

No. 786,797.

PATENTED APR. 11, 1905.

G. B. COCKER.
ELECTRICAL STOP MOTION.
APPLICATION FILED NOV. 20, 1903.

2 SHEETS—SHEET 1.

FIG 1

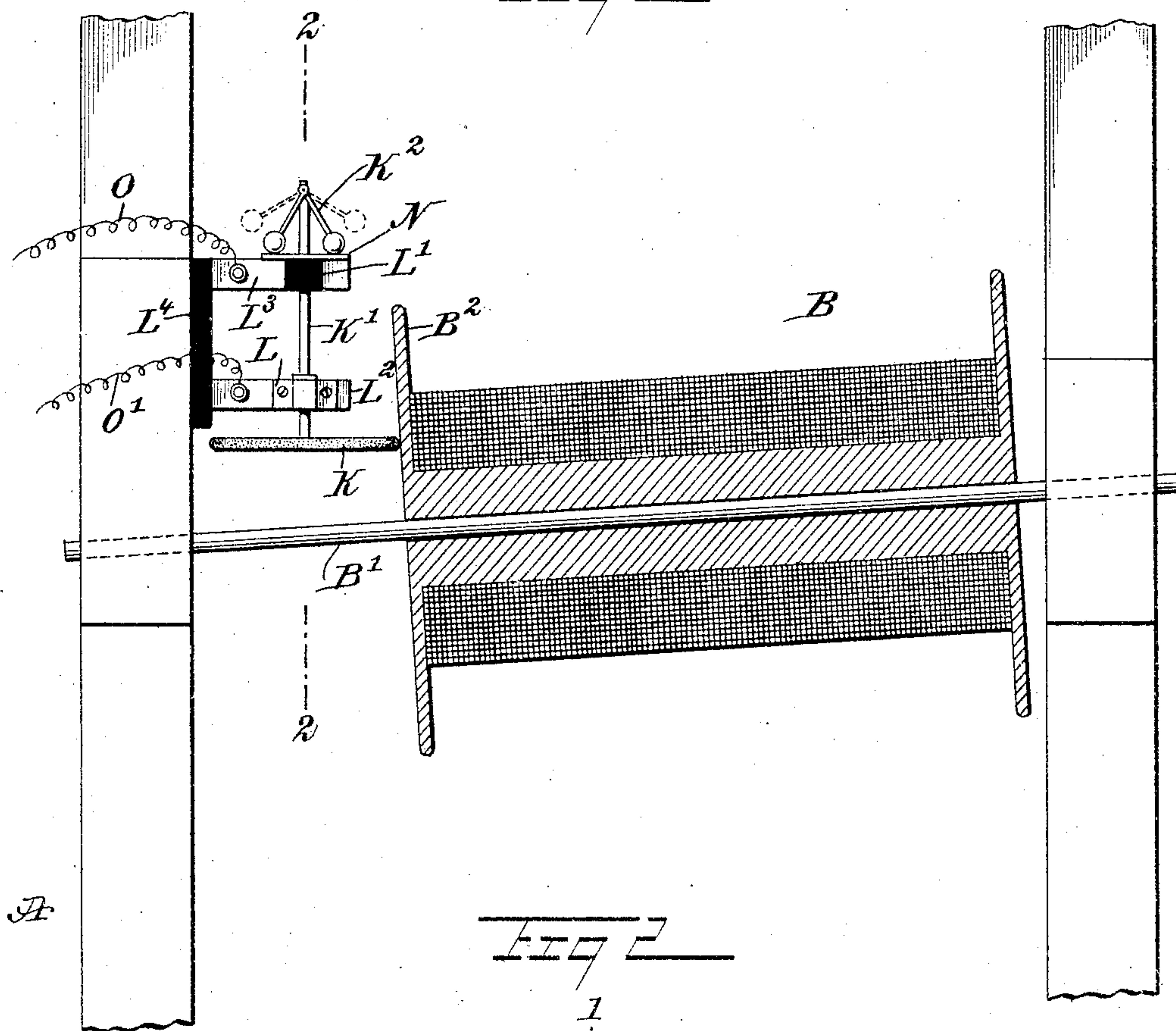
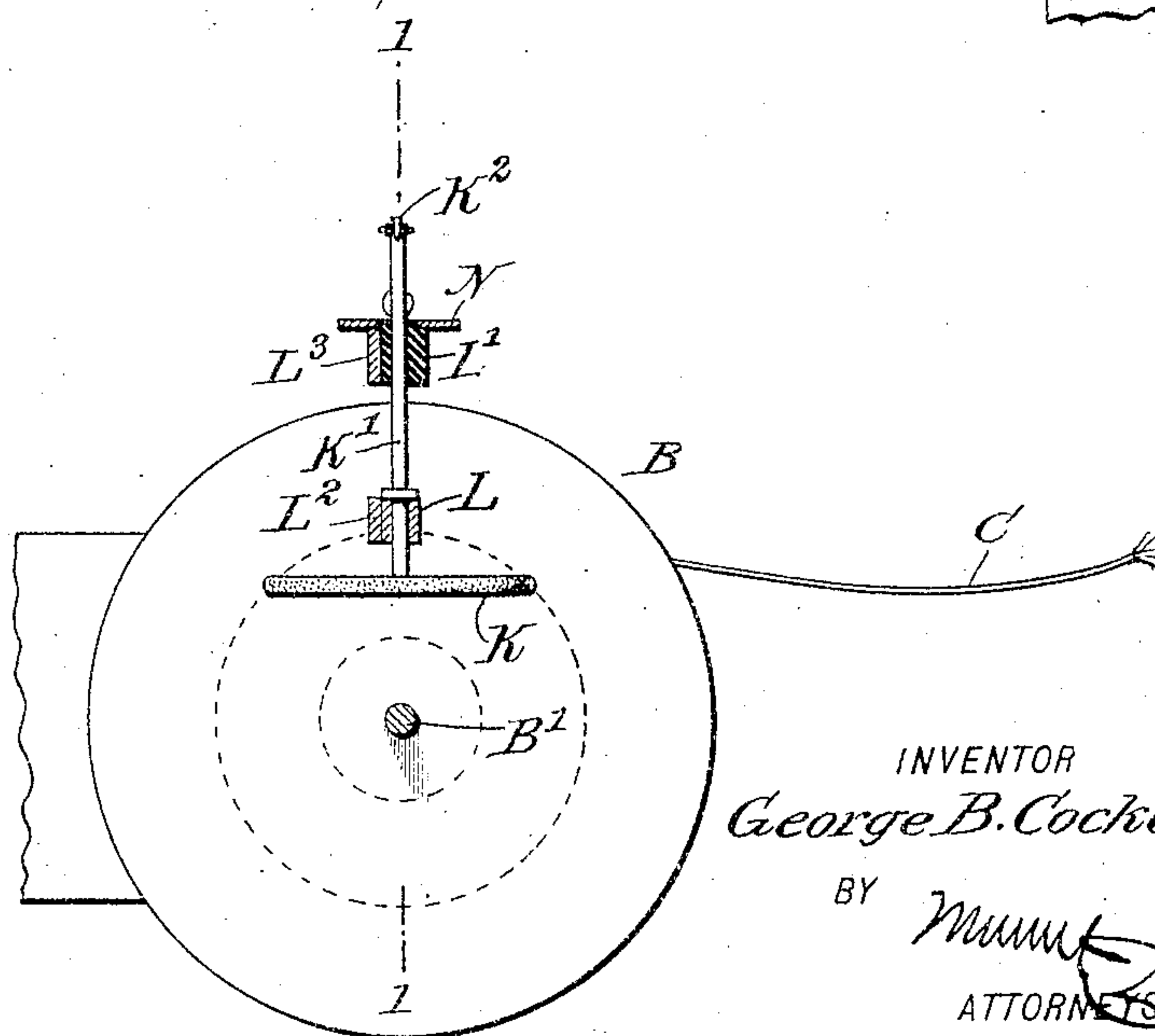


FIG 2



WITNESSES:

H. Walker
Geo. G. Foster

INVENTOR

George B. Cocker

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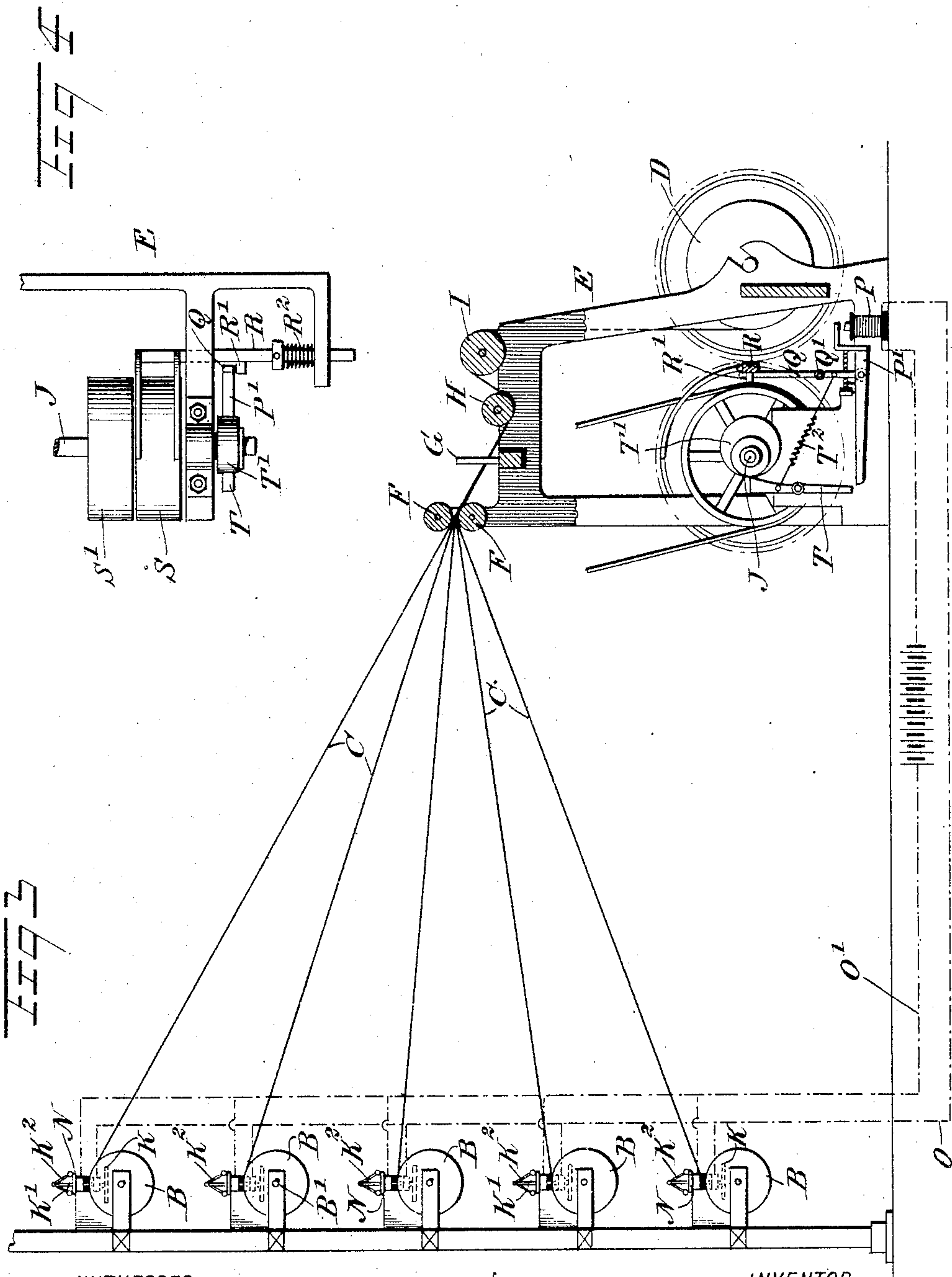
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UNITED STATES PATENT OFFICE.

GEORGE B. COCKER, OF FRANKFORD, PENNSYLVANIA.

ELECTRICAL STOP-MOTION.

SPECIFICATION forming part of Letters Patent No. 786,797, dated April 11, 1905.

Application filed November 20, 1903. Serial No. 181,960.

To all whom it may concern:

Be it known that I, GEORGE B. COCKER, a citizen of the United States, and a resident of Frankford, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Electrical Stop-Motion, of which the following is a full, clear, and exact description.

The invention relates to cordage machinery; and its object is to provide a new and improved electrical stop-motion for twistors, warpers, winders, spoolers, and similar cordage-machines, the stop-motion being arranged to stop the machine, as soon as one of the yarns or threads breaks, without the use of drop-wires or the like—such, for instance, as are shown and described in the Letters Patent of the United States No. 512,013, granted on January 2, 1894, to Clayton Denn, John Cocker, and Charles Denn.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the circuit-closer and the spool or bobbin for actuating the same, the section being on the line 1 1 of Fig. 2. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1. Fig. 3 is a sectional side elevation of the improvement as applied to a creel and beam-warper, and Fig. 4 is a plan view of part of the actuating mechanism of the stop-motion.

In the creel A, of any approved construction, are mounted to turn spools or bobbins B, from which unwind yarns or threads C to be wound on the beam D of a beam-warper E or other cordage-machine. The beam-warper shown in Fig. 3 is provided with rods F, between which pass the yarns C to then pass through a reed G, then under a top roll H, over a measuring-cylinder I, to finally wind on the beam D, driven by a suitable mechanism from the shaft J of the beam-warper E.

The yarn-spools B, as shown in Figs. 1 and

2, are mounted to rotate loosely on a spindle B', held slightly inclined in the framework of the creel A, and the lower flange B² of the yarn-spool B rests with its outer face on the peripheral surface of a wheel K, secured on a shaft K', disposed vertically and mounted to turn in bearings L and L', held on brackets L² and L³, secured to an insulating-plate L⁴, attached to the framework of the creel A, as plainly shown in Fig. 1.

On the upper end of the shaft K', above the bracket L², are pivoted weighted arms K², adapted to engage and make contact with a contact-plate N, held on the bracket L³.

When the cordage-machine is running and the yarn or thread C unwinds from the spool or bobbin B, then the latter is rotated, and the rotation thereof causes a driving of the wheel K and its shaft K', whereby the weighted arms K² are caused to swing outward by centrifugal force—that is, move out of contact with the contact-plate N. In case the yarn or thread C breaks then the rotation of the spool or bobbin B ceases, and consequently that of the wheel K and shaft K', and hence the arms K² swing downward and make contact with the contact-plate N to close the circuit for actuating the mechanism employed for stopping the beam-warper E.

For the purpose mentioned the bearing L' is an insulated one and is held on the bracket L³, and the latter and the bracket L² are connected by circuit-wires O and O' with an electromagnet P, controlling an armature-lever P', hung on the lower end of a vertically-disposed lever Q, fulcrumed at Q' on the main frame of the beam-warper E.

I have indicated in Fig. 3 a battery as the source of electrical supply in the circuit OO', but obviously do not desire to be limited thereto in the use of my invention.

The armature-lever P' normally stands out of engagement with the core of the electromagnet P—that is, as long as the latter is de-energized; but when one of the arms K² makes contact with the plate N on the breaking of the corresponding yarn C and the circuit is closed then the electromagnet P is energized to attract the armature-lever P'.

The upper end of the lever Q, carrying the

armature-lever P', is engaged by a projection or lug R' on the shifter-bar R of the belt-shifter to hold the latter in such position that the belt engages a fast pulley S, held on the main shaft J of the beam-warper E, as plainly indicated in the drawings. The shifter-bar R is pressed on by a spring R², so that when the lever Q swings out of engagement with the lug R' then the shifter-bar R is moved transversely by the action of the said spring R² to cause the belt-shifter to move the belt from the fast pulley S onto a loose pulley S'.

A vibrating lever T, fulcrumed on the main frame of the beam-warper E, receives its vibratory motion from a cam T' on the main shaft J, the upper end of the vibrating lever being held in engagement with the cam by a spring T², connecting the said lever with the lever Q, and the lower end of this vibrating lever T normally vibrates freely over one end of the armature-lever P'. When the latter is attracted by the electromagnet P becoming energized, as before explained, then the armature-lever P' swings into the path of the lower end of the vibrating lever T, so that the latter pushes the armature-lever P' to one side, and thus imparts a swinging motion to the lever Q to move the latter out of engagement with the lug R', and the belt is now shifted by the belt-shifter R from the fast pulley S to the loose pulley S'.

When the machine is in operation, the several weighted arms K² are out of engagement with the contact-plates N, and when a thread breaks then the corresponding arms K² immediately swing downward to make contact with the corresponding contact-plate N to close the circuit and to cause the belt-shifter to be actuated for moving the belt from the fast pulley S to the loose pulley S' to stop the beam-warper E.

The actuating mechanism above described is similar to the one shown and described in the patent above referred to.

From the foregoing it will be seen that the circuit-closer does not come in contact with the yarn or thread, but is actuated from the spool or bobbin, and hence is not liable to be clogged by fibers from the threads or yarns. It will be further seen that by the arrangement described the centrifugal circuit-breaker closes the circuit immediately on the breaking of the thread, as the bobbin or spool then ceases its rotation, and consequently the cordage-machine is stopped before the broken end of the thread has a chance to pass onto the beam D.

It is evident that the wheel K of the centrifugal circuit-closer can be driven by another part of the spool or bobbin than the flange B². For instance, the bobbin may be secured on the shaft B', so that the latter rotates, and the wheel K may be driven from this shaft by friction-wheels or other devices, or the hub of the spool or bobbin B may be extended beyond the flange B² and geared with the wheel K to rotate on the latter.

In the construction shown in Fig. 1 the spindle B' is inclined, so that the flange B² abuts at all times with sufficient force against the wheel K to cause a rotation of the wheel K as soon as the spool or bobbin is rotated on the unwinding of the thread or yarn.

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

1. The combination in an electrical stop-motion provided with rotatable circuit-closer means, of a rotatable thread-holder, and means whereby said thread-holder is supported into driving engagement with the circuit-closer means, substantially as described.

2. The combination in an electrical stop-motion provided with rotatable circuit-closer means, of a rotatable thread-holder, an inclined support on which the holder is free to slide and be held by gravity, into driving engagement with the rotatable circuit-closer means, substantially as described.

3. The combination in an electrical stop-motion provided with a centrifugal-acting circuit-closer, of a rotatable driving device on the circuit-closer, insulated circuit-terminals adapted to be closed, an inclined rod with suitable support, a rotatable thread-holder arranged on said rod and adapted to slide there-down into driving engagement with the rotatable device on said circuit-closer, substantially as described.

4. The combination of centrifugally-operating closer mechanism, and a cordage-spool movable by gravity into driving engagement with the circuit-closer mechanism.

5. The combination of a circuit-closer, a rotatable spool, a rotatable device working in contact with said spool and operatively connected with the circuit-closer.

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

GEO. B. COCKER.

Witnesses:

THEO. G. HOSTER,
ALFRED H. DAVIS.