

(No Model.)

H. VAN HOEVENBERGH.

PRINTING TELEGRAPH.

No. 313,786.

Patented Mar. 10, 1885.

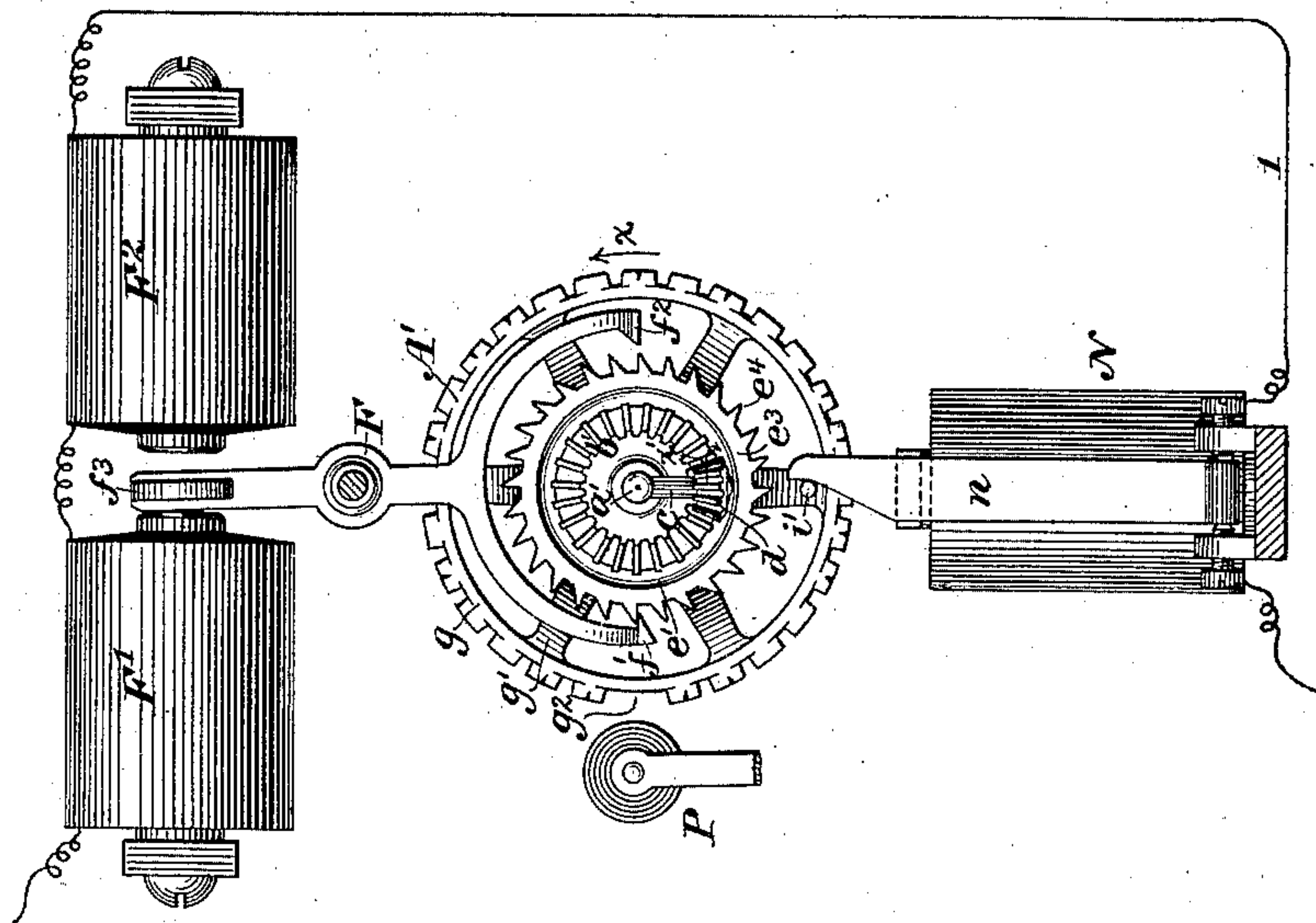


Fig. 2

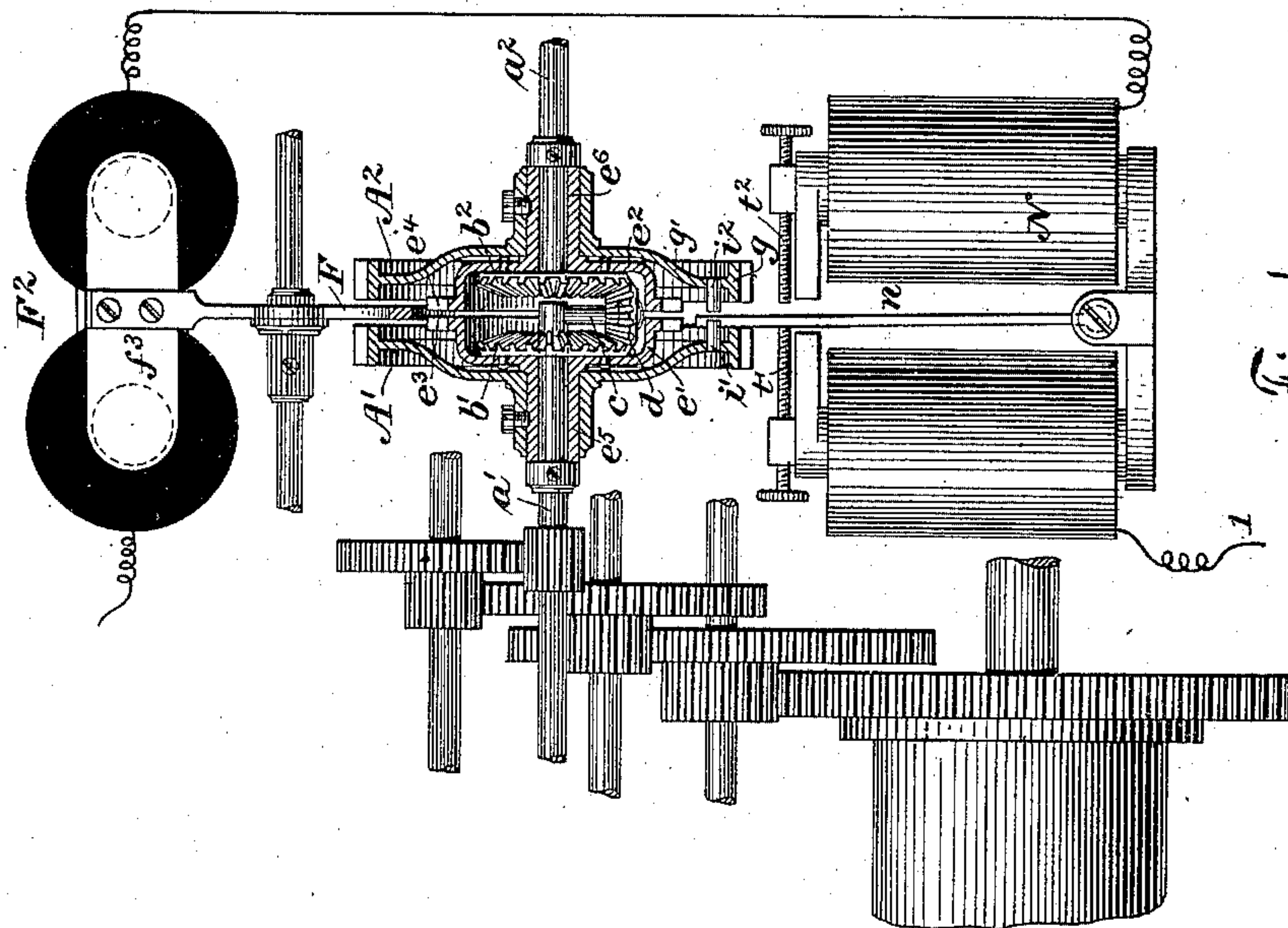


Fig. 1

WITNESSES

Wm A. Skink  
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# UNITED STATES PATENT OFFICE.

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## PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 313,786, dated March 10, 1885.

Application filed April 30, 1883. (No model.)

*To all whom it may concern:*

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

My invention relates to certain improvements in the construction and organization of  
10 the escapement apparatus employed in printing-telegraphs for determining the positions of two independent type-wheels, for the purpose of printing from either one, as may be desired.

The object of the invention is to provide  
15 means whereby either of the two type-wheels may be actuated independently of the other, and the type-wheel which is not actuated may be automatically arrested in a predetermined position, or at the unison-point, by the same  
20 action which permits the advancement of the moving type-wheel.

The invention consists in mounting two type-wheels of peculiar construction side by side upon two independent arbors, to each of  
25 which wheels is secured a scape-wheel and a bevel gear-wheel. The wheels of both systems are in the same axial line. Between the faces of the gear-wheels is placed a bevel-pinion, the teeth of which engage the teeth of both  
30 gear-wheels, thereby linking them together. This pinion is carried upon an arbor at the extremity of a wrist crank or arm extending at right angles from one of the arbors, and the three wheels constitute an epicyclic train.  
35 The axis of the revolution of the pinion is thus perpendicular to that of the arbor of the type-wheel which carries it, and this arbor is normally revolved in a given direction through the instrumentality of a suitable clock mechanism. A single anchor-escapement, constructed to be actuated in opposite directions through the action of alternate positive and negative impulses transmitted through two  
40 suitable electro-magnets, serves as a release for both scape-wheels. The extremity of the polarized armature of a third electro-magnet extends between the two type-wheels, and may be inclined toward one type-wheel or the other, according to the character of the current trans-

mitted through the electro-magnet. When  
50 this armature is inclined toward one type-wheel, it projects into the path of a pin carried upon that type-wheel, and acts to arrest its movement at the unison-point. When inclined toward the other type-wheel, the armature acts in like manner to arrest the move-  
55 ment of that type-wheel at a corresponding point.

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of such  
60 portions of a printing-instrument as are necessary to illustrate my invention, and Fig. 2 is a side elevation of the same.

Referring to the drawings,  $a'$  and  $a''$  represent two horizontal arbors placed in the same  
65 axial line, and serving as supports for two type-wheels,  $A'$  and  $A''$ , respectively. The arbor  $a'$  is revolved in the direction indicated by the arrow  $x$ , through the agency of a suitable train of clock mechanism. The arbor  $a''$ ,  
70 however, is stationary, serving merely as a support for the corresponding system of wheels, hereinafter described.

Near the confronting extremities of the arbors are carried two beveled gear-wheels,  $b'$   
75 and  $b''$ , respectively, loosely mounted thereon and revolving independently thereof. An arm or right-angled extension,  $c$ , is carried upon the arbor  $a'$  between the two gear-wheels. A bevel-pinion,  $d$ , is carried at the extremity of  
80 the arm  $c$  and revolves freely thereon. The teeth of this pinion engage the confronting teeth of the gear-wheels and communicate a revolution to one or the other, or to both, of the gear-wheels when the arbor  $a'$  is revolved, in  
85 a manner hereinafter explained.

Two hollow scape-wheels,  $e'$  and  $e''$ , are respectively affixed to the gear-wheels and in-  
close the same. The sides  $e^3$  of these wheels are formed so as to come into proximity to  
90 each other, and at their adjacent edges a series of radial teeth,  $e^4$ , is formed upon each wheel.

An anchor-escapement,  $F$ , is employed for controlling the movements of the two scape-  
wheels  $e'$  and  $e''$ . For this purpose it is con-  
95 structed with pallets  $f'$  and  $f''$ , of sufficient breadth to engage both series of teeth. Two electro-magnets,  $F'$  and  $F''$ , are employed for



determining the movements of the escapement F, through the instrumentality of alternating electric impulses or currents, transmitted therethrough and acting upon an armature, 5  $f^3$ , in a manner well understood.

The scape-wheels  $e'$  and  $e^2$  are constructed with elongated hubs or sleeves  $e^5$  and  $e^6$ , respectively, surrounding the arbors  $a'$  and  $a^2$ . The type-wheels  $A'$  and  $A^2$  are respectively 10 mounted upon these sleeves. For the purpose of bringing the peripheries of the type-wheels as nearly together as practicable, the supporting arms or spokes  $g'$  of the rims  $g$  are curved in such manner as to inclose the gear and 15 scape wheels. A sufficient space must, however, be left between the rims  $g$  of the two wheels to permit the arm of the escapement F, for supporting the pallets  $f$ , to extend between them. This arm may, however, be 20 very thin, and thus the separation may be narrow.

Upon the type-wheel  $A'$  is carried an inwardly-projecting pin,  $i'$ , which extends slightly beyond the inner edge of the rim  $g$  of that wheel. A similar pin,  $i^2$ , projects inward 25 from the other type-wheel,  $A^2$ . Into the path of one or the other of the pins  $i$  is projected the extremity of a polarized armature,  $n$ , of an electro-magnet, N. The lengths of the pins 30  $i$  are such that when the armature  $n$  is at the limit of its movement in the direction of one of the type-wheels the corresponding pin will be carried by the revolution of the type-wheel against the armature, and the movement of 35 that type-wheel will be arrested. In like manner, when actuated in the opposite direction, the armature will arrest the movement of the other type-wheel at a given point through the action of its corresponding pin.

40 Suitable adjustable stops,  $t'$  and  $t^2$ , may be employed for limiting the movements of the armature  $n$ .

The electro-magnets N and  $F'$  and  $F^2$  are all designed to be included in a single electric 45 circuit, together with any suitable device for transmitting alternate electric impulses therethrough.

Any of the usual devices may be employed for actuating a platen, P, to effect an impression from the desired type-wheels, such device preferably being actuated through the instrumentality of electric impulses transmitted through an independent conductor.

55 A blank or open space,  $g^2$ , is left upon each of the type-wheels A, and this space bears such relation to the corresponding pin,  $i$ , that it will be opposite the platen P when the type-wheel is arrested by the polarized armature  $n$ . If, therefore, the platen P be actuated 60 when either of the type-wheels is thus arrested at its unison-point, no impression will be received from that type-wheel.

The operation of the instrument is as follows: Whenever rapid electric impulses are 65 transmitted through the conductor  $l$ , these impulses will act to vibrate the escapement device F, and the shaft  $a'$ , acting through the

arm  $c$  and pinion  $d$ , will tend to cause both gear-wheels  $b'$  and  $b^2$  to revolve in the direction indicated by the arrow  $x$  simultaneously. 70 Electric impulses of the character required to thus actuate the escapement F will not, however, be of sufficient duration to cause the polarized armature  $n$  to be actuated, on account of the greater magnetic inertia of the cores of 75 the magnet N. The armature  $n$  will therefore remain in the position which it happens to occupy until a prolonged impulse is transmitted. Considering this position to be that indicated in the drawings—that is to say, adjacent to the 80 type-wheel  $A'$ —both type-wheels will continue to revolve until the pin  $i'$  is brought into contact with the extremity of the armature  $n$ , at which point the type-wheel  $A'$  will be arrested. The type-wheel  $A^2$ , however, will continue to 85 revolve through the action of the epicyclic train, as will appear from the fact that, the gear-wheel  $b'$  being arrested, the pinion  $d$  will be caused by the revolution of the arm  $c$  to roll upon the teeth of the wheel  $b'$  in the direction 90 indicated by the arrow  $x'$ , thereby causing the wheel  $b^2$  to continue its revolution in the direction indicated by the arrow  $x$ . The movement of the type-wheel  $A'$  will then be arrested when the required character is 95 presented to the platen P by causing the impulses transmitted through the conductor  $l$  to cease. If the platen P be then actuated, the character required will be printed from the type-wheel  $A^2$ , but no impression will be ef- 100 fected by the type-wheel  $A'$ , for the reason that its blank space  $g^2$  is presented to the platen. If now a second character is to be printed from the same type-wheel  $A^2$ , the required character may be brought into the proper position 105 in a manner precisely similar to that already described, the type-wheel  $A'$  remaining stationary at the unison-point during the time the type-wheel  $A^2$  is so actuated. When it is 110 desired to print from the other type-wheel, an impulse of the proper character and duration to impel the armature  $n$  toward the type-wheel  $A^2$  is transmitted through the electro-magnet N, and this impulse, being of a greater duration than the alternating impulses employed 115 for actuating the escapement-arm F, will immediately cause the armature  $n$  to release the type-wheel  $A'$  and to project into the path of the wheel  $A^2$ . When the armature  $n$  has been thus actuated and alternating impulses are 120 transmitted for the purpose of bringing the required character on the type-wheel  $A^2$  into position to be printed, the movement of the type-wheel  $A^2$  will be arrested at its unison-point by means of the pin  $f^2$  and armature  $n$ . 125 So long as the alternating impulses are transmitted the type-wheel  $A'$  will be actuated in the direction indicated by the arrow  $x$ , through the influence of the motion of the arbor  $a'$ , in a manner precisely similar to that described 130 with reference to the type-wheel  $A^2$ . The revolution of the pinion  $c$ , however, in this instance will be opposite to that indicated by the arrow  $x'$ , and it will be caused to roll upon



the face of the gear-wheel  $b^2$ , thereby causing the gear-wheel  $b'$  and the type-wheel  $A'$  to be revolved in the direction indicated by the arrow  $x$ .

5 Instead of employing beveled gear-wheels and a pinion of corresponding character, it may in some instances be found desirable to employ crown-wheels or other form of straight gearing.

10 I claim as my invention—

1. The combination, substantially as here-  
inbefore set forth, of two independently-mov-  
able type-wheels and an epicyclic gearing me-  
chanically uniting said type-wheels.

15 2. The combination, substantially as here-  
inbefore set forth, of two independently-mov-  
able type-wheels, two scape-wheels, respect-  
ively attached thereto, an escapement device  
engaging the teeth of both of said scape-  
20 wheels, and an epicyclic gearing uniting said  
type-wheels.

3. The combination, substantially as here-  
inbefore set forth, of two type-wheels, two  
scape-wheels, respectively attached thereto,  
25 an escapement device engaging the teeth of  
both said scape-wheels, two parallel gear-  
wheels applied to and moving with said type-  
wheels, a movable pinion engaging the teeth  
of both of said gear-wheels, and having its  
30 axis of revolution perpendicular to the axis of  
said gear-wheels, and means, substantially  
such as described, for revolving said pinion  
about the axis of revolution of said wheels.

4. The combination, substantially as here-  
35 inbefore set forth, of the type-wheels  $A'$  and  
 $A^2$ , the gear-wheels  $b'$  and  $b^2$ , the arbor  $a'$ , the  
arm  $c$ , the pinion  $d$ , engaging the teeth of both  
of said gear-wheels, and means, substantially  
such as described, for arresting the movement  
40 of either of said type-wheels, and continuing  
the movement of the remaining type-wheel.

5. The combination, substantially as here-  
inbefore set forth, of two type-wheels, means

for revolving either or both of said type-  
wheels in a given direction, two detents, re- 45  
spectively applied to said type-wheels, an  
electro-magnet, and a polarized armature ex-  
tending between said type-wheels and acting  
to arrest the movement of one or the other of  
the same, according to the direction of a cur- 50  
rent transmitted through said electro-magnet,  
by intercepting the path of the corresponding  
detent.

6. The combination, substantially as here-  
inbefore set forth, of a type-wheel, a gear- 55  
wheel concentric therewith, an arbor support-  
ing said gear-wheel, means for revolving said  
arbor, a pinion caused by the revolution of  
said arbor to revolve in a plane perpendicular  
to the axis of revolution of said arbor, a sec- 60  
ond type-wheel and a second gear-wheel  
mounted upon an independent arbor, and  
means, substantially such as described, for ro-  
tating one or both of said type-wheels through  
the instrumentality of said pinion and gear- 65  
wheels.

7. The combination, substantially as here-  
inbefore set forth, of two type-wheels, two  
scape-wheels, respectively attached thereto, a  
single escapement-anchor applied to both of 70  
said scape-wheels, and means, substantially as  
described, for controlling the movements of  
said escapement-anchor.

8. The combination, substantially as here-  
inbefore set forth, of two type-wheels, two 75  
scape-wheels, respectively applied thereto, and  
a single escapement-anchor applied to both of  
said scape-wheels.

In testimony whereof I have hereunto sub-  
scribed my name this 25th day of April, A.D. 80  
1883.

HENRY VAN HOEVENBERGH.

Witnesses:

DANIEL W. EDGECOMB,  
CHARLES A. TERRY.