

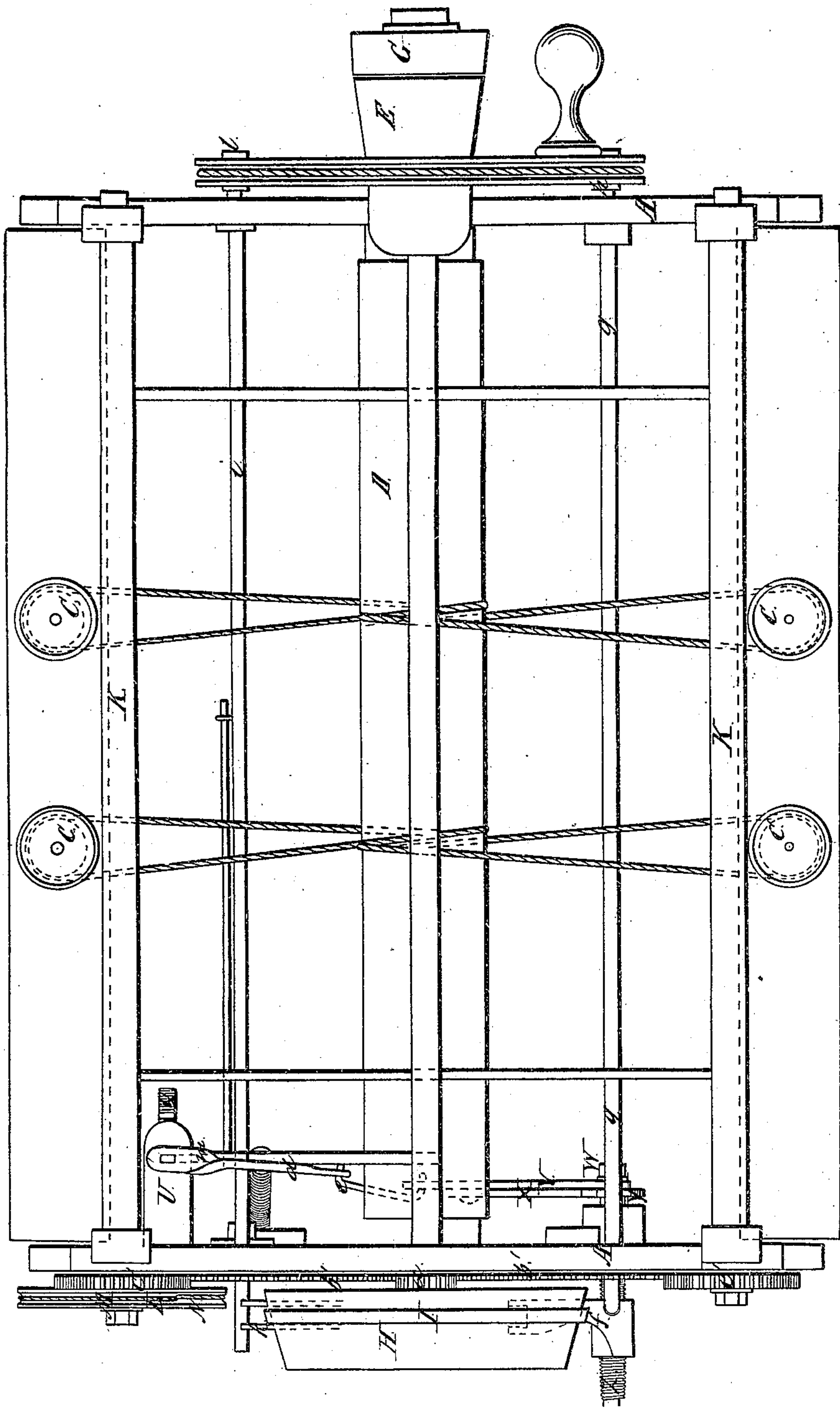
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H. Luther
Spinning Mach.

Nº 13,726.

Patented Oct. 30, 1855.

Fig. 1

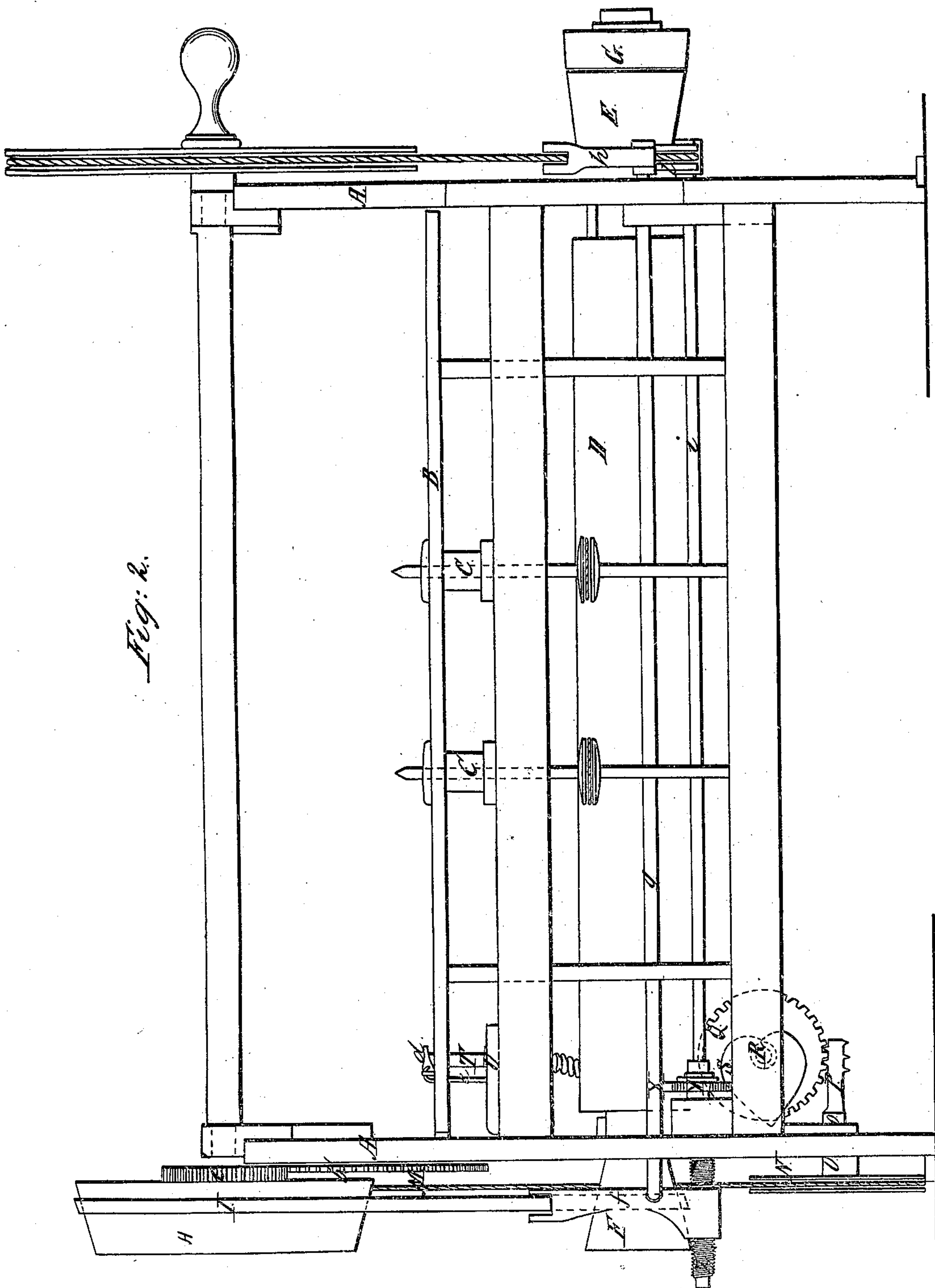


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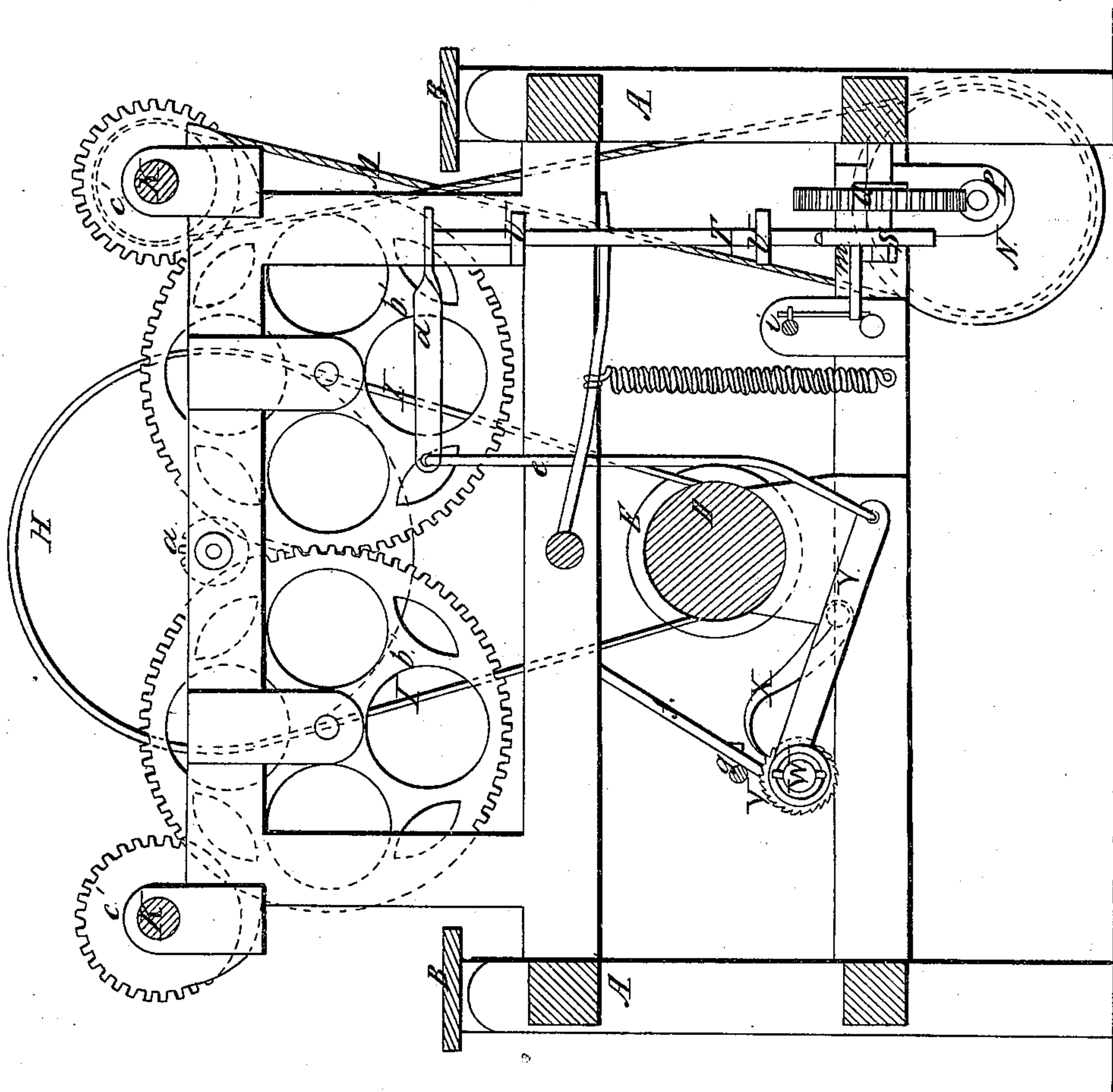
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Fig: 4.



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Fig: 5.

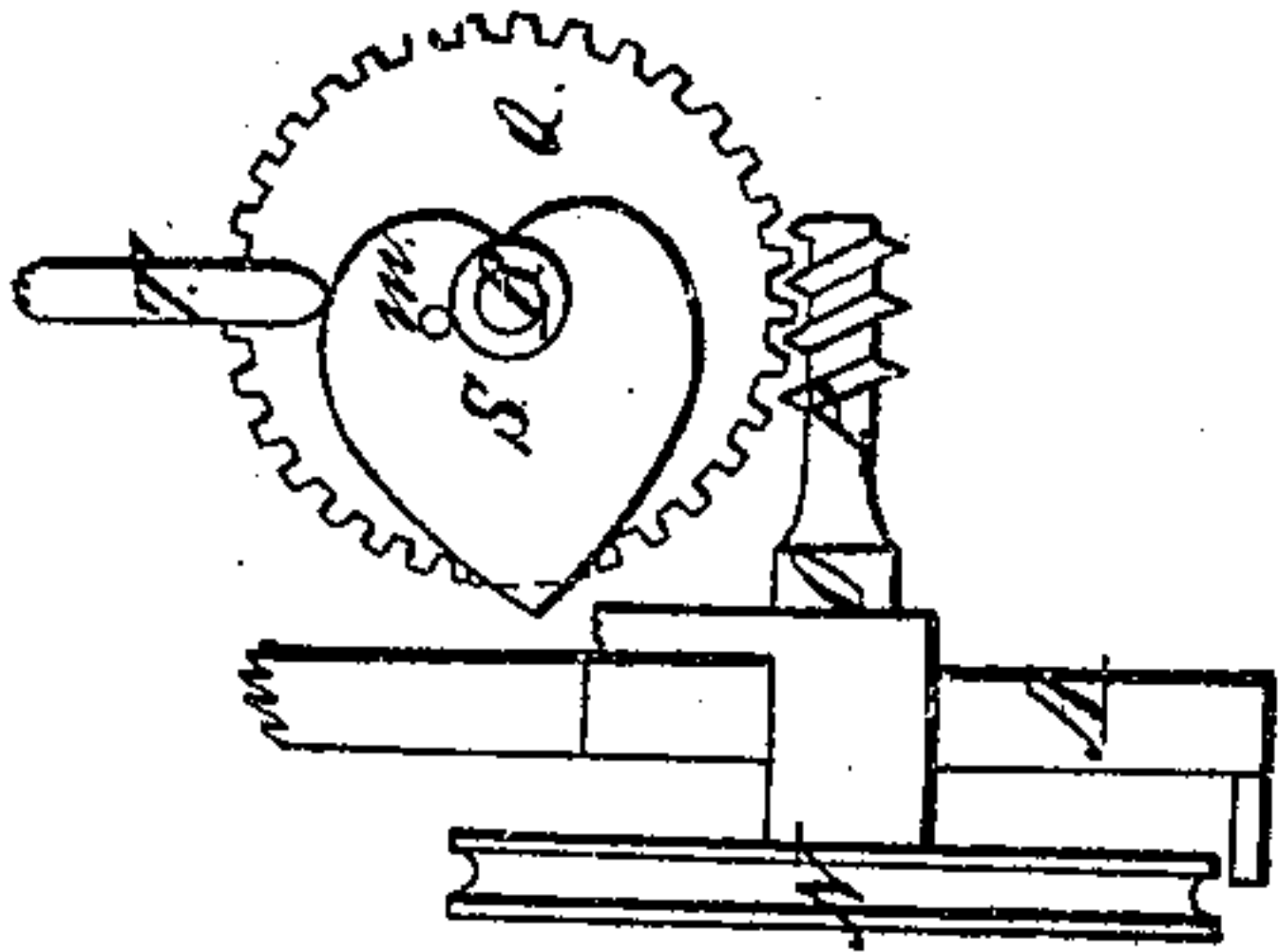
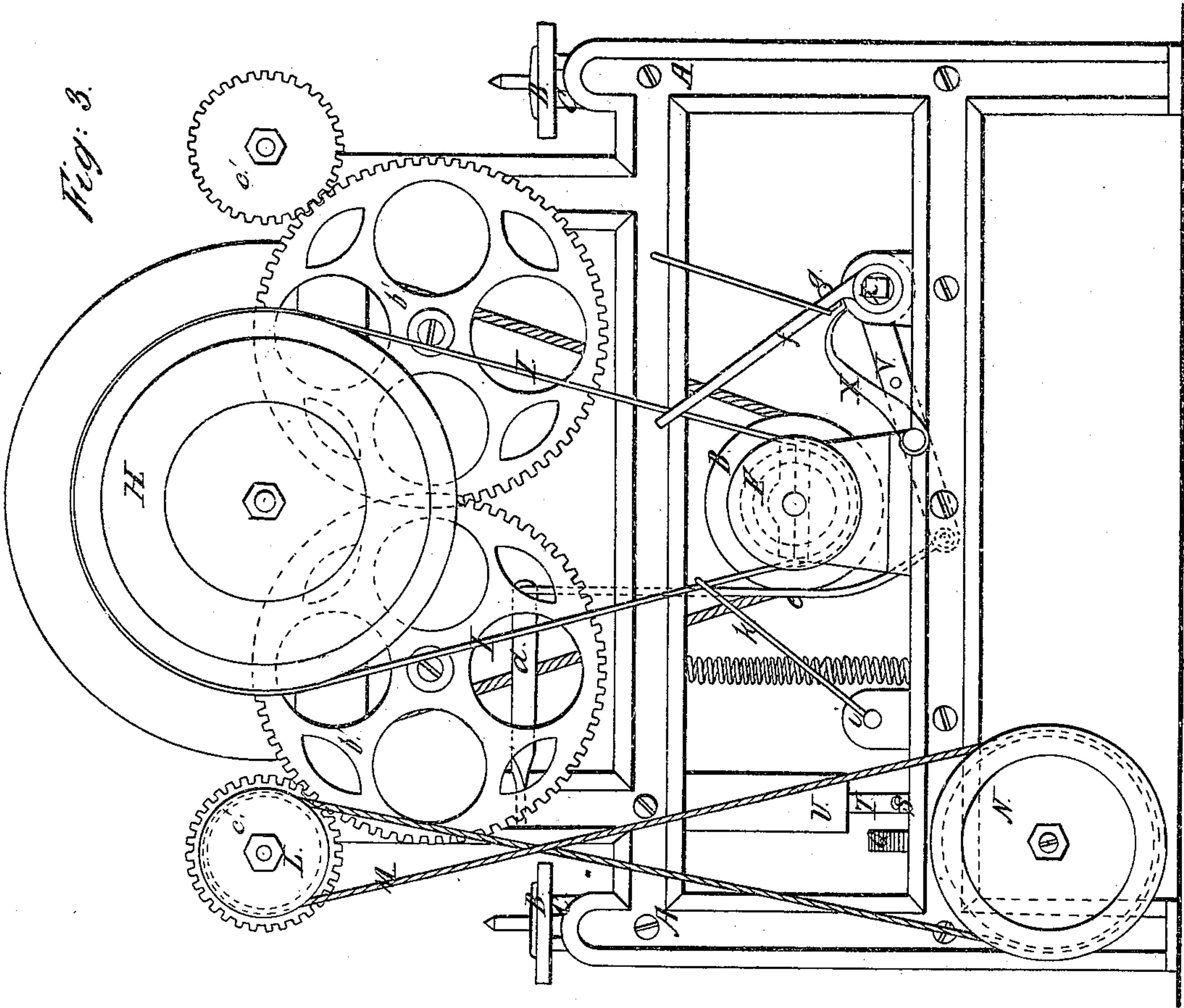


Fig: 3.



UNITED STATES PATENT OFFICE.

HENRY LUTHER, OF PROVIDENCE, RHODE ISLAND.

RING AND TRAVELER SPINNING FRAME.

Specification of Letters Patent No. 13,726, dated October 30, 1855.

To all whom it may concern:

Be it known that I, HENRY LUTHER, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Ring and Traveler Spinning Frames, whereby a uniformity of twist and strain on yarn is produced during the operation of spinning and winding it on either a spindle or bobbin; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1, denotes a top view of a ring, traveler spinning frame provided with my improvement. Fig. 2 is a front elevation of it. Fig. 3, is an end elevation; Fig. 4, is a transverse section taken so as to exhibit the mechanism immediately adjacent to that end of the machine shown in Fig. 3.

In these drawings, A, represents the frame of the machine which is constructed in the ordinary manner and provided with rails B, B, and spindles, C, C, C. Extending longitudinally through the said frame is the drum, D, for driving the said spindles. The journal at one end of the drum is provided with a cone pulley, E, while that on the opposite side of said drum so furnished with another cam pulley, F, each of which is arranged with its largest diameter outward.

By the side of the cone pulley, E, and on the same journal with it, there is a loose pulley, G, for the reception of the driving belt of the machine when such machine is not in operation; such driving belt being shifted to the cone pulley, E, in order to set the machine in movement. Above the cone pulley, E, there is another cone pulley H, arranged as seen in the drawings. An endless belt, I, runs around the two pulleys F, and, H, and communicates motion from the lower to the upper of the two.

By means of a train of gears, *a*, *b'* *b'*, and *c'*, *c'*, see Figs. 1 and 2, motion is carried from the large cone H to the two rollers K, K, which constitute portions of the two sets of delivering rollers or mechanism generally applied to spinning frames of this character. Around a pulley, L, fixed upon the shaft of one of the delivering rollers, K, an endless cross belt, M, extends and also works around and imparts motion to a grooved pulley, N, fixed upon a short shaft

O, see Fig. 5, which is an end view of the said pulley and representation of the machinery immediately connected with its shaft, *o*. An endless screw, P, is fixed on the inner end of said shaft, *o*, and operates in a worm gear, *q*, upon whose shaft, R, there is fixed a cam or heart S. A vertical rod, T, rests upon the periphery of the said cam, is supported in a suitable bracket, U, and has an arm *d*, projecting at right angles from it and connected to a lever, V, by a rod, *e*, as seen in Fig. 4, the said rod being hinged both to the arm and the lever. The said lever turns freely on a horizontal shaft, W, and carries a spring impelling pawl X, that works in a ratchet Y, fixed upon the said shaft. On the shaft there is a long screw, *z*, which passes and works through the lower end of a belt fork, *f*, whose upper end receives the endless belt, I, between its prongs.

By means of a slide rod, *g*, the belt fork is connected with another belt fork, *h*, situated near the cone pulley, E, and made to embrace the driving belt. Another sliding shaft or rod, *i*, may be arranged on the opposite side of the spindle drum and be provided with belt forks as seen at, *k*, *l*, such belt forks being applied respectively to the main driving belt and the endless belt, I, by means of a rod, *i*. The said sliding rod, *i*, may be connected with a crank pin, *m*, extending from the inner side of the cam or heart, S. When the said cam or heart S is put in rotation a reciprocating sliding movement will be imparted to the slide rod, *i*, and so as to cause the belt, I, and the driving belt to be simultaneously moved on their pulleys. This also takes place when the two belt forks, *h* and *f*, are moved by means of the mechanism connected with and made to operate the screw, *z*, such mechanism being intended for regulating the twist and strain of the yarn while it is being laid upon bobbins.

The mechanism above described for giving motion to the slide rod, *i*, is employed for regulating the twist and strain on the yarn when the machine is used in the formation of caps upon the spindles.

It is an established fact that the strain on the yarn during the operation of spinning it by the use of the ring and traveler will be increased with the speed of the spinning frame.

When frames are run at about one rate of

speed whether their bobbins are empty or full, a very injurious variation of strain on the yarn has been found to be created by the action of the traveler while the bobbin is being filled, there being generally speaking not only too much strain on the yarn, when the filling of the bobbin first commences, and not enough upon it when the bobbin is nearly filled. The variation of the strain on the yarn is produced by the peculiar manner in which the draft of the yarn is exerted on the traveler while the bobbin is being filled, it being greatest when the bobbin is empty and growing less during the operation of filling the same, the friction of the traveler on its ring being thereby varied so as to produce a variable strain upon the yarn. By not only using cone pulleys at both ends of the spindles driving drum, but machinery constructed and applied to them and the delivering rollers substantially in manner as specified, the speed of the frame will be regularly increased during the filling of the bobbin and be made to produce a uniformity of strain on and twist of the yarn.

During each revolution of the heart or cam, S, the lever, V, will be depressed and raised so as to give motion to the ratchet, Y, and its screw, Z, the screw operating the belt forks, *f*, and, *h*, so as to move the driving belt and belt, I, upon their cone pulleys in such manner as to increase the speed of the machine as may be required.

When the cone pulleys are applied to operate the sliding shaft *i*, and its belt forks *k*, *l*, the speed of the machine will be regu-

lated as occasion may require in order to produce uniformity of twist and strain on the yarn during the operation of building cops upon the spindles. 40

As an increase the speed of the spindles it becomes necessary to provide for a due increase of speed of the delivering rollers in order that the delivery of the yarn may be increased under the increased rotation of the spindles. The difficulty to be overcome by my improvement is not produced by increasing or diminishing the delivery of the yarn, but results from the peculiar action and friction of the traveler upon its ring while a bobbin is being filled, a variation in the speed of the machine in manner as above described serving to overcome such difficulty. 45 50

What I claim as my invention is— 55

Combining with the twisting mechanism and the delivering rollers or mechanism of a ring and traveler spinning frame mechanism, a mechanism substantially as described which while the cap or bobbin increases in size shall so increase the rotary movements of the spindles, and the delivering rollers as to maintain uniformity in the twist and strain of the yarn, as specified. 60

In testimony whereof I have hereunto set my signature this thirty-first day of January A. D. 1855. 65

HENRY LUTHER.

Witnesses:

JEROME B. KIMBALL,
CHARLES V. WARE.