

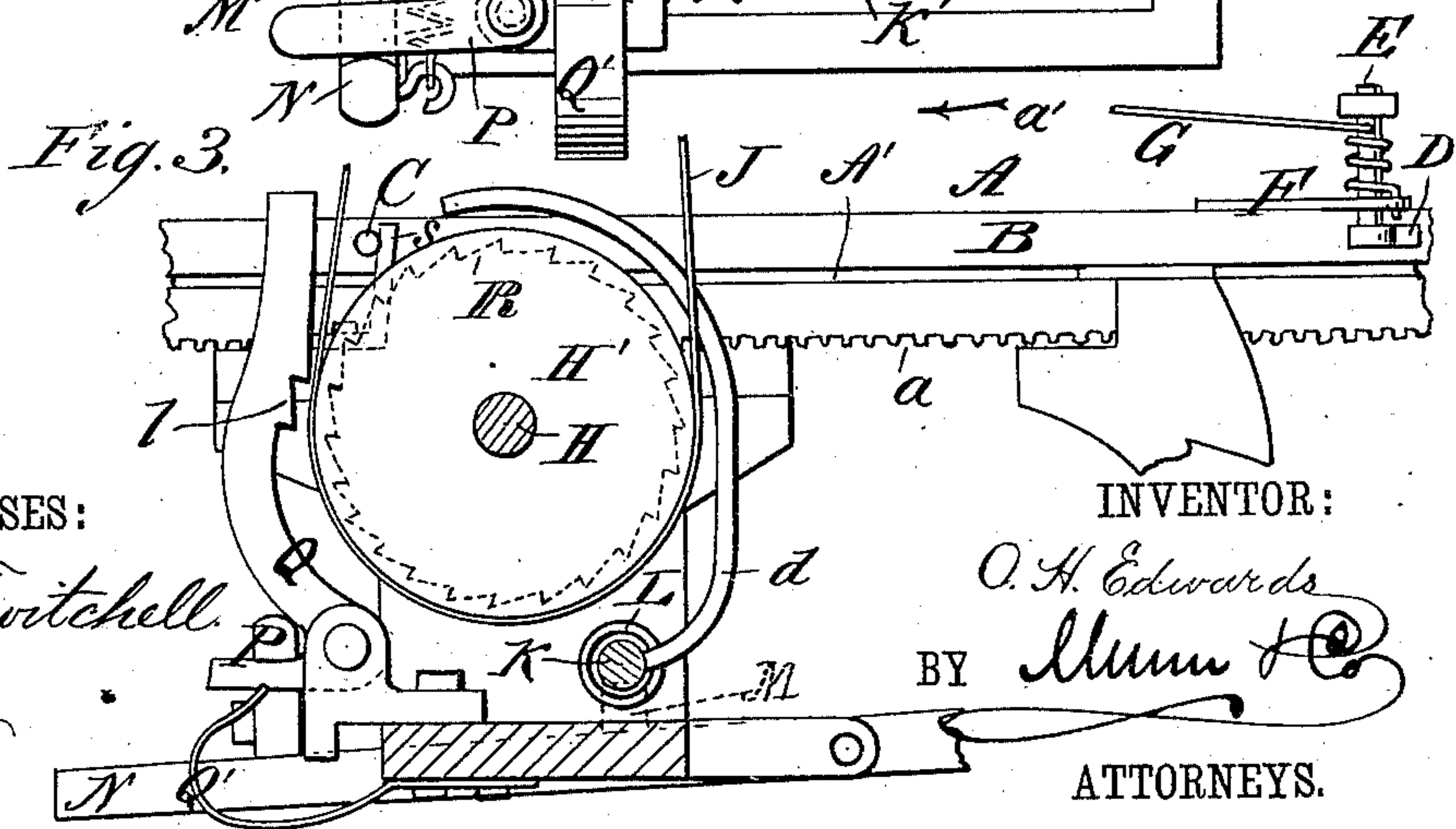
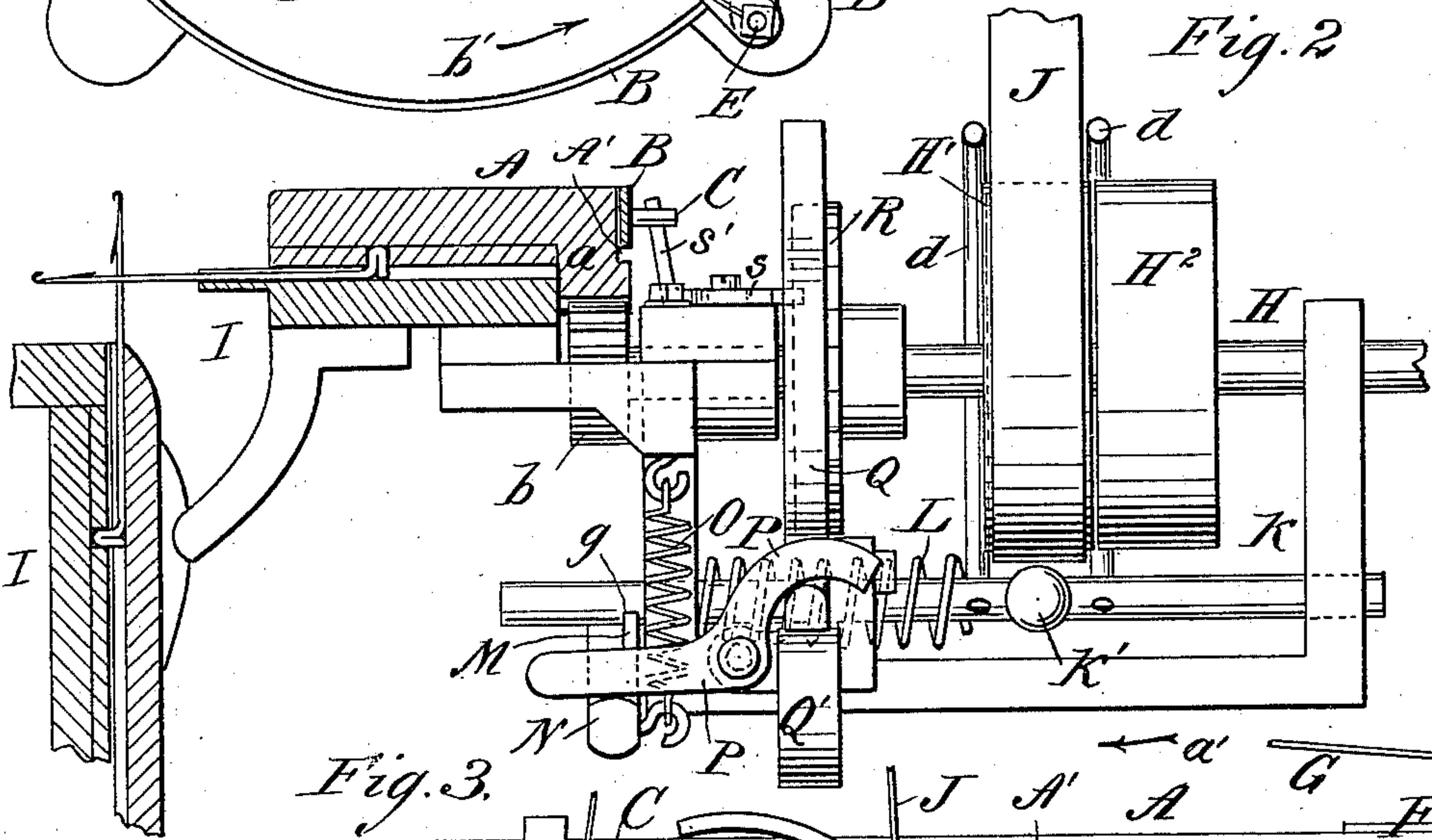
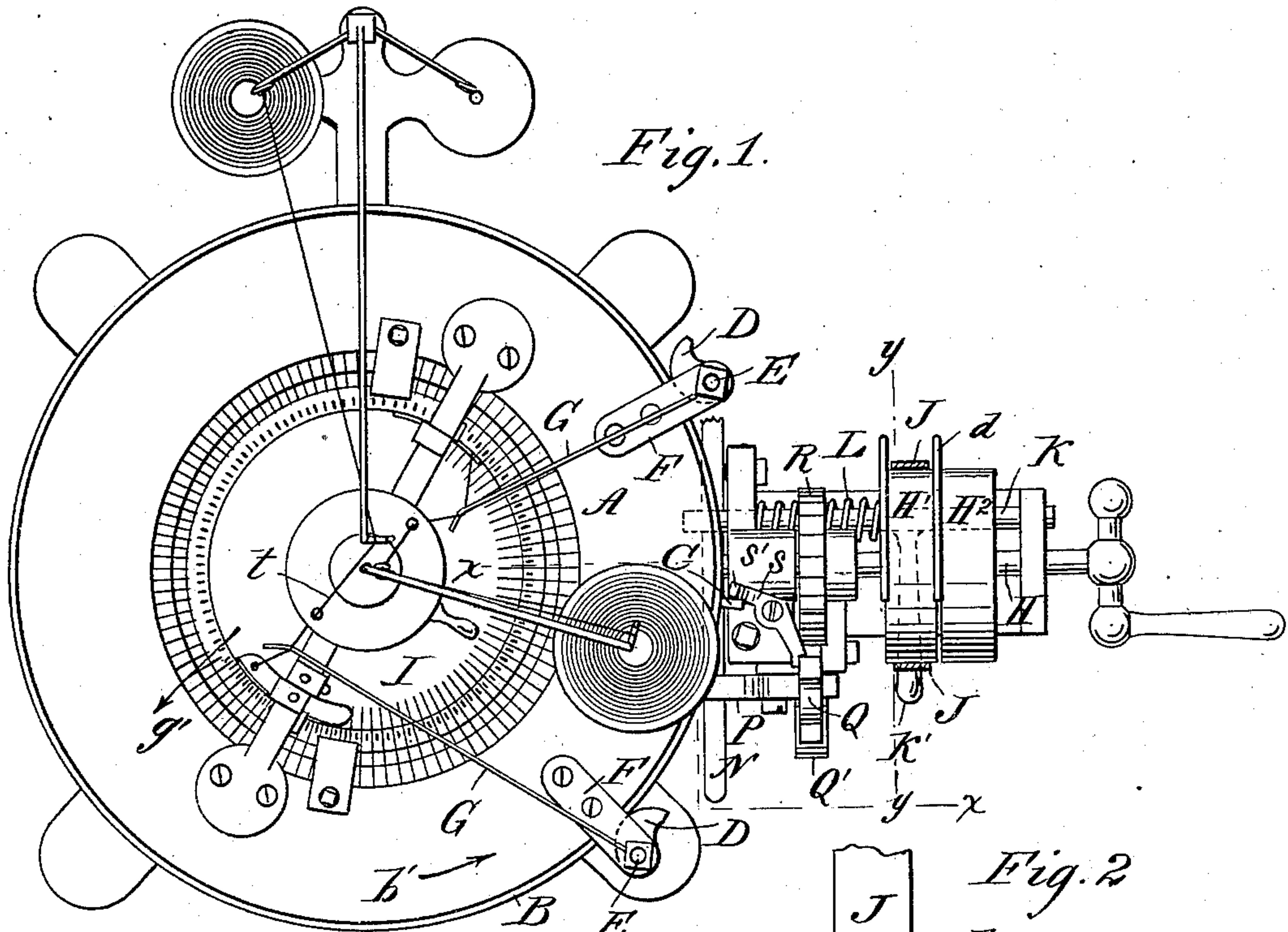
(No Model.)

O. H. EDWARDS.

STOP MOTION FOR KNITTING MACHINES.

No. 311,238.

Patented Jan. 27, 1885.



WITNESSES:

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UNITED STATES PATENT OFFICE.

OLIVER H. EDWARDS, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO FREDERICK H. McCOUN, OF SAME PLACE.

STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 311,238, dated January 27, 1885.

Application filed September 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, OLIVER H. EDWARDS, of the city, county, and State of New York, have invented an Improvement in Stop-Motions for Knitting-Machines, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved device for automatically stopping a knitting-machine in case the thread breaks.

The invention consists in the peculiar construction and arrangement of parts, as hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of a knitting-machine provided with my improved stop-motion. Fig. 2 is an enlarged sectional view of the same on the line *xx*, Fig. 1. Fig. 3 is a sectional view on the line *yy*, Fig. 1, of the parts shown in Fig. 2.

The revolving ring A of a knitting-machine is provided with an annular recess, A', in its outer edge, in which recess a ring, B, is placed, which rests loosely on the bottom of the recess. The ring B is provided with an outwardly or laterally projecting stud, C. A cam, D, is secured to the lower end of each of the short shafts E, journaled in arms F, secured to the ring A, and projecting a short distance from the same. A spring-wire, G, has one end secured in the end of an arm, F, is then coiled around the shaft E, and passed through or secured to the same, and is then extended toward the needle-ring I, and has its end bent slightly to form a catch for preventing the thread from slipping off the said wire. That edge of each cam D toward the ring B is curved eccentrically, and can be roughened or serrated, as can also the outer surface of the ring B. The ring A is provided on its under side with a circular rack, *a*, with which a pinion, *b*, engages, which is mounted on one end of a driving-shaft, H, carrying a fixed belt-pulley, H', and a loose belt-pulley, H². The belt J passes between the prongs *d* of a

belt-shifting fork secured to a longitudinally-sliding rod, K, provided with a handle, K'. A spiralspring, L, surrounding the rod K, presses the said rod in the direction from the pulley H' toward the pulley H²—that is, the spring L automatically throws the belt J from the fixed pulley H' on the loose pulley H² when the rod K is released, as hereinafter described. The rod K is provided in its inner end with a transverse notch or recess, *g*, into which the edge of a plate or blade, M, secured in a lever, N, is drawn by a spring, O, secured to the free end of the lever and to the bed of the machine. A lever, P, pivoted to the machine-frame, has one end resting on the lever N, and the other end resting on the lower arm of an angular lever, Q, pivoted at its angle to the frame of the machine. The upwardly-projecting curved shank of the lever Q is provided on its inner edge with downwardly-projecting teeth *l*, adapted to engage with the teeth of a ratchet-wheel, R, mounted on the shaft H. A spring, Q', pressing against the free end of the bottom arm of the lever Q, presses the upwardly-projecting arm of the lever against the ratchet-wheel, when the belt-shifter rod K is released to shift the belt from the fixed to the loose pulley. A latch, S, is pivoted on the frame of the machine to swing in the horizontal plane, and is provided at one end with an upwardly-projecting stem, S', adapted to be struck by the stud C on the ring B.

The above-described device is applicable to a knitting-machine having vertical or horizontal needles, or both, as shown in the drawings. In brief, it can be attached to any circular-knitting machine, the device being modified in construction according to the construction of the machine.

The operation is as follows: The loose ring B is so adjusted that its stud C will almost be in contact with the upwardly-projecting stem S' of the latch S. The belt-shifter rod K is moved in the direction of the arrow *a'*, whereby the belt J will be shifted on the fixed pulley H' at the same time the spring L is compressed and the notch *g* brought over the blade or plate M, which is drawn or snapped into

the notch by the spring O, thereby locking the belt-shifting rod K in position. The upwardly-projecting arm of the lever Q is thereby drawn from the ratchet-wheel R by the lever N acting on the lever P, which in turn acts upon the lower arm of the said lever Q, and is held in this position by the end of the latch S, against which the said arm of the lever Q is pressed by the spring Q'. The end of the latch S against which the lever Q presses is notched, as shown in Fig. 1, to receive and hold the lever, and to prevent the latch from being turned on its pivot by the pressure of the said lever. The machine now being in motion, the studs C of the loose rings B will be brought into contact with the stem S' of the latch S, and the lever Q, being pressed against the said latch by the spring Q', will prevent the said latch from being turned upon its pivot by the action of the pins of the loose ring until the latter is locked to the ring A by the cams D, which are held a short distance away from said loose ring by the threads t, which threads pass over the ends of the wires G and press their free ends toward the center of the needle-cylinder. If a thread breaks, the free end of the corresponding spring-wire G is released, and is thrown in the direction of the arrow g', and at the same time the corresponding cam D is thrown in a like direction, and is pressed against the ring B by the spiral spring formed by the wire G. The cam thus binds on the ring B and causes the said ring to revolve with the ring A in the direction of the arrow b', thereby causing the stud C to strike the stem S' of the latch S, and thereby throwing the outer end of the latch S toward the ring B, and thus releasing the upwardly-projecting toothed part of the lever Q, which is pressed against the ratchet-wheel R, by the spring Q' acting on the bottom or outwardly-projecting arm of the lever Q. The lever Q engaging with the ratchet-wheel on the driving-shaft immediately stops the rotation of the said shaft. As the spring Q' throws the outwardly-projecting arm of the lever Q upward, this arm throws upward the outer end of the lever P, thereby depressing its inner end and at the same time depressing the lever N and drawing the plate or blade M out of the notch g, and thus releasing the rod K, which is thrown in the inverse direction of the arrow a' by its spring L, thereby shifting the belt J from the fixed pulley H' on the loose pulley H².

Having thus described my invention, what I claim as new is—

1. The combination, with a knitting-machine needle-ring, a revolving ring surrounding the same, the driving-shaft, a ratchet-wheel thereon, and means for operating the driving-shaft, of a loose ring surrounding the said revolving ring and provided with a laterally-projecting stud, cams on the revolving ring adapted to clamp the loose ring to the revolving ring when the thread breaks, a

latch engaging the stud of the loose ring, a lever adapted to engage said ratchet-wheel, and a spring adapted to press the lever into engagement with the ratchet-wheel, substantially as herein shown and described. 70

2. The combination, with the needle-ring, the driving-shaft, a ratchet-wheel thereon, a revolving ring, a loose ring surrounding the revolving ring, provided with a lateral stud, and means for locking the loose ring to the revolving ring and operating the machine, of a latch engaging the stud of the loose ring, a toothed lever adapted to engage the ratchet-wheel, a spring adapted to press the lever into engagement with the ratchet-wheel, a belt-shifting fork, and intermediate mechanism for operating the toothed lever from the belt-shifting fork, substantially as herein shown and described. 85

3. The combination, with a knitting-machine needle-ring, a revolving ring, and means for operating the machine, of a ring loosely mounted on the revolving ring, a stud projecting from the loose ring, the latch S, the elbow-lever Q, having teeth, the ratchet-wheel R, the driving-shaft H, and means for automatically locking the loose ring on the revolving ring when the thread breaks, substantially as herein shown and described. 95

4. The combination, with a knitting-machine needle-ring, the revolving ring A, and means for operating the machine, of the loose ring B, the stud C, the latch S, the elbow-lever Q, the levers P and N, the springs Q' and O, the belt-shifter rod K, the spring L, and means for automatically locking the loose ring on the revolving ring when a thread breaks, substantially as herein shown and described. 105

5. The combination, with a knitting-machine needle-ring, the revolving ring A, and means for operating the machine, of the loose ring B, the stud C, the lever S, the elbow-lever Q, the levers P and N, the latter provided with a plate or blade, M, the springs Q' and O, the belt-shifter rod K, having a notch, g, the spring L, and means for locking the ring B on the ring A automatically when a thread breaks, substantially as herein shown and described. 115

6. The combination, with a knitting-machine needle-ring, I, the revolving ring A, and means for operating the machine, of cams D, held on the ring A, the ring B, provided with the stud C, the shafts E, the wires G, secured to and coiled around the said shafts E, and projecting toward the middle of the needle-ring, and devices for shifting the belt and stopping the rotation of the driving-shaft, which devices are adapted to be released and operated by the stud on the ring B, substantially as herein shown and described. 125

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