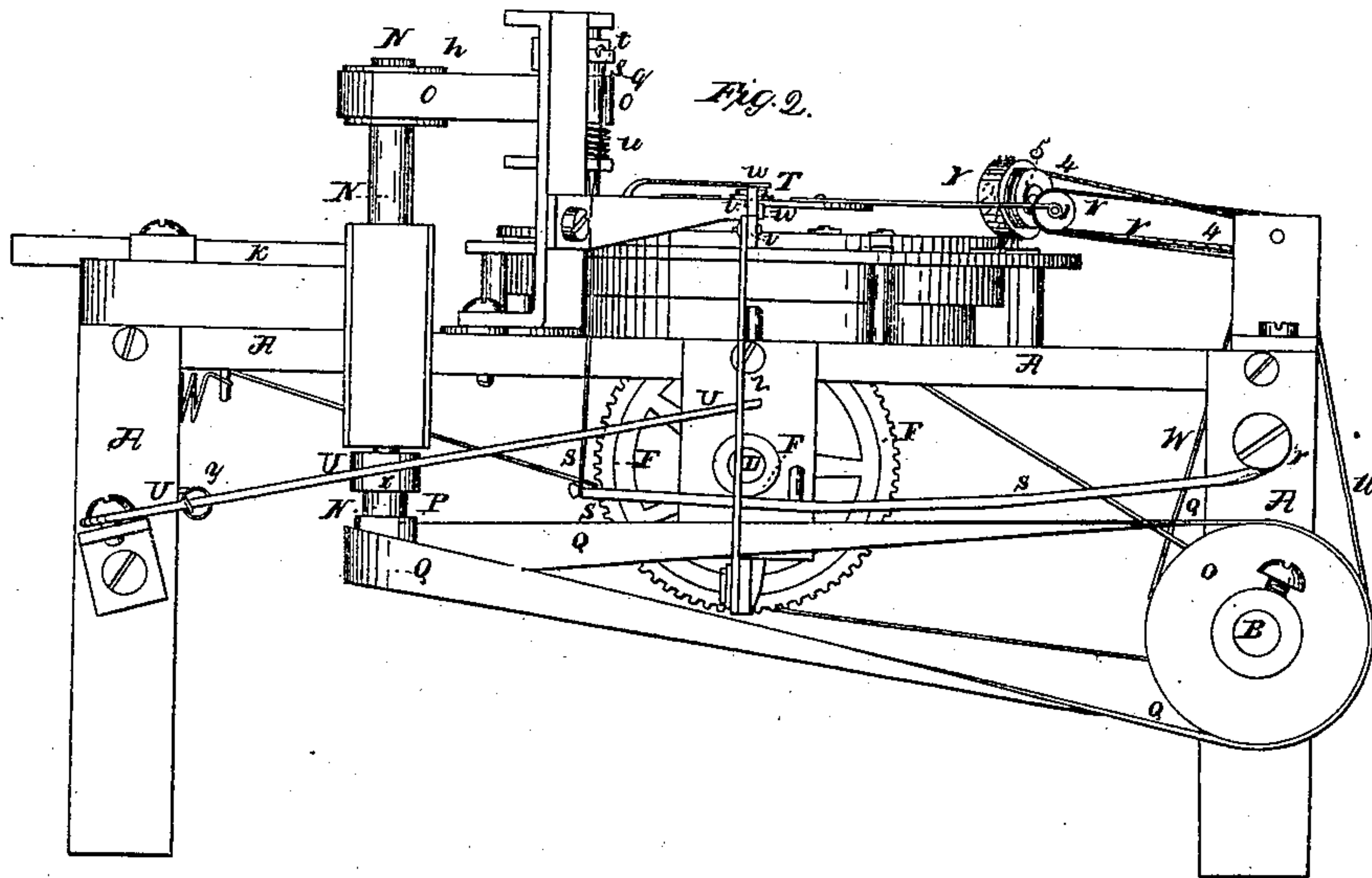
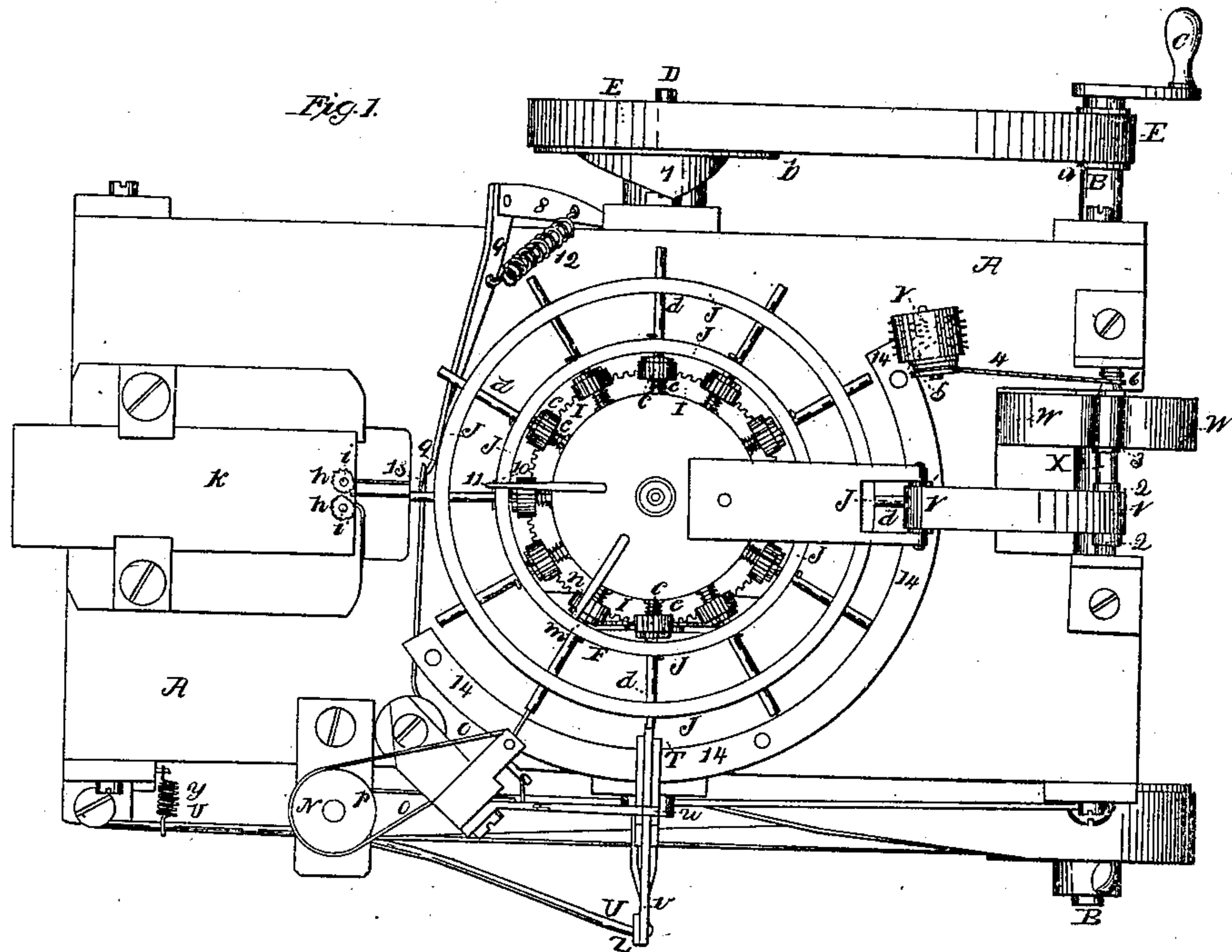


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No. 68,429. Patented Sept. 3, 1867.

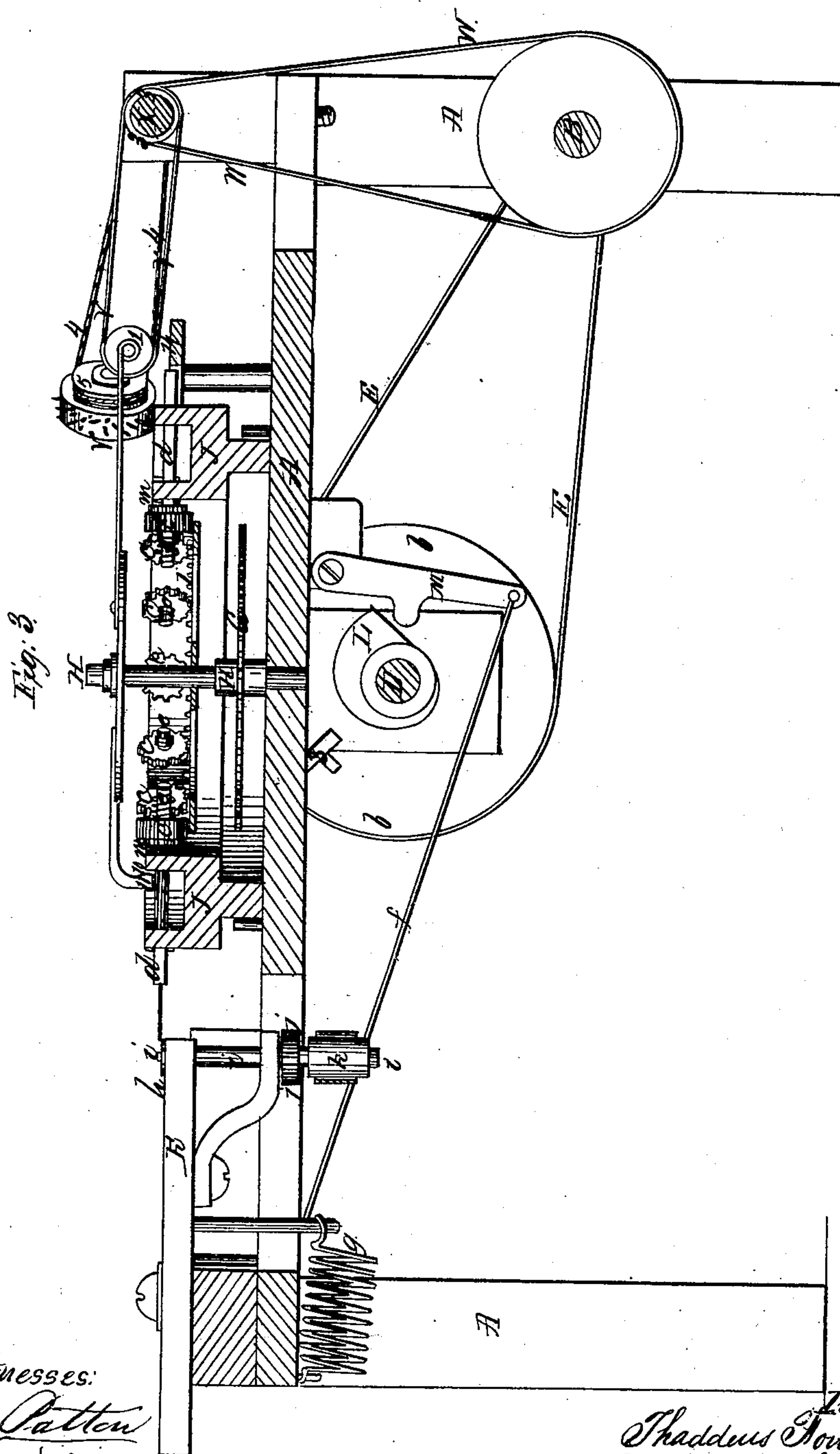


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No. 68,429.

Patented Sept. 3, 1867.



Witnesses:

Witnesses:
James D. Patton
 Shof. of Chamberlain

Inventor

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By Atty. A. B. Soughton.

United States Patent Office

THADDEUS FOWLER, OF SEYMOUR, CONNECTICUT.

Letters Patent No. 68,429, dated September 3, 1867.

IMPROVEMENT IN MACHINES FOR MAKING SEWING-MACHINE NEEDLES.

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, THADDEUS FOWLER, of Seymour, in the county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Machines for Making Sewing-Machine Needles; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a top plan of the machine.

Figure 2 represents an elevation of one of its sides.

Figure 3 represents a longitudinal central section through the same.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

My invention relates to a machine for making sewing-machine needles, wherein the blank is automatically fed up, turned, grooved, drilled, pointed, and polished, as will be explained in connection with the drawings.

A represents a substantial table and frame for containing all the operative parts of the machine. On the table or frame A there is a shaft, B, which may be driven by a crank, C, or by a pulley, by any first-moving power, and from this shaft is transmitted the power that operates the various devices for accomplishing the several successive operations in forming the needles. Around a small pulley, *a*, on one end of the shaft B, and around a larger pulley, *b*, on the end of a second shaft, D, there passes an endless belt or band, E, for giving motion to said shaft D, and upon this shaft, which is underneath the bed or table, there is a vertical cogged gear, F, that takes into and turns a horizontal gear, G, on a vertical shaft, H, and upon this shaft also, above the gear G, there is another gear, I, which has cogs on its rim projecting upward, and which take into and rotate a series of frictional spur-gears, *c*, arranged on a series of mandrels, *d*, that radiate from a common point, of which the shaft H is the centre. These mandrels *d*, with their spur-gears *c*, are arranged in a carrying and holding-wheel, J, that is intermittently moved, and then held whilst the series of operations is performed, as will be explained. The spur-gears *c* are not permanently fastened on their respective mandrels *d*, but are held thereto by springs *e* which cause sufficient friction to make the gears revolve the mandrels ordinarily, but so that when necessary any mandrel may remain stationary whilst its gear may move; and thus the machine may have a constant motion, whilst some of its parts remain fixed or in a fixed position. The blanks that are to be operated upon or converted into needles are placed in suitable holes or sockets in the outer ends of the mandrels, and are fed around and operated upon, as will be explained. A slide or carriage, K, is placed and guided on top of the table, and is moved up toward each blank, as it comes opposite to it, by means of a cam, L, on the shaft D, which takes against a pivoted arm or lever, M, and to which arm or lever the carriage is connected by a rod, *f*, and when the cam ceases to act upon the arm or lever, or runs out, a spring, *g*, which is expanded by the moving up of the carriage, by its contraction draws back the carriage for the next succeeding operation. Upon the carriage K are arranged two milling tools or burs *h h*, which are upon the upper ends of shafts *i i* that pass down through the carriage, and have upon them gears *j j*, by which they are rotated towards each other, and to or against the blank between them. The power to drive the mills or burs is taken from a vertical shaft, N, by means of an endless belt that passes around a pulley, *k*, on one of the shafts *i*, and this pulley-shaft, through its gear *j*, drives its mate or fellow. The object of the mills or burs *h* is to cut the grooves in the blank, and, when these grooves are cut diametrically opposite each other, the blank is moved along to the drill where the eye is drilled. The mills or burs being horizontal, they cut the grooves on the sides, as it were, of the blank. The drill is arranged vertically, as seen at *l*, and consequently the blank must be turned a quarter revolution, so that the eye may be drilled through from groove to groove. For this purpose there is a pin, *m*, passed through each mandrel *d*, which projects far enough to come against a stop, *n*, and when said pin is against said stop the mandrel cannot turn, though its pinion *c* may turn on it. These pins *m* are so arranged in the mandrels that when they come against the stop *n* the grooves will be in the proper position for the drill to properly drill the eye, and are so held until the eye is drilled through. The drill *l* is rotated by an endless belt, *o*, which passes around a pulley, *p*, on the vertical shaft N, and a pulley, *q*, on the drill-stock. The shaft N derives its motion from the main driving-shaft B, through the pulleys O P, and the band Q passing around them. In addition to the rotating motion of the drill *l* it must have a feeding motion to the blank, so as to drill clear through it, or from groove to groove. For this purpose I arrange as follows: On the shaft D

there is an eccentric, R, that works against a rod, S, fastened at one of its ends *r* to the main frame, and moves said rod downward. To the opposite or free end of said rod S a link, *s*, is connected, which extends upward, and is attached to an arm, *t*, connected to the drill-stock, and as the eccentric moves the rod S it draws the drill down far enough to feed it through the blank, which, of course, is a very short distance, and when the cam ceases to act on the rod the recoil of the spring *u* raises up the drill for the next operation.

The partially-formed needle is then moved along and stopped in its feeding-circuit under the pointing instrument T, but continues to revolve around its own axis, to be pointed. This pointing instrument is nicked like a fine file, and is hung upon an arm, *v*, that is reciprocated through or on a guide, *w*, to make its motions uniform and accurate. The arm *v* is operated as follows: On the vertical shaft N there is a cam, *x*, that works against a rod, U, that is fastened to the main frame, and controlled or held up against said cam by a spring, *y*. The free end of the rod U is connected to a pivoted arm or lever, *z*, on the upper end of which the arm *v*, that carries the pointing instrument T, is attached; said pointing instrument being inclined to give the proper taper to the needle. As the partially-made needle revolves rapidly under the pointing instrument, which moves back and forth, the pointing is soon done.

Next the partially-made needle is fed around and stopped under the polishing-belt V, which is an emery belt, passing over pulleys 1 2, and driven from the main driving-shaft B by an endless belt, W, passing around a pulley thereon, and around a small pulley, 3, on the shaft X that drives the polishing-belt. The needle is rapidly rotated around its own axis under the polishing-belt, and the latter having also a travelling motion, the polishing is quickly done.

Next the needle is fed along and momentarily stopped under the scratch-wheel Y, which cleans out the grooves where the polishing-belt will not reach, and the needle is completed. The scratch-wheel is driven by a belt, 4, passing around its pulley 5, and a pulley, 6, on the shaft X, and when the needle thus finished passes the scratch-wheel it can be drawn out from its mandrel and another blank inserted.

The intermittent motion given to the wheel J, that carries around the mandrels and blanks in them to the several devices that operate upon the blanks, and complete and form it into a sewing-machine needle, is attained as follows: On the pulley-wheel *b* there is a cam, 7, that strikes against a pivoted arm, 8, and moves said arm on its pivot. To this arm 8 is pivoted a dog, 9, that takes against one of the mandrels (said series of mandrels forming a ratchet as it were,) and moves that mandrel into proper position, so that its blank will be operated upon by the mills or burs *k*. When the mandrel arrives at the exact point its pin 10 comes against the stop 11, and it is there held whilst the burs cut the grooves in it. The dog or pawl 9 is returned by the spring 12, or otherwise, for the next succeeding similar operation, and, that there may be no backward motion to the feed-wheel J, a spring-hook, 13, catches over or behind the mandrel and prevents any backward motion, whilst it does not interfere with the forward feeding of said carrying-wheel.

A circular rim or rest, 14, extends around far enough to support the projecting blank, or partially or completely made needles, whilst they are being acted upon by the drill, the pointer, the polisher, and the scratcher. The carriage K forms a rest or support for the projecting blank whilst the mills are cutting the grooves.

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

1. In combination with an intermittently revolving feed-wheel, carrying a series of mandrels, a dog or pawl for moving said feed-wheel, when said dog or pawl takes against the mandrels themselves as a ratchet to turn the wheel by, substantially as described.

2. I also claim, in combination with a feed-wheel, and a series of mandrels therein, and with the milling and drilling mechanism, a mechanism for stopping and holding the blank under the drill at a quarter revolution from the position it occupied at the mills, substantially as and for the purpose set forth.

3. I also claim, in machine-drilled needles, the drilling of the hole through the blank, from the bottom of one groove to the bottom of the opposite groove, by a mechanism arranged and automatically operated, substantially as herein described and represented.

THADDEUS FOWLER.

Witnesses:

A. B. STUGHTON,
R. C. LAMBERT.