June 10, 1930. R. DEASON 1,763,459

RECEIVING APPARATUS

Filed Nov. 23, 1928 2 Sheets-Sheet 1

Fig. 1.

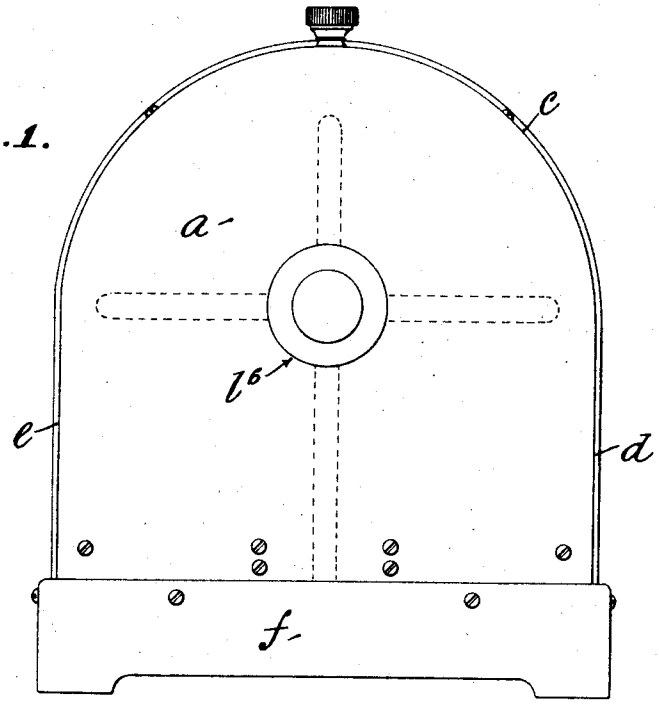


Fig. 3.

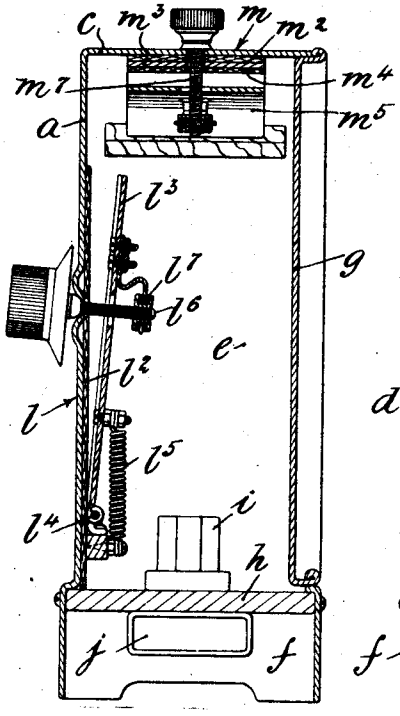
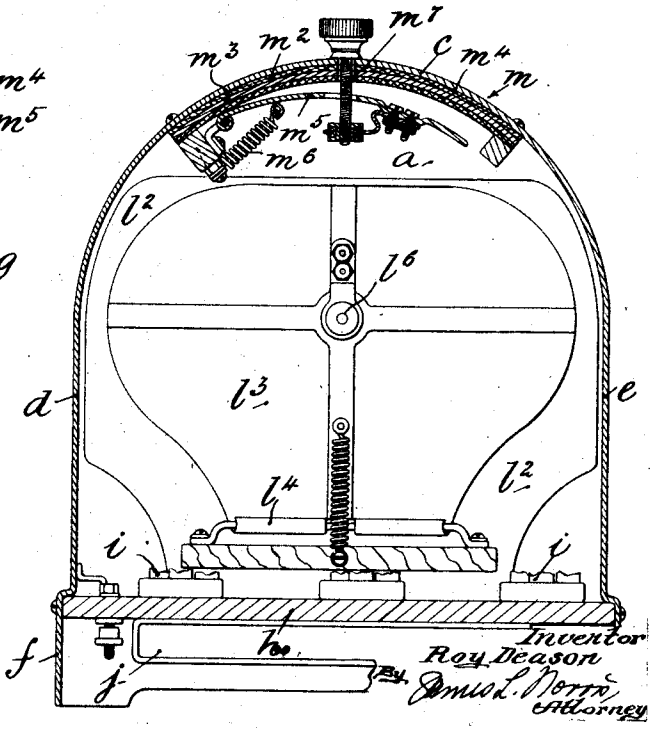


Fig. 2.



Inventor
Roy Deason
By James L. Norris
Attorney

June 10, 1930. R. DEASON 1,763,459

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Filed Nov. 23, 1928 2 Sheets-Sheet 2

Fig. 5.

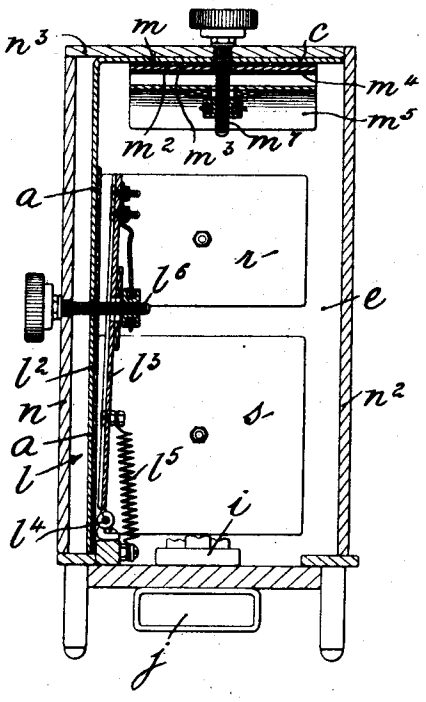
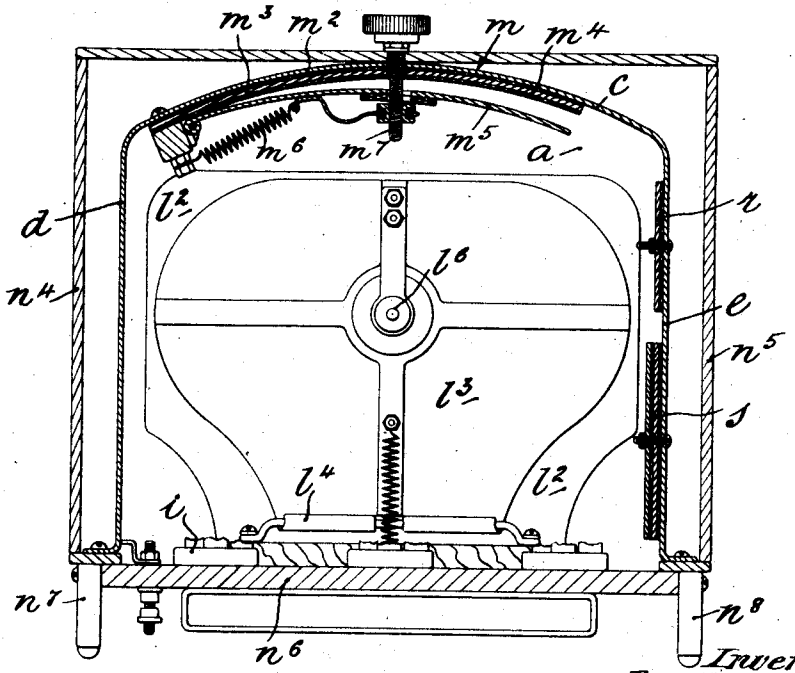


Fig. 4.



Inventor
Roy Deason
By James L. Norris
Attorney

Patented June 10, 1930 1,763,459

UNITED STATES PATENT OFFICE

ROY DEASON, OF SMALL HEATH, ENGLAND

RECEIVING APPARATUS

Application filed November 23, 1928, Serial No. 321,429, and in Great Britain November 29, 1927.

The invention relates to apparatus for receiving, transmitting and amplifying high frequency and low frequency electrical currents, particularly for radio purposes, and to the provision of condensers employed therein, and the object of the invention is an inexpensive production of apparatus with greater efficiency.

The kind of apparatus to which the invention solely relates is one wherein there is a casing-like body containing, enclosing and supporting the whole of the normally fitted electrical equipment of the apparatus and freely opened by a simple lid which is removed for inspection, replacement, adjustment, etcetera of said equipment without in any way impairing its support or efficiency, so that while the lid is removed opening the body the apparatus is still complete and efficient.

In this kind of apparatus the feature of the invention is the use to form a permanent part of the body of a rigidly built metal plate-like structure providing walls which constitute in themselves one element of certain condensers employed in the apparatus at earth or other predetermined potential. Said metal structure is of substantially large area and may form either the actual casing-like body of the apparatus or may be enclosed by an insulating casing-like body, but whatever form the plate-like structure takes in the apparatus it is always part of the body as distinct from the lid, and provides wall-like surfaces of substantial area capable of forming one element of a condenser or of two or more condensers having one of their sides at the same electrical potential.

For both manufacture and use it is desirable to produce an apparatus of small dimensions, and to utilize the space therein to the best advantage for the electrical equipment, and the invention enables this to be done with very great efficiency for the reason that large area condensers can be built up upon, and as parts of, the plate-like structure according to the invention without materially minimizing the ordinary base or foundation space for the application of other instruments used in the apparatus.

In one form of the invention in which the metal plate-like structure constitutes the external casing-like body of the apparatus, said structure is of sheet metal and is connected up to earth or other circuit, and the one, two or more condensers whose one sides are at earth or the same potential are built up upon said structure so that said structure forms one element of all said condensers, and as said structure is always at the same potential throughout its entire surface there is no possibility of ohmic resistance being set up between the different condensers of which it forms part.

In another form of the invention the metal plate-like structure is an internal one enclosed by an insulating outer cover or casing-like body, but it constitutes one element of two or more condensers having one of their sides at the same electrical potential, as for instance, earth potential.

The first form of the invention is provided with an insulating base built into the structure forming the exterior casing-like body of the apparatus, and upon this base are mounted the necessary and well-known accessories to be employed in the apparatus in conjunction with the condenser or condensers provided in accordance with the invention as previously described, while in the second form of the invention the metal structure is built up upon an insulating part constituting the base to the insulating outer cover, or casing-like body.

The invention aforesaid is applicable in radio apparatus for receiving or transmitting or for amplifying or for any of these purposes in combination, the essential features of it being as before stated that said metal plate-like structure forms one element of a condenser or of two or more condensers having one of their sides at the same electrical potential.

The drawings forming part hereof show two forms of the invention, Figs. 1–3 where the metal plate-like structure constitutes the external container or casing-like body of the apparatus, and Figs. 4 and 5 where the structure is enclosed by an insulating outer cover or casing-like body.

Fig. 1 is a front elevation.

Fig. 2 is a vertical section of Fig. 1.

Fig. 3 is a transverse vertical section of Figs. 1 and 2.

Fig. 4 is a vertical section somewhat similar to Fig. 2.

Fig. 5 is a transverse vertical section similar to Fig. 3.

With reference to Figs. 1–3, the large area sheet metal structure constitutes the external container or casing-like body of the apparatus and is comprised by the integral front a, top c, sides d and e, and lower skirting f by which latter the apparatus rests upon any supporting surface. The open back of this structure is closed by a detachable lid g fitting tightly all round a push-in friction-tight fit. The removal of this simple lid freely opens the body and gives free access to the internal electrical equipment.

Rigidly built into the skirting of this structure is a horizontal non-conductive base h, preferably wood, to constitute a foundation for the valves etc., of the apparatus requiring insulation from the container, certain parts only, such as the valve sockets i and the tuning coil j, being indicated as attached to this base.

The metal structure is connected to earth and forms one element of condensers l and m having one of their sides at the same electrical potential, said sides being actually formed by the structure which also forms a means for building up the condensers.

The condenser l is an aerial tuning variable one constituted by the front a of the structure, by the dielectric l^2, and by the plate-like adjustable side l^3, which is hinged at l^4 to an insulator secured to the casing front and is moved for adjustment by the spring l^5 in one direction and by the adjusting screw l^6 in the other direction, said screw being adapted for hand operation from the exterior of the front a and being insulated from the side l^3 at l^7 where the screw box for said screw is connected to said side.

The double condenser m is applied to the top c of the casing or structure and comprises a fixed condenser formed by said top, the dielectric m^2 and the fixed metal side m^3, while the variable condenser built against this side m^3 is provided by the dielectric m^4, and the adjustable side m^5 which is similarly moved by a spring m^6 and a hand-operated screw pin m^7. The one side of this fixed condenser is the plate-like metal structure itself but both sides of the variable condenser are plates separate of the structure of a different potential to the potential of the structure so that this second condenser is built up on the top of the other condenser using the structure only as a support for it, both of its sides being of a different potential to the structure.

It will be clear from Figs. 2 and 3 how the plate-like metal structure, constituting the external container of the apparatus, forms a mounting for these condensers and enables same to be inexpensively built up to large area without limiting the space within the apparatus for the disposition of the other necessary accessories employed in a radio receiving apparatus, while at the same time as its entire surface is always at the same potential there is no possibility of ohmic resistance being set up between the different condensers of which said structure forms one element.

The form of the invention Figs. 4 and 5 differs only from the previous form inasmuch as the metal plate-like structure is enclosed by an insulating outer cover of wood or the like. The outer cover comprises front n, removable back n^2, top n^3, sides n^4, n^5, base n^6 and elevating feet n^7 and n^8, while the parts of the plate-like structure comprise the integral front a, top c and sides d and e, the front and the sides resting upon the base n^6 of the insulating outer cover. The condenser l is substantially as aforesaid as also is the condenser m, but in this form of the invention two additional condensers r and s of the fixed type are applied to one of the side walls of the plate-like metal structure, these condensers being of any suitable form utilizing the plate-like metal structure as one of their elements.

It will be clear with reference to the construction Figs. 1–3 that the conductive casing-like body in addition to forming one side of the one or more condensers can also serve as an effective electrical conductor for all instrument circuits in the apparatus which are at the same electrical potential as the casing-like body.

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

1. Apparatus for receiving, transmitting or amplifying high frequency and low frequency electrical currents, comprising a metal casing, a metal plate supported adjacent the inner face of one wall of said casing but insulated from the latter, said wall and said plate forming two elements of a condenser, means tending to move said plate away from said wall, and means operative from the exterior of said casing for moving said plate toward said wall in opposition to the last-named means.

2. Apparatus for receiving, transmitting or amplifying high frequency and low frequency electrical currents, comprising a metal casing, a metal plate mounted adjacent to but insulated from the inner face of a wall of said casing, said casing wall and said plate forming elements of a condenser, means tending to move said plate away from said wall, and means for moving said plate toward said wall, the last-named means comprising a rotatable knob mounted externally of said casing and a stem carried by said knob and

extending through said wall and having screw-threaded engagement with said plate, said stem being insulated from one of said condenser members.

3. Apparatus for receiving, transmitting or amplifying high frequency and low frequency electrical currents, comprising a metallic casing, a sheet of insulating material mounted on the inner face of one wall of said casing, a metal plate hinged adjacent one of its edges to said sheet, said casing wall, sheet and plate forming elements of a condenser, a nut carried by said plate but insulated therefrom, and a rotatable spindle extending through said wall and sheet and engaging said nut for rocking said plate toward said sheet.

4. An apparatus according to claim 3 including means tending to rock the plate away from the sheet.

ROY DEASON.