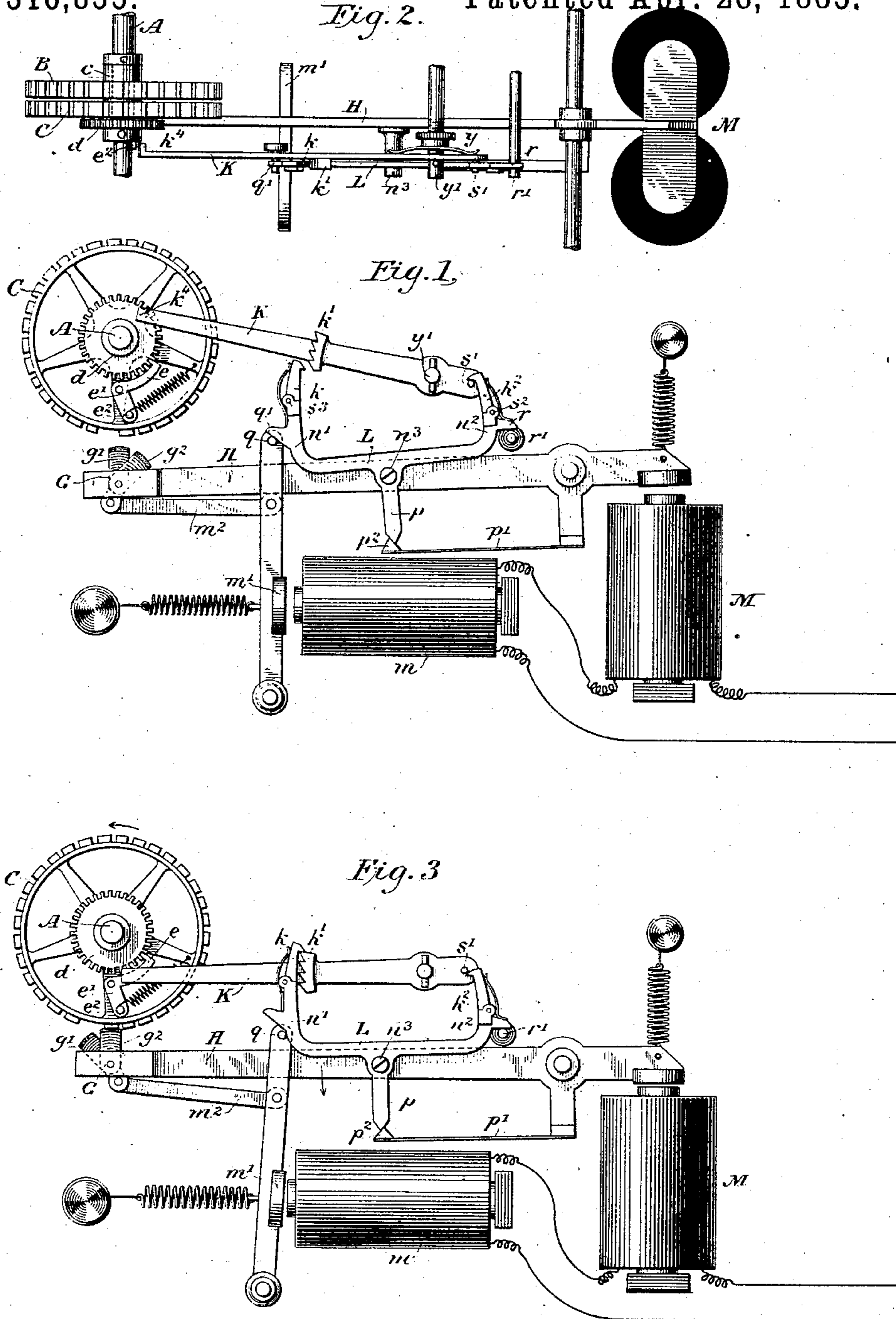


(No Model.)

H. VAN HOEVENBERGH.
UNISON FOR PRINTING TELEGRAPHS.

No. 316,855.

Patented Apr. 28, 1885.



Witnesses

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UNISON FOR PRINTING-TELEGRAPHS.

SPECIFICATION forming part of Letters Patent No. 316,855, 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 apparatus employed for maintaining the type-wheels of a printing-telegraph instrument in unison with the transmitting apparatus.

The object of the invention is to provide a device which, while allowing the printing to be continuously effected from one of the type-wheels, will be gradually moved into position to arrest the same at their unison-point when printing is effected from the other type-wheel.

The invention consists in constructing the apparatus in substantially the following manner: Two type-wheels are loosely mounted upon a shaft, and are normally coupled thereto by means of a ratchet-wheel and a click engaging the same. The ratchet-wheel is secured to the type-wheel shaft, while the click or dog is carried upon one of the type-wheels or the sleeve carrying the same. A double platen, consisting of two platen-faces projecting from each other at an angle, is provided for effecting impressions from the respective type-wheels. An electro-magnet is employed for controlling this platen, so that the one platen-face may be presented to the one type-wheel or the other platen-face to the other type-wheel at the will of the transmitting-operator. A device for engaging the retaining-click and forcing it out of engagement with the ratchet-wheel, thereby releasing the type-wheels from the type-wheel shaft, is also controlled by the movements of the armature-lever employed for controlling the movements of the platen. For this purpose the arm for releasing the retaining-click is frictionally supported upon a suitable arbor, and is provided with a series of ratchet-teeth, which are designed to be engaged by a corresponding pawl during the operation of printing from one of the type-wheels, preferably the type-wheel carrying numerals. This pawl is carried upon a frame pivoted to the printing-lever, and this frame is normally held in such

a position that the pawl will not engage the teeth of the ratchet-bar. When, however, the platen has been moved so that an impression is taken from the figure type-wheel, the frame is thrown into such position that the pawl will engage the ratchet and move the arm forward through a distance corresponding to one tooth of the ratchet-bar. This operation will be repeated for each downward movement of the press-lever after effecting an impression from the figure type-wheel. The parts are so adjusted that if a given number of impressions—say, four—be taken from the figure type-wheel in succession the unison-arm will be in position to engage the locking pawl or click, and to thereby force it out of engagement with the ratchet-wheel carried upon the type-wheel shaft. If, therefore, the escapement employed for advancing the type-wheel be actuated when the releasing-arm is in this position, the type-wheels will be unlocked from the shaft and be retained at their unison-point. It will be necessary, therefore, only to effect four impressions in succession from the figure type-wheel, and to then revolve the type-wheel shaft through one complete revolution, in order to insure that the type-wheels are at their unison-point. By then effecting an impression from the letter type-wheel the releasing or unison arm will be withdrawn from the path of the retaining-click, and the type-wheels will be again locked to the shaft. In practice it is seldom desired to effect more than three impressions from the figure type-wheel without the intervention of a punctuation-mark, or of a character carried upon the letter type-wheel.

In the accompanying drawings, Figure 1 is a side elevation of such parts of a printing-telegraph instrument as are necessary to illustrate the invention, and Fig. 2 is a plan view of the same. Fig. 3 is a side elevation showing the position of various parts of the instrument during the operation of effecting a unison.

Referring to these figures, A represents the type-wheel shaft, upon which are carried two type-wheels, B and C. The type-wheels are rigidly supported upon a sleeve, *c*, loosely surrounding the type-wheel shaft. Upon this shaft is rigidly supported a toothed wheel, *d*, the teeth of which are designed to be engaged

by a click or pawl, e . This pawl, therefore, normally locks the type-wheels to the shaft, which is designed to be advanced step by step in any well-known manner. The pawl is piv-
 5 oted to one of the type-wheels C, and it is provided with an extension, e' , carrying a projection, e^2 . This projection is designed to be engaged by a unison-arm, K, when it is desired to arrest the type-wheels at their unison-
 10 point, in a manner which will be hereinafter described. One of the type-wheels, B, is designed to carry the more important letters and certain marks of punctuation, while the other type-wheel, C, is intended to carry figures and
 15 such other characters as are less frequently employed. The impressions are effected from these type-wheels, respectively, by means of two platen-faces, g' and g^2 , which are carried upon a double platen, G. The platen G is piv-
 20 oted to a press-lever, H, which is actuated by means of an electro-magnet, M. The platen-faces g' and g^2 project from each other at a slight angle, so that but one of the same can be presented to its type-wheel at a time, and
 25 an impression will therefore be effected, when the press-lever is actuated, from the type-wheel B or C, accordingly as the face g' or g^2 is presented to its type-wheel, it being understood that the platen-faces are respectively in
 30 the planes of the corresponding type-wheels.

For the purpose of controlling the position of the platen G, an electro-magnet, m , is employed. This electro-magnet is designed to be in the same circuit with the electro-magnet M; but its armature-lever m' responds only
 35 to currents of greater strength than those employed for actuating the press-lever H through the instrumentality of its electro-magnet M. When, therefore, it is desired to effect impressions from the type-wheel B, the armature-lever m' is allowed to remain in its position
 40 away from its electro-magnet, and the currents employed for actuating the press-lever are of less strength than is required for actuating the armature-lever m' . When, on the other
 45 hand, it is desired to effect impressions from the type-wheel C, currents of greater strength are employed than are necessary for actuating the press-lever H, and the armature-lever m'
 50 also responds to these currents. A link, m^2 , couples the armature-lever m' to the platen G. When, therefore, the armature-lever m' is drawn toward its electro-magnet m , the platen G is turned upon its axis, so that the face
 55 g' is turned at an angle to the confronting portion of the type-wheel B, while the platen-face g^2 is turned toward the type-wheel C. An impression will therefore be effected under these circumstances from the type-wheel
 60 C only.

The change in the position of the lever m' , for the purpose of effecting impressions from the type-wheel C, is employed, also, for throwing a pawl, k , into such position that it will
 65 engage a tooth of a rack, k' , carried upon the unison-lever K. During the return move-

ment of the press-lever, after effecting an impression from the figure type-wheel, the pawl moves the unison-arm K downward toward the path of the projection e^2 , and thus
 70 toward the position which it occupies when it serves to release the type-wheels from their shaft. For this purpose the pawl k is carried in a frame, L, which is pivoted to the press-lever H. The frame L is provided with two
 75 arms, n' and n^2 , the one of which carries the pawl k , while the other carries a catch or pawl, k^2 , which is designed to return the unison-arm to its normal position when the lever falls, after effecting an impression from the
 80 type-wheel C, in a manner hereinafter described. The frame L is pivoted at a point, n^3 , to the lever H. An extension, p , projects from the frame L below the lever H, and the end of this extension is beveled in opposite
 85 directions, as shown. Applied to this extension is a spring, p' , carrying a beveled point, p^2 , which is designed to hold the frame L either in the position shown in Fig. 1 or in the
 90 position indicated in Fig. 2 until it is forcibly moved therefrom. For the purpose of moving the frame L from one to the other of its positions, a pin or projection, q , is carried
 95 upon the armature-lever m' , and this pin is designed to engage the beveled side of a projection or catch, q' , carried upon the frame L, when the armature is moved toward its electro-magnet for the purpose of printing from
 100 the figure type-wheel C. Normally, the point q is out of the path of the projection q' ; but when the press-lever is actuated by means of a current of sufficient intensity to draw the
 105 armature-lever m' forward, not only will the frame L be moved upward, but the point q will be moved forward into position to press against the projection q' before the lever H has completed its upward movement, and
 110 to thereby turn the frame L upon its pivot, and cause the catch k to engage the rack k' . The electro-magnet m is for this purpose designed to act more quickly than the electro-magnet M, although responding only
 115 to currents of greater strength than are required for actuating the latter. The point q will, therefore, by striking the beveled side of the projection q' , turn the frame L upon its axis, so that the pawl k will engage one of the teeth of the rack k' . The subsequent
 120 downward movement of the lever H and frame L will cause the arm K to also descend through the space corresponding to that occupied by one tooth of the rack-bar. The frame L will be held, by means of the spring
 125 p' and point p^2 , acting upon the extension p , in the position which it has been caused to occupy by reason of the armature-lever m' until it be forcibly removed therefrom. For the
 130 purpose, however, of throwing the pawl k out of engagement with the rack when it shall have advanced the same, a projection or stop, r , extends from the arm n^2 of the frame L, and this projection is engaged, when the lever

H is near the lower limit of its movement, by means of a pin or stop, r' . If, therefore, the lever of frame L be turned into the position shown in Fig. 3, it will, when the lever H has descended nearly to its limit of movement, be tipped or turned back to its normal position by the contact of the projection r with the pin r' . The pawl k will thereby be thrown out of engagement with the rack. If, however, the succeeding impression is taken from the type-wheel C, the operation will be repeated, and the arm K will be drawn downward another tooth. The arm K will be securely held in the successive positions which it is caused to occupy by means of a friction-clutch, y , applied to its axis y' . It is designed that four such movements shall throw the arm K into such position that its extremity k^4 will engage the extension e^2 upon the pawl e , or be in the path to intercept its revolution, and to thereby throw it out of engagement with the ratchet-wheel d . If, therefore, the type-wheel shaft be revolved, the type-wheel will be arrested at a predetermined unison-point in this manner.

It sometimes occurs that the polarity of the polarized armature commonly employed for actuating the escapement of a printing-telegraph instrument becomes reversed under the influence of an abnormally strong current. The positions subsequently occupied by the type-wheels under the influence of the two classes of currents are also reversed, therefore, in the usual form of instrument—that is to say, in instruments where the type-wheels are rigidly secured to the shaft. It will be understood, however, that even should the polarized armature in this instrument be reversed, the type-wheels will be set right when they have been brought to unison and are again locked to the shaft.

For the purpose of withdrawing the arm K from the path of the click the catch k^2 is employed. This catch projects into the path of a pin, s' , carried upon the short arm of the lever K, when the frame L is in the position shown in Fig. 1. If, therefore, the frame L be allowed to descend in this position, the pawl k^2 will engage the pin s' and return the lever K to its normal position.

For the purpose of preventing the pawl from actuating the lever during the upward movement of the frame L, the pawl k^2 may be pivoted to the arm, as shown at s^2 , in such a manner that it will turn backward a sufficient distance to allow it to pass the pin. Likewise the pawl k may be pivoted to the arm n' , as shown at s^3 , so that it will not move the lever K during the slight upward movement which it may receive after it has been forced into the rack k' . The elasticity of the spring p' may, however, be relied upon for permitting a sufficient movement of the frame L for effecting both these movements.

In an application of even date herewith, Serial No. 139,884, there is shown and described

a unison device which is brought into action through the instrumentality of the printing-lever. Such an organization, however, is particularly claimed in this application, rather than the one referred to.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of a type-wheel shaft, two type-wheels carried thereon, a locking device for coupling said type-wheels to said shaft, a press-lever for effecting impressions from said type-wheels, a unison-arm which remains at rest while impressions are effected from one type-wheel, and means, substantially such as described, for moving said unison-arm into a position to unlock said type-wheels when impressions are taken from the other type-wheel.

2. The combination, substantially as hereinbefore set forth, with a type-wheel shaft and two type-wheels carried thereon, of a device for locking said type-wheels to said shaft, a unison-arm for unlocking said type-wheels and arresting them at their unison-point, a press-lever for effecting impressions from one or the other of said type-wheels, and a device, caused by the movements of said press-lever when impressions are being taken from one of said type-wheels, to move said unison-arm into position to unlock and arrest said type-wheels.

3. The combination, substantially as hereinbefore set forth, with a type-wheel shaft and two type-wheels, of a device for locking said type-wheels to said type-wheel shaft, two platen-faces which are respectively applied to said type-wheels, an electro-magnet for causing one or the other of said platen-faces to be presented to its type-wheel accordingly as said electro-magnet is or is not vitalized, an arm for releasing said shaft from said type-wheels, and means, substantially such as described, serving to move said arm into position to so release said shaft when a given number of impressions are successively effected from one of said type-wheels, but not to so operate when impressions are effected from the other of said type-wheels.

4. The combination, substantially as hereinbefore set forth, with two type-wheels and a type-wheel shaft, of two platen-faces respectively applied thereto, an electro-magnet for causing one or the other of said platen-faces to be presented to its type-wheel, an arm for arresting said type-wheels at their unison-point, and a pawl for actuating said arm, which pawl is caused to engage said arm when said electro-magnet is vitalized.

5. The combination, substantially as hereinbefore set forth, of two type-wheels, a printing-lever for effecting impressions from said type-wheels, an electro-magnet for determining from which of said type-wheels impressions shall be effected by said lever, a unison-arm for arresting said type-wheels at their unison-point, a pawl which is caused to en-

gage said unison-arm and to advance it into a position to arrest said type-wheels when said electro-magnet is vitalized, and means, substantially such as described, for disengaging said pawl from said arm when it has advanced the same after an impression has been effected.

6. In a printing-telegraph instrument, the combination, substantially as hereinbefore set forth, with a press-lever and a unison-arm for the type-wheels, of a pivoted support carried upon said press-lever, an electro-magnet, its armature and armature-lever, which armature-lever is normally out of the path of said support, but which, when actuated, serves to turn said support upon its axis, and a pawl carried upon said support, which pawl, when the support is thus turned, engages said unison-arm and advances the same a predetermined distance each time said press-lever is actuated.

7. The combination, substantially as hereinbefore set forth, with two type-wheels and a press-lever for effecting impressions therefrom, of a unison-arm applied to said type-wheels, a pawl for engaging said unison-arm, which pawl is normally out of the path of said unison-arm, means, substantially such as described, for causing said pawl to engage said unison-arm and to advance it a predetermined distance during the movement of said lever away from said type-wheels, and a stop for throwing said pawl out of engagement with said arm each time it has so advanced the same.

8. The combination, substantially as hereinbefore set forth, with the printing-lever of a printing-telegraph instrument, of a unison-arm, a ratchet carried thereon, a support pivoted to said printing-lever, a pawl carried upon said support, an electro-magnet, a stop operated by said electro-magnet for causing said pawl to engage said ratchet during the upward movement of said printing-lever, and a second stop for causing said pawl to be disengaged from the ratchet during the downward movement of said printing-lever.

9. The combination, substantially as hereinbefore set forth, with the printing-lever H and the unison-arm K, of the frame L, pivoted to said lever, the pawl k, carried upon said frame, the ratchet k', carried upon said unison-lever, and means, substantially such as described, for causing said pawl to engage said ratchet.

10. The combination, substantially as hereinbefore set forth, of two type-wheels, a printing-lever for effecting impressions from said type-wheels, a unison-arm applied to said type-wheels, a pawl actuated by said press-lever for moving said unison-arm into position to arrest said type-wheels, an electro-magnet for controlling the position of said pawl with reference to said unison-arm and for advancing

ing the same into position to arrest said type-wheels when impressions are taken from one of the same, and a second pawl actuated by said printing-lever and serving to move said unison-arm out of the path of said type-wheels when impressions are effected from the other type-wheel.

11. The combination, substantially as hereinbefore set forth, with a type-wheel shaft and two type-wheels carried upon the same, of a ratchet-wheel secured to said shaft, a locking-pawl moving with said type-wheels, which pawl normally locks said type-wheels to said shaft, and a unison-arm serving to mechanically engage said pawl, and thereby disengage said type-wheels from said shaft, and to arrest them at their unison-point.

12. The combination, substantially as hereinbefore set forth, of a type-wheel shaft, a ratchet-wheel applied to said shaft, two type-wheels loosely mounted upon said shaft, a pawl for locking said type-wheels to said shaft, and a unison-arm for mechanically engaging said pawl, thereby unlocking said type-wheels and arresting them at their unison-point, substantially as described.

13. The combination, substantially as hereinbefore set forth, with two type-wheels, the one carrying letters and the other carrying figures, of a unison-arm, and means, substantially such as described, for causing said unison-arm to arrest said type-wheels at their unison-point when four successive impressions have been taken from said figure type-wheel.

14. The combination, substantially as hereinbefore set forth, in a printing-telegraph instrument, of a figure type-wheel and a letter type-wheel, a unison-stop, and means for operating said unison-stop when impressions are effected from said figure type-wheel.

15. The combination, substantially as hereinbefore set forth, in a printing-telegraph instrument, of two type-wheels, means for effecting impressions from either of the same, a unison-stop, and means for operating the same when printing is effected from one of said type-wheels.

16. In a printing-telegraph instrument, a unison-stop and mechanical means for bringing the same into action by the printing-lever.

17. In a printing-telegraph instrument, a unison-stop and mechanical means for bringing the same into position to unison the instrument by the movements of the printing-lever.

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

HENRY VAN HOEVENBERGH. [L. S.]

Witnesses:

DANL. W. EDGECOMB,
CHARLES A. TERRY.