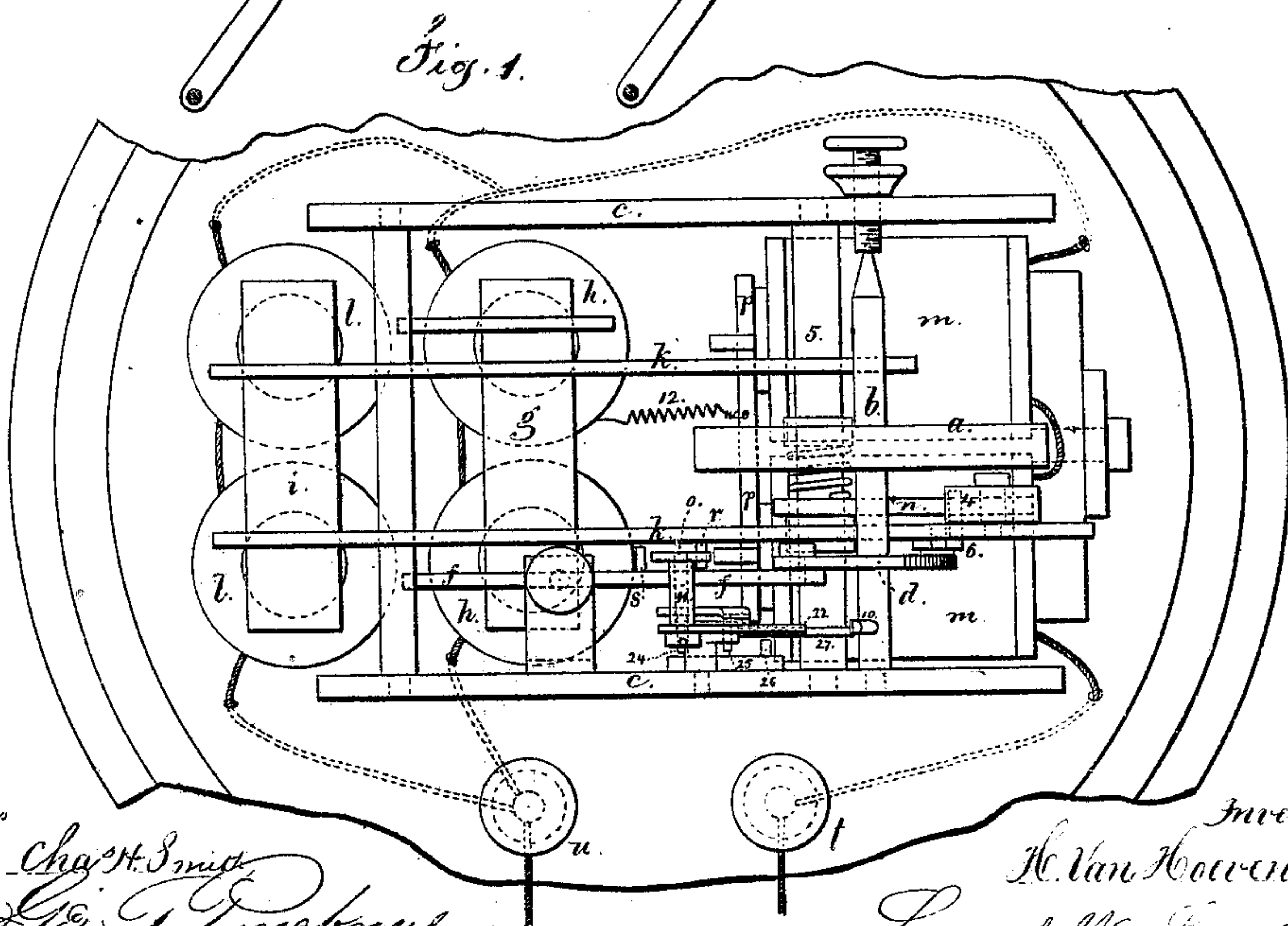
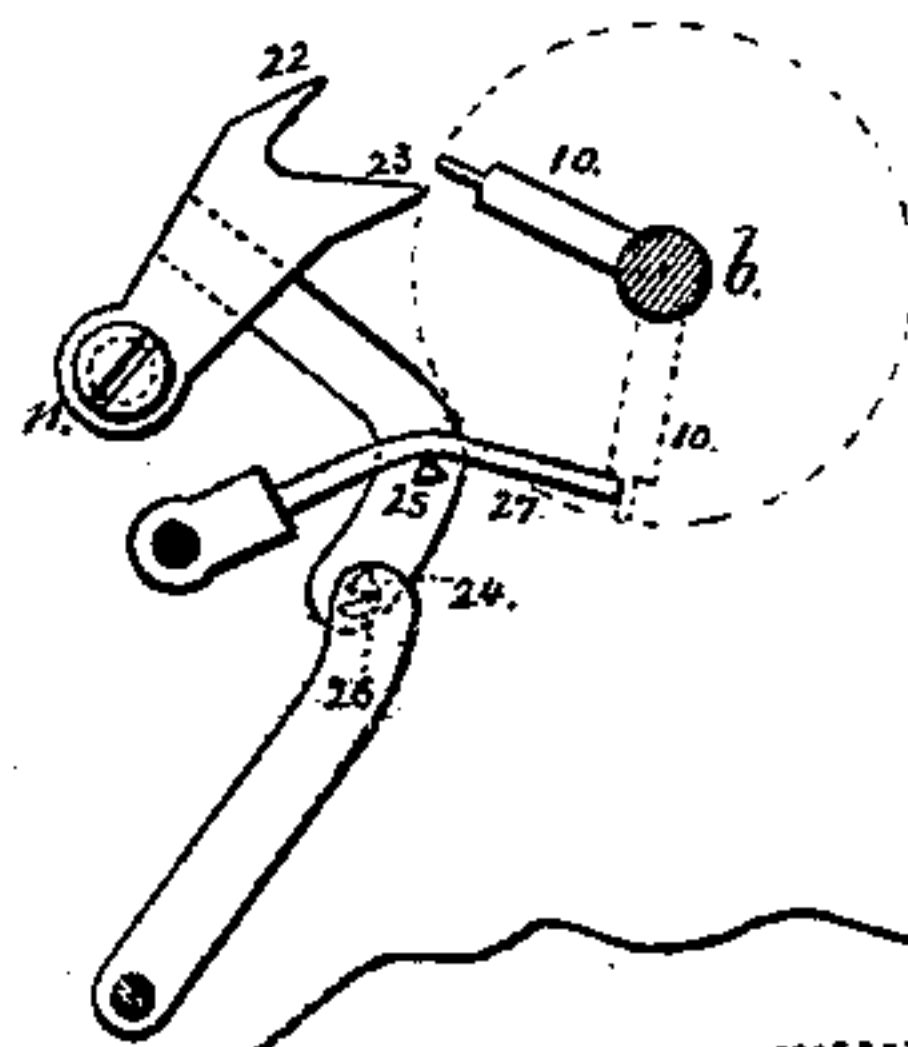
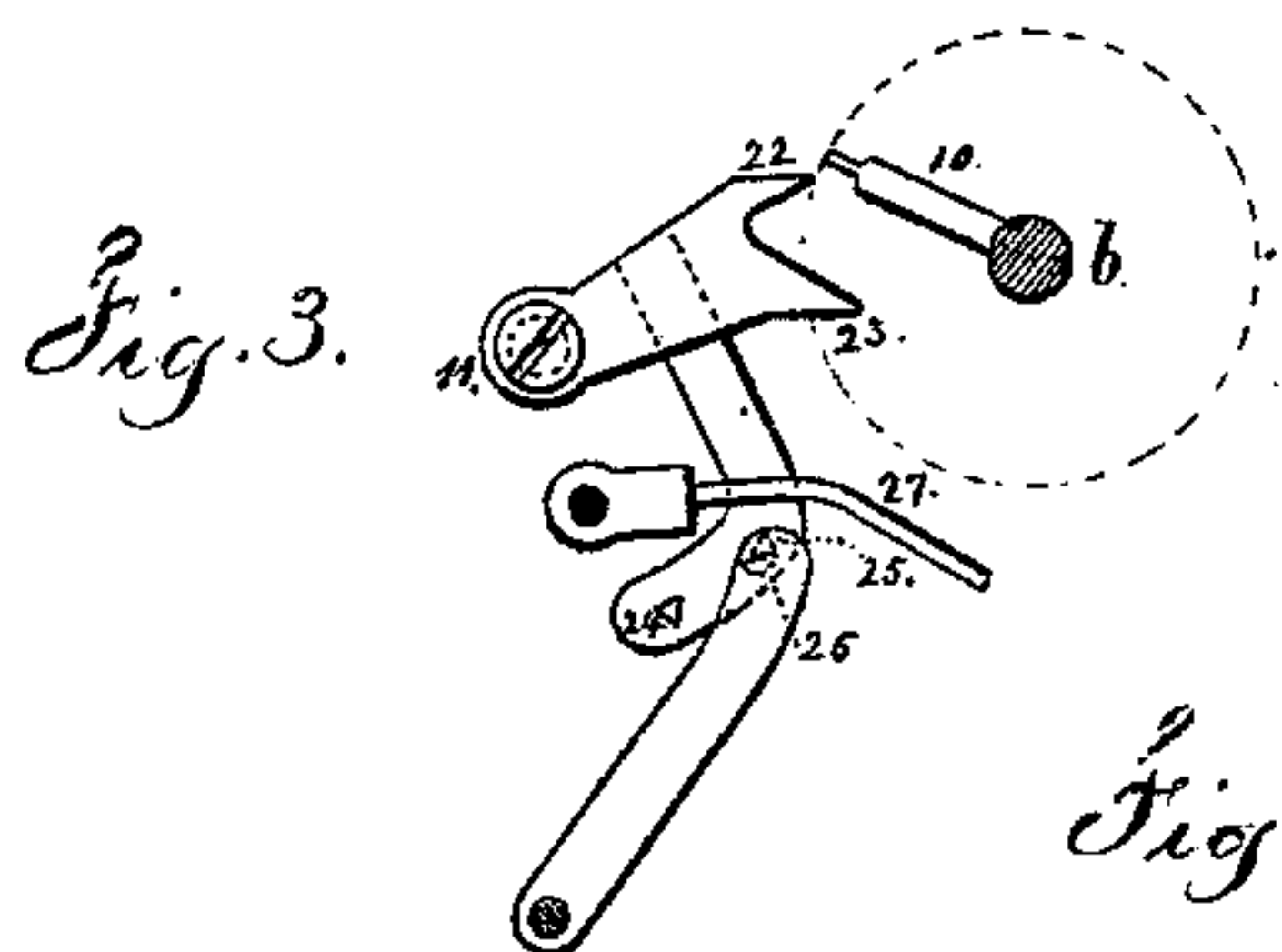
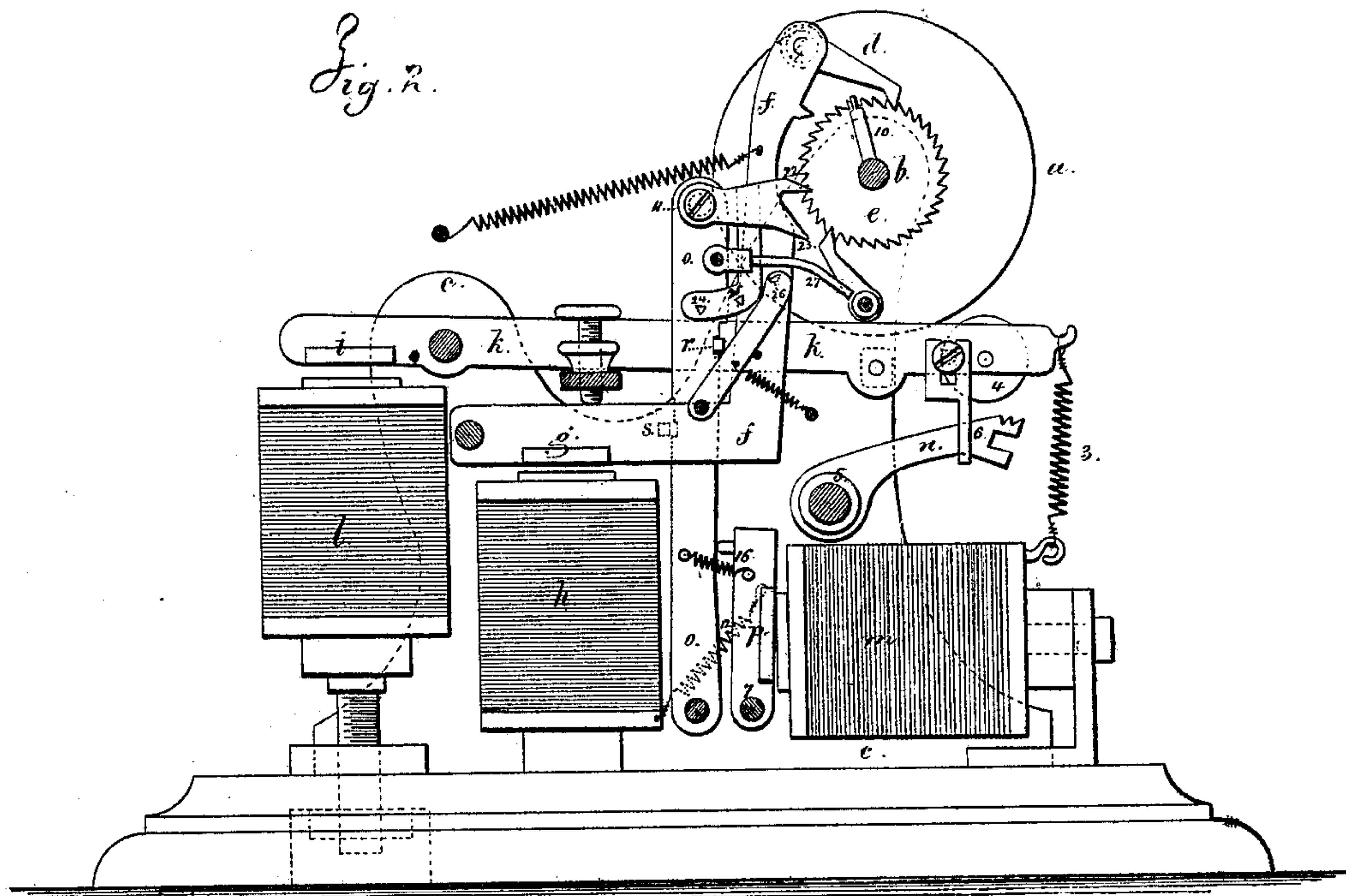


HENRY VAN HOEVENBERG  
Improvement in Printing-Telegraphs.

No. 126,353.

Patented April 30, 1872.



Witnesses

Chas. H. Smith  
Geo. T. P. P. P. P.

Inventor

H. Van Hooventberg  
Lemuel W. Ferrell



## UNITED STATES PATENT OFFICE.

HENRY VAN HOEVENBERGH, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN PRINTING-TELEGRAPHS.

Specification forming part of Letters Patent No. 126,353, dated April 30, 1872.

*To all whom it may concern:*

Be it known that I, HENRY VAN HOEVENBERGH, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Printing-Telegraphs; and the following is declared to be a correct description thereof.

This printing-telegraph is made to operate upon a line with one wire, and a number of instruments may be connected in one circuit. Printing-telegraphs have been made in which a permanent magnet or a switch has been moved by reversing the current for either directing the current through an electro-magnet or for blocking the armature of an electro-magnet to prevent the movement of the same. My invention relates to a controlling-magnet that is charged by the pulsations of electricity that operate in the other magnet or magnets and holds the armature in contact with the poles, so that the same will not be easily separated therefrom, until the polarity of the circuit is reversed. By employing this controlling-magnet in a printing-telegraph where an electro-magnet moves the type-wheel by a step-by-step motion, the printing-lever in such instrument will be held from being moved until the current is reversed and the printing-lever unlocked and the type-wheel lever momentarily locked; and by a second reversal of the polarity of the current a second impression can be given from the type by the printing-lever without moving the type-wheel; or, after the polarity has been reversed, the pulsations of the same polarity will move the type-wheel.

It is to be understood that the pulsations go through all three magnets; but the controlling-magnet holds the printing-lever from moving until a reversal of the current takes place and the armature of the controlling-magnet is released thereby, so as to be moved, by a spring or otherwise, at the time of the impression being made; and I remark that this movement of the armature might be the means for connecting the circuit to the printing-magnet, instead of simply releasing its lever.

In the drawing, Figure 1 is a plan of my printing-telegraph. Fig. 2 is a side view of the same; Fig. 3, a detached view of the uni-son-stop in one position; and Fig. 4 is another view of the stop in position for holding the type-wheel.

The type-wheel *a* is mounted upon a shaft, *b*, in frames *c c*, and moved by a step-by-step mechanism of any desired character. I have shown the pawl *d*, ratchet-wheel *e*, and lever *f*, moved by the armature *g* of the electro-magnet *h*. The printing-lever *k* is actuated by the armature *i* of the electro-magnet *l*, and the paper is fed along as the lever is drawn away from the type by the spring 3. To give this movement to the paper I make use of the roller 4 and pawl *n*, said pawl *n* being upon the cross-bar 5, with a friction applied at the side thereof, so as to hold it in any position to which it may be moved, but not to prevent that motion being given easily. The finger 6 lifts this pawl *n* as the printing-lever rises, and the ends of the pawl are brought contiguous to the roller 4, the paper being between the roller and pawl; hence, as the printing-lever *k* and roller 4 descend, the pawl presses the paper to the roller, and the diagonal position of the pawl causes the movement of the paper as the printing-lever descends. The controlling-magnet *m* has an armature, *p*, on the fulcrum 7, and to this the lever *o* is attached or connected, as shown, by a spring. This lever *o* has two notches on opposite sides—one to take the stop *r* on the printing-lever *k*, and the other to take the stop *s* on the type-wheel lever *f*.

The connections from the binding-screws *t* and *u* lead through the magnets *m*, *h*, and *l*; hence all the pulsations of electricity act in them all simultaneously, or nearly so; but the armature of the controlling-magnet *m*, being nearest to its poles, is the most easily drawn to said poles and held there by contact and induced magnetism, and hence does not leave the electro-magnet by the simple breaking of the circuit in giving the pulsations for setting the type-wheel, and the stop *r* will hold the printing-lever so that it will not move, and the stop *s* will be free so that the type-wheel lever can move each pulsation. If, now, the polarity of the current is reversed, the armature of the controlling-magnet is repelled or drawn off by its spring 12, the lever *o* catching the stop *s* and preventing the type-wheel being moved, and simultaneously liberating the stop *r*, so that the impression-lever is moved by the same pulsation acting in the magnet *l*. The pulsation attracts the armature *p* instantly to the controlling-magnet *m* and again holds it there,



and in so doing draws upon the lever *o* by the spring 16; hence, as the impression-lever *k* descends, the stop *r* is caught and the stop *s* simultaneously liberated, and the operator at the sending station can go on and manipulate the type-wheel, or a second impression can be given from the same type without moving the type-wheel, by simply again reversing the polarity of the current which causes the movements before named.

The mechanism for stopping the type-wheel at a unison-point, so as to bring all the instruments of one circuit into harmony, consists of a revolving arm, 10, on the shaft *b*, an arm hinged at 11 to the lever *o*, with teeth 22 and 23 and detents 24 and 25, a detent, 26, and spring on the frame *c*, and a stop, 27, also hinged on the frame *c*.

As the shaft *b* and arm 10 revolve the latter lifts the teeth 22 23 and detents 24 25, and these are held up by the detent 26 successively and according to the number of teeth, so the type-wheel will have to make the requisite number of revolutions to raise the hinged arm high enough to bring the stop 27 up into the path of the revolving arm 10 and stop the same, as indicated in Fig. 4. When the lever *o* flies back on reversing the polarity of the current in the controlling-magnet, the detent and hinged arms, being drawn back and off the supporting-detent 26, will fall; hence the unison-stop will only be brought into action when the rotation of the type-wheel is purposely continued sufficiently for raising the stop entirely; otherwise it will fall from its partial elevation each time the current is reversed for effecting the printing.

There may be a projecting pin on the type-wheel, on type-wheel shaft, taking a projection on the printing-lever, to prevent the movement thereof being too great at the blank space of the type-wheel.

I remark that the movement of the armature of the controlling-magnet, when the current is reversed, may be availed of for closing momentarily a circuit through the printing-magnet *l*, such circuit being otherwise broken; or this movement may be availed of in any other telegraphic operation, the essential feature of this part of my invention consisting in the armature held to the electro-magnet by induced magnetism, regardless of the length of the pulsations or the pauses in telegraphing, and only

separating momentarily when the polarity of the current is changed, and then being held by induced magnetism, as before; or, by changing the polarity of the current each pulsation, the armature will be vibrated with rapidity, and may be employed for setting the type-wheel, the printing-lever being actuated by a second pulsation of the same polarity, while the type-wheel is held by the armature adhering to the poles of the electro-magnet; thereby the action of the parts will be simply reversed.

I claim as my invention—

1. An electro-magnet and armature in which the armature is held to the cores by induced magnetism, except momentarily, when the polarity of the current is changed, in combination with a type-wheel and step-by-step movement and impression mechanism, substantially as set forth.

2. The armature of an electro-magnet held by induced magnetism, in combination with an impression-lever of a printing-telegraph, and a locking mechanism to hold the printing-lever, except momentarily, when the polarity of the electric current is reversed, as set forth.

3. A locking-lever, combined with stops upon the impression-lever and type-wheel lever, to hold the latter and release the former simultaneously, and vice versa, substantially as set forth.

4. The swinging arm and teeth 22 23, in combination with the arm 10 and detents 24, 25, and 26, and stop 27, substantially as set forth, for stopping the type-wheels in unison.

5. The feeding-pawl *n*, with a friction applied to hold the same, in combination with the finger *g*, roller *d*, and impression-lever, substantially as specified.

6. An impression-magnet, a type-wheel magnet, and a controlling-magnet, all in the same or branch electric circuits, and mechanism operated by the controlling-magnet for preventing the action of the printing-lever, except momentarily, when the polarity of the circuit is reversed, as set forth.

Signed by me this 5th day of January, A. D. 1872.

HENRY VAN HOEVENBERGH.

Witnesses:

GEO. T. PINCKNEY,  
CHAS. H. SMITH.