

(No Model.)

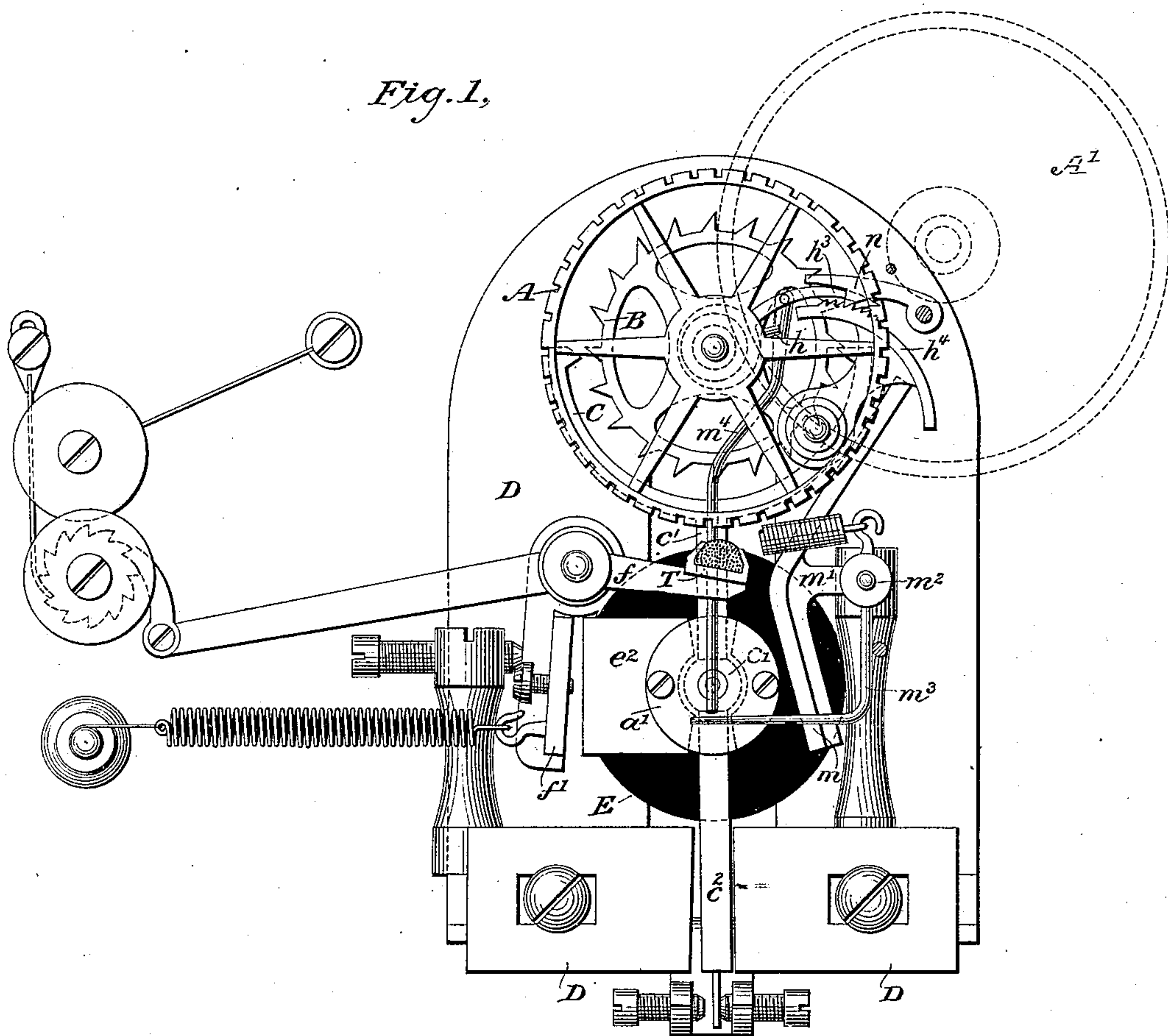
2 Sheets—Sheet 1.

R. J. SHEEHY.
PRINTING TELEGRAPH.

No. 334,294.

Patented Jan. 12, 1886.

Fig. 1,



Witnesses

Geo. W. Breck
Carrie C. Ashley

Inventor

Robert J. Sheehy

By his Attorneys

Pope & Edgcomb

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2,

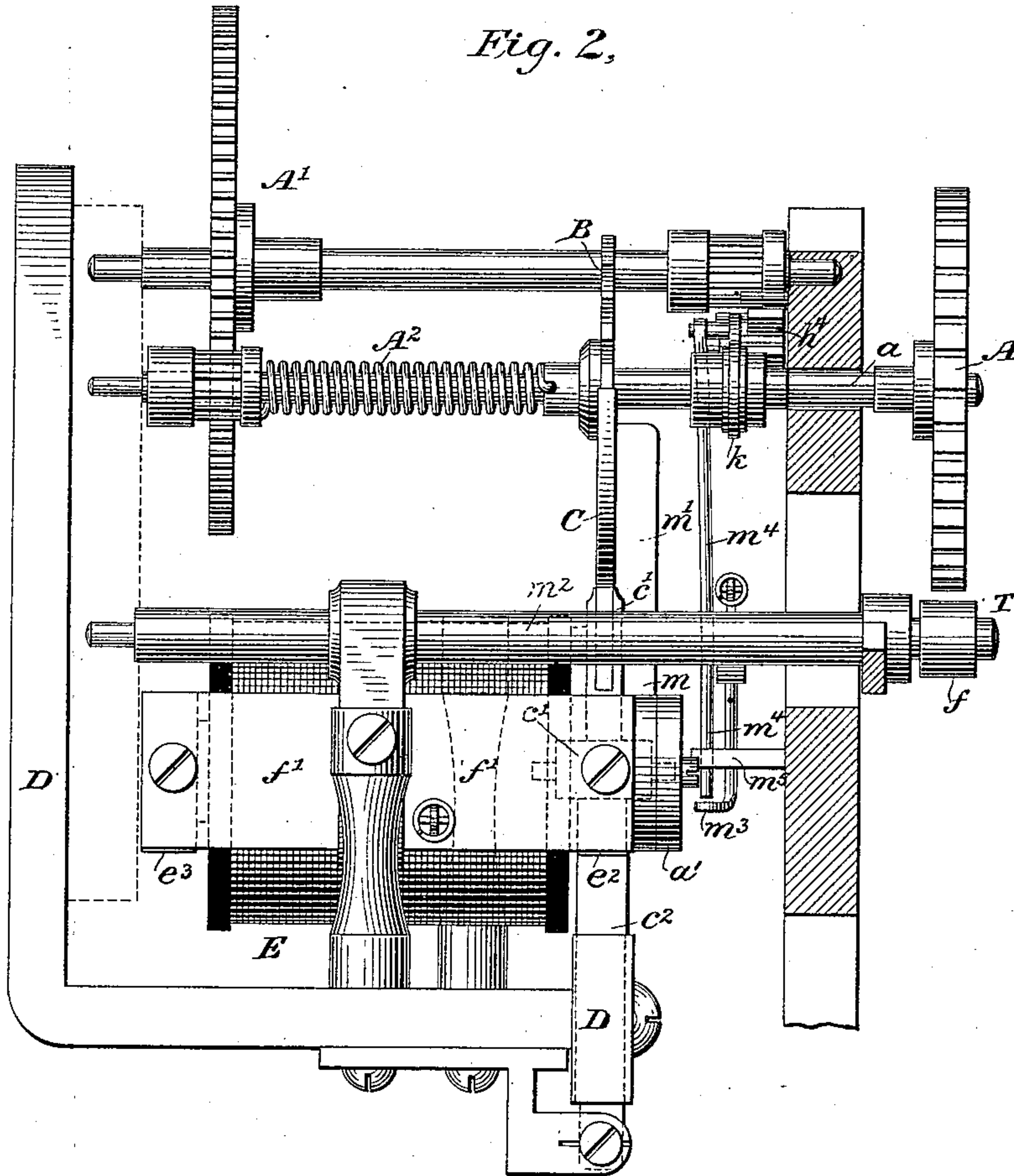


Fig. 3,

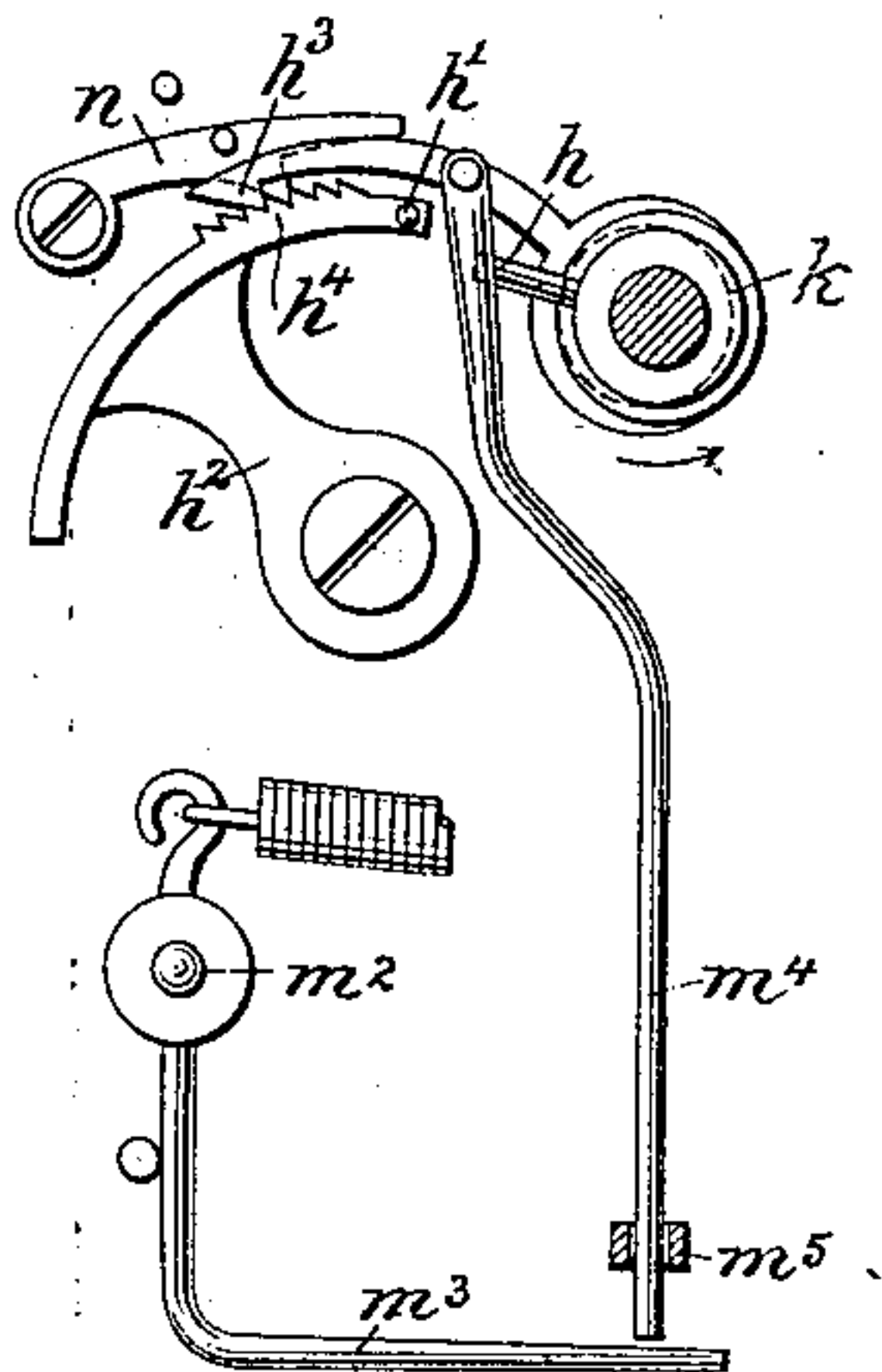
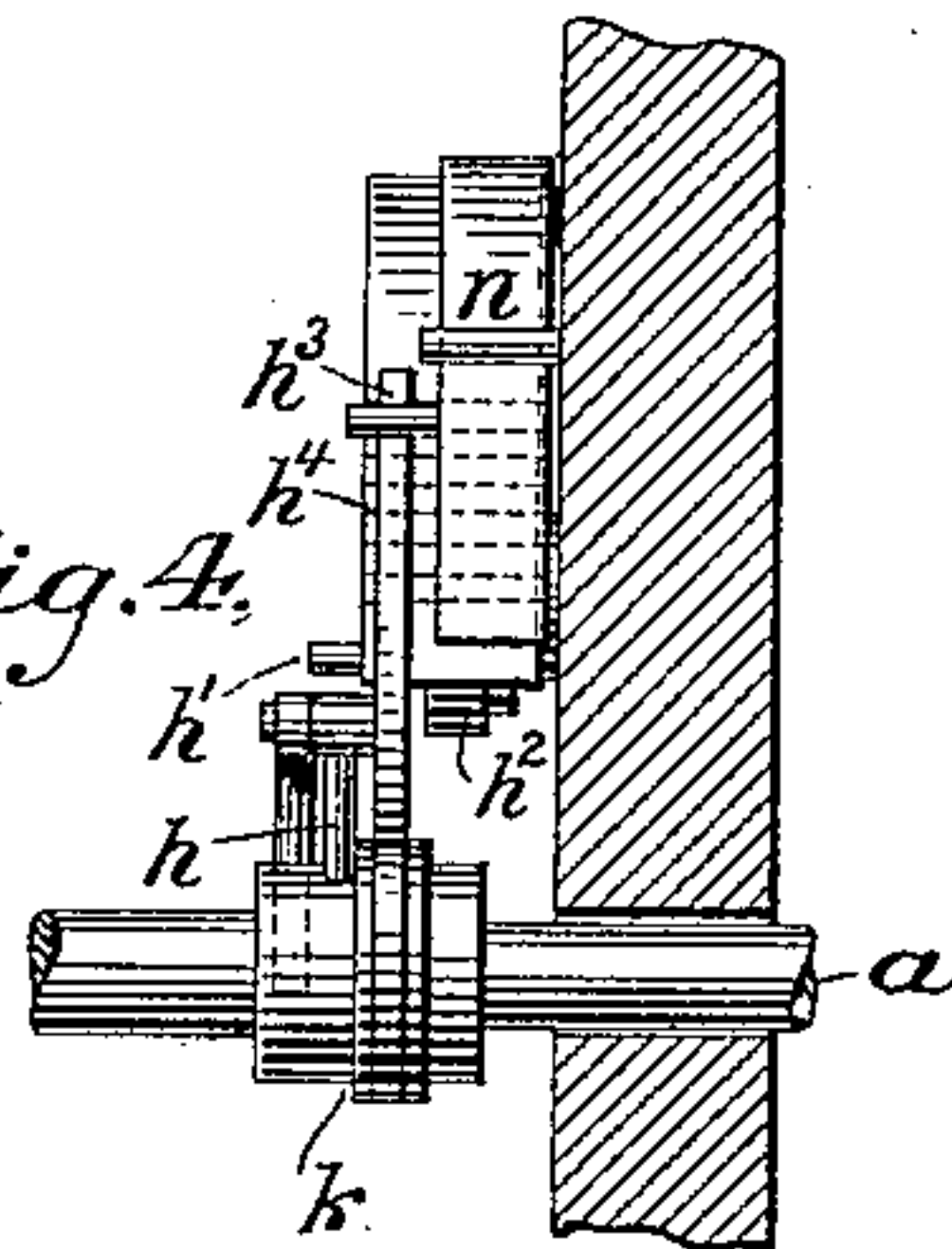


Fig. 4,



Witnesses

Geo. W. Breck.
Carrie O. Ashley

Inventor

Robert J. Sheehy.

By his Attorneys

Ropes & Edgcomb

UNITED STATES PATENT OFFICE.

ROBERT J. SHEEHY, OF NEW YORK, N. Y.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 334,294, dated January 12, 1886.

Application filed January 12, 1885. Serial No. 152,565. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. SHEEHY, a citizen of the United States, residing in New York, in the county and State of New York, have invented certain new and useful Improvements in Printing-Telegraphs, of which the following is a specification.

The invention relates to the class of apparatus employed for telegraphically printing dispatches through the agency of electric currents traversing a single main line.

The object of the invention is to provide simple, reliable, and rapidly-operating means for effecting impressions from a type-wheel.

The invention consists in constructing a receiving-instrument in substantially the following manner: A type-wheel is carried upon a shaft, which may be impelled either by a weight or spring, or by a vibrating anchor having pallets properly constructed to engage the teeth of a star-wheel. The escapement-anchor is pivoted at one pole of an electro-magnet, and is constructed with an extension of magnetic material, which receives from the electro-magnet a given polarization when the coils of the electro-magnet are traversed by currents in a given direction. The polarity of the extension is reversed when the direction of the current is reversed. The extension preferably constitutes a portion of the core of the electro-magnet by being constructed with an arm which passes within the coils of the same. The portion of the extension without the coils passes between two magnetic poles formed by the arms of a permanent magnet. The alternating north and south polarization of the extension of the escapement-lever causes the latter to be driven to and fro by reason of the attraction and repulsion established between the extension and the poles of the permanent magnet.

For the purpose of effecting impressions from the type-wheel, a printing-platen is carried upon a lever provided with an armature responding to prolonged currents transmitted through the electro-magnet. This armature, while it does not respond to the short impulses employed for actuating the escapement, may be constructed to respond to either a prolongation of one of the impulses or to a prolonged current having increased strength. A

second armature is applied to the electro-magnet, and this also responds whenever the printing-lever is actuated. The movements of the second armature are employed for releasing a unison device. This device preferably consists of a detent, which is gradually moved into the path of a stop carried upon the type-wheel shaft when the latter is revolved. The movements of the detent are effected by means of an eccentric-wheel carried upon or constituting a part of the type-wheel shaft. A suitable pawl is driven to and fro by this eccentric. The pawl engages the teeth of a segment carried upon a pivoted lever, and the unison-detent moves with this lever. Each revolution of the type-wheel shaft advances the detent a predetermined distance toward the path of the stop upon the type-wheel, and after a given number of revolutions the detent will stand in the path of the stop and serve to arrest the type-wheel at unison. If, however, an impression be effected before the required number of revolutions of the type-wheel has been accomplished, the second armature will serve to release the teeth of the segment from engagement with its actuating-pawl, and also a retaining pawl or dog which is applied thereto. The segment, together with the detent, then returns to its starting-point automatically, either by the action of gravity or of a spring.

In the accompanying drawings, Figure 1 is a front elevation illustrating the essential parts of the invention. Fig. 2 is a side view of the same. Figs. 3 and 4 show certain details in the construction of the unison device.

Referring to the figures, A represents a type-wheel, which is carried upon a shaft, *a*. This shaft may be driven through a train of gear, *A'*, in the usual manner, or it may be impelled by the means of an anchor employed as an escapement, such an anchor acting upon a star-wheel. When a spring or weight is employed, a yielding connection is preferably employed between the train *A'* and the type-wheel. This may be accomplished by using a coupling-spring, *A²*. Upon the shaft *a* there is carried an escapement-wheel, B, and to this wheel is applied an escapement-anchor, C. The anchor C is supported upon an extension, *c*, of soft iron. A portion of the extension

passes within the coil of an electro-magnet, E, and constitutes a section of the core of the same. It, however, is pivoted at one end within the coil and at the other outside the coil to a plate of soft iron. This plate serves to close the opening formed in the core e of the magnet E for receiving the extension e' . An arm, e^2 , of the extension extending outside the coils of the magnet is thus polarized by induction from the electro-magnet E. The electro-magnet E is included in the circuit of the main line, and is designed to be traversed by alternating electric impulses. These impulses give to the core of the electro-magnet a polarization dependent upon the direction of the current, and the arm e^2 receives a polarization dependent upon the polarization of the electro-magnet. The changes in the polarization of the arm e^2 serve to impel the escapement-anchor to and fro. For this purpose a permanent magnet, D, is employed. This magnet is preferably mounted upon the frame of the instrument, and its arms are bent forward parallel with the core of the electro-magnet, its poles extending into proximity to the extension e^2 . It should be noted, however, that the permanent magnet and the electro-magnet are independent of each other. When, therefore, the extension e^2 has a given polarity, it will be drawn toward one pole and repelled from the other pole of the permanent magnet, and when its polarization is reversed it will be attracted and impelled in the opposite direction. In this manner, by means of alternating impulses, the escapement-anchor will be driven to and fro, and the type-wheel shaft either released or driven forward step by step.

For the purpose of effecting impressions from the type-wheel, a platen, T, is employed. This platen is carried upon a lever, f , which is designed to be actuated by the movements of an armature, f' . The armature f' is applied to the electro magnet E, and is presented to two extensions, e^2 and e^3 , of the respective poles of the magnet. The short alternating currents employed for actuating the escapement are of insufficient duration to actuate the armature f' ; but a prolonged current in either direction will cause the armature f' to be drawn forward and the platen to be thus actuated and an impression effected. The impressions may, however, be effected by prolonged currents of greater strength than are normally employed for actuating the escapement.

Attached to or connected with the platen-lever there may be any convenient form of paper-feeding device suited to the purpose.

For the purpose of bringing the type-wheel into unison whenever it is desired, a stop, h , is carried upon the type-wheel shaft, and this stop is designed to be intercepted by a detent, h' . The detent is carried upon a lever, h^2 , and is moved forward step by step by the action of a pawl, h^3 , acting upon a toothed segment, h^4 . The segment h^4 is carried upon the

lever supporting the detent, and the pawl is driven to and fro by means of an eccentric, k . This eccentric is mounted upon the type-wheel shaft or constitutes a part of it. During each revolution of the type-wheel shaft the pawl is driven forward and back by means of the eccentric, and as it rests against the teeth of the segment it draws the latter forward, bringing the detent into the path of the stop.

A suitable retaining-pawl, n , prevents the detent from falling back when it is thus advanced.

Any predetermined number of revolutions of the type-wheel may serve to bring the detent into position to arrest the type-wheel at unison. For the purpose, however, of preventing the detent from thus intercepting the stop, except when it is desired, a releasing device is employed, and this device is designed to be actuated whenever an impression is effected. For this purpose a second armature, m , is applied to one pole of the electro-magnet E. This armature is carried upon a lever, m' , which is supported upon the arbor m^2 . The axis or arbor m^2 carries an extension, m^3 , passing beneath a rod, m^4 . This rod is loosely supported in the frame of the instrument at m^5 . The rod m^4 is coupled with the pawl h^3 at its upper end, and when it is elevated it serves to throw the pawls h^3 and n of the unison device out of engagement with the segment, thereby permitting the detent to fall back, which it will do by reason of the force of gravity. The armature m responds only to the prolonged or increased currents employed for printing, so that for each impression made the unison device will be released and the detent fall back to its starting-point.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of a type-wheel, an anchor for giving a step-by-step movement to the same, a soft-iron arm for vibrating said anchor, an electro-magnet polarizing said arm according to the direction of the current traversing its coils, a permanent magnet applied to said arm, substantially as described, a press-lever, and an armature for operating the same, applied to extensions of the respective poles of said electro-magnet.

2. The combination, substantially as hereinbefore set forth, of a type-wheel, an anchor for giving a step-by-step movement to the same, an arm of magnetic material for operating said anchor, an electro-magnet polarizing said arm, a permanent magnet serving to impel said arm in one direction or the other, according to the polarization of the electro-magnet, a press-lever, an armature for actuating the same, applied to said electro-magnet, and an independent armature applied to said electro-magnet for releasing a unison device.

3. In a printing-telegraph instrument, a unison device consisting of a stop moving with

the type-wheel, a detent, a cam or eccentric moving with the type-wheel, a toothed segment or rack-bar for moving said detent, and a pawl actuated by said eccentric for actuating said segment.

4. In a printing-telegraph instrument, a unison-stop, a unison-detent, a pawl driven to and fro by the movement of the type-wheel, and serving thereby to move said detent into the path of said stop, a retaining-pawl, an electro-magnet for operating the type-wheel,

and an independent armature responding to printing-currents to release said detent from said pawls.

In testimony whereof I have hereunto subscribed my name this 10th day of January, A. D. 1885.

ROBERT J. SHEEHY.

Witnesses:

DANL. W. EDGECOMB,
CHARLES A. TERRY.