L. S. CRANDALL.

Automatic Telegraph-Key.

No. 168,144. Patented Sept. 28, 1875.

Fig: 1

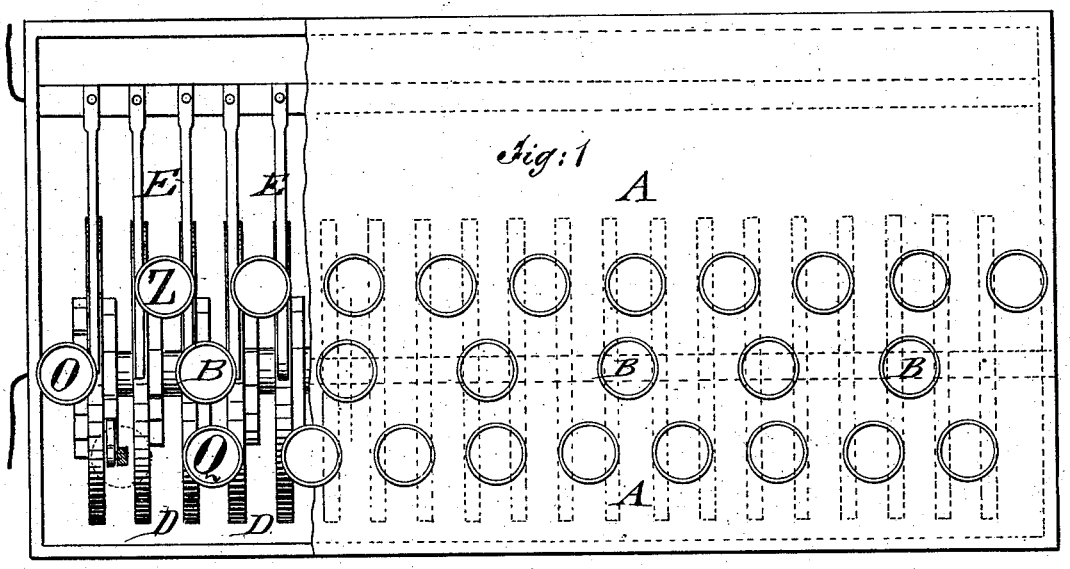


Fig: 2.

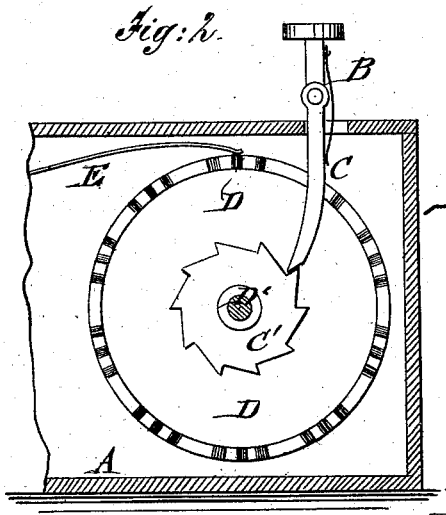


Fig: 3.

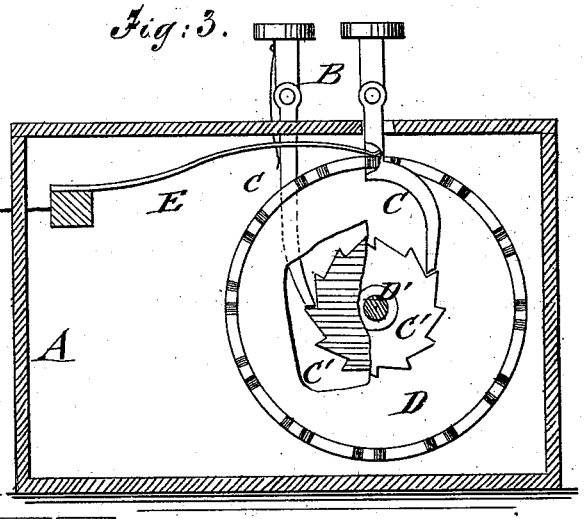
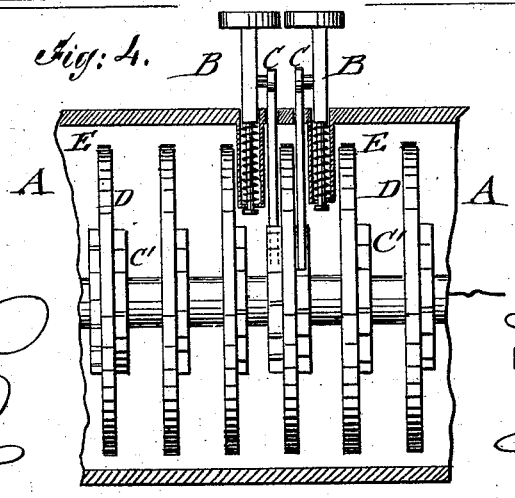


Fig: 4.



WITNESSES:

Chas. Nida

A. F. Terry

INVENTOR:

L. S. Crandall

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

LUCIEN S. CRANDALL, OF NEW YORK, N. Y.

IMPROVEMENT IN AUTOMATIC TELEGRAPH-KEYS.

Specification forming part of Letters Patent No. **168,144**, dated September 28, 1875; application filed August 21, 1875.

CASE B.

To all whom it may concern:

Be it known that I, LUCIEN S. CRANDALL, of the city, county, and State of New York, have invented a new and Improved Automatic Telegraph-Key, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view, Figs. 2 and 3 vertical transverse sections, and Fig. 4 a vertical longitudinal section, of my improved automatic telegraph-key.

Similar letters of reference indicate corresponding parts.

My invention has reference to an improved telegraph-key, by which the automatic transmission of messages by mechanical means is accomplished, and the same attended to with greater rapidity, uniformity, and certainty than with the common telegraphic key.

The invention consists of a series of spring-keys or finger-levers, representing the letters of the alphabet, which move on being depressed, and wheels that are divided along their circumference into insulated and non-insulated portions, so as to close or break the circuit by the contact with spring tongues or "riders" connected to one pole, while the wheels are connected to the other pole of the battery.

In the drawing, A represents the supporting-frame of my improved automatic telegraph-key, on which are arranged, in suitable manner, a series of sliding and spring-acted keys, B, marked with the letters of the alphabet, and placed for convenience in such a manner that the more frequently occurring letters are grouped together, while those less frequently used are placed around the same. Each key is connected by a pivoted spring-pawl, C, with the ratchet-wheel C′ of a wheel, D, of any desired diameter. The wheels D are placed loosely on one common shaft, D′, and connected through the same with one pole of the battery. The wheels D turn loosely on shaft D′ when their ratchet-wheel is engaged by depressing the corresponding key. Each wheel D is divided along its circumference into insulated and non-insulated portions, which portions are so arranged or proportioned that a regular movement of the wheel throws a uniform number of them in contact with a metallic spring tongue or rider, E, which is connected to the other pole, so as to cause the irregular opening and closing of the circuit, and thereby the registering of a dot, a dash, or a space, or a combination of them.

The smooth and continuous periphery of the wheels produces the even contact with the tongues, so as to secure the least possible friction between the same.

If the insulated and non-insulated portions of each wheel are so proportioned that the Morse character of the letter of its key is produced at each depression of the same, and if the subdivision of the circumference and of the ratchet-wheel is accurately constructed, so as to repeat the same letter regularly and uniformly by the exact contact of the tongue or rider, the mechanical transmission of words and messages can be accomplished in rapid and reliable manner.

As several letters of the alphabet are expressed in Morse characters, (being the reverse of other letters,) this may be made use of to simplify the construction of this key, by combining the keys of two such letters with one wheel, provided with two ratchets, in such a manner that the depression of one key throws the wheel in one direction, and produces one letter, while the depression of the other key turns the wheel in opposite direction, and gives thereby the letter having the reversed Morse character of the former. This coupling of letters reduces the number of transmitting-wheels, while it facilitates, also, considerably the use of the key.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An automatic telegraph-key for mechanical transmission of messages, constructed of a series of sliding spring-keys, representing the letters of the alphabet, and connected, by spring-pawls and ratchet-wheels, with a corresponding number of revolving wheels, with partially-insulated circumferences, and with spring tongues or riders in contact therewith, said wheels being connected to one pole, while

the tongue is connected to the other pole, substantially as and for the purpose specified.

2. The combination of two sliding spring-keys, having spring-pawls, with one transmitting-wheel, provided with ratchet-wheels placed in opposite direction to each other, for the purpose of coupling keys having letters with reversed Morse characters, substantially as shown and described.

LUCIEN S. CRANDALL.

Witnesses:
T. B. MOSHER,
ALEX. F. ROBERTS.