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C. P. BEANLAND ET AL

2,291,787

INDUCTANCE AND CAPACITY TRIMMER UNIT

Filed July 12, 1941

Fig. 1.

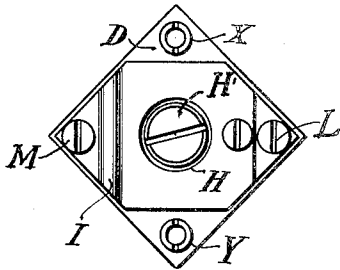


Fig. 4.

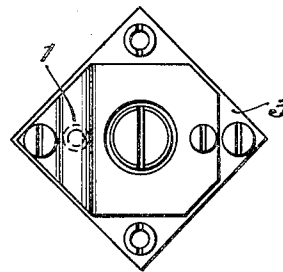


Fig. 2.

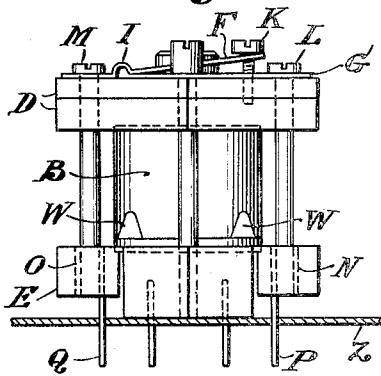


Fig. 5.

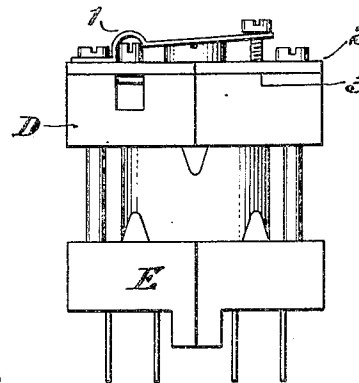


Fig. 3.

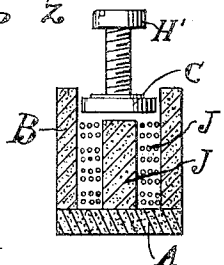
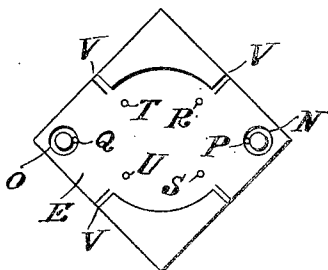


Fig. 2a



INVENTORS
Charles Percy Beanland
Christopher Sydney Cockerell
BY *H. S. Brown*
ATTORNEY

UNITED STATES PATENT OFFICE

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INDUCTANCE AND CAPACITY TRIMMER
UNIT

Charles Percy Beanland, Chelmsford, and
Christopher Sydney Cockerell, Danbury, Eng-
land, assignors to Radio Corporation of
America, a corporation of Delaware

Application July 12, 1941, Serial No. 402,174
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8 Claims. (Cl. 250—16)

The present invention relates to an improved combined inductance and capacity unit and provides such a unit which is of small dimension and of which the inductance and capacity elements are easily adjustable in value and which is, therefore, particularly suitable for satisfying military and aircraft radio requirements, including, more especially, ganged H. F. assemblies or aircraft equipment.

For a clear understanding of the invention, reference will be had to the accompanying drawing wherein Fig. 2 is a front elevation of the combined inductance and capacity trimmer unit; Figs. 1 and 3 are respectively top and bottom views of Fig. 2; Fig. 2a is a view in cross-section of the inductance unit; Fig. 5 is a front elevation of a modified form of the invention; and Fig. 4 is a plan view of Fig. 5.

In the embodiment illustrated in Figures 1 to 3, the unit comprises an inductance element including a core J (shown in Fig. 2a), one fixed end member A, preferably of disc form, an outer cylindrical member B, and an adjustable plunger C of disc form constituting a second end member, all these components being of ferro-magnetic material, preferably dust iron, with a coil J' surrounding the core and occupying the space bounded by the ferro-magnetic elements, the inductance element being held between two insulating end cheeks D and E, one of which D has a central threaded hole which accommodates a threaded screw H' to which the adjustable plunger is attached; and a capacity element consisting of two metallic plates F and G mounted on and extending over the major area of the threaded end cheek D, the two metallic plates being insulated from each other by a mica sheet (not shown). The two metallic plates and the sheet of mica are each provided with a hole H which registers with the hole in the end cheek upon which they are mounted, access to the adjusting screw of the plunger member C of the inductance element being had through these registered holes. The outer metallic plate F has a "set" I on the line of its fixture to the end cheek D whereby, in the absence of restraint, it tends to move hinge-fashion away from the other metallic plate G. The two metallic plates and the mica sheet are each provided with a second hole, that in the outer metallic plate F being near to the free edge of the said plate, through which extends a threaded pin K. This pin is provided on the outside of the outer metallic plate with a head, and the pin serves to adjust the distance separating the two metallic plates. The two end

cheeks D and E between which the inductance element is mounted, are held together, and thus hold together the components of the inductance element, by means of two pins L and M which pass through corners of the cheek D, upon which the capacity element is mounted and screw into metallic collets N and O let into holes in corresponding corners of the other cheek E. One of these pins passes through one and the other through the other of the two metallic plates G and I, of which the capacity element is constituted and thus serve electrically to connect these plates one to one and the other to the other collet. The lower end cheek E has let into its under side remote from the inductance element, a number of connecting pins P, Q, R, S, T, U, two of which P and Q are in electrical connection with the aforementioned collets N and O and thus with the condenser plates, and to others, say four, of which connections of the coil and tapings thereon of the inductance may be made. Saw-cuts V are made in the edge of the lower end cheek E and slots W in the end of the cylindrical member of the inductance element to accommodate the connecting wires (not shown). The upper end cheek accommodating the capacity element is either wholly or in part constituted as two plates of insulating material both plates being threaded for the accommodation of the threaded screw of the adjustable plunger and screws X, Y, are provided whereby these two plates may be clamped together whereby to lock the stem of the plunger adjusting screw against movement once a desired adjustment shall have been made. Preferably the screws X, Y, by which the two plates of the upper cheek are clamped together, consist of long pins, threaded at one end, which pass through the two plates of the upper cheek through the lower cheek, and screw into a metallic plate Z which serves both as a mounting plate for the whole assembly and as the base of a screening can. Figures 4 and 5 show a slightly different arrangement for locking the plunger adjusting screw once a desired adjustment shall have been made. Here screw I clamps together sections 2 and 3.

The screening can (not shown) is fixed in place by means of two screws which are threaded and screw into the heads of the last mentioned pins X and Y. The top of the screening can is provided with holes through which access is had to the head of the inductance plunger adjusting screw and to the adjusting nut of the capacity element.

The whole unit is of square cross section, with

sides approximately one inch long, and, including the metallic base, stands a little over one and a half inches high.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed we declare that what we claim is:

1. A combined inductance and capacity unit comprising a cylindrical member, a fixed end member in the form of a disc closing the bottom of the cylindrical member, an adjustable plunger of disc form constituting a second closure member for the top of the cylindrical member, said members being of ferro-magnetic material, a core contained within the cylindrical member, a coil surrounding the core and occupying the space bounded by the ferro-magnetic members, a pair of insulating end cheeks between which are clamped the above mentioned elements constituting the inductance element, and a capacity element consisting of two metallic plates mounted on and extending over the major area of the upper end cheek, the two metallic plates being insulated from each other by a mica sheet.

2. A unit as claimed in claim 1 wherein the fixed and adjustable end members, the cylindrical member and the core are of dust iron.

3. A unit as claimed in claim 1 wherein the upper end cheek has a central threaded hole which accommodates a threaded screw to which the adjustable plunger is attached.

4. A unit as claimed in claim 1 wherein the upper end cheek has a central threaded hole which accommodates a threaded screw to which the adjustable plunger is attached, wherein the two metallic plates and the sheet of mica are each provided with a hole which registers with the hole in the upper end cheek, access to the adjusting screw of the plunger member of the inductance element being had through said registered holes.

5. A unit as claimed in claim 1 wherein the two end cheeks are held together, thereby clamping together the components of the inductance element, by means of two pins which pass

through corners of the upper cheek and screw into metallic collets let into holes in corresponding corners of the lower cheek.

6. A unit as claimed in claim 1 wherein the two end cheeks are held together, thereby clamping together the components of the inductance element, by means of two pins which pass through corners of the upper cheek and screw into metallic collets let into holes in corresponding corners of the lower cheek, one of the said pins passes through one and the other through the other of the two metallic plates of which the capacity element is constituted and thus serve electrically to connect these plates respectively to connecting pins attached to the collets.

7. An inductance unit comprising a cylindrical member, a fixed end member in the form of disc closing the bottom of the cylindrical member, an adjustable plunger of disc form constituting a second closure member for the top of the cylindrical member, said members being of ferro-magnetic material, a core contained within the cylindrical member, a coil surrounding the core and occupying the space bounded by the ferro-magnetic members, a pair of insulating end cheeks between which are clamped the above mentioned elements constituting the inductance element, being constituted as two plates of insulating material and having a threaded aperture, a screw threaded through said aperture and having its lower end attached to the adjustable plunger, whereby said two plates are clamped together to lock the stem of the plunger adjusting screw against movement once a desired adjustment shall have been made.

8. A unit as claimed in claim 7 wherein the screws by which the two plates of the upper cheek are clamped together, consist of long pins, threaded at one end, which pass through the two plates of the upper cheek, through the lower cheek, and screw into a metallic plate which serves both as a mounting plate for the whole assembly and as the base of a screening can.

CHARLES PERCY BEANLAND.

CHRISTOPHER SYDNEY COCKERELL.