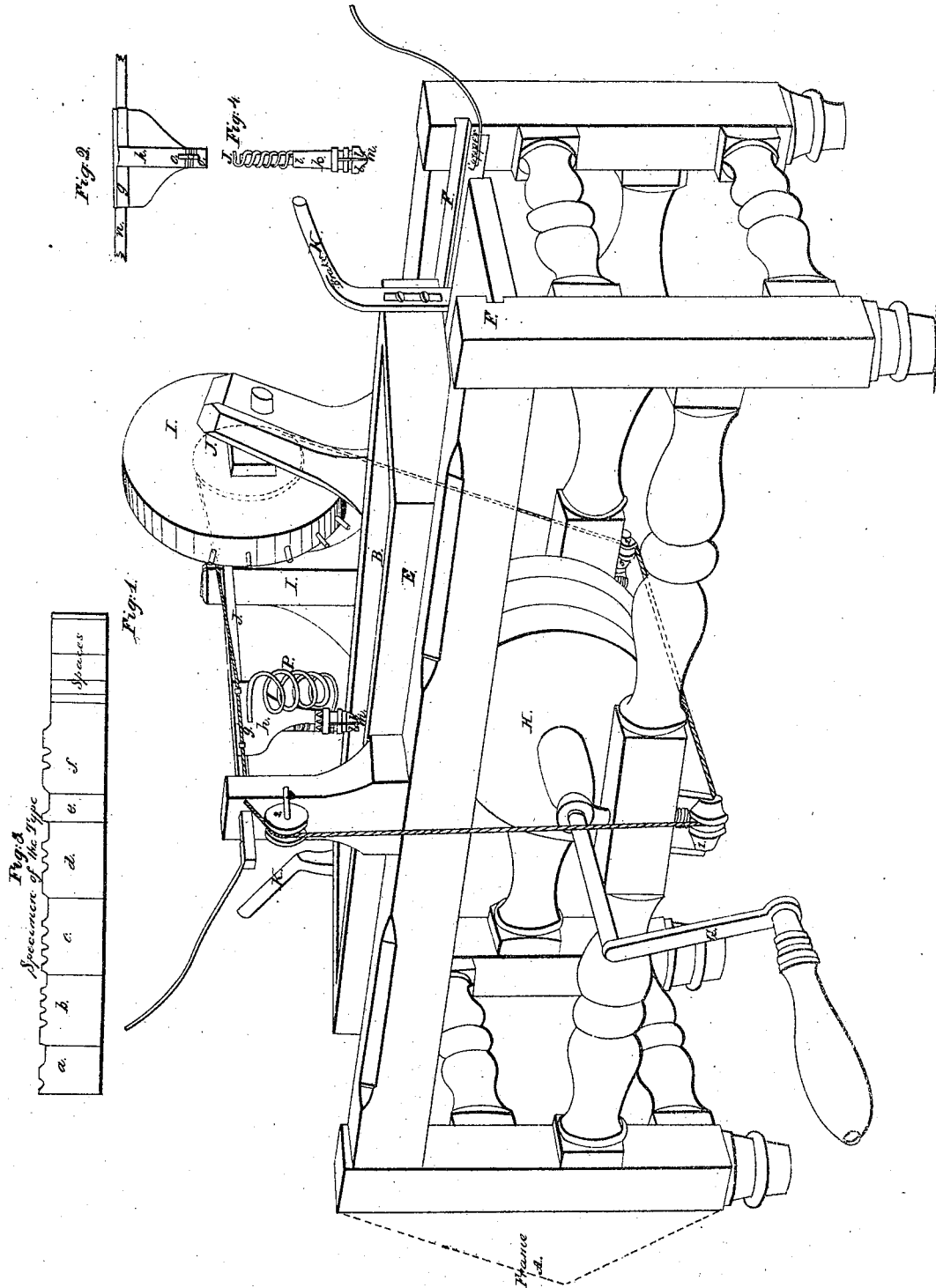


E. R. Roe.
Electric Circuit Closer

Patented May 30, 1848.

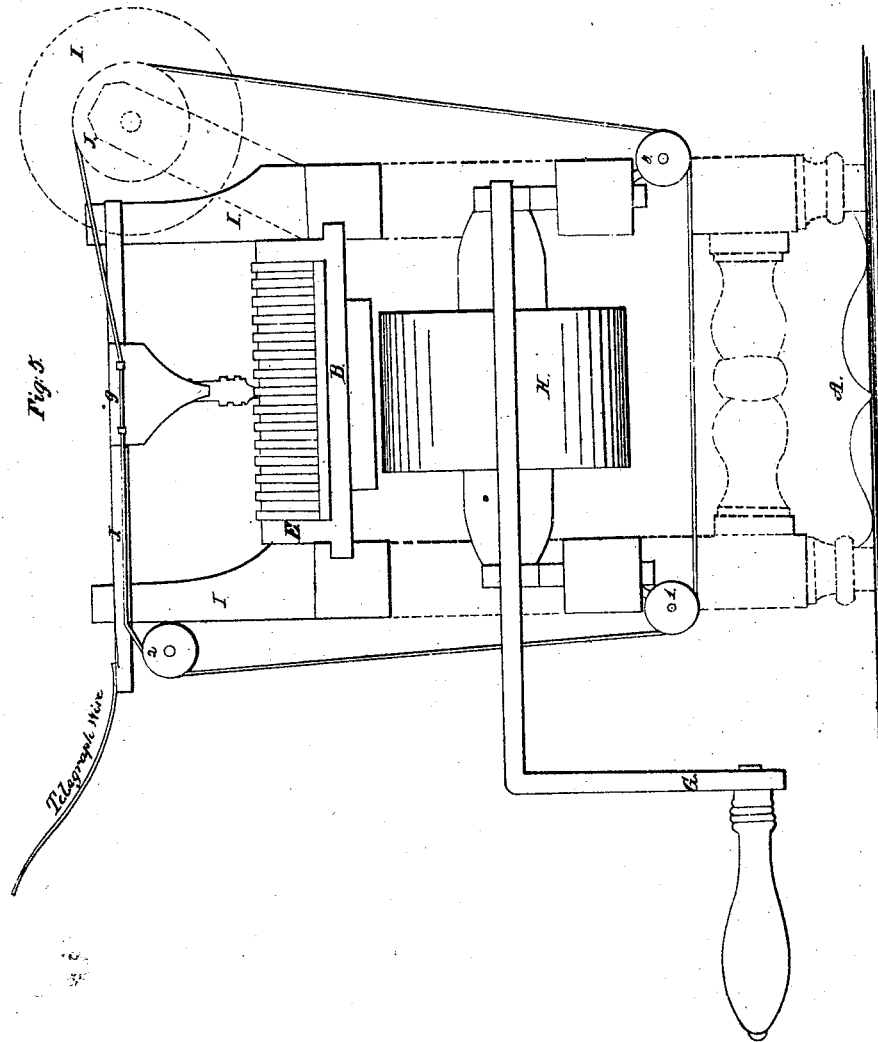


Sheet 2-2, Sheets.

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Nº 5,612.

Patented May 30, 1848.



UNITED STATES PATENT OFFICE.

EDWARD R. ROE, OF SHAWNEETOWN, ILLINOIS.

IMPROVEMENT IN TELEGRAPH-MANIPULATORS.

Specification forming part of Letters Patent No. 5,612, dated May 30, 1848.

To all whom it may concern:

Be it known that I, EDWARD R. ROE, of Shawneetown, in the county of Gallatin and State of Illinois, have invented a new Machine for Operating, Working, or Manipulating a Morse's Electro-Magnetic Telegraph and other telegraphs of a similar character; and I do hereby declare that the following is a full and exact description thereof.

The schedule and accompanying drawings referred to in this specification being a part of the same, I do hereby declare that—

Figure I is a perspective view of the manipulator. Fig. II is a side view of the part called "traverser." Fig. III is a side elevation of some specimens of the types. Fig. IV is a view of the wand detached from the socket. Fig. V is a perpendicular section, seen endwise.

The description of Morse's American telegraph referred to in this specification may be found on file in the Patent Office, Reissue No. 79.

My invention consists of, first, movable metallic types as conductors of electricity or galvanism; second, a metallic type-bed upon which they are to rest, (which is also movable to and fro, somewhat in the manner of a common printing-press,) and, third, a movable wand, which is also a conductor, and is made to traverse the face of the types, thereby making, continuing, or breaking the galvanic circuit, according to the forms of the types.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct a frame of wood or other suitable material, (see accompanying drawing, A,) in any form which will furnish support and connection to the parts of the machine about to be described. In this frame plays the type-bed B, consisting of a flat metallic floor surrounded by perpendicular edges E E, sufficiently high to support the types in an upright position or to keep the form in place when the types are locked up in a chase and placed on the type-bed. Upon the sides of the type-bed are tongues which move in grooves F F in the supporting-frame. The whole, when in operation, is moved to and fro by a crank, G, and roller H, attached to it by straps, in the manner of a common printing-press. A large machine I would make still more similar to a printing-press by having

the bed B move on railways instead of tongues working in grooves.

The types which I use consist of flat pieces of metal of equal height and thickness, to be more particularly described below, *a b c d e f*. They are set upon the type-bed in a series of long lines running lengthwise of the same and separated by leads in the manner common to ordinary printing-types, and they are to be secured there in the same manner as ordinary types are, by wedges and quoins. The arrangement of the types when on the bed is such, however, that they succeed each other, first from left to right, and next from right to left, in alternate lines, the object of which will be shown hereinafter.

Projecting upward from the middle, one on each side of the frame A, are two pieces framed into the same, (marked I I,) which support an angular or ovoidal metallic bar, J, which passes from one to the other some distance above the type-bed. On this bar J moves the traverser. (See sectional drawing, Fig. II.) The traverser consists of a metallic body, (see sectional drawing, Fig. II, *g*,) having an opening through it in form corresponding with the bar J, which passes through it, and upon which it plays. From this body, and being a portion of the same, projects downward a tube or socket, Fig. II, *h*, in which plays the wand, Fig. IV. The wand, (Fig. IV,) is made of glass, ivory, or any imperfect conductor, and is made to slide easily within the socket *h*. Its upper portion within the socket is smaller than its lower one, and is surrounded by a spiral spring, *j*, of elastic wire, which tends to force the wand from the socket.

In the side of the tube *h* is a narrow slit, *o*, Fig. II, in which plays a small pin, *k*, projecting from the wand within, and adjusting the distance to which it is expelled from the socket by the spring within.

The lower end of the wand requires a particular description. It projects some distance without the socket. It is reduced one way to the thickness of the types over which it is to pass, and is faced the other way to two inclined planes, meeting each other at an obtuse angle. Immediately at the angle where the planes meet a metallic conductor, *m*, is inserted, (Fig. IV, *l l*,) which conductor is connected by a pliable metallic wire, *p*, Fig. I, to the socket or body of the traverser.

On the side of the machine opposite the crank G, Fig. 1, is the traverse-wheel I, Fig. 1, whose motion is at right angles to that of the type-bed. The traverse-wheel has on one of its sides, turned from the same piece of wood, (or other material,) a small wheel or pulley, J, Fig. 1, in the groove of which plays a cord attached to the traverser.

Projecting from the circumference of the traverse-wheel are teeth or cogs, which give periodical motion to the wheel by coming in contact with the brakes K K. These brakes are attached, one to each end of the type-bed, by adjusting-screws, and they consist of a perpendicular and an inclined portion, the inclination bearing such relation to the teeth on the traverse-wheel that when the brake is made to pass under the tooth by the motion of the type-bed, the tooth is elevated and the wheel is made to revolve a short distance, carrying with it, of course, the pulley upon its side. Both brakes strike the same tooth successively, which permits the distance between the teeth to be doubly as great as otherwise, and thus enables the brakes to detach themselves.

The cord or band which passes over the pulley J is an endless band. It is attached to the traverser, passes over the pulley J, down under the frame of the machine, up and through the upright piece I, and over a small pulley at every angle in its course, (1, 2, 3,) and thence to the place of beginning at the traverser.

Finally, one of the grooves in which the tongues of the type-bed work is faced with copper or other conductor, and the metallic floor of the type-bed is made to slide in constant contact with such conductor. Now, it is evident that if the wires of an electro-magnetic telegraph be separated, and one of the ends attached to the metallic face of the groove in which the type-bed moves and the other end to the metallic bar J on which the traverser plays, at the same time letting the wand press upon the surface of the type on the bed, the machine becomes a part of the galvanic circuit.

Instead of attaching the conducting-wire from the battery to the metallic facing in the groove it may be fastened to the iron chase which surrounds the types, and the wire itself coiled into a helix to give it pliability and freedom of motion.

For operating Morse's telegraph the faces of my types correspond exactly with his symbolic alphabet of dots and lines, and between the types and on their faces are depressions which correspond to the blanks or spaces peculiar to such alphabet. It is evident, therefore, that if a line of types is made to pass under the wand the circuit will be made, continued, and broken in times proportionate to the faces and depressions on the types, and Morse's register, if in connection with the machine, must operate in precisely the same times.

The non-conducting inclined planes at the

end of the wand are intended to enable the conductor between them to glide smoothly over the types.

My machine, taken as a whole, I call the "telegraph-manipulator."

To use my manipulator I compose from the case (of ordinary form) with my telegraph-types all of the matter which the business of the telegraph-office makes it convenient to dispatch at once, be it one or many dispatches, and limited only by the capacity of the type-bed. The types are set up in lines, the types of which succeed each other alternately from left to right and from right to left. They are locked up in a "chase" and placed upon the type-bed, and a "proof" taken therefrom by soft paper being pressed upon the form, or in any of the ordinary modes common to other types. The proof is "corrected" and the manipulator put in connection with the battery. The type-bed is then moved rapidly under the wand, from right to left, by a hand upon the crank. When the last type of the first line has passed, the "brake" K strikes a pin on the traverse wheel I and turns it a certain distance. The pulley on its side draws the band which is attached to the traverser, and it slides on the bar J a distance equal to one type in thickness. The motion is then reversed and the next line of types passes under the wand, and the other brake turns the wheel and moves the traverser, as before. This motion is continued until all of the types have passed under the wand. The motion may be very rapid; but the rapidity of motion which may be possible, while it still does accurate work, must be determined by experience, and the rapidity with which the paper moves under the "pen" of the "register" may then be regulated accordingly. But as Morse's alphabet does not depend upon actual time, but only proportionate, any want of harmony between the speed of the manipulator and that of the paper will only affect the size of the characters and not their forms.

I operate telegraphs working in actual time by regulating the motion of the manipulator by clock-work, and dividing the types into proportional lengths on the surface, according to the time required.

I do not claim to have invented a new telegraph, but a manipulator or machine for operating telegraphs now in use and other similar ones; and I do not claim to be the first who has used metal types for the purpose of making and breaking the connection of the galvanic circuit, that having been done by Samuel F. B. Morse, as set forth in his specification on file in the Patent Office, dated December 27, 1845, (see Reissue No. 79;) nor do I claim the use of metallic types as conductors, forming part of the galvanic circuit, that being an old device heretofore known.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the body *g*, the socket *h*, the spiral spring *j*, and the wand (Fig. IV)

with its conducting-point and its non-conducting inclined planes, the whole constituting the traverser.

2. The manner of giving the proper motion to the traverser by the combination and action of the traverse-wheel I, the pulley J, and the cord which plays in it, the teeth upon the traverse-wheel, and the brakes K K, operated by the type-bed B, in the manner described, and for the purpose described.

3. The combination, for telegraphic purposes, of the types, arranged in the manner described, with the traverser and its wand and its conducting-point, guarded by non-conducting inclined planes.

E. R. ROE.

Witnesses:

SAMUEL STREETER,
GEO. C. THOMAS.