

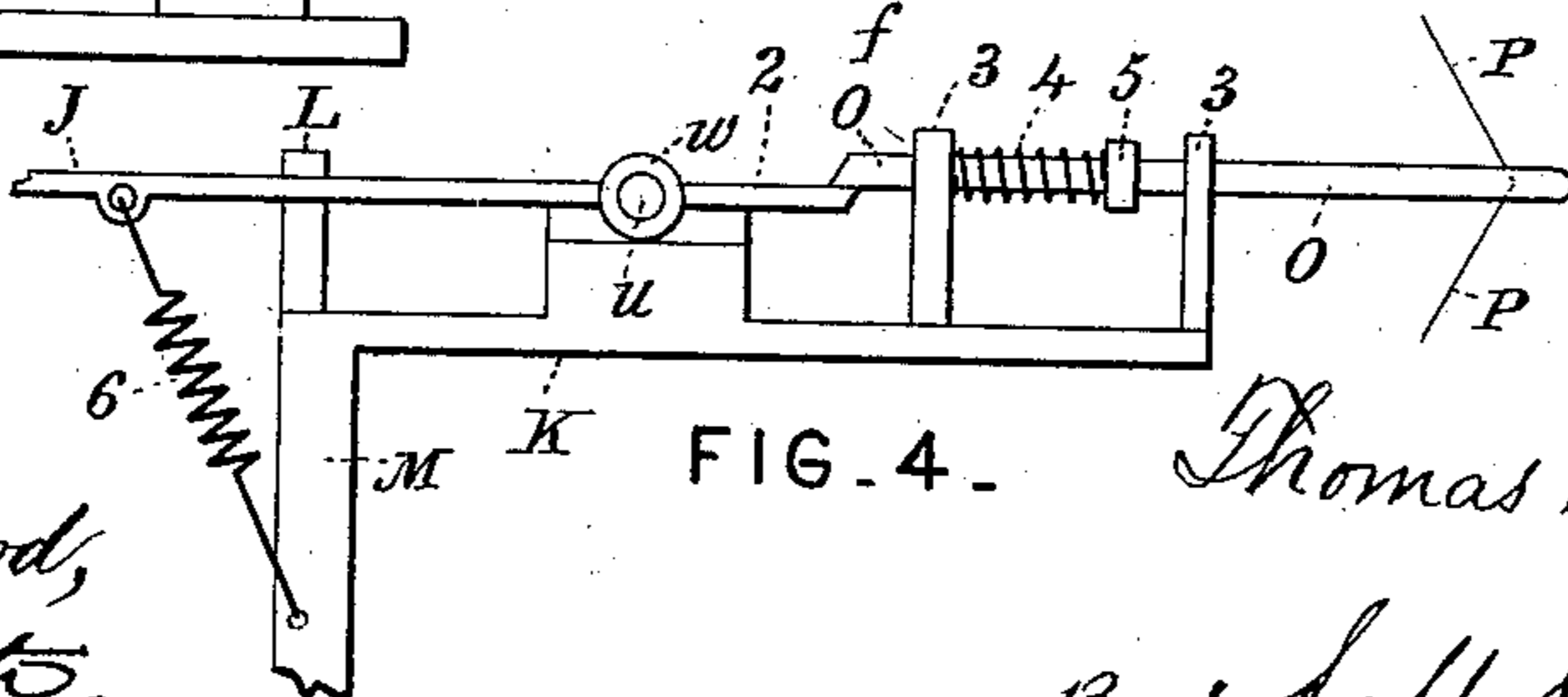
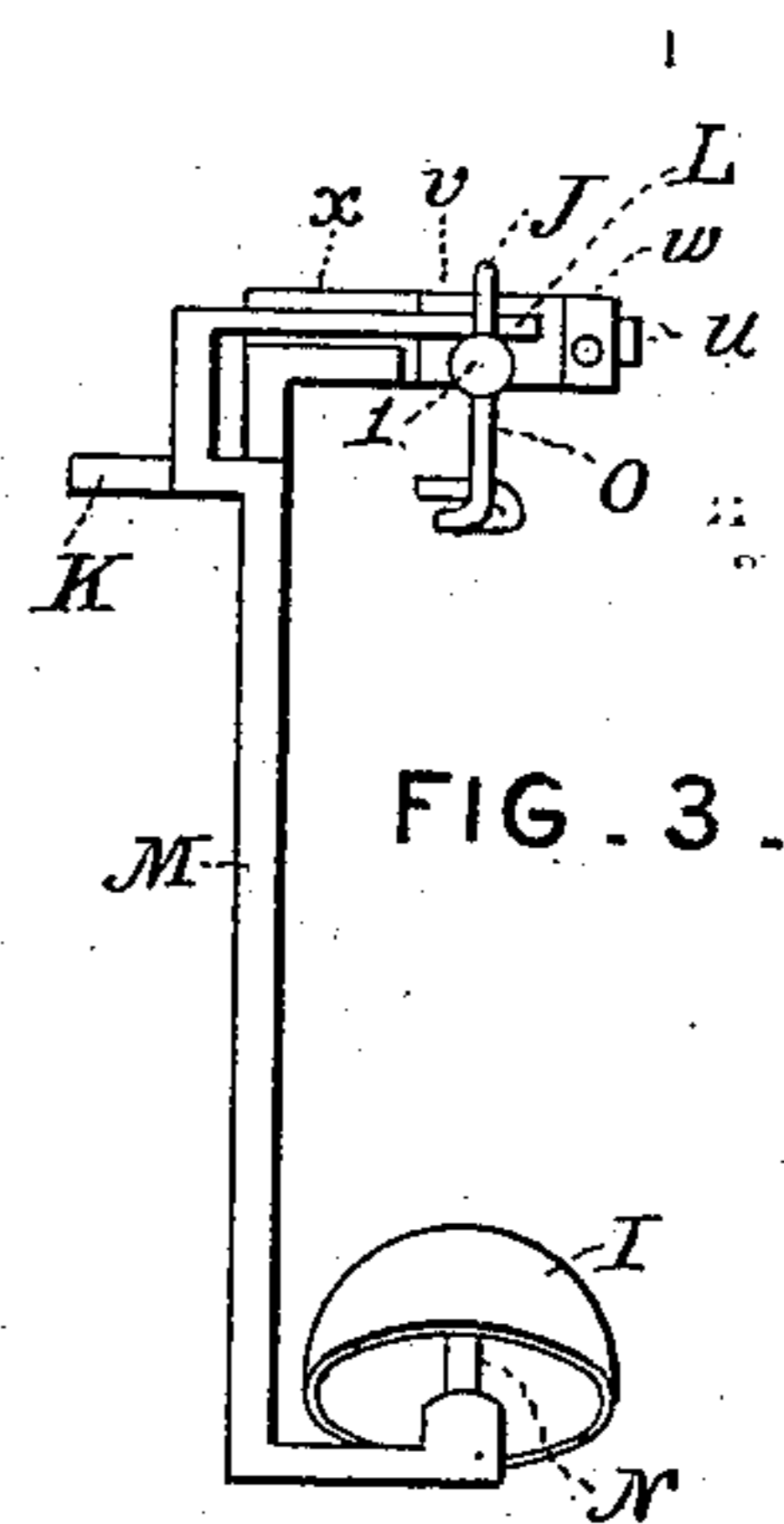
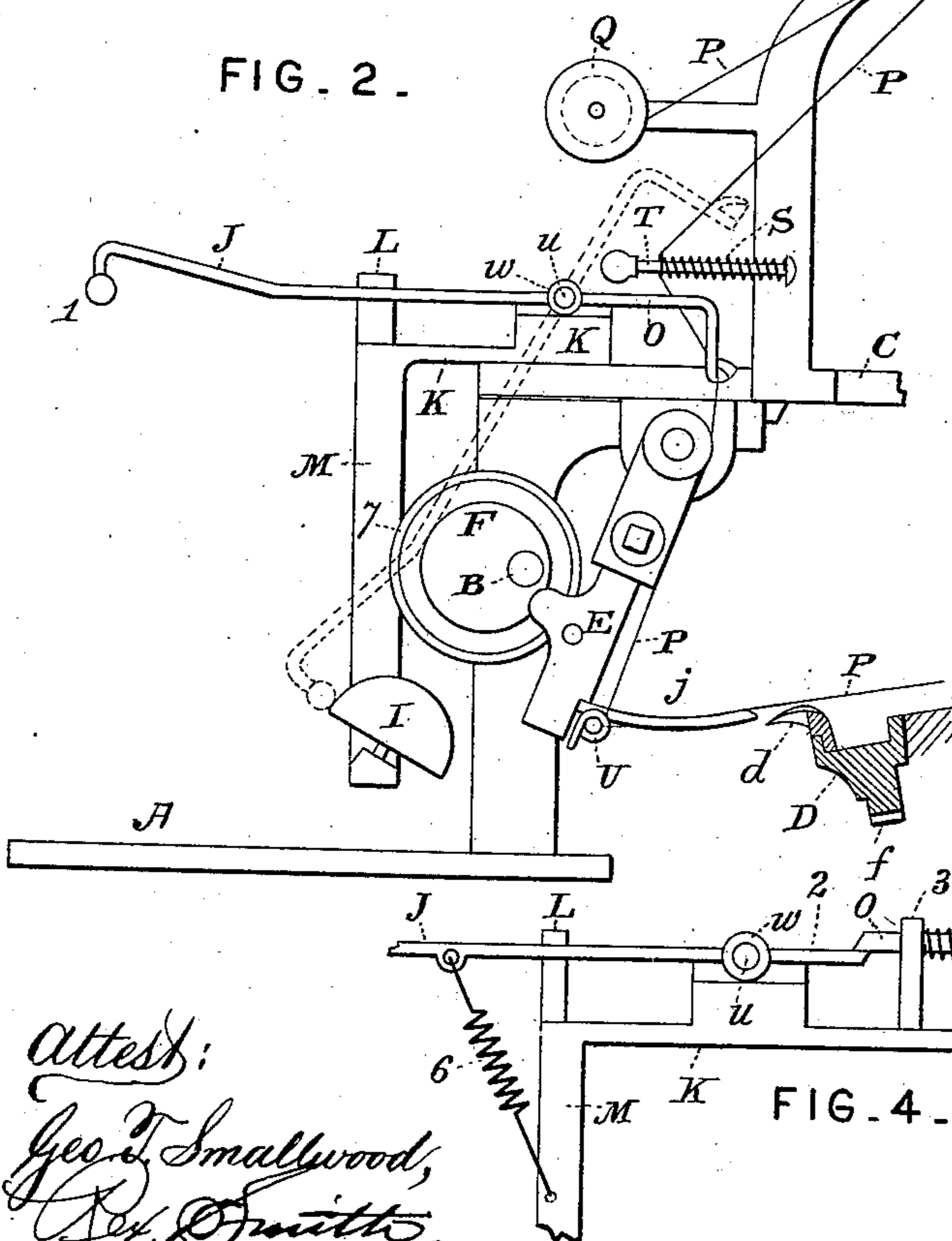
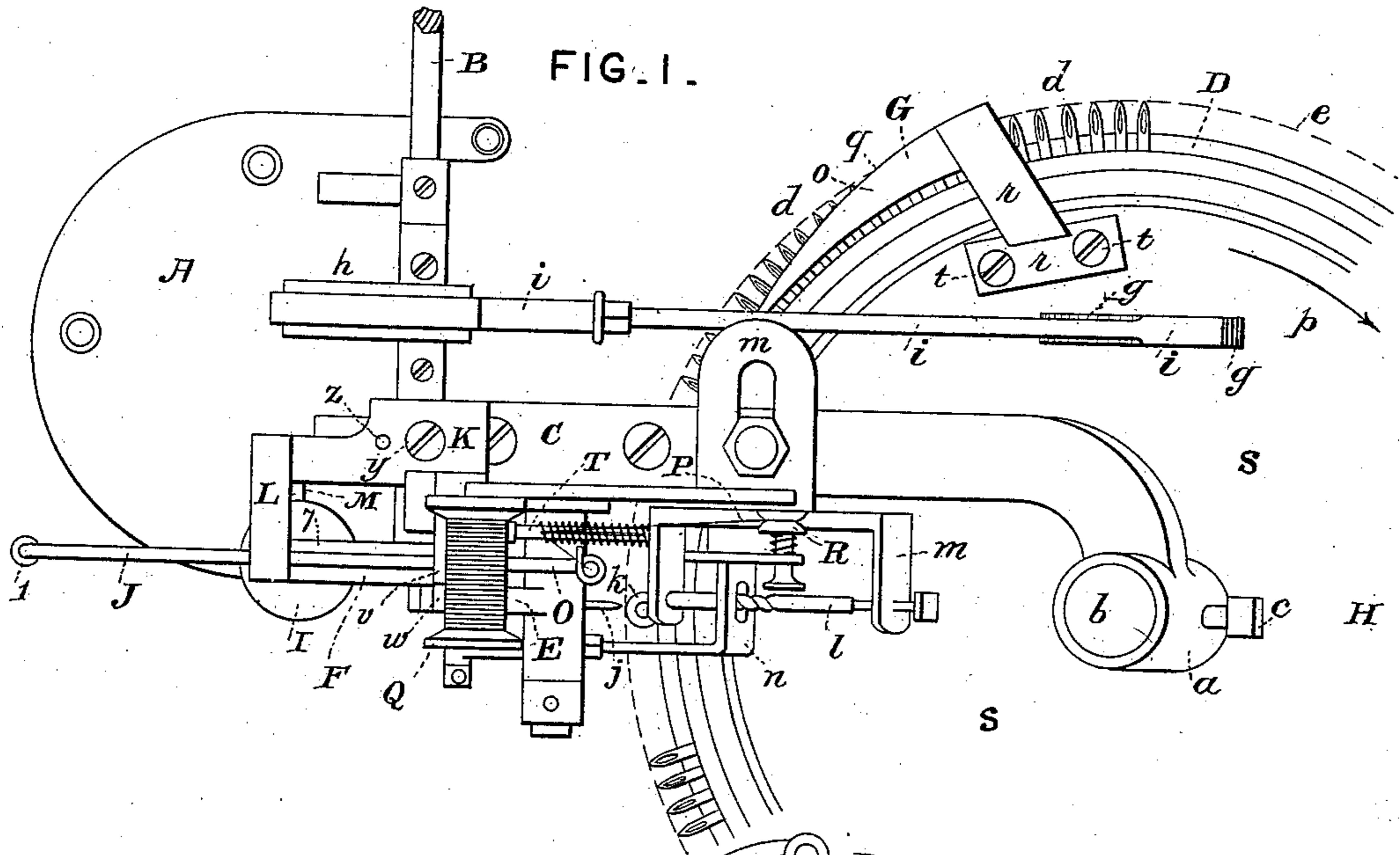
(No Model.)

T. S. SMITH.

ALARM SIGNAL FOR MACHINES FOR SEWING LOOPED FABRICS.

No. 389,534.

Patented Sept. 11, 1888.



Attest:
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UNITED STATES PATENT OFFICE.

THOMAS S. SMITH, OF WATERFORD, NEW YORK.

ALARM-SIGNAL FOR MACHINES FOR SEWING LOOPED FABRICS.

SPECIFICATION forming part of Letters Patent No. 389,534, dated September 11, 1888.

Application filed November 3, 1887. Serial No. 254,212. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. SMITH, of Waterford, county of Saratoga, State of New York, have invented a new and useful Improvement in Alarm Signals for Machines for Uniting Looped or Knit Fabrics, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to that class of machines for uniting knit fabrics, known as "circular turning-off machines," and more particularly when with this class of machines an automatic throwing-off device is employed.

In using machines of this class the attention of the operator is constantly required to the matter of placing the fabrics on the "points" and preparing the edges of the knit fabrics for the sewing or stitching together, in such manner that it frequently happens when the sewing-thread breaks that for a considerable time before the mishap is discovered by the operator the fabrics are thrown off the points without having their edges sewed together. Much more is this the case when an automatic throwing-off device is used on the turning-off machine.

The object of my invention is to provide an alarm-signal and means for sounding the same, whenever the thread breaks, in order that the operator, hearing the signal, may immediately stop the machine; and my invention consists in the combination, with a turning-off machine and its means for producing a proper tension on the thread thereof, of a bell mounted on the frame of the machine, a clapper pivoted on said frame, the shank of which lies in the path of the thread, whereby the clapper is held inoperative, and means, acting when the tension of the thread is released, to throw said clapper against the bell; also to certain details in construction and arrangement of parts, hereinafter specified.

In the several figures of the drawings like letters refer to like parts.

Figure 1 is a plan view of my invention applied to a circular turning-off machine of the variety fully described in Letters Patent No. 354,374, dated December 14, 1886, showing a stationary automatic throwing-off device attached thereto, and omitting such details as are unnecessary to this description. Fig. 2 is

a side elevation of such parts of Fig. 1 as are required to still further illustrate this application of my invention. Fig. 3 is a rear elevation of the sound-producing device and other details hereinafter fully described. Fig. 4 represents certain modifications in the details of the alarm-sounding device.

A is the frame or stand supporting the driving-axle B and projecting arm C. The outer or overhanging end of arm C is provided with a hub or sleeve, *a*, bored to receive the cylinder-shaft *b*, which is secured by set-screw *c*.

D is the circular ring carrying the points *d* in the manner usual in this class of machines. The dotted circle *e*, Fig. 1, is the circle of the extremities of the points. The ring D is provided on its lower side with teeth *f*, forming a circular rack driven by a pinion on the shaft of the ratchet-wheel *g*. (Shaft and pinion not shown.) The ratchet-wheel *g* receives its motion from an eccentric, *h*, on the shaft B, through the eccentric-pawl rod *i*.

E is the needle-arm, which receives its motion from the eccentric-cam F in the usual manner.

j is the curved needle, and *k* is the circular needle.

l is the circular-needle spindle carried by the adjustable hanger *m* and driven by the slotted rod *n*.

G is the stationary throwing-off device of my invention, for which application for Letters Patent was filed October 17, 1887, Serial No. 252,519. The blade *o* of the throwing-off device is firmly fixed in position immediately above the points, almost or quite in contact with the same, in such manner that the extremity or point of the blade *o* is located within the circle of the pendent fabrics, and when the machine is in operation, with the points *d* revolving in the direction indicated by the arrow *p*, the pieces of fabric will be carried against and along the edge *q* of the blade *o*, and be thereby forced outward and off the extremities of the points.

r is an arm or hanger proceeding from and firmly supporting the blade *o*, and attached to the stationary plate *s* by screws *t*.

The operator, stationed on the side of the machine indicated by the letter H, being busily occupied with the matter of placing the pieces of fabric on the points *d* and preparing the edges for sewing, cannot see whether the edges

have or have not been sewed together when they are pushed off by the blade *o* and drop down to the floor or into a suitable receptacle; hence the necessity of sounding an alarm-signal when the thread breaks.

The sound-producing device in the present application of my invention consists of a suitable gong or bell, *I*, and a suitable vibrating hammer, *J*. The bell is firmly held in a proper position to receive the blow of the hammer and produce the required alarm. The hammer is pivoted to a stationary shaft or pivot, *u*, by a sleeve, *v*, retained between collar *w* and shoulder *x*.

The axle *u* projects from a suitable hanger, *K*, and the hanger *K* is firmly secured to the turning-off machine by a screw, *y*, and steady-pin *z*. From the hanger *K* project also the stop *L* and bell-supporting rod *M*, into the extremity of which is securely fastened the bell-spindle *N*. The hammer is prevented from going above the position shown in Fig. 2 by the stop *L*, and when allowed to fall from that position the enlarged extremity *1* of the hammer will strike the bell, as indicated by the dotted lines in Fig. 2, unless, for the purpose of continuous ringing, the hammer and bell are located in the plane of the eccentric-cam *F*, as shown in the drawings, in which case the hammer will be thrown upward for a new blow, once for every revolution of the eccentric-cam *F*, which is once for every vibration of needle-bar *E*.

It will be understood from the drawings that the bell-hammer, when released from its highest position, will fall of its own weight and sound an alarm by striking the bell unless something is interposed to prevent it. Were the hammer to be located in a position to require it, a spring, *6*, or other suitable device may be applied in addition to or as a substitute for the weight of the hammer.

To produce a continuous ringing of the bell, any suitable projection, *7*, from a revolving shaft may be interposed, which projection will strike the hammer and toss or force it away from the bell every time the shaft revolves, and thereby produce a repeated or continuous ringing of the bell. In the example shown in the drawings the eccentric-cam *F* affords a suitable and convenient projection, which, upon each revolution of the driving-shaft *B*, will properly vibrate the hammer.

O is the starting bar, rod, or lever, which in the example shown in Figs. 1, 2, and 3 is rigidly attached at one extremity to the sleeve *v*, and consequently vibrates with the hammer *J*, but in a contrary direction. The other extremity terminates in a suitable eye or loop for retaining the sewing-thread *P*. The relative position of the parts is such that when the machine is in operation the pressure of the thread in the eye or loop keeps the hammer *J* up against the stop *L*, and when the thread breaks, the pressure of the thread being destroyed, the hammer drops, striking the bell.

Q is a spool of thread.

R is a thread-guide and friction and tension device.

S is a spiral spring coiled around the slotted rod *T*.

U is a thread-guide near the lower extremity of the needle-arm.

The thread *P* unwinds from the spool *Q*, passes between the friction-plates of the device *R*, down through the slot in rod *T*, pressing against the spring *S*, then down through the eye in the extremity of the starting-rod, and thence through the thread-guide *U* to the needle-eye, and up through the needle-eye, as shown in the drawings. However the thread may be guided to the needle and the requisite tension maintained, all that is required in my invention is that the pressure of the thread be applied in the right direction to the starting bar, rod, or lever *O*, as hereinbefore set forth.

In the modification shown in Fig. 4 a short arm or catch-piece, *2*, projects from the sleeve or hub *v* of the hammer, and, catching under the end of the starting rod *O*, holds the hammer against the stop *L*. The starting rod, bar, or lever is in this example a sliding rod moving freely in suitable bearings, *3*, pressed toward the hammer by the thread *P*, which passes through an eye in the end, and is pressed toward the thread *P* by the spiral spring *4*, which is compressed between the bearing *3* and the collar *5* in such manner that when the thread *P* breaks the starting-rod will be moved endwise by the spring *4* releasing the hammer.

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

1. In a turning-off machine, and in combination with its means for producing a proper tension on the thread, a bell mounted on the frame of the machine, a clapper pivoted on the frame of the machine, the shank of which lies in the path of the thread, whereby the clapper is held inoperative, and means, acting when the tension of the thread is released, to throw the clapper against the bell.

2. The combination, with a turning-off machine, for the purpose of indicating a break in the thread thereof, of a device for producing a continuous ringing or alarm, consisting of a bell mounted on the frame, and a clapper also mounted on the frame and controlled by a lever, a portion of which lies in the path of the machine-thread, whereby the clapper is held inoperative, means, acting when the tension of the thread is released, to throw the clapper against the bell, and a cam projection or spur on a revolving wheel or shaft actuating said clapper after the thread is broken, for the purpose and substantially as described.

In testimony whereof I have hereunto set my hand this 1st day of November, A. D. 1887.

Witnesses: THOMAS S. SMITH.

EDWIN HAYES,
DAVID R. SMITH.