a pinion-wheel, c , which engages with a large gear-wheel, C, by which it is operated, and through which motion is imparted to the shaft B and fly-wheel B' . This wheel C also engages with the pinion-wheel d' on the shaft d , and operates the same. This shaft d has its bearings in the side a and in an upright plate, D, which is formed with an elbow, by means of which it is secured to the side, a' , of the frame. On this shaft d works the sleeve E. This sleeve is provided with slots, $e e$, by means of which its position is allowed to be changed.

There passes through each of these slots $e e$, and is attached directly to the shaft d , the bearing-arm of the blade or wing F of the fan. These blades or wings F F are provided with small angular flange-plates, $f f$, to which are secured a bent-wire rod, f' , its other end being attached directly to the sleeve E. e' is a groove in the sleeve E, in which rests the end of the bent circular lever-arm G, by means of which the sleeve and fan, and their connecting-devices, are all operated. The other end of this lever-arm G is provided with a screw-thread, g , and projects through a slot in the end a^2 of the frame. On this screw-thread is secured a thumb-head, g' . The gear-wheel C is secured to the shaft h , to which are also attached a spur-wheel, H, and two pinion-wheels, h^1 and h^2 . The shaft h has its bearing in the side a' of the frame. The spur-wheel H engages with a pinion-wheel, i , and the pinion-wheel h^1 with a gear-wheel, I, both attached to the main shaft K. K K' are the main shafts, and have their bearings in the sides a and a' of the frame. To these shafts are attached the drums L L', that contain the coil-springs. One end of these springs is attached to the shaft K, and the other to the drum. $l l$ are a series of teeth cast around the edge of the periphery of the drums L L'. These teeth engage with the pinion-wheel h^2 on the shaft h . M M' are two gear-wheels, which are placed on the outer face of the drums L L'. The wheel M engages with the main spur-wheel N, and the wheel M' with the intermediate pinion-wheel n , which also gears with the spur-wheel N. O O' and $o o'$ are ratchet-wheels and spring-pawls, by which the springs are held as fast as wound up. P is a hand-lever, which is firmly secured to a shaft, p , as is also the wheel N. The shaft p has its bearing in the side, a' , of the frame, and in the upright plate D.

The operation is as follows:

The lever-arm P, which passes through a slot in the top of the frame, is worked backward and forward, at each movement revolving both of the drums, and also at each movement making a complete wind of one or the other of the springs. It will be observed that the diameter of the wheels M and M', and also of the intermediate pinion-wheel n , being only half of that of the wheel N, and the latter being provided with twice the number of teeth, that while it is allowed to travel only in a semicircle, and consequently a half revolution, it insures a complete revolution of the springs and drums on the main shaft at each movement. As fast as the drums are wound, they and the main shafts K and K' are held by the ratchet and pawls $k k$, while the springs are held by the ratchets and pawls O O' and $o o'$. As soon as fully wound, the machine is started, and through the system of gearing hereinbefore fully described, motion is at last imparted to the wheel C, and is by it transmitted to the pinion-wheel c , and to the shaft B and fly-wheel B' . Motion is then communicated to the sewing-machine by connecting the shaft B therewith, or by means of a driving-wheel and belt, or a pitman connection.

Supposing the machine to be in operation, and at the highest rate of speed, the blades or wings F F of the fan are then parallel with the sides of the frame.

Now it is desirable, for some reason, to diminish the rate of speed. This can readily be accomplished, simply by moving the bent circular lever-arm G, which operates the sleeve E, which will throw the blades or wings F F in a diagonal position, or reverse them entirely. When the blades are reversed entirely, the speed of the machine is soon so slackened that simply by placing the hand upon the fly-wheel the machine can instantly be stopped.

The system of gearing and ratchet-pawls is such as to permit the fly-wheel to be turned in a reverse position, should occasion require, to replace a needle, or for other purposes.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent of the United States, is—

1. The drums and springs, when the same are operated by the lever and intermediate pinion-wheel, substantially as described, as and for the purpose specified.
2. The drums L L', with their springs, when the same communicate their power to the main driving-shaft of the machine, through a system of intermediate gearing, and the whole is so combined and arranged as to operate substantially as described, as and for the purpose specified.
3. Regulating the speed of the machine by means of the sleeve E, lever G, and fan-blades F F, when the same are constructed and arranged so as to operate substantially as described.

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

A. H. ENHOLM.

Witnesses:

J. McKENNEY,
H. C. McKENNEY.