(No Model.)

J. N. FARRAR & C. W. MORSE.

TELEGRAPHIC TRANSMITTER FOR UNSKILLED OPERATORS.

No. 300,353. Patented June 17, 1884.

Fig. 1

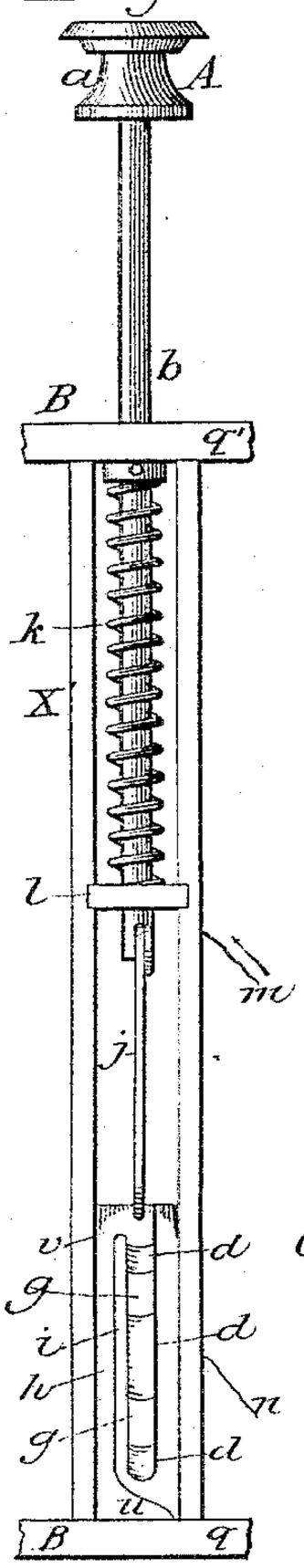


Fig. 2.

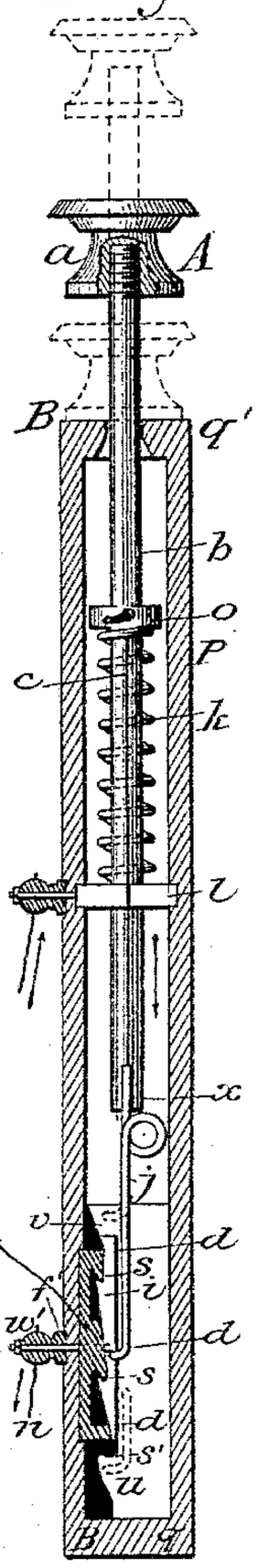


Fig. 3.

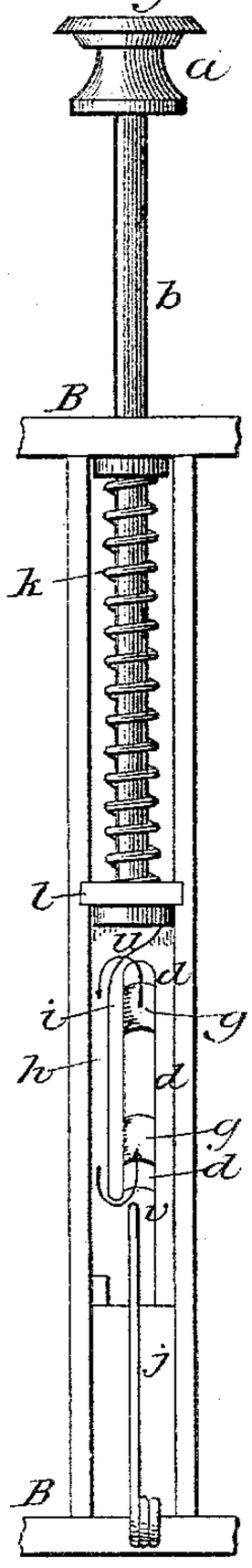


Fig. 4.

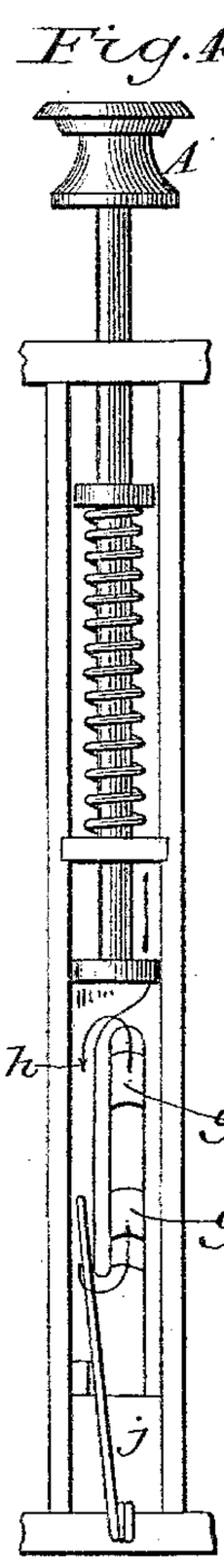


Fig. 5.

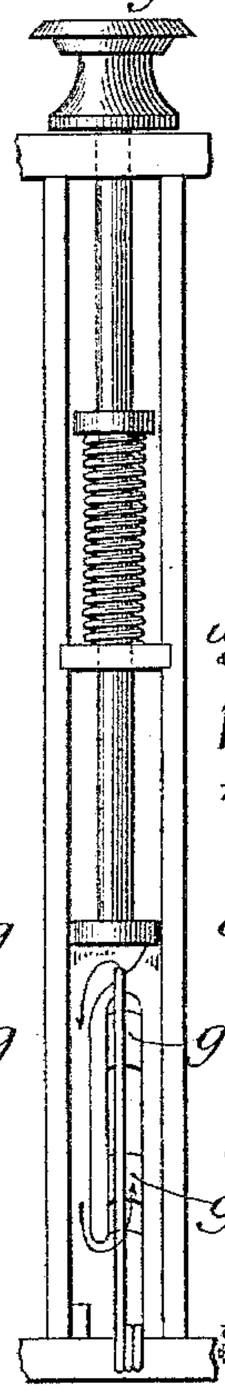


Fig. 6

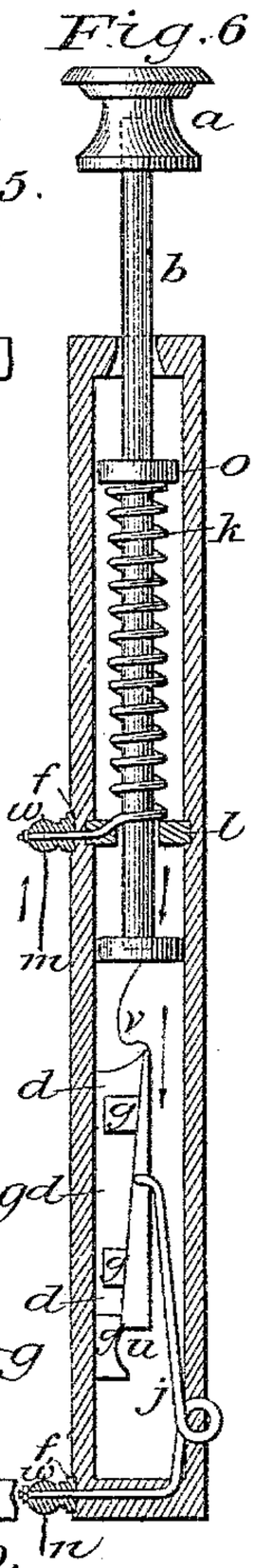


Fig. 7.

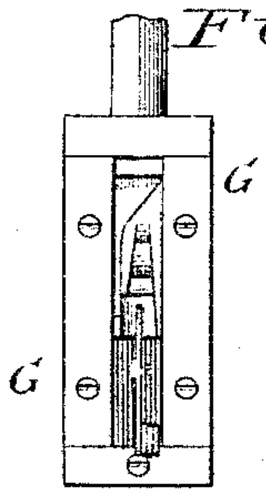


Fig. 8.

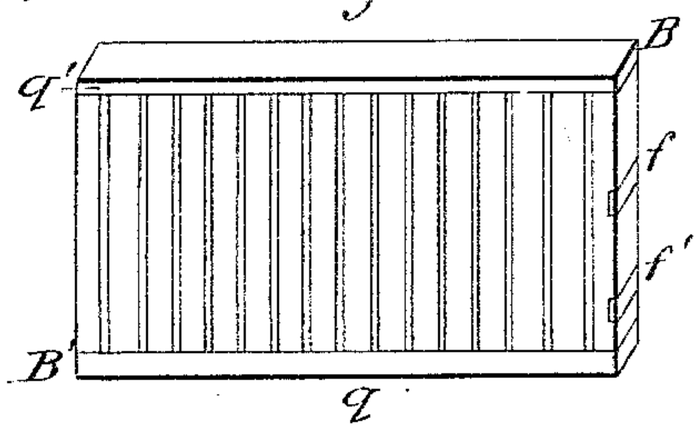
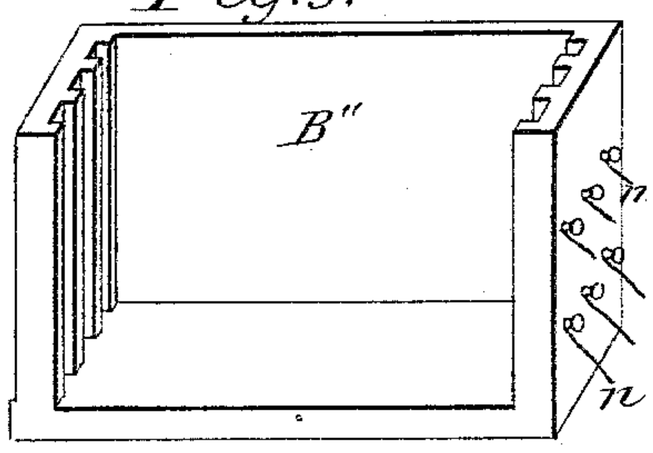


Fig. 9.



Witnesses:

James Muldoon

Louis Prioleau

Inventors.

John N. Farrar

Charles W. Morse

UNITED STATES PATENT OFFICE.

JOHN N. FARRAR AND CHARLES W. MORSE, OF NEW YORK, N. Y.

TELEGRAPHIC TRANSMITTER FOR UNSKILLED OPERATORS.

SPECIFICATION forming part of Letters Patent No. 300,353, dated June 17, 1884.

Application filed September 14, 1883. (No model.)

To all whom it may concern:

Be it known that we, JOHN N. FARRAR and CHARLES W. MORSE, citizens of the United States, residing in the city of New York, county of New York, and State of New York, have invented a new and useful Improved Electric Telegraph Transmitting-Machine; and we do hereby declare that the same is a sufficiently clear description thereof to enable other people skilled in the art to make and use the same, reference being had to the accompanying drawings.

Our invention has for its object a transmitting-machine so constructed as to enable a person of limited skill to transmit messages rapidly and accurately, with no liability of distortion of the letters or characters, by automatically making and breaking the circuit in the order and time that is necessary to produce letters by the dot-and-line method, and may also be used for any other applicable system, by the simple act of forcing along a groove or chamber a key in nearly or quite a straight line, and operated by the fingers in a manner somewhat similar to that adapted in the "typewriter."

As a description of the apparatus used to produce one character is similar to all, the explanations will be confined principally to one key and its associate parts, leaving it to be understood that a practical machine in its entirety is made up of as many keys as letters and figures in common use.

Figures 1 and 2 illustrate, respectively, a front view and a side section of one modification, and Figs. 3, 4, and 5 the front view, and Fig. 6 a side section, of a different modification of the apparatus for producing the letter F of the Morse alphabet. The difference between the modifications consists in the reversal of the positions of the two poles, the movable pole in one case becoming the stationary pole in the other. Fig. 7 illustrates a perspective view of the gage and guide body as it appears detached from the other parts; Fig. 8, a perspective view of one of the key-bank frames as it appears detached from the outside case and without keys; Fig. 9, a perspective view of the outside case, into which the key-frames slide and rest, for the purpose of easy detachment in case it becomes necessary to examine the working parts.

In order to simplify the explanation, different parts are designated by arbitrary names, indicated on the drawings by letters which correspond to similar parts throughout the several views.

A illustrates the key or movable portion in its entirety, and B the frame-work surrounding it, within which the key portion A plays back and forth in quite a straight line.

a indicates a non-metallic finger-piece; *b*, the key-rod; *j*, the spring-stylus pole; G, gage and guide body, which governs the motion of the spring-stylus pole *j* when on duty, and is made up of a peculiarly-formed piece of metal, *d*, suited to the character desired and connected with the opposite pole, *w'*, and set in a non-metallic groundwork, *f*, which may be of hard rubber, celluloid, ivory, wood, or other non-conducting material, having two grooves on its surface, one partially of metal, and denominated "letter-track" *g d*, the other a non-conducting or non-metallic "return-track" *h*, ridge *i*, separating the tracks *g d* and *h*, the electric spiral spring *k*, chamber-partition *l*, and battery-wires *m* and *n*, which extend the entire length of a bank or row of keys, to which the poles of each are connected.

To render the working of the machine clear and simple the explanation of the action of the electric current with that of the mechanism will be carried along together. The electric current enters along the wire *m* through the screw *w* to the spiral spring *k*, thence to the key-rod *b* at a point just under the flange *o*, where the spring-wire passes through or is otherwise attached to it. From thence the current passes along a wire, *c*, through the key-rod *b* to the spring or stylus pole *j*, which, when brought in contact with the opposite pole or poles, *d*, completes the circuit through the thumb-screw *w'* and wire *n*, causing a dot or mark at the receiver corresponding to the time used and breadth of the metallic letter-pole *d*, after which, when the stylus-pole *j* reaches the non-metallic portion *g* in the letter-groove *g d*, the current is broken, to be recompleted when the next pole is reached, and so on, until the letter is completed, when the spring or stylus pole *j* drops off of an overhanging diagonally-shaped cliff-like step, *s'*, into a hollow, *u*, Fig. 2. At this stage, the pressure on the finger-piece *a* (which has caused the

contact of the poles) being removed, the spiral spring *k* carries the key *b* back to its original position, and as the diagonal step *s'* is so shaped as to prevent, by its under cut, the hook-shaped stylus-pole *j* from retracing the letter-making track *g d*, it (*j*) is made to glide along its edge *s'* into the non-metallic return-track *h* to its terminus, where it springs past the end of the ridge *i* (which separates the two tracks *h g* and *d*) into a concave pocket, *v*, where it is again ready for duty, Fig. 1.

The above explanation represents the key-rod *b* as being made of a non-metallic substance, through which passes a conducting-wire, *c*, Fig. 2; but the key-rod may be entirely of metal, and the electric current may connect with it just under the flange *o;* or it may pass directly to it (*b*) through the metallic partition *l* from the thumb-screw *w*, thence to the stylus-pole *j*, provided there be no oxidation or looseness.

The operation for producing a letter may be made noiseless by having the metallic end of the letter-pole *d* level with the non-metallic portion of the groove *g*, so that the stylus-pole *j* may slide on a smooth plane, as shown in Fig. 6; or it may be made to produce audible "clicks," corresponding in number and time to the number of dots and lines in a character, by the stylus-pole *j* falling off of saw-teeth-like steps *s s s'*, as shown in Fig. 2.

In order to perfectly and instantly break the circuit at the time of the fall of the stylus-pole *j* and entirely cut off metallic connection between the two poles at this stage, the non-metallic portion *g* extends up under the eaves of the overhanging tooth-shaped pole *d*, as shown in Fig. 2, which (*d*) is shaped so as to extend to the edge of the step, in order to prevent the wear of the non-metallic portion *g* by the friction of the stylus-pole *j*.

Figs. 3, 4, and 5 illustrate the appearance of three positions of the working parts of the second modification, which differs from the first (Figs. 1 and 2) by the spring stylus-pole *j* (Figs. 3, 4, 5, and 6) being fixed stationary, and the gage guide-body attached to the key-rod and made to play back and forth instead.

Fig. 6 represents a side section of Fig. 4, with the stylus-pole *j* resting upon the middle portion of the letter-pole *d*, instead of the return-track *h*. The dark or black shading represents the key-rod *b* and letter-pole *d* united and as one solid piece.

The keys of the alphabet and numerals are divided into two or more parts, each part being made to form a row set into a corresponding row of frames, B', as shown in Fig. 8, by being joined together, constituting a bank of keys, each bank being made to fit into a corresponding groove made on the inside of a detachable case, B'', Fig. 9, substantially as shown. The individual poles from each key are united to a flat wire, *f f'*, Fig. 8, confined in a groove along the entire length of the key-bank frame, Fig. 8, to which they belong, also extending around the corners on the ends of the frame, and are connected with the battery-wires *m n* by means of thumb-screws *w w'*, extending through the side of the case from the outside, and which impinge upon them, (*w w'*,) as shown in Figs. 8 and 9.

We are aware that keys made similar to those used on the piano have been in use in telegraphy and that automatic machines acting upon the rotary or circular principle are common. Therefore we do not make our claims so broad as to cover all forms nor all modes of action; but

What we do claim as our exceedingly-simple invention, and wish to secure by Letters Patent, is—

1. The guide-piece G, for governing the action of the stylus-pole *j*, in combination with the transmitting-track *g d*, having saw-like click-steps *s s*, with the return-track *s h u*, with the partition-ridge *i*, substantially as described, and for the purpose set forth.

2. The stylus-wire *j*, forming one pole of the battery, in combination with the tracks *s s* and *s h u* in the guide-body G, containing the opposite pole, substantially as described, and for the purpose set forth.

3. The metallic partition *l* in the key-groove to which is connected one of the battery-wires *m*, in combination with the key-rod *b*, extending through said partition, and the stylus-pole *j* and guide-body G, connected substantially as described, and for the purpose set forth.

JOHN N. FARRAR.
CHARLES W. MORSE.

Witnesses:
JAMES MULDOON,
LOUIS PERROTTET.