2 Sheets--Sheet 1.

# THOMAS A. EDISON.

## Improvement in Printing-Telegraphs.

No. 126,532. Patented May 7, 1872.

Fig. 2.

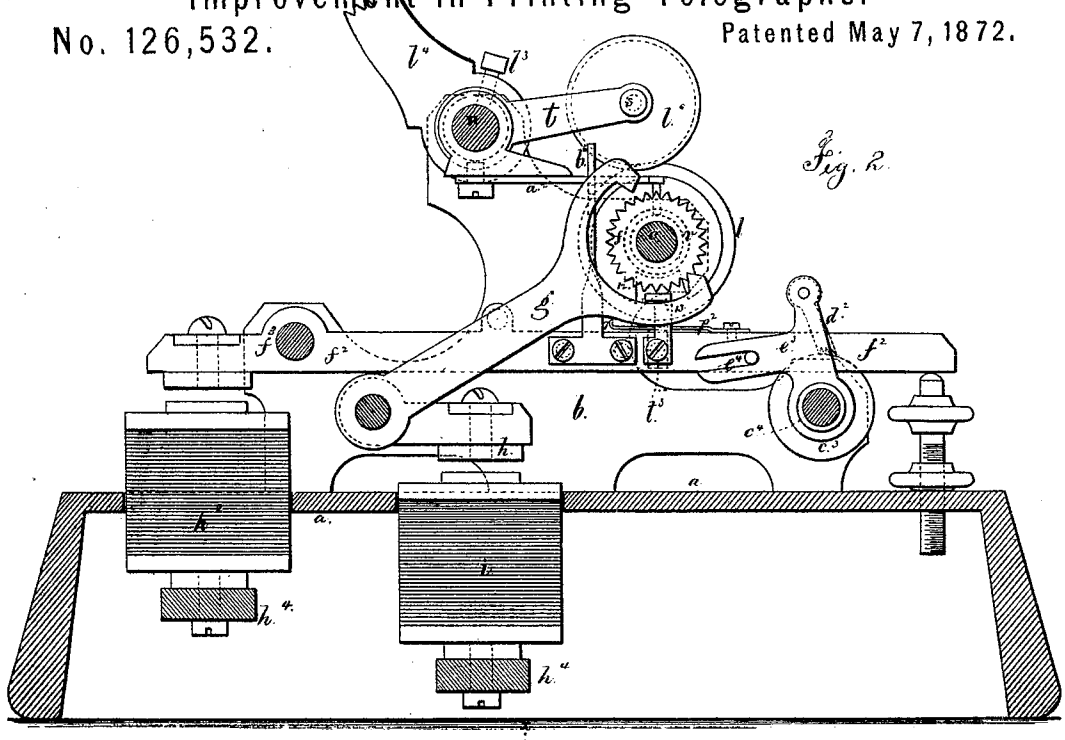
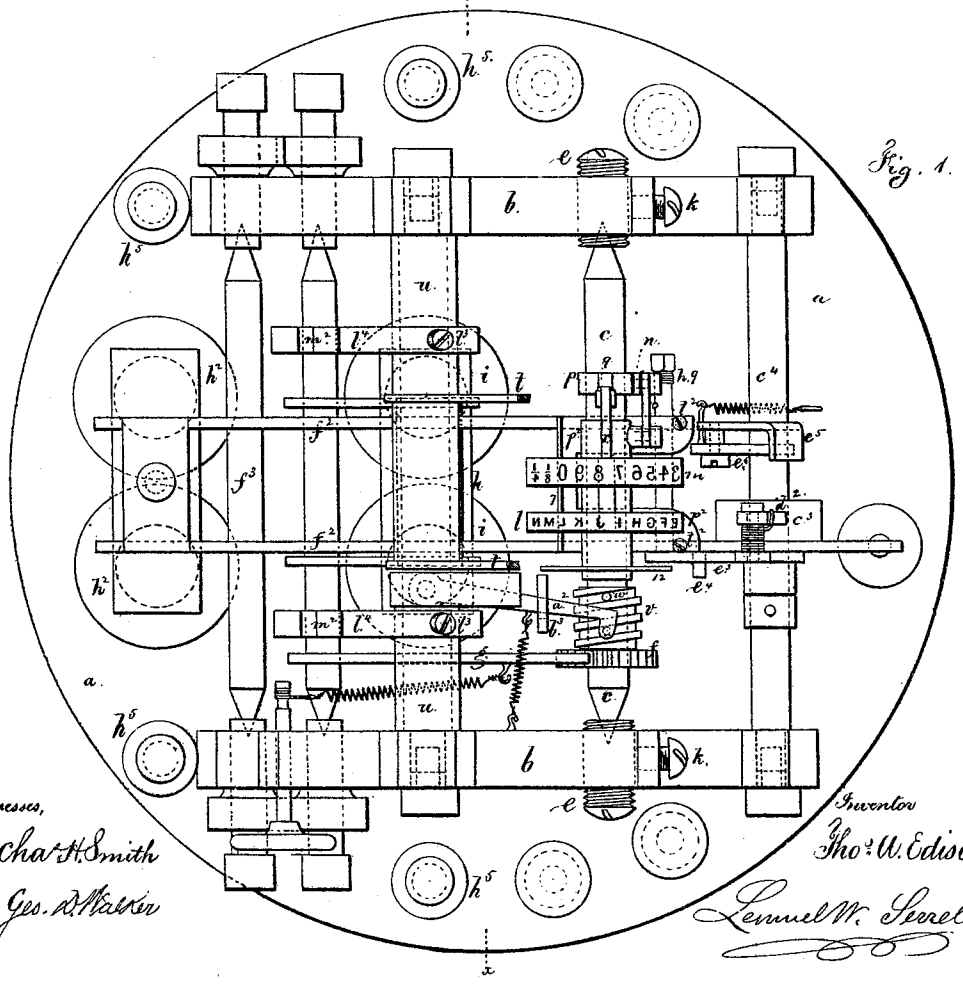


Fig. 1.



Witnesses,

Chas. H. Smith

Geo. H. Walker

Inventor

Thos. A. Edison

Lemuel W. Serrell

atty

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

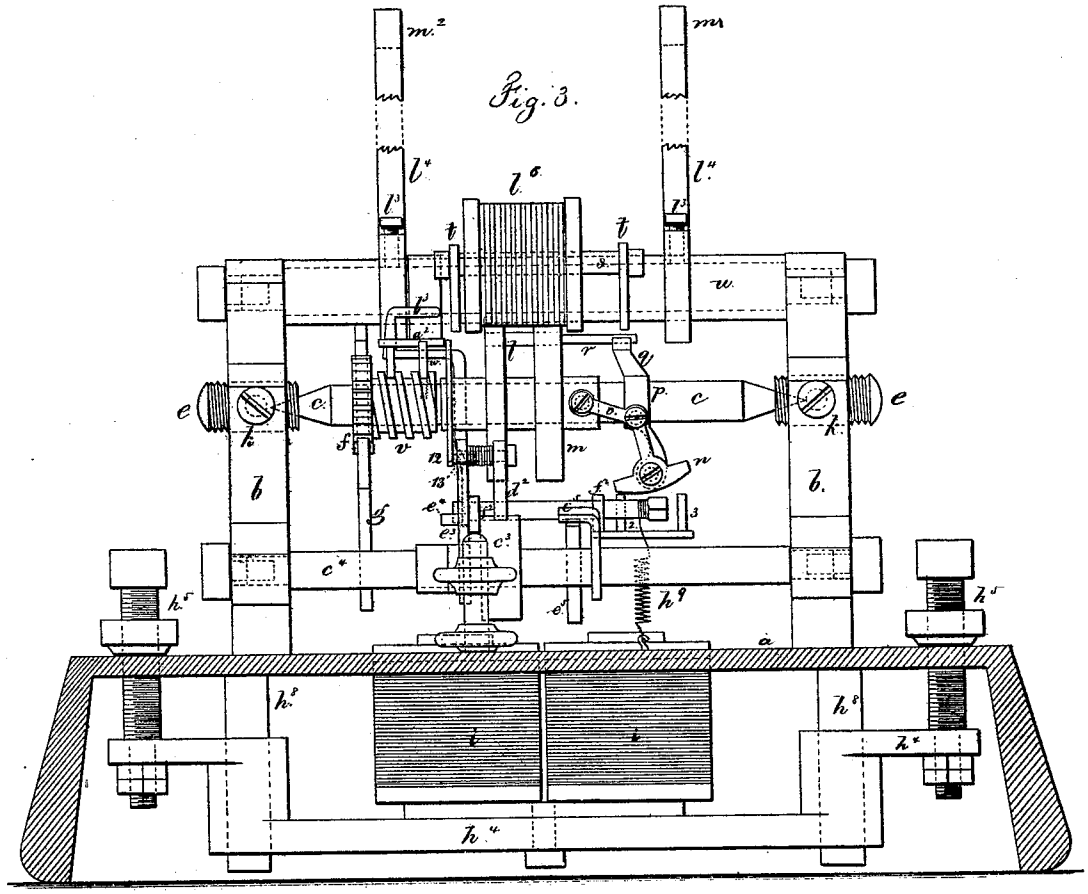
2 Sheets--Sheet 2

# THOMAS A. EDISON.

## Improvement in Printing-Telegraphs.

No. 126,532. Patented May 7, 1872.

Fig. 3.



Witnesses,

Chas. H. Smith

Geo. A. Walker.

Inventor

Thos. A. Edison

Lemuel W. Serrell atty

A.M. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF NEWARK, NEW JERSEY, ASSIGNOR TO GOLD AND STOCK TELEGRAPH COMPANY, OF NEW YORK CITY.

## IMPROVEMENT IN PRINTING-TELEGRAPHS.

Specification forming part of Letters Patent No. 126,532, dated May 7, 1872.

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Newark, in the county of Essex and State of New Jersey, have invented and made certain Improvements in Printing-Telegraphs, and the following is declared to be a full and exact description of the same.

In an application for Letters Patent dated July 26, 1871, and allowed August 18, 1871, a printing-telegraph instrument is shown in which two type-wheels are employed upon a revolving shaft, said type-wheels being upon a sleeve that slides upon the shaft, and is moved by a connection from the printing-lever to bring either type-wheel into position for printing. A shield between the paper and type-wheel is employed to prevent an impression from the type-wheel that is not in use.

In an application for Letters Patent dated November 13, 1871, and allowed December 15, 1871, a unison device is shown, consisting of a stop upon the type-wheel, a worm upon the type-wheel shaft, and a hinged and swinging arm, with one end resting on the worm, and operated by a connection to the impression-magnets, so that the swinging-arm is kept from contact with the stop upon the type-wheel except when these wheels are continuously turned for bringing all the machines in the line into unison, in which case the swinging arm comes into contact with said stop.

My present invention relates to modifications in the construction and arrangement of the parts employed in the before-named telegraph instruments, whereby the machine is rendered more compact, the parts adjusted with greater accuracy, and the working of the apparatus rendered reliable in all respects.

My improvements relate as follows: First, to the manner of mounting the type-wheel shaft in adjustable screw-bearings. Second, to shifting the type-wheels by a link and connections to the printing-lever. Third, to the ink-roller, made of disks of cloth or other woven material. Fourth, to the ink-roller fitted so that it can shift with the type-wheels. Fifth, to a pin inserted in the shaft to act as a stop for the unison arm to take against, instead of the stop being on the type-wheel. Sixth, to making the upper end of the unison tripper of a forked shape to limit the motion of the unison arm. Seventh, to the paper-feeding mechanism that operates upon the upward movement of the printing-lever, and a holding device to prevent back movement of the paper and allow of the printing being observed. Eighth, to the type-wheel and impression-magnets, sustained and adjusted with reference to their respective armatures. Ninth, to the arms for the paper-reels, affixed upon the cross-bar which sustains the ink-roller. Tenth, to the impression-shield, made as an open spring-plate to keep the paper in contact with the impression-pad and away from the type-wheel.

In the drawing, Figure 1 is a plan of the machine complete. Fig. 2 is a vertical section of the same; and Fig. 3 is an elevation of the apparatus with the bed in section at the line *x x*.

*a* is the bed of the machine, and secured to it are the side frames *b b*, of usual character. *c* is the type-wheel shaft, mounted in the screw-bearings *e e*, and revolved by the ratchet-wheel *f*, lever *g*, armature *h*, and electro-magnet *i*. The screw-bearings *e e* allow of the shaft *c* being adjusted longitudinally to accomodate the position of other parts; and to prevent the screws *e e* working loose by the jar or concussion of the apparatus I clamp them firmly by the screws *k k*, which enter the frames *b b* at right angles to the screws *e e*. The type-wheels *l m* are upon a sleeve sliding freely on the shaft *c*, and to shift said type-wheels so that either can be printed from I make use of the pins 2 3 upon the printing-lever to move the T-lever *n*. Instead of employing this T-lever to act by a slot and pin to move the sleeve as in the application for Letters Patent before referred to, I make use of a link, *o*, connected to the sleeve and lever *n*, by which a very easy motion is obtained, and one in which there is but little friction. The fulcrum of the lever *n* is upon an arm extending from the collar *p* upon the shaft *c*, and said collar is provided with a second arm, *q*, which acts as a guide for the pin *r* extending from the type-wheels, and insures the rotation of the type-wheels with the shaft *c*, and of their being kept in their proper position. The disk 12 and cam 13 prevent the type-wheels being accidentally shifted; these correspond to parts in before-named applications. The ink-roller $l^6$ is made

of a number of disks or washers of woven cloth, secured upon the hollow axis of the roller and between the heads thereof. The surface of the roller thus formed is dressed smooth by burning or otherwise, and such surface will wear smooth, and not become torn or injured by the sharp edges of the letters on the type-wheel, as is apt to be the case when the roller is formed of layers of cloth wound upon the axis of the roller. This roller is also much better than a roller formed of felt, because the fine fibers thereof are not closely connected together, and hence they wear off and clog the type-wheels. The ink-roller is upon the shaft *s*, that is supported by the arms *t t* from the cross-bar *u*, and I make this shaft *s* of such length that the ink-roller may slide upon the same as it is moved by and with the type-wheels as they are shifted, and thus prevent the type-wheels scraping the ink from the roller, as they now do with the fixed roller.

The "unison" device is a worm, *v*, upon the shaft *c*, a stop, *w*, projecting from the shaft *c*, a hinged and swinging arm, $a^2$, and the tripper $b^3$, connected to or moved with the printing-lever. The operation of this unison is the same as in the application before referred to, except that the tripper is moved by the printing-lever, instead of by the printing-magnet, to bring the arm $a^2$ to its normal position away from the stop *w;* but I make the upper part of said tripper-bar $b^3$ of the forked form shown, so as to limit the upward and lateral movement of the arm $a^2$ and keep it in its proper position relatively to the worm *v*. To feed the paper along I make use of the roller $c^3$ upon the stationary shaft $c^4$, the feeding-pawl $d^2$, the slotted lever $e^3$, and the pin $e^4$, on the printing-lever $f^2$. The printing-lever $f^2$ is moved by its magnet $h^2$, as usual; but the position of the slotted lever $e^3$ and pin $e^4$ is such that the feed of the paper takes place during the upward movement of the printing-lever by the direct action of the printing-magnet through the printing-lever, and not by the action of a spring, as is the case when the paper is fed by the downward movement of the lever; consequently this spring $h^9$ can be made lighter, and not so much power will be required to operate the printing-lever. Upon the shaft or bar $c^4$ is a stationary arm and plate, $c^5$, and connected to this arm is the spring-holding pawl $e^5$. The paper (one side of the strip) passes under this plate, and is prevented from moving back by the pawl $e^5$, and as this plate requires to be but very narrow, it does not hide the printing upon the strip of paper, but leaves it visible at this point. The printing and type-wheel magnets $h^2$ *i* are each mounted in and connected to a yoke or frame, $h^4$, and said frame is suspended and adjusted by the set-screws and nuts $h^5$ $h^5$. Guide-pins $h^8$ $h^8$ are employed for guiding and steadying the frame $h^4$. This arrangement allows of the magnets being adjusted to suit the position of their respective armatures. $l^4$ $l^4$ are arms secured to the bar *u* by the screws $l^3$ $l^3$, and formed at their upper ends with the bearings $m^2$ for the shaft of the paper-reel. The paper-reel thus located is not in the way of other parts of the machine, and avoids the use of a standard or support for the reel separate from the machine itself. The shield $p^2$, which prevents an impression from the type-wheel not in use, is a three-sided or open spring-plate, as shown in Fig. 1, and connected by the screws $t^2$ $t^2$ to the printing-lever. The paper passes from the paper-reel under the axis $f^3$ of the printing-lever, and thence beneath the rounded end 7 of said plate $p^2$ and over the impression-pad $t^3$, to the paper-feeding device, and this spring plate or shield keeps the paper in contact with the impression-pad and away from the type-wheel that is not in use; hence it prevents blurring of the paper by the type.

I claim as my invention—

1. The type-wheel shaft *c*, sustained at its ends in the screw bearings *e* that are clamped by the screws *k*, as specified.

2. The link *o* and T-lever *n*, in combination with the type-wheels *l m* and sleeve sliding on the shaft *c*, as set forth.

3. The inking-roller $l^6$, made of disks of woven cloth clamped between heads, as set forth.

4. The inking-roller sliding upon its shaft, in combination with the pair of type-wheels also sliding upon their shaft, as set forth.

5. The unison stop *w*, made of a pin passing into the type-wheel shaft, in combination with the worm *v* and swinging arm $a^2$, as and for the purposes set forth.

6. The unison tripper $b^3$, made as a fork, in combination with the arm $a^2$ and screw *v*, as and for the purposes set forth.

7. The paper-feeding mechanism, consisting of the dog $d^2$ and lever $e^3$, moved by the upward motion of the printing-lever and the holding-dog $e^5$, and acting near the respective edges of the paper, as set forth.

8. The type-wheel and impression-magnets, sustained and adjusted by the yoke $h^4$ and screws $h^5$ that pass up through the bed *a*, as set forth.

9. The arms *t* for the paper-reel, sustained upon and above the cross-bar *u* that receives the arms of the ink-rollers, as set forth.

10. The impression-shield, made as an open three-sided spring-plate, attached to the impression-lever, as and for the purposes set forth.

Signed by me this 3d day of January, A. D. 1872.

T. A. EDISON.

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