W. W. MASSIE.

WIRELESS TELEGRAPHY.

APPLICATION FILED FEB. 27, 1907.

935,386. **Patented Sept. 28, 1909.**

Fig. 1.

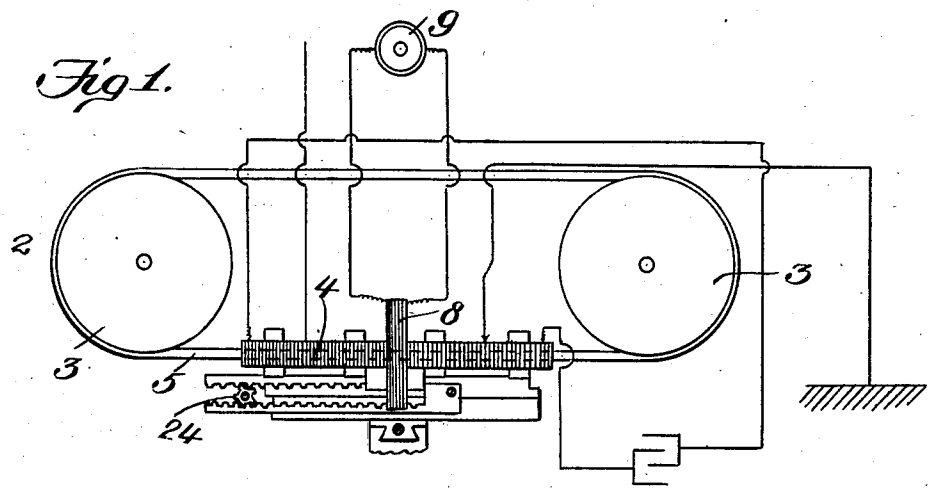


Fig. 2.

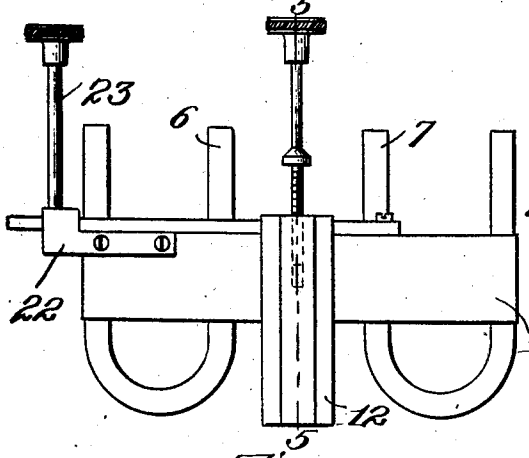


Fig. 4.

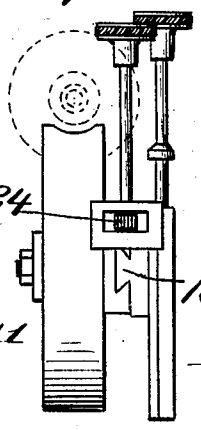


Fig. 5.

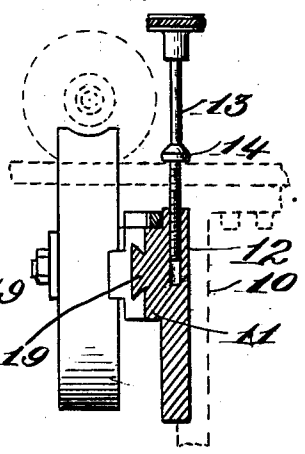


Fig. 3.

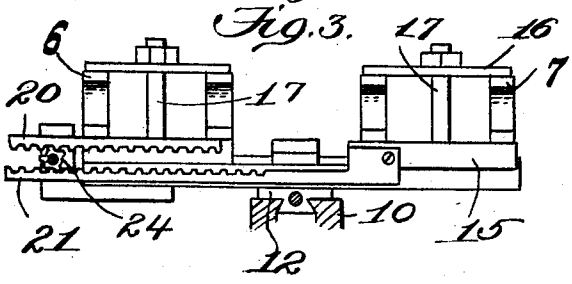
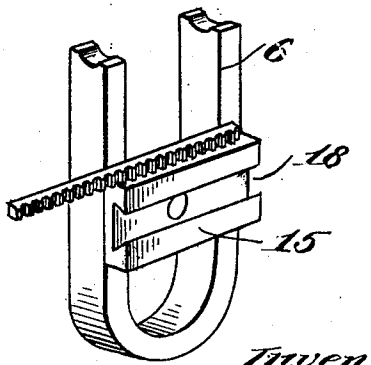


Fig. 6.



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UNITED STATES PATENT OFFICE.

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WIRELESS TELEGRAPHY.

935,386. Specification of Letters Patent. **Patented Sept. 28, 1909.**

Application filed February 27, 1907. Serial No. 359,618.

To all whom it may concern:

Be it known that I, WALTER W. MASSIE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Wireless Telegraphy, of which the following is a specification.

This invention relates to wireless telegraphy and more especially to means for tuning.

The present organization can be incorporated with advantage in many types of systems; it has been employed with utility in conjunction with the Massie wireless telegraph system as disclosed in Letters Patent, No. 853,929 granted May 14, 1907.

Wireless telegraphy embodying my present invention includes what is known in the art as a magnetic detector. Such a device takes various forms, it ordinarily including a coil and at least two magnets.

One of the primary features of the present invention is for relating these magnets in an adjustable manner. I prefer to so dispose these magnets that they can be adjusted toward and from each other in a direction corresponding with the longitudinal axis of the said coil. By the adjustment of these magnets in the direction indicated I can accurately tune a receiving circuit. I am not prepared at this time to state any theory relative to the causes for such phenomena, although it is my opinion that such adjustment varies the inductance to such an extent as to assure accuracy of tuning.

In the drawings accompanying and forming a part of this specification I have shown a form of embodiment of the invention which to enable those skilled in the art to practice said invention will be set forth fully in the following description, while the novelty of the invention will be included in the claims succeeding said description.

Referring to said drawings, Figure 1 is a diagrammatic view of a receiving circuit in connection with which is a device including my invention. Fig. 2 is a front elevation of the magnets shown in Fig. 1 and the means for adjusting the same. Fig. 3 is a top plan view. Fig. 4 is a side elevation and Fig. 5 a cross sectional view of the parts shown in Fig. 2. Fig. 6 is a perspective view of a magnet.

Like characters refer to like parts throughout the several figures.

In Fig. 1 of the drawings which is set forth as a diagrammatic view, I have illustrated in part a certain known arrangement of circuits exactly similar to that in use in the Massie system to which I have herein- before referred. For this reason I do not deem it necessary to describe in detail the several connections illustrated in said Fig. 1 any more than to indicate that the same include a magnetic detector such as that shown in a general way by 2. This magnetic detector comprises as usual two pulleys or sheaves as 3 of duplicate construction and a tubular coil as 4 through which the band 5 is adapted to move. In addition to the pulleys 3, coil 4 and band 5 the magnetic detector has two magnets as 6 and 7. These several parts may be and preferably are of well known construction. The magnetic detector coil 4 presents inductance for a closed receiving circuit. A secondary is illustrated at 8 and it may be connected to a telephone as 9.

My invention does not reside in the detector coil itself or any particular arrangement of wiring, but broadly in a certain adjustable relation of the magnets of the detector. I adjust preferably both of these magnets toward and from each other.

It is customary to support certain of the working parts of the device including the magnetic detector upon a casing or boxing shown partially in full lines in Fig. 3 and partially by dotted lines in Fig. 5, being denoted by 10. I have shown as fitted against this casing or boxing a magnet carrier as 11 which may consist of a plate having on its inner face a ribbed block 12, the rib of which is adapted to slide vertically in a way or groove in the boxing. I have illustrated as extending through the top of the boxing a screw 13 having a shoulder 14 adapted to bear against the top of said boxing. The threaded portion of the screw as shown clearly in Fig. 5 is tapped into the block 12. It, therefore, follows that when the screw 13 is turned in one direction the block 12 and hence the carrier 11 will be lifted, and that when the screw is turned in the opposite direction the carrier will lower or settle downward by its own weight. The

screw, therefore, serves to vertically adjust the two magnets 6 and 7 as will hereinafter more particularly appear. The legs of these magnets are adjacent the coil 4. They may be actually contiguous or in contact therewith or they may be separated therefrom, such relations depending upon certain conditions to be met which can readily be done by the manipulation of the screw 13. In addition to the vertical adjustment of the magnets they have a horizontal adjustment. I desire to state at this point that I use the terms horizontal and vertical to describe the set of the parts shown in the drawings. It is possible that the magnets may in use be disposed horizontally instead of as shown in the drawings vertically. In this case the magnets would be adjusted horizontally to regulate the amount of separation between their legs and the coil of the detector and they would also be adjusted horizontally to regulate their lateral separation. In other words, I wish to make it clear that I do not limit myself to placing the magnets in any particular plane, as the invention covers a more general relation than this.

It is my custom to removably clamp the magnets 6 and 7 to the carrier 11 and for this purpose employ in connection with each magnet an inner clamping member as 15 and an outer clamping member as 16, a screw or bolt as 17 connecting the two clamping members. By loosening up on the screw, a magnet can be removed from between said clamping members or jaws and a new magnet if occasion requires can be put in its place. When the two screws 17 are tightened up the magnets 6 and 7 will be held in firm relation and against relative movement with respect to the two clamping devices. The clamping devices also provide a ready means for assuring the proper leveling of the magnets. The inner sections 15 of the clamping members as indicated clearly in Fig. 6 have grooves as 18 extending along the same which are adapted to receive tongues as 19 on the opposite side of the plate 11. The two sections or blocks 15, therefore, slide horizontally upon the plate or carrier 11.

To the block 15 of the magnet 6 is shown as connected a rack 20, while a rack 21 is similarly connected with the block 15 of the magnet 7, as shown best in Fig. 3. In the present case the racks are of different lengths, this being due to the space between the magnets. The racks may be connected with the blocks 15 in any desirable way.

Upon the plate 11 I have shown mounted a bracket 22 constituting a suitable bearing for the vertically disposed spindle 23 equipped near its lower end with the pinion 24 which is adapted to mesh with the teeth of the opposite racks 20 and 21 which it will be understood are in parallelism. When the spindle 23 is turned in one direction the magnets 6 and 7 will be simultaneously moved toward each other and when said spindle is turned in the opposite direction the magnets will be separated and this spacing of the magnets is utilized by me for obtaining the tuning. Ordinarily I provide for a maximum adjustment of one inch between the magnets. I can by the adjustment of the magnets provide for the reception in a closed receiving circuit such as that shown in the drawings of wave lengths of any character from a minimum to a maximum.

What I claim is:

1. A magnetic detector having a coil and magnets, and means for simultaneously moving the magnets toward and simultaneously from each other in a direction substantially axially of said coil.

2. A magnetic detector having a coil, and magnets coöperative therewith, racks arranged in reverse relation and connected with the magnets, and a pinion meshing at opposite sides with the racks, the pinion forming a connection between the magnets and when turned serving to adjust the magnets toward or from each other in accordance with the motion of the pinion and in a direction axially of said coil.

3. A magnetic detector having a coil and magnets coöperative therewith, means for relatively adjusting the magnets in a direction toward and from each other, and means for bodily adjusting the magnets in a different direction toward and from the coil.

4. A magnetic detector having a coil and magnets, the magnets being relatively adjustable in a direction toward and from each other and also in a different direction toward and from the coil.

5. A magnetic detector having a coil and magnets, a carrier for the magnets, the carrier being movably mounted to carry the magnets toward and from the coil and each of the magnets being adjustable on the carrier for movement toward and from each other.

6. A magnetic detector having a coil and magnets, a carrier for the magnets, the carrier being movably mounted to carry the magnets toward and from the coil, racks connected with the respective magnets, and a rotary pinion meshing with the teeth of the racks, the pinion when turned serving to move the magnets toward or from each other.

7. A magnetic detector comprising a coil, a plurality of magnets coöperative therewith, and means connecting said magnets for relatively adjusting them simultaneously in reverse directions while they remain in a predetermined fixed relation to the axis of the coil.

8. A magnetic detector comprising a coil, a plurality of magnets coöperative there-

with, and means connecting said magnets for relatively adjusting them simultaneously in opposite directions axially of said coil.

9. A magnetic detector comprising a coil, a magnet coöperative therewith, a carrier movable transversely of the axis of said coil, and a member movable on said carrier in the direction of the axis of the coil, said magnet being connected to one of said movable parts.

10. A magnetic detector comprising a coil, magnets coöperative therewith, means for relatively adjusting said magnets in a direction axially of said coil, and means for adjusting the magnets transversely of the axis of the coil.

11. A magnetic detector comprising a coil, and magnets coöperative therewith, said magnets being relatively adjustable axially of the coil and also adjustable transversely of the axis of the coil.

12. A magnetic detector comprising a primary coil, a core therein, and magnets coöperative with the coil and relatively adjustable in a direction axially and bodily adjustable transversely thereof.

13. A magnetic detector involving primary and secondary coils, a core coöperative with the primary coil, and magnets coöperative with the primary coil and relatively adjustable axially thereof.

14. A magnetic detector comprising a primary winding, a core coöperative therewith, and a plurality of magnets arranged opposite to the primary winding and having means for insuring an adjustment of such magnets to positions equidistantly at opposite sides of a given point in the length of the primary coil.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WALTER W. MASSIE.

Witnesses:
L. E. HINCKLEY,
C. M. RICHARDSON.