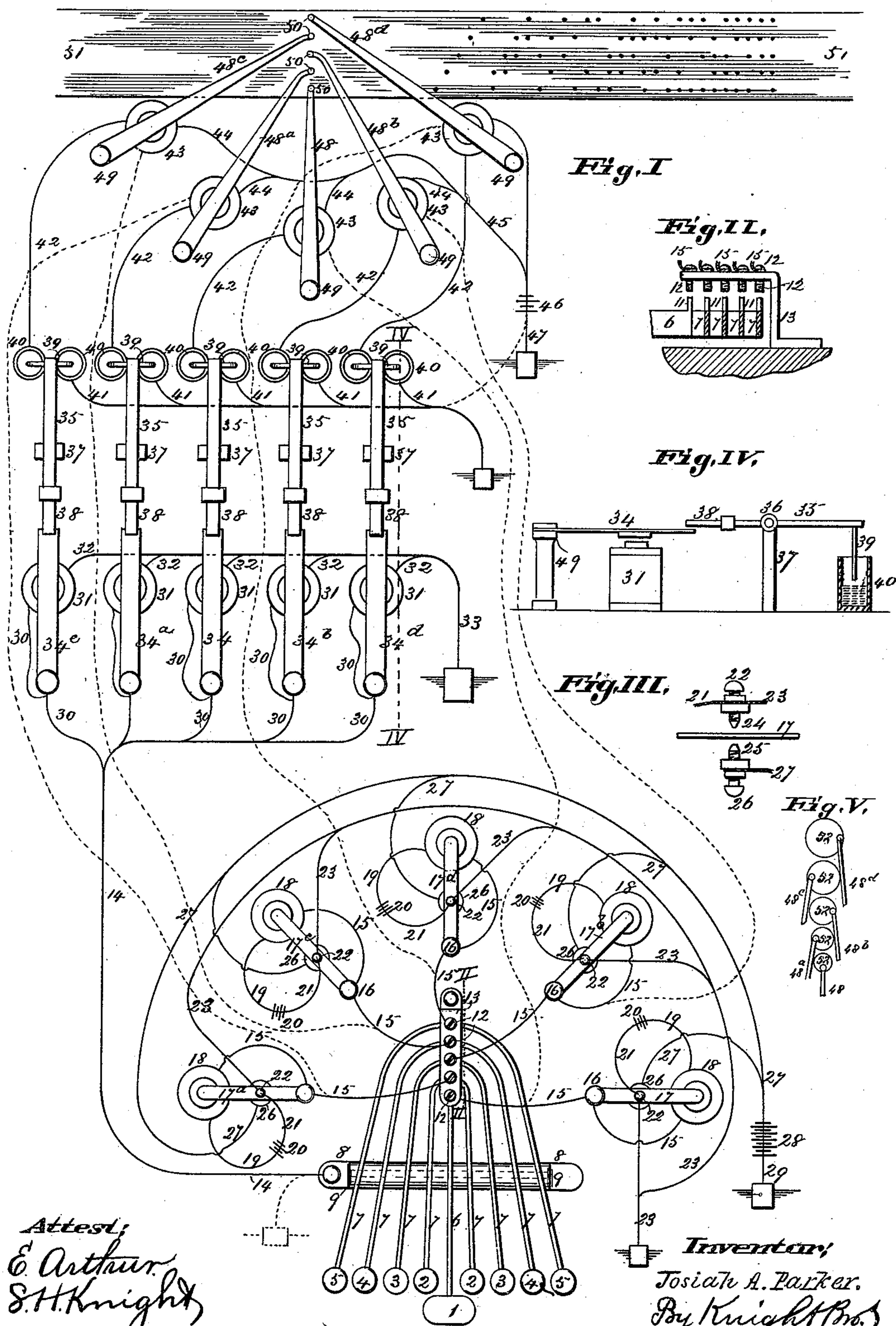


J. A. PARKER.
TELEGRAPH APPARATUS.

Patented Feb. 24, 1891.



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UNITED STATES PATENT OFFICE.

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TELEGRAPH APPARATUS.

SPECIFICATION forming part of Letters Patent No. 447,198, dated February 24, 1891.

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To all whom it may concern:

Be it known that I, JOSIAH A. PARKER, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Telegraph Apparatuses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This is a device for the more speedy and certain manipulation of the devices at the transmitting end of the line, as will be hereinafter fully set forth.

15 In Letters Patent granted to M. M. Bartholomew, No. 215,559, dated May 20, 1879, and No. 255,910, dated April 4, 1882, and the right in which patents is now vested in me and others, is described a machine and system for rapid writing, making use of nine keys—viz., a key for each finger and one key for the two thumbs, and whereby the hands may be used alternately to produce marks transversely across a paper ribbon. This machine has been improved and perfected, and is in general use for the purpose intended under the name of the "Stenograph."

25 The object of my invention is to utilize this machine modified to suit the purpose. It may be used with any, or almost any, one of the methods already known for synchronous transmission of a number of messages over one wire or a number of wires.

30 I shall describe my invention in conjunction with devices shown and described in Letters Patent No. 161,739, granted April 6, 1875, to A. G. Bell and assignees, to which reference is made for a detailed description of the devices shown in said patent. I wish it clearly understood that I do not confine myself in the application of my device to the said devices of Bell, or any other special devices.

35 Figure I is a plan illustrating the invention. Fig. II is a vertical section at II II, Fig. I. Fig. III is a detail side elevation showing the connection of the local-circuit wire and main-circuit wire, respectively, with the contact-points. Fig. IV is a detail vertical section at IV IV, Fig. I, showing parts in side elevation. Fig. V is a detail plan showing a modification.

1, 2, 3, 4, and 5 are the metal stenograph-keys, which are in proper positions for the thumbs and fingers, the key 1 being for both thumbs, while the keys 2, 3, 4, and 5 are for the fore, middle, ring, and little fingers, respectively. The thumb-key 1 has a straight shank 6. The other keys are U-shaped or divaricate, and all have at the front ends plates or buttons to receive the pressure of the fingers. These plates or buttons may be of insulating material, or they may be insulated in any manner. It is immaterial which hand is used to depress the keys, as each finger works the same key as the corresponding finger of the other hand. In practice it is usual to strike with the hands alternately, and thus work with greater speed than could be attained with a single hand, as one hand may be on the descent while the other is on the ascent.

8 is an insulated plate having lugs 9, through which passes a rod 10, which forms the pivot of the keys. Upon the parts of the keys most distant from the finger plates or buttons are upright metal studs 11.

12 are contact or binding screws insulated in a bracket 13. One of these screws is over each of the key-studs 11, so that on the depression of the outer end of the key contact is made between its stud and its proper contact or binding screw 12.

14 is a single main-line wire in electric connection with the plate 8, and consequently with the keys.

15 are wires, one of which is connected with each of the binding-screws 12. The wires 15 are shown extending first to the fixed end 16 of the vibrating spring-armatures 17, 17^a, 17^b, 17^c, and 17^d, and from the point 16 to the coil of electro-magnets 18, from thence in a wire 19 to a battery 20.

21 is a wire extending from the battery 20 to a contact-screw 22, which is grounded by a wire 23. The contact-point 24 of the screw is over the vibrating spring-armature and normally out of contact with it.

25 is the contact-point of a screw 26, below the vibrating spring-armature, and having a wire 27 extending to a battery 28, that is grounded by a wire 29.

Supposing the thumb-key 1 to be depressed,

its stud 11 will be brought against its proper screw 12, and an electric current will be established through the magnet of the armature 17. This will draw down the armature
 5 against the contact-point 25 and short-circuit the current, cutting out the magnet 18, when the armature 17 will spring away from the point 25. The recoil of the armature brings it in contact with the point 24, and the current again passes through the magnet, this
 10 time by means of the local circuit 20 21 17 15 19. Thus the armature 17 is thrown into vibration.

Each of the armatures 17 17^a 17^b, &c., is
 15 tuned to a different pitch, so that the rapidity of the pulsations imparted to the main line 14 may vary according to which of the armatures is thrown into vibration.

The main line 14 has branches 30, each
 20 leading to a distinct electro-magnet 31. 32 are wires leading from the magnets to a common ground-wire 33. Each of these magnets has a spring-steel armature 34, 34^a, 34^b, 34^c, or 34^d, which is tuned to the same pitch as
 25 one of the armatures 17 17^a, &c., the armature 34 being tuned to the pitch of armature 17, the armature 34^a being the same pitch as armature 17^a, that 34^b as that 17^b, and so on. Now as the impulses in the main line are
 30 governed by the vibrations of the armatures 17 17^a, &c., only the armatures 34 34^a, &c., of the same pitch will respond effectually.

35 is a lever or pivoted bar, which may be of wood or other light material, and which is
 35 pivoted at 36 on a standard 37. There is one of these levers or bars associated with each of the spring-armatures 34 34^a, &c., the heavy end 38 of the bar being over the free end of the armature, but not normally in contact with
 40 it. The construction and arrangement of the parts are such that when the armature is thrown into vibration it will strike against the bar 35 as it ascends and keep the end 38 elevated during the full vibration of the arma-
 45 ture. The lighter end of the bar 35 has a depending fork 39, whose tines enter separate insulated or insulating cups 40, containing mercury. The mercury in one cup is grounded by a wire 41, while the mercury in the other
 50 cup is in electric contact with a wire 42, leading to an electro-magnet 43, and from that by a wire 44 to a wire 45, leading to a battery 46, having a grounded wire 47, connected to the other pole. Each of the magnets 43 has a
 55 spring-armature 48, 48^a, 48^b, 48^c, or 48^d, supported on a fixed point at 49. The free end of each armature 48 carries a marker or stylus 50. It will be seen that these markers are in a line transverse to the paper ribbon
 60 51, having precisely the same position relatively to the ribbon that the markers have in the stenograph hereinbefore referred to. Thus it will be seen that if the key 1 is depressed the armature 48 at the receiving end
 65 will be drawn down and precisely the same mark may be made on or in the paper ribbon as if the ribbon had been placed in the ordi-

nary stenograph. The same follows in relation to the other keys, as 17^a 17^b, &c., and corresponding armatures 48^a 48^b, &c.

In describing the connection between the line-wire 14 and the magnets 31 it is not stated that the connecting-wire 30 is in contact with the armature 34, as it is not necessary that there should be any contact be-
 75 tween them. Contact is, however, shown, and this feature may be adopted.

The invention is shown and described with a single line-wire 14. It is obvious that the device might be much simplified by dispens-
 80 ing with all the parts between the wires 15 and the magnets 43 and extending all of the wires 15 as line-wires, each to its proper magnet and grounding the wire 14 at the transmitting-station. This construction is indi-
 85 cated by dotted lines in Fig. I. It will be observed that the main essentials of the invention would be present in this form—namely, the use of the modified stenograph in the transmitting of telegraph messages, and the
 90 printing of the message by a series of marks transverse to the paper ribbon at the receiving-station, the armature 48 being in connection with the key 1, 48^a in connection with key 2, 48^b with key 3, and so on.

The local circuit at the receiving-station may be a closed circuit, as shown in dotted line, where the two ground-lines 41 and 47 are connected together instead of being grounded. It will also be observed that the main essen-
 100 tials of this invention can be carried out by having the message received by sound or sight (by the use of any of the well-known instruments which have long been known for such purposes) instead of being recorded.

The message is shown and described as received upon a traveling ribbon by marks made in certain defined places upon the ribbon transversely considered, each marker being
 110 over a different imaginary longitudinal line on the ribbon; but it is obvious that the letter or sign may be indicated to the sight by the simple movement of one or more of the markers or other indicators, or that the indicators may be used to sound different tones,
 115 thus indicating to the ear a certain letter or word by a certain note or by two or more notes sounded simultaneously. A way of carrying out this is shown in Fig. V, where the indicators are shown adapted to impinge upon
 120 bells 52 of different tones.

I claim herein as new and of my invention—

1. An electric telegraph having a number of divaricate circuit closing or breaking keys, each key having at the ends finger-buttons
 125 for the corresponding fingers of the right and left hands, substantially as and for the purpose set forth.

2. The combination, in an electric telegraph apparatus, of divaricate circuit closing or
 130 breaking keys, each key having at the ends buttons for the corresponding fingers of the right and left hands, and electro-magnets excited by the keys and having armatures whose

levers have markers thereon adapted to mark a ribbon in a series of marks transverse to the ribbon, substantially as and for the purpose set forth.

5 3. The combination, in an electric telegraph, of a series of divaricate keys, as 2 3, at the transmitting-station, each key having a button at each end for the corresponding fingers of the right and left hands, electro-magnets,
10 one of which is connected with each key and adapted to be excited by movement of the key, each of such electro-magnets having a reed-armature set to a different pitch to the armature or armatures of the other electro
15 magnet or magnets, a line-wire adapted to receive electric impulses from the tuned armatures, electro-magnets at the receiving-station excited by impulse in the line-wire and having reed-armatures set to various pitch and
20 each armature set to the same pitch as an armature at the transmitting-station, and a

recording device governed by the armatures of the receiving-station, substantially as set forth.

4. The combination of the divaricate keys 25 located in proper positions for the respective thumbs and fingers, a number of magnets connected to the respective keys, a number of vibrating armatures, each differing in pitch from the others and affected by the respective 30 magnets, a line-circuit running to the receiving-station and connected with a number of magnets, and vibrating armatures operated upon by the respective receiving-magnets and set to a varying pitch corresponding with the 35 respective armatures at the transmitting-station, all substantially as herein set forth.

JOSIAH A. PARKER.

Witnesses:

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J. M. MAROT.