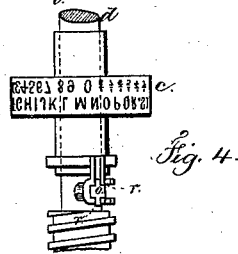
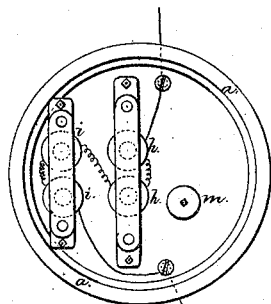
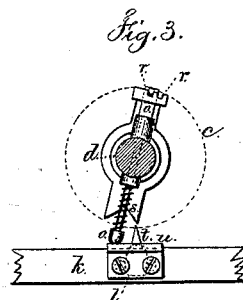
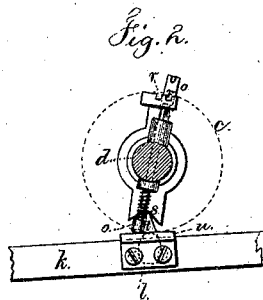
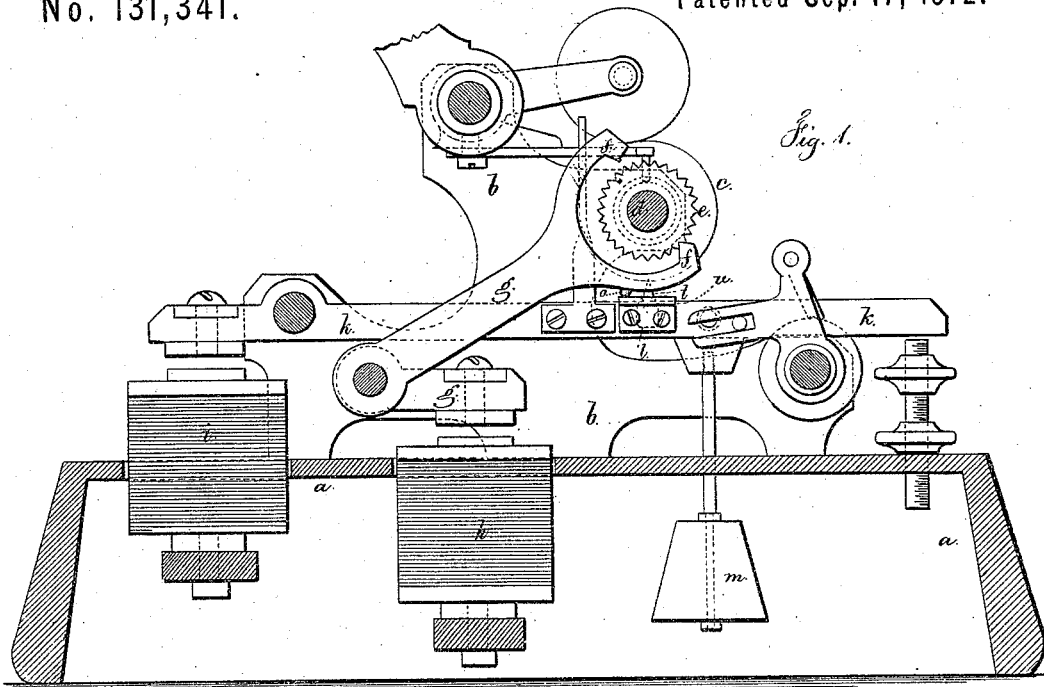


T. A. EDISON.  
 Improvement in Printing Telegraph Instruments.  
 No. 131,341. Patented Sep. 17, 1872.



*Chas. H. Smith*  
*Geo. D. Halber*

**Witnesses.**

**INVENTOR**  
*Thos. A. Edison,*  
*Per. L. W. Jenell* **ATTY.**

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF NEWARK, NEW JERSEY.

## IMPROVEMENT IN PRINTING-TELEGRAPH INSTRUMENTS.

Specification forming part of Letters Patent No. 131,341, dated September 17, 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 an Improvement in Printing-Telegraphs, and the following is declared to be a correct description of the same.

Before my present invention the printing-lever magnet had been placed in the same circuit as the type-wheel magnet, and the former had been prevented from giving an impression each pulsation by a spring acting upon the printing-lever; but unless the pulsations that set the type-wheel lever were very rapid, the printing-lever would be moved more or less. If the spring is under considerable tension, so as to prevent an impression until a pause occurs after the type-wheel has been set, the printing-magnet accumulates sufficient force to overcome said spring; but the impression is not reliable, because the spring prevents the pad giving a blow, and the said spring accumulates resisting power to the action of the magnet as the printing-lever is moved.

My present invention is made for effecting the printing by a blow resulting from the motion of a weighted lever. The weighted lever resists the action of the printing-magnet, so as not to move until the force of the electromagnet is sufficient, and then the inertia of the moving weight insures a sufficiently-powerful blow to print from the type-wheel. In this manner a series of printing-telegraph instruments can be worked successfully in a one-wire circuit, and all polarized switches and electrical circuit-changers are dispensed with. I also make use of a mechanism for turning the type-wheel partially around upon its shaft, to bring one range of letters or figures into position and take out of action the intermediate figures.

In the drawing, Figure 1 is a longitudinal section of the said machine, and Figs. 2, 3, and 4 are detached views of the type-wheel shifting mechanism.

The base *a*, frame *b*, type-wheel *c*, shaft *d*, ratchet-wheel *e*, and pallets *f*, moved by the lever *g*, are of usual construction, and the type-wheel magnet *h* and printing-magnet *i*, are of ordinary character, and may be either in one electric circuit, or in separate circuits, although especially designed for use in one

electric circuit, as represented in Fig. 5. The printing-lever *k* and pad *l* are also of ordinary construction, with the exception that the weight *m* is attached to said lever *k*, in order that it may prevent the printing-lever acting when the magnet *i* is only slightly energized; but when said magnet is sufficiently powerful to move the weight and lever, said weight gives the necessary blow to effect the printing much more perfectly than can be done with the same electric current and a spring to restore the printing-lever to a normal position. The type-wheel *c* is to be made with the desired letters or characters in two ranges—for instance, numbers may be placed between the letters to alternate with them, or the numbers may be upon a separate type-wheel, the characters of one coming opposite the spaces of the other, and the step-by-step motion is sufficient to move the type-wheel from one letter or character to the next in either range; hence one of the ranges will be out of action and the other in position; and to change so as to print from the range that had been out of action requires that the type-wheel or wheels shall be rotated upon the shaft a distance equal to half the movement given by one of the step-by-step motions. I effect this by the movement next described. Across the shaft *c* is the spring-locking bolt *o*, having a T-head, and upon the sleeve carrying the type-wheel or wheels is an arm having notches, *r*, at one end for the T-head of the bolt *o* and at the other end a fork, *s*, for the stud *t* upon the impression-lever *k*. A plate, *u*, upon the impression-lever acting upon the bolt *o*, raises its T-head out of one of the notches *r*, and at this time the type-wheel can be partially rotated. If the position of the parts is such that the stud *t* acts against the fork *s*, the type-wheel will be moved either one way or the other, according to which side of the fork said inclined stud *t* takes against as the printing-lever rises, the bolt *o* being disconnected, and upon the printing-lever falling, the T-head of the bolt secures the parts in position by entering one of the notches *r*.

It is to be understood that the operator at the transmitting-station can shift all the type-wheels at once in the various machines in the electric circuit by bringing them around to the point where the stud of the printing-lever

will operate upon the proper inclined side of the fork *s*, and then actuating the printing-lever to disconnect the bolt *o* and then turn the type-wheel or wheels *c* to bring one range of types into action and turn the other range around, so that the impression-pad will not act against either of the types therein; but it will be below the space between the types in one range of type, and impress from the types of the other range of types.

I claim as my invention—

1. The printing-lever and weight, in combination with the type-wheel and an electromagnet, for the purposes and as set forth.

2. The bolt *o*, notches *r*, and fork *s*, in combination with a type-wheel or wheels having two ranges of figures or letters and the print-

ing-lever and stud *t*, as and for the purposes set forth.

3. The combination, in one electric-circuit, of two or more type-wheel magnets, and two or more printing-magnets, and two or more weighted printing-levers, substantially as set forth, whereby the printing will be effected by the same pulsation used to bring the type-wheel to place, but only when the printing-magnet has accumulated sufficient force to give a blow by the weighted printing-levers, substantially as set forth.

Signed by me this 28th day of May, A. D. 1872.

Witnesses:

T. A. EDISON.

GEO. T. PINCKNEY,

CHAS. H. SMITH.