

Nov. 6, 1923.

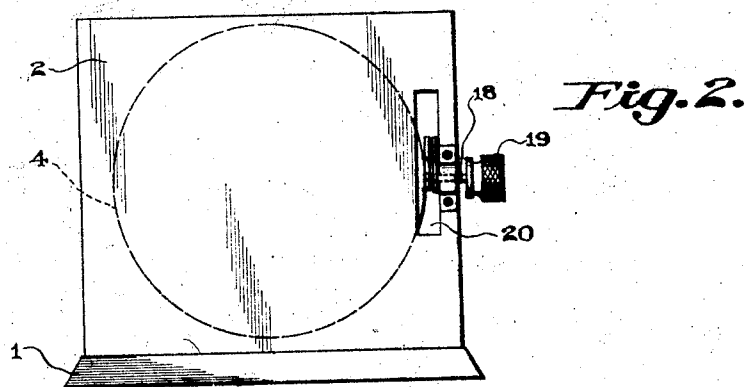
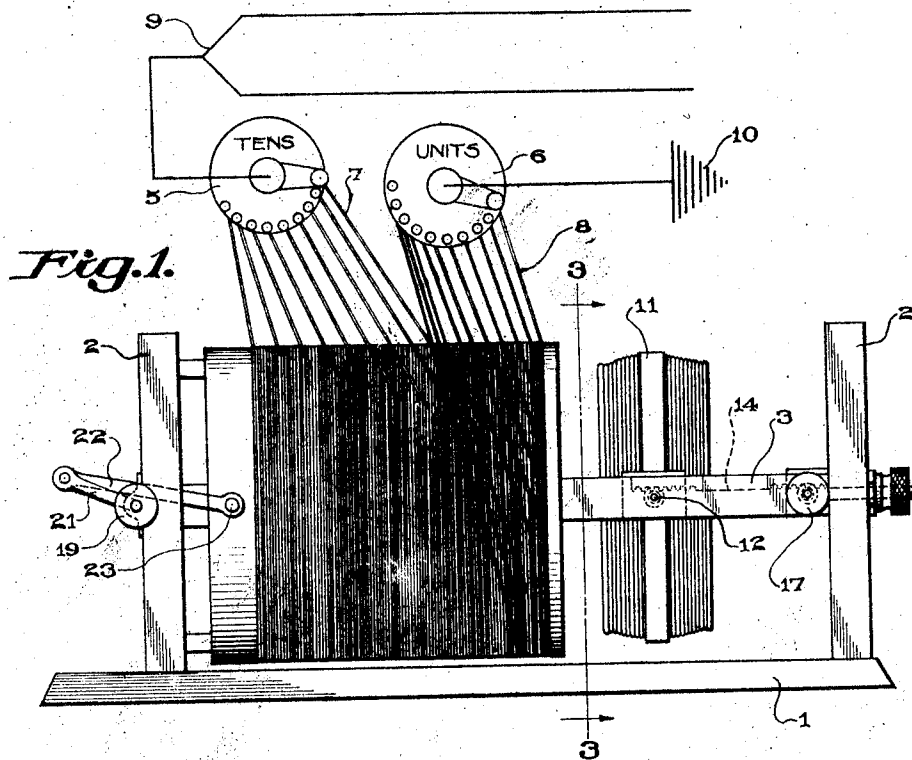
1,473,407

L. W. HATCH

LOOSE COUPLER OR RECEIVING COIL

Filed Oct. 3, 1922

2 Sheets-Sheet 1



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Witnesses

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2 Sheets-Sheet 2

Fig. 3.

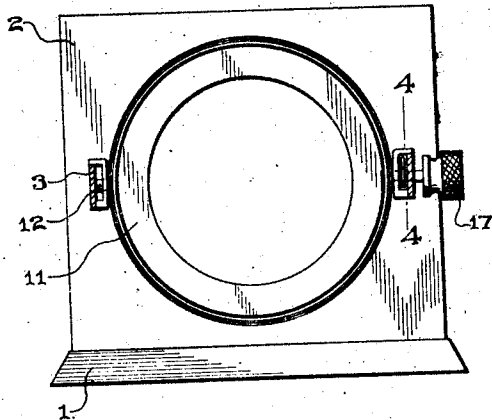


Fig. 6.

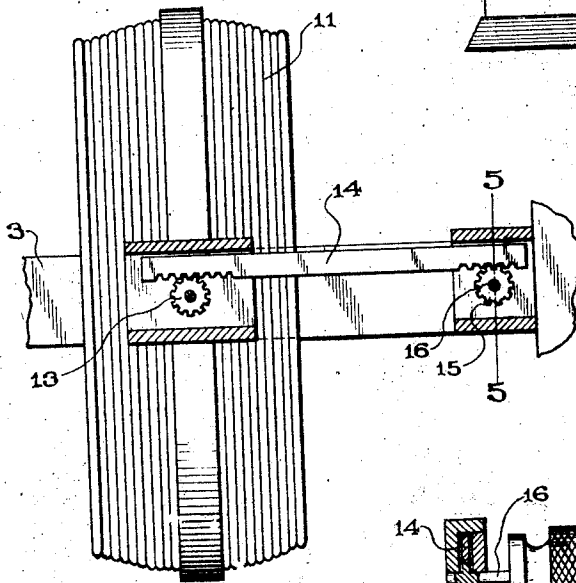
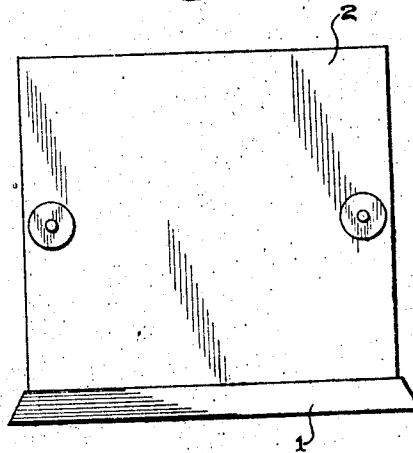


Fig. 4.

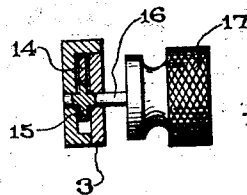


Fig. 5.

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1,473,407

UNITED STATES PATENT OFFICE.

LUMAN W. HATCH, OF STAMFORD, CONNECTICUT.

LOOSE COUPLER OR RECEIVING COIL.

Application filed October 3, 1922. Serial No. 522,159.

To all whom it may concern:

Be it known that I, LUMAN W. HATCH, a citizen of the United States, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented new and useful Improvements in Loose Couplers or Receiving Coils, of which the following is a specification.

In carrying out the present invention it is my purpose to improve and simplify the general construction of loose couplers or receiving coils for use in connection with radio apparatus and to provide a loose coupler wherein the primary coil may be adjusted relative to the secondary coil to obtain a variable inductance and wherein the secondary coil may be easily and conveniently adjusted relative to the primary coil while within the latter in order that the closest inductance variation possible may be obtained.

It is also my purpose to provide a loose coupler or receiving coil which may be manufactured and marketed at a small cost, which may be quickly and easily adjusted and which will embody comparatively few parts and this so arranged and correlated as to reduce the possibility of derangement to a minimum.

With the above recited objects in view and others of similar nature, the invention resides in the construction, combination and arrangement of parts hereinafter set forth in and falling within the scope of the appended claims.

In the accompanying drawings:—

Figure 1 is a view in side elevation of a loose-coupler constructed in accordance with my invention.

Figure 2 is an end view.

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Figure 4 is an enlarged sectional view on the line 4—4 of Figure 3.

Figure 5 is a sectional view on the line 5—5 of Figure 4.

Figure 6 is a view of the end of the coupler opposite from that shown in Figure 2.

Referring now to the drawings in detail, 1 designates a base slab which in the present instance is substantially rectangular in plan. Uprising from the slab 1 adjacent to the respective ends thereof are end pieces 2 and connecting the end pieces 2 are longitudinal bars 3, 3 spaced apart in parallelism and arranged in a horizontal plane. Adjacent to

one end piece 2 and slidably mounted upon the bars 3 is a primary winding or coil 4 in which the wire is wound in a layer on an insulating tube which may be formed of pasteboard, wood, fibre or any other suitable material. The wire forming the coil is covered with suitable insulating material. 5 and 6 designate switches which are connected by tap wires 7, and 8, respectively, to the turns of the wire in the primary coil. In this instance the contacts or points of the switch 6 are connected respectively to single turns of the wire on the primary, while the points or contacts of the switch 5 are connected by the tap wires 7 to groups of turns each on the primary. In this instance the plate of the switch 5 is connected to the aerial 9 while the plate of the switch 6 is connected to the ground as at 10.

Arranged between the bars 3 adjacent to the other end piece 2 is a secondary coil 11 of suitable construction. The body carrying the coils of the secondary is circular in outline and at diametrically opposite points is formed with outwardly extending axial alining trunnions 12 that are journaled in respective side bars 3 so that the secondary coil may be swung at an angle. In order to so swing the secondary coil one of the coils 12 is equipped with pinion 13 with which meshes one end of a rack bar 14. This rack bar lies parallel with the adjacent side bar 3 and the other end thereof meshes with a pinion 15 carried on a shaft 16 journaled in the side bar 3 and provided with a knob 17 by which the pinion 15 may be rotated. By means of this construction it will be seen that when the knob 17 is rotated from one direction to the other the longitudinal movement will be imparted to the rack bar thereby rotating the pinion 13 so as to turn the secondary coil. The primary coil 4 as previously stated is adapted for sliding movement over the secondary coil so that the inductive relation of the primary with respect to the secondary may be varied according to the circumstances in each particular case. In order to so slide the primary coil 4 I employ a shaft 18 that is journaled in the end pieces 2 adjacent to the primary coil. The outer end of the shaft is equipped with a knob 19 while the inner end of the shaft extends into a slot 20 formed in the end piece 2. The end of the shaft within the slot 20 is connected to one end of an arm 21 and the other end of the arm 21 is connected to one ex-

termy of the link 22 that works through the slot 20 and is connected to the primary 4 as at 23. This construction permits the coil 4 to be moved longitudinally with respect to the secondary coil when the shaft 18 is rotated.

It will be seen that after the primary coil has been adjusted relative to the secondary coil to vary the inductive relation of the coils, the secondary coil may be swung within the primary coil thereby enabling the closest inductance variation possible to be obtained with my improved receiving transmitter or loose coupler.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear and exact understanding of the said embodiment. I do not desire, however, to be understood as confining myself to the specific construction and relative arrangement of parts inasmuch as in the future practice of the invention, minor changes may be made therein without departing from the spirit and scope of the claims.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:—

1. A loose coupler comprising a base slab, end pieces upstanding from said base slab, longitudinal bars interconnecting said end pieces, a primary coil slidably mounted upon

said bars adjacent to one of said end pieces, a secondary coil arranged between said bars adjacent to the other end piece, means for sliding said primary coil relative to said secondary coil to vary the inductive relation of said coil, pivotal connections between said secondary coil and said side bars, and means for turning said secondary coil in order that the closest possible inductance variation may be obtained.

2. A loose coupler comprising a base slab, end pieces upstanding from said base slab, longitudinal bars interconnecting said end pieces, a primary coil slidably mounted upon said bars adjacent to one of said end pieces, a secondary coil arranged between said bars adjacent to the other end piece, means for sliding said primary coil relative to said secondary coil to vary the inductive relation of said coil, pivotal connections between said secondary coil and said side bars, and means for turning said secondary coil in order that the closest possible inductance variation may be obtained, said last-named means comprising a pinion connected to said secondary coil at the axis of revolution thereof, a rack bar meshing the said pinion, a secondary pinion meshing the said bar and a knob connecting the said pinion, whereby said rack bar may be actuated to rotate said secondary coil.

In testimony whereof, I affix my signature.

LUMAN W. HATCH.