

W. H. ENGLE.
TELEGRAPH INSTRUMENT.
APPLICATION FILED FEB. 21, 1912.

1,049,066.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

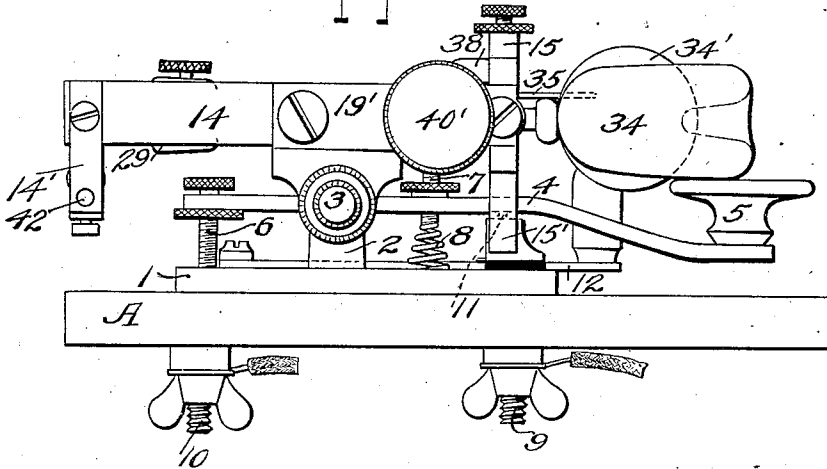


Fig. 2.

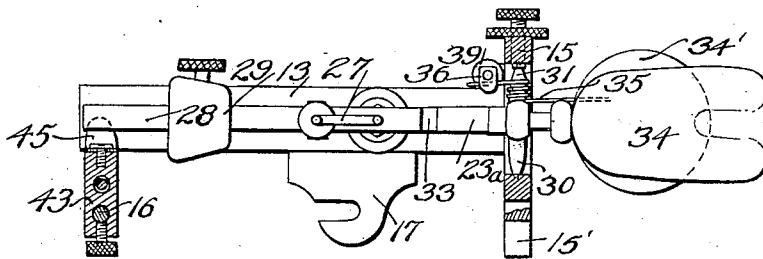
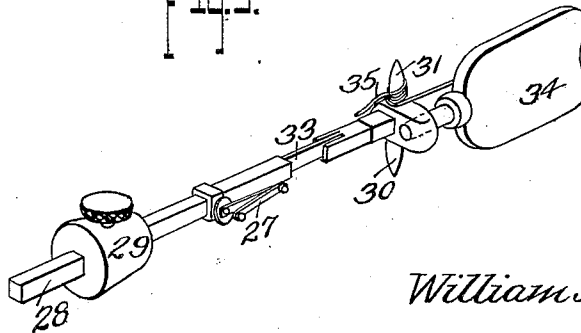


Fig. 3.



Witnesses

E. H. Wagner
J. M. Kirkley

Inventor
William H. Engle

By *Beck & Cobb*
W. Cobb

Attorneys

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2 SHEETS—SHEET 2.

Fig. 4.

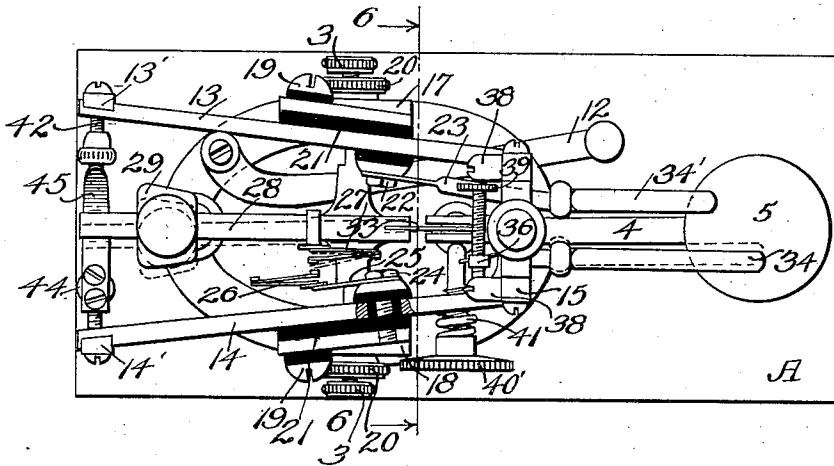


Fig. 5.

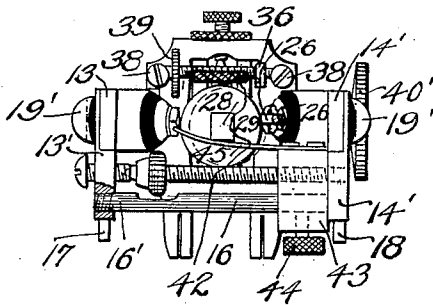
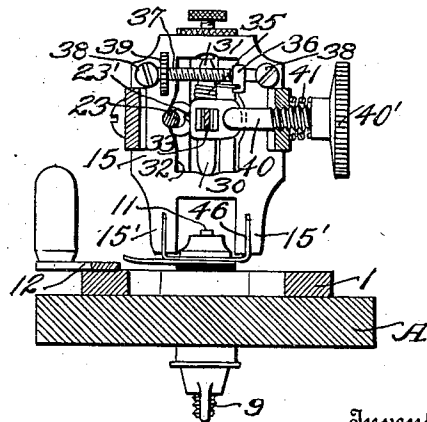


Fig. 6.



Inventor
William H. Engle

Witnesses
C. H. Wagner.
G. W. Kirkley

By Decker & Cobb
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM H. ENGLE, OF PORT COSTA, CALIFORNIA.

TELEGRAPH INSTRUMENT.

1,049,066.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed February 21, 1912. Serial No. 679,077.

To all whom it may concern:

Be it known that I, WILLIAM H. ENGLE, a citizen of the United States, residing at Port Costa, in the county of Contra Costa and State of California, have invented certain new and useful Improvements in Telegraph Instruments, of which the following is a specification.

The present invention appertains broadly to telegraph transmitting instruments and particularly to the vibratory type. Perhaps the best known instrument of the above mentioned type is the Martin "Vibroplex," now extensively used by telegraphers, and shown and described in Patent No. 842,154, issued January 22, 1907. The "Vibroplex," as is well known, is designed to lessen the number of manual movements necessary in operating the ordinary Morse transmitter by employing a vibrator which operates to send a succession of impulses along the line circuit, said impulses constituting dot contacts and the instrument being adapted to close the line circuit continuously in order to make space contacts. The "Vibroplex" is an instrument separate from the ordinary Morse transmitter and its advantages are universally recognized.

The primary object of the present invention is to provide a vibrator attachment which is compact, and susceptible of easy adjustments of various parts to not only control the touch and vibratory action of the machine, but to permit the attachment to be applied to different sized keys.

Another special feature of the present invention is the provision of peculiar means coacting with the pendulum, or vibrating element proper, for stopping the vibration immediately said part is desired to be inactive.

Still another feature of the invention is special means for adjusting the dot contact point space of the vibrator, whereby this adjustment may be obtained even while the instrument is sending, the operator being able to attend to the adjustment with one hand while using the other hand in sending.

The attachment forming this invention has been devised furthermore with a view of providing an arrangement of parts economizing space to the greatest possible extent and affording quite considerable substantiality so as to stand the wear and tear of ordinary usage readily.

With the above and other objects in view, a full comprehension of the construction and advantages of the invention will be obtained upon reference to the following detail description and to the accompanying drawings, 60 in which—

Figure 1 is a side elevation showing the invention as applied to an ordinary Morse transmitter. Fig. 2 is a longitudinal sectional view of the attachment alone, the U-shaped contact plate being omitted. Fig. 3 is a detail perspective view of the pendulum, or vibrating element, by which the dots are made. Fig. 4 is a top plan view of the parts shown in Fig. 1. Fig. 5 is an end view of the attachment alone. Fig. 6 is a sectional view taken about on the line 6—6 of Fig. 4, the parts of the Morse key being removed. 70

Throughout the following detail description and on the several figures of the drawings, similar parts are referred to by like reference characters. 75

Certain parts illustrated in the drawings are conventional and constitute an ordinary Morse telegraph key. Said key includes a metallic base 1 resting on a table, desk, or other support A and having intermediate its ends the upwardly projecting lugs or standards 2, on which are mounted the adjustable screws 3 forming pivots that support the key lever 4. The lever 4 has a finger piece 5 at one end and an adjustable stop 6 at its opposite end. Coöperating with the lever is the usual adjusting screw 7 and spring 8. 80

The base 1 of the key is fastened to the support A by the binding posts 9 and 10, the post 10 having a circuit wire connected therewith and being electrically connected, itself, with the base 1. The post 9, however, is insulated from the base 1 and electrically connected to the contact 11 which co-operates with a contact on the key lever 4. Another circuit wire is connected with the post 9 in the conventional way and the parts above set forth comprise the Morse key with the exception that the ordinary switch 12 is employed. 95

The vibrator attachment constituting this invention comprises a frame composed of the sides 13 and 14 connected at one end by a head 15, and having at opposite ends downwardly extending arms 13' and 14'. The arms 13' and 14' are connected by a 110

bar 16, one end of which may be permanently secured to the arm 14' and the other end threaded for adjustable connection with the arm 13', as shown at 16'. By detaching the screw or fastening which connects the arm 13' with the side 13 of the vibrator frame, said arm 13' will be adapted to be rotated to adjust it longitudinally of the bar 16, and in this manner, the distance between the sides 13 and 14 may be increased or decreased to render the frame adjustable for application to different sized keys.

The connection between the vibrator frame and Morse key is established by means of hooks 17 and 18 which project downwardly from the sides 13 and 14 about centrally of the ends thereof and are secured to the sides by screws 19. Said hooks 17 and 18 engage with the pivot screws 3 on which the key lever 4 is journaled and the jam nuts 20 which are carried by the pivot screws engage the outer sides of the hooks 17 and hold the latter firmly against the lugs 2 of the base 1. The hooks 17 and 18 are insulated from the sides of the vibrator frame by the insulation strips 21.

A fastening 22 connects a dash lever 23 to the side 13 of the frame but is insulated from said side 13 and electrically connects the part 23 with the hook 17. In like manner a fastening member 24 connects a contact plate 25 with the hook 18 through the side 14 of the vibrator frame, said fastening 24 being insulated from the frame to form an electrical connection between the plate 25 and hook 18 for the purpose to be hereinafter described.

The plate 25 carries a V-shaped spring contact 26 that is adapted to cooperate with a similar oppositely extending V-shaped contact 27, the latter being carried by the vibrating element proper, or pendulum 28. The pendulum 28 has an adjustable weight 29 mounted near its free end portion and the opposite end of the pendulum has the vertical pivots 30 and 31 projecting from its opposite sides and engaged with bearings at the upper and lower sides of an opening 32 formed in the head 15. The pendulum 28 is really composed of rigid metal sections connected by an intermediate spring 33 and a suitable finger piece 34 is carried by the pendulum at the end adjacent to the pivots 30 and 31. The finger piece 34 is arranged just above the finger piece 5 of the key lever 4 of the Morse key and the dash lever 23 has a finger piece 34' spaced therefrom but somewhat shorter.

It will be apparent that the pendulum 28 is free to swing or vibrate in the space between the key lever and side 14 of the vibrator frame, but the pendulum is held in its normal stationary position by means of a small coil spring 35, which encircles the pivot 31 and has one end engaging the fin-

ger piece 34 and the opposite end engaged with an adjusting block 36. The block 36 is supported by an adjusting screw 37 which is swiveled or otherwise mounted in the lateral arms 38 projecting from the upper portion of the head 15. A knurled finger piece 39 facilitates the rotation of the screw 37 so as to increase or decrease the tension of the spring 35 which cooperates with the pendulum in a manner readily apparent.

On the side 14 of the vibrator frame is carried an adjustable stop screw 40 by which the swing of the pendulum bar may be shortened or lengthened in adjusting the dot contact space to a nicety. The screw 40 is fixed at its adjustments by the action of a spring 41 encircling the same and interposed between the side 14 and the knurled head or turning piece 40' of said screw.

In other transmitters, the part equivalent to the screw 40 is fixed in its adjustment by a jam nut and in the adjusting operation, when the screw is positioned properly, the manipulation of the jam nut often disturbs said original adjustment. Furthermore, the adjustment of the screw 40 in previous devices cannot well be performed without using both hands but, in the present invention it will be apparent that even while the operator is sending, the screw 40 will be readily adjustable to adjust the dot contact action of the instrument very finely, this being exceedingly advantageous under actual conditions of service.

From the foregoing, it will be understood that in so far as the parts of the Morse key are concerned, they may be operated in the customary way independently of the parts forming the vibrator attachment.

Associated with the pendulum 28 of the vibrator and located adjacent to the bar 16, is a threaded shaft 42 suitably mounted between and on the sides 13 and 14 of the frame and carrying an adjustable support 43 having a threaded opening to receive the shaft 42 and having a separate opening through which the bar 16 passes so as to cooperate with the part 43 as a guide. The member 43 may be adjusted by turning the shaft 42 and will be held at a predetermined adjustment by a set screw 44.

Mounted on the member 43 is a flat curved stop spring 45, the curved end portion of said spring being arranged to engage with the pendulum 28 when the latter is in its normal position. When the pendulum under the action of the finger piece 34 is moved in the direction of the side 14 of the frame, it is free of the spring 45 and adapted by its vibration, and the action of the springs 26 and 27, to make the dots in the operation of the vibrator attachment. As soon, however, as the pressure on the finger piece 34 is relieved, permitting the pendulum to move to its normal position,

the pendulum becomes engaged with the spring 45 and its vibration is stopped immediately.

At its lower end, the head 15 has the spaced legs 15', each of which is vertically slotted to receive by comparatively tight frictional engagement the vertical side portions of a U-shaped contact plate 46, and furthermore, the space between the legs 15' is sufficient to permit the key lever 4 to pass therethrough. The contact plate 46 is insulated from the base 1 but electrically connected with the contact 11 that coöperates with the key lever 4 of the Morse instrument. Said plate 46 affords an electrical connection between the head 15 of the vibrator frame and the circuit wire attached to the binding post 9.

It is to be noted that the dash lever 23 in its normal position is spaced from the dot lever 23^a which comprises the pendulum 28, there being, however, contact points 23' carried by the parts 23 and 23^a and adapted to be engaged in sending dashes over the line by operation of the lever 23, as will now be more fully described.

In actual use, it will be apparent that upon moving the finger piece 34 of the pendulum 28 toward the finger piece 34', said pendulum will be vibrated, causing the springs 26 and 27 to correspondingly make and break contact, it being this action of the springs that causes the dots to be sent over the line circuit. In the coöperation of the springs 26 and 27, the circuit including the vibrator attachment and Morse key is closed through the post 10, base 1, the lug 2 engaging or in contact with the hook 18, said hook 18, plate 25, springs 26 and 27, pendulum 28, head 15, plate 46 and post 9.

When the dash lever 23 is actuated by being moved toward the pendulum 28, the contact points 23' on the parts 23 and 23^a will be brought together, continuously closing the dash circuit of the instrument until the finger piece 34' has the pressure thereagainst relieved. In dash sending, the circuit may be described as being closed through the post 10, the lug 2 engaging the hook 17, said hook 17, the lever 23, lever 23^a, head 15, plate 46 and post 9.

The vibrator attachment, as above described, is especially advantageous in that it is adapted to fit over the ordinary Morse key and utilize, without any change whatever, the circuit connections of the key, as already established. The attachment furthermore occupies practically no more space than the Morse key, can be quickly removed from the key by merely releasing the attachment frame upon disengagement of the hooks 17 and 18 from the pivot screws 3, after loosening the nuts 20, the key lever 4 being drawn through the head 15 in order to disengage the attachment entirely from

the parts of the key. In addition to the compactness of the attachment, the use of the springs 26 and 27 of V-form is designed to afford a good or long contact in the making and breaking of the circuit in dot sending. The springs 26 and 27 allow the contact points, which will, of course, be carried thereby, to remain together longer and afford a better contact than is obtained in vibrators where a single spring closes the circuit by contact with a solid contact member or post.

It is contemplated that, in the use of the invention, several Morse keys, such as may be employed by a telegrapher, will have the U-shaped connecting and supporting plates 46 applied thereto, and a single vibrator frame with the attached parts may thus be quickly mounted upon any of the Morse keys or equipped with the parts 46. The part 46 increases the solidity of the attachment, as afforded by the hooks, screws and nuts hereinbefore described.

One of the special advantages of my device as hereinbefore described, is the fact that it is constructed and applied in such a manner as to be solid upon the desk, eliminating likelihood of movement about due to lateral operation in the use of the instrument.

Having thus described the invention, what is claimed as new is:

1. In combination with a telegraph key comprising a fulcrum, a contact post, and an electric circuit including said various parts, a vibratory attachment comprising a frame having means mounted thereon for sending prolonged and momentary impulses over said circuit, means on said frame for detachable connection with the fulcrum, a head carried by the frame, and a detachable contact plate mounted on the contact post aforesaid and arranged for detachable engagement with the head of the frame.

2. In combination with a base, pivot screws on said base, a vibrator attachment comprising a frame, hooks carried by said frame to engage the pivot screws aforesaid, vibratory circuit closing means carried by said frame, and a separate circuit closing device mounted on the frame.

3. A vibrator attachment for telegraph keys comprising a frame, a pendulum mounted for vibration on said frame, circuit closing means associated with the frame and pendulum, a separate circuit closing device carried by the frame, means for electrically connecting the attachment aforesaid with a telegraph instrument, the attachment frame being composed of spaced sides, a head connecting the sides at one end and supporting the pendulum, and means at the other end of the frame coöperating with the pendulum to prevent vibration thereof.

4. A vibrator attachment for telegraph

keys comprising a frame, a pendulum mounted for vibration on said frame, circuit closing means associated with the frame and pendulum, a separate circuit closing device carried by the frame, means for electrically connecting the attachment aforesaid with a telegraph instrument, the attachment frame being composed of spaced sides, a head connecting the sides at one end and supporting the pendulum, means at the other end of the frame cooperating with the pendulum to prevent vibration thereof, and means at the last mentioned end of the frame adjustably connecting its sides.

5. A vibrator attachment for telegraph keys comprising a frame, a pendulum mounted for vibration on said frame, circuit closing means associated with the frame and pendulum, a separate circuit closing device carried by the frame, means for electrically connecting the attachment aforesaid with a telegraph instrument, the attachment frame being composed of spaced sides, a head connecting the sides at one end and supporting the pendulum, means at the other end of the frame cooperating with the pendulum to prevent vibration thereof, and means at the opposite end of the frame adjustably connecting its sides together.

6. In a vibratory telegraph instrument, the combination of a frame, a pendulum

mounted thereon, and a flat spring arranged to engage the free end of the pendulum to normally prevent vibration thereof. 35

7. In a vibratory telegraph instrument, the combination of a frame, a pendulum mounted thereon, a flat spring arranged to engage the free end of the pendulum to normally prevent vibration thereof, and means 40 to hold the pendulum in cooperation with said spring.

8. In a vibratory telegraph instrument, the combination of a frame, a pendulum mounted thereon, a flat spring arranged to engage the free end of the pendulum to normally prevent vibration thereof, and spring means normally acting on the pendulum to hold it in cooperation with the first mentioned spring. 50

9. In a vibratory telegraph instrument, the combination of a frame, a pendulum mounted thereon, a flat spring arranged to engage the free end of the pendulum to normally prevent vibration thereof, and means 55 for adjusting the position of the spring on the frame.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. ENGLE.

Witnesses:

GEO. H. WARD,

FRANK J. DOUGLAS