

(No Model.)

H. VAN HOEVENBERGH.  
UNISON FOR PRINTING TELEGRAPHS.

No. 316,696.

Patented Apr. 28, 1885.

Fig. 2.

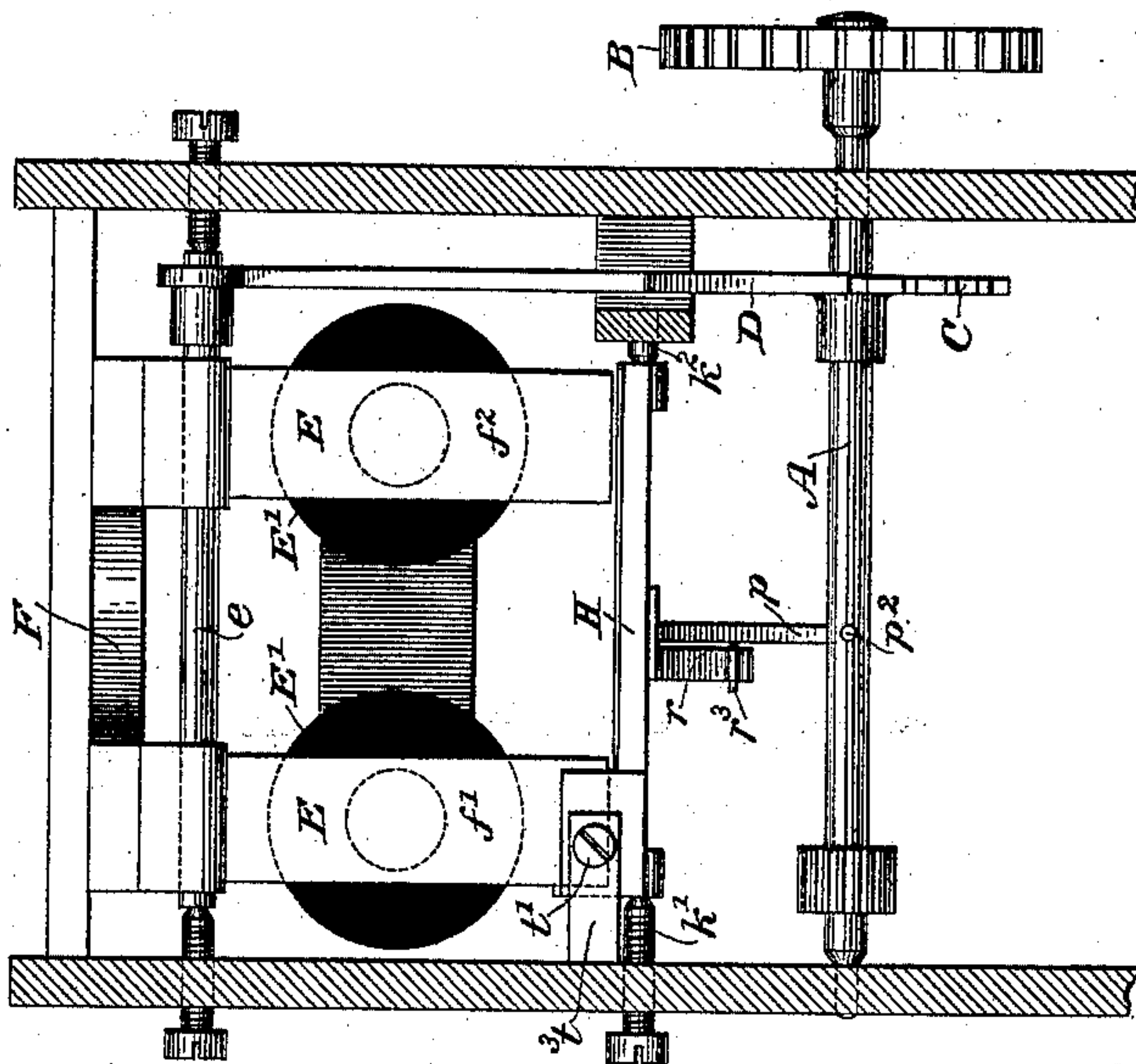
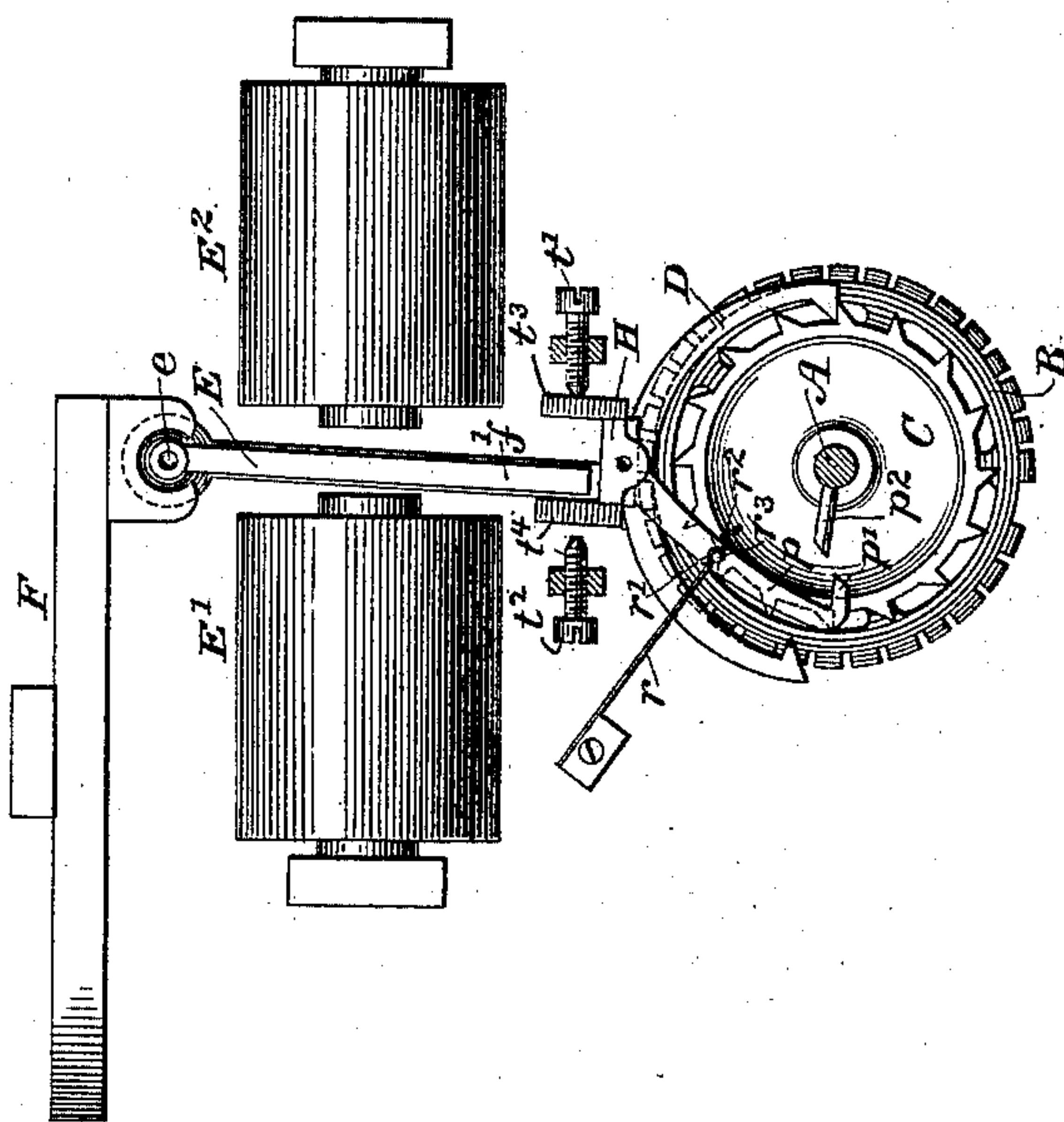


Fig. 1.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## UNISON FOR PRINTING-TELEGRAPHS.

SPECIFICATION forming part of Letters Patent No. 316,696, dated April 28, 1885.

Application filed August 7, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY VAN HOEVENBERGH, a citizen of the United States, residing in Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Unison Devices for Printing-Telegraphs, of which the following is a specification.

My invention relates to the class of devices employed in connection with printing-telegraph instruments for the purpose of maintaining the type-wheels of the receiving-instruments in unison with the transmitting apparatus.

The object of the invention is to provide convenient means for so controlling the position of a unison-arm that it will normally stand out of the path of a unison-stop applied to the type-wheel shaft, but may be caused to intercept the path of the same whenever it is so desired.

The invention consists in organizing the apparatus in substantially the following manner: Applied to the type-wheel shaft and a scape-wheel of the usual character is an escapement-anchor, the to-and-fro movements of which are occasioned by means of two electro-magnets acting upon an inductively-polarized armature. A pivoted lever or rocker of magnetic material is applied to the extremities of the polarized armature of the escapement-magnets. During the normal operation of the instrument this rocker is not actuated; but it is, however, so adjusted as to respond to the increased attraction which the escapement-armature is caused to exert when currents of greater than normal strength are employed, such increase in attraction being due to the inductive effects of the electro-magnets upon the escapement-armature. The rocker is so pivoted that if the polarized armature be in one of its two positions when the stronger current is transmitted it will be actuated in one direction. If, however, the polarized armature be in its other position at that time, the rocker will be actuated in the opposite direction. Applied to and moving with this rocker is a unison-detent, which is thus capable of being moved into or out of the path of a stop

moving with the type-wheel, accordingly as the rocker is actuated in one direction or the opposite. When, therefore, it is desired to arrest the type-wheel at its unison-point, it is necessary only to transmit through the escapement-magnets, when the polarized armature is in the proper position with reference to the rocker, a current of the last polarity employed and of sufficient strength to cause the rocker to be actuated. The detent will thus be thrown into the path of the unison-stop, and by subsequently actuating the escapement device through the instrumentality of currents of the strength normally employed the type-wheel will be revolved until it is arrested at its unison-point. When it is desired to withdraw the detent from the path of the stop, a strong current of the opposite polarity is transmitted, and this current not only carries the polarized armature into its second position, but also serves to so actuate the rocker as to withdraw the detent from the path of the unison-stop. Suitable means are employed for holding the detent in either position which it is caused to assume until it is purposely actuated.

In the accompanying drawings, Figure 1 is a side elevation of such parts of a printing-telegraph instrument as are required to illustrate my invention, and Fig. 2 is an end view of the same.

Referring to the drawings, A represents a type-wheel shaft, upon which is carried a type-wheel, B. A scape-wheel, C, is also mounted upon a type-wheel shaft, and to this scape-wheel is applied an escapement-anchor, D. The escapement-anchor is carried upon a shaft or arbor, *e*, which also carries a polarized armature, E. The polarized armature is designed to be actuated in one direction, and the opposite by means of electric currents of alternating polarity transmitted through two electro-magnets, *E'* and *E''*, in a well-known manner. The armature E is preferably polarized by means of a permanent magnet, F, and it consists of two soft-iron sections, *f'* and *f''*, which are respectively supported at the respective poles of the permanent magnet. The sections *f'* and *f''* are thus normally polarized to a certain degree by the permanent magnet, and will



actuate the shaft or arbor  $e$  upon which they are carried in one direction and the opposite in response to the alternating currents in the usual manner. A step-by-step movement of the type-wheel is thus obtained. When, however, the armature-sections are adjacent to the poles of one or the other of the electro-magnets, they will receive therefrom by induction a certain amount of additional polarization which will be dependent upon the strength of the current transmitted through the electro-magnets.

Near the extremities of the two sections  $f^1$  and  $f^2$  of the armature there extends a soft-iron rocker or pivoted lever,  $H$ . This rocker is supported at its respective extremities by means of two pointed screws,  $k^1$  and  $k^2$ , or in any other suitable manner. The parts are so organized that the armature  $E$  will present its extremities to the rocker  $H$  upon one side of its axis when a current is transmitted through the electro-magnets  $E^1$  and  $E^2$  in one direction, and upon the other side of the axis when the current is transmitted in the opposite direction. During the normal operation of the instrument the armature  $E$  is impelled to and fro without affecting the rocker  $H$ , for the reason that the magnetism developed therein is not sufficient to actuate the rocker. When, however, a current of greater than normal strength is transmitted through the electro-magnets, the magnetism which is developed in the armature  $E$  will be sufficient to attract the rocker  $H$ , causing it to turn upon its axis in one direction or the opposite, accordingly as the armature  $E$  is toward one or the other of the electro-magnets  $E^1$  or  $E^2$ .

Applied to the rocker  $H$  there is a unison-arm,  $p$ , and this arm carries at its extremity a detent,  $p^1$ , which is designed to normally stand out of the path of a unison-stop,  $p^2$ , which is carried upon the type-wheel shaft  $A$ . When, however, it is desired to arrest the type-wheel at its unison-point, the detent  $p^1$  is caused to intercept the path of the stop  $p^2$ . The necessary movements of the arm  $p$  are obtained from the movement of the rocker  $H$ . Thus when it is desired to move the unison-detent  $p^1$  into the path of the stop or arm  $p$  a strong current is transmitted having the character required to hold the armature  $E$  toward the electro-magnet  $E^2$ , and when it is desired to remove the detent from the path of the stop a strong current of the character required to draw the armature  $E$  toward the electro-magnet  $E^1$  is transmitted.

For the purpose of causing the rocker  $H$  and the arm  $p$  to normally remain in whichever position they have been caused to occupy, a spring,  $r$ , is employed. In the extremity of this spring there are formed two recesses,  $r^1$  and  $r^2$ , and a pin,  $r^3$ , carried upon the arm  $p$  falls into one or the other of these two recesses, accordingly as it is away from or in the path of the unison-stop. The normal attraction exerted by the polarized armature  $E$

upon the rocker  $H$  will not be sufficient to move the latter in opposition to the resistance offered by the spring  $r$ , but the increased magnetism will be sufficient to effect this result.

For the purpose of limiting the movements of the rocker  $H$ , suitable adjustable stops,  $t^1$  and  $t^2$ , may, for convenience, be applied to extensions  $t^3$  and  $t^4$ , of non-magnetic material, which project upward from the opposite sides of the rocker.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, with the type-wheel and type-wheel shaft of a printing-telegraph instrument, of a scape-wheel and escapement-anchor, a polarized armature and the electro-magnets for actuating the said escapement-anchor, a magnetic lever or rocker applied to said polarized armature, and a unison-stop actuated by said lever or rocker under the influence of currents of greater than normal strength.

2. The combination, substantially as hereinbefore set forth, with the type-wheel and type-wheel shaft of a printing-telegraph instrument, of an escapement device, a normally-polarized armature and electro-magnets for actuating said escapement device, a magnetic lever or rocker applied to said polarized armature, means, substantially such as described, for actuating said lever or rocker in one direction or the other through the influence of currents of greater than normal strength, accordingly as they are of one polarity or the opposite, and a unison device actuated by said lever or rocker.

3. The combination, substantially as hereinbefore set forth, with an escapement device for printing-telegraph instruments, of a unison-stop, a polarized armature and electro-magnets for actuating said escapement device, a magnetic lever or rocker applied to said polarized armature, and a unison-detent actuated by said lever or rocker.

4. The combination, substantially as hereinbefore set forth, of the escapement device of a printing-telegraph instrument, electro-magnets and an armature for actuating the same, a permanent magnet serving to normally polarize said armature to a given degree, a rocker applied to said polarized armature, which rocker is not actuated by the magnetism normally induced in said polarized armature, and a unison device which is operated through the influence of said polarized armature when said electro-magnets are traversed by currents of greater than normal strength.

5. The combination, substantially as hereinbefore set forth, with the escapement device of a printing-telegraph instrument, a polarized armature, and electro-magnets for actuating the same, of a unison device, a lever of magnetic material applied thereto, and means, substantially such as described, whereby currents of greater than normal strength transmitted through said electro-magnets induce in said



polarized armature sufficient magnetism to actuate said unison device through the lever applied thereto.

5 6. The combination, substantially as herein-  
before set forth, in a printing-telegraph instru-  
ment, of a permanent magnet, a soft-iron ex-  
tension normally polarized thereby, a soft-  
iron lever applied to said extension, means,  
substantially such as described, for causing said  
10 extension to move from one to the other side  
of the axis of said lever, means, substantially  
such as described, for inducing in said exten-  
sions sufficient magnetism to actuate the same,  
and a unison device controlled by said lever.  
15 7. The combination, substantially as herein-  
before set forth, with a permanent magnet and  
an armature normally polarized thereby, of  
two electro-magnets for actuating said polar-  
ized armature, a lever or rocker of soft iron  
20 applied to said polarized armature, which le-  
ver or rocker is centrally pivoted and located,  
as described, whereby the polarized armature  
is caused to present its extremities thereto up-  
on opposite sides of its axis, a unison device

actuated by said lever or rocker, and a yield- 25  
ing spring applied to said auxiliary armature,  
whereby it is normally held in one or the other  
of two positions.

8. The combination, substantially as herein-  
before set forth, with a permanent magnet and 30  
an armature normally polarized thereby, of  
two electro-magnets for actuating said arma-  
ture, a lever or rocker of soft iron applied to  
said polarized armature, which lever or rocker  
is centrally pivoted and located, as described, 35  
whereby the polarized armature is caused to  
present its extremities thereto alternately up-  
on opposite sides of its axis, a unison device  
actuated by said lever or rocker, and stops for  
limiting the movements of said lever or rocker. 40

In testimony whereof I have hereunto sub-  
scribed my name this 26th day of June, A. D.  
1884.

HENRY VAN HOEVENBERGH. [L. S.]

Witnesses:

DANL. W. EDGECOMB,  
CHARLES A. TERRY.