

April 3, 1951

J. R. MAZZOLA
CONDENSER ASSEMBLY

2,547,085

Filed May 1, 1948

3 Sheets-Sheet 1

Fig. 1.

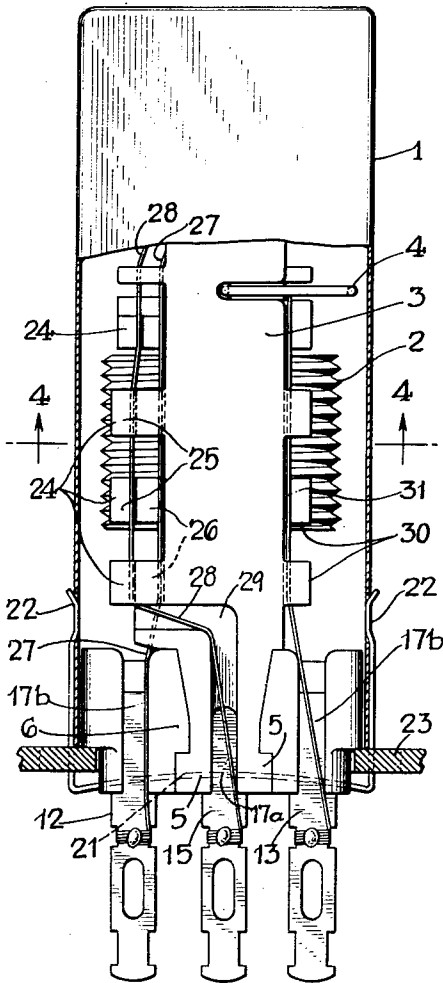


Fig. 2.

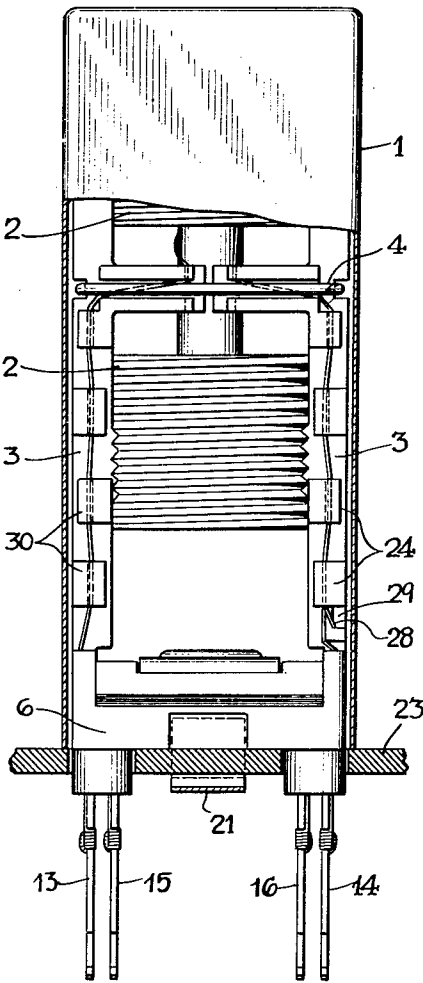


Fig. 3.

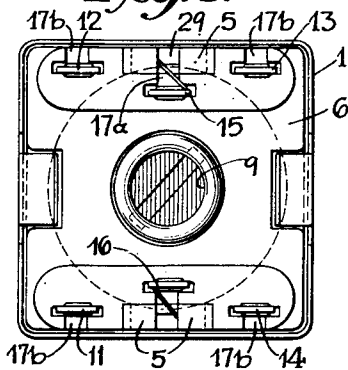
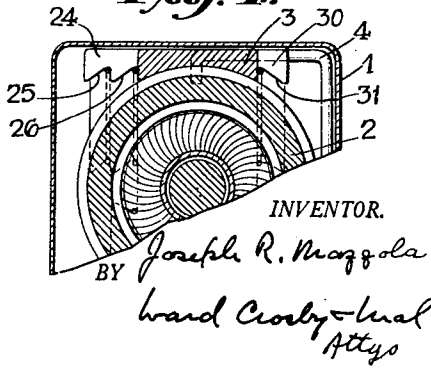


Fig. 4.



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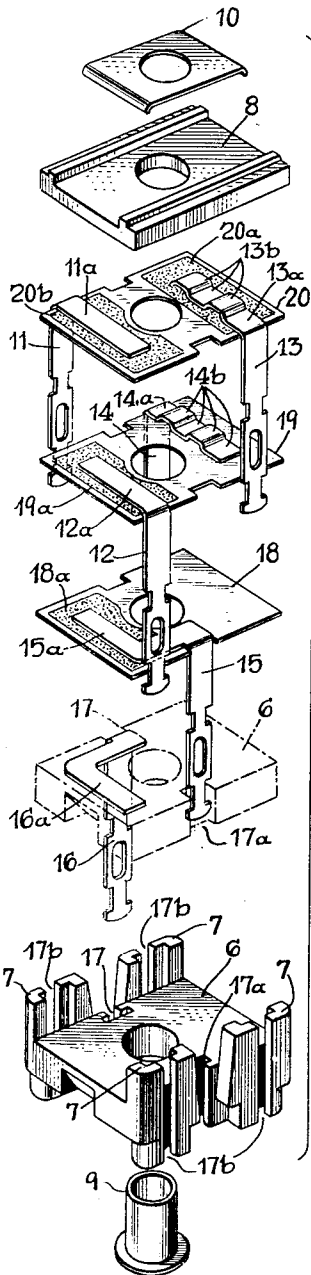


Fig. 5.

Fig. 7.

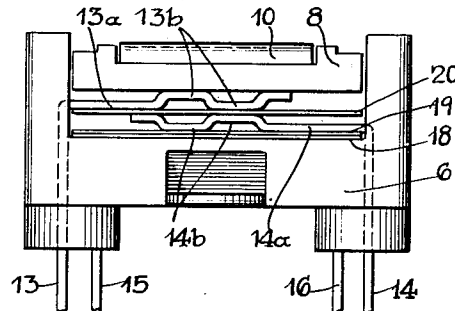
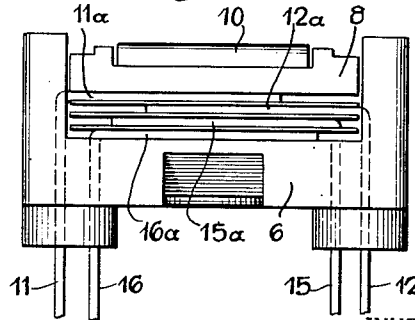


Fig. 8.



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Fig. 9.

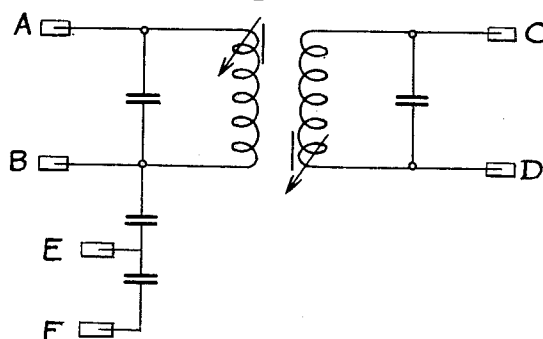


Fig. 10.

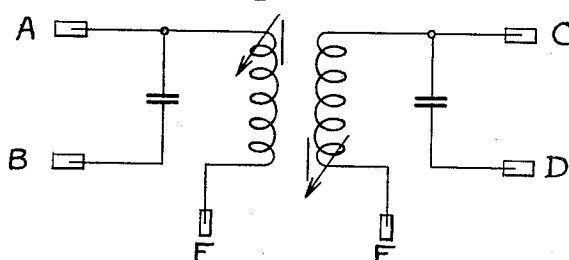


Fig. 11.

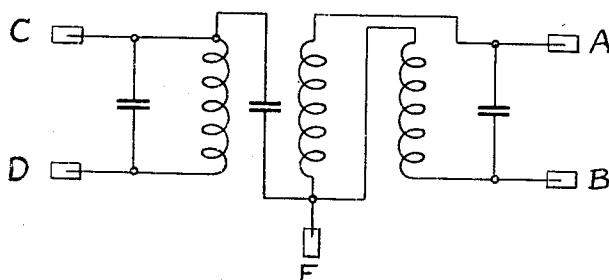
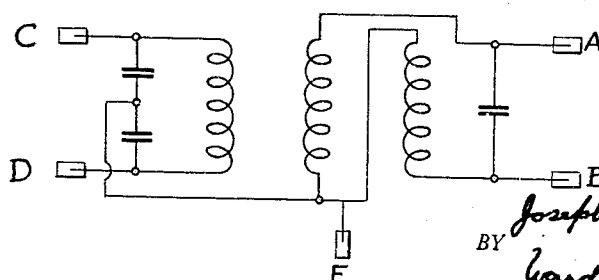


Fig. 12.



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UNITED STATES PATENT OFFICE

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CONDENSER ASSEMBLY

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Application May 1, 1948, Serial No. 24,620

3 Claims. (Cl. 175-41)

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This invention relates to the condenser and coil assemblies of the general type disclosed in the U. S. patent to Ketcham No. 2,435,630 issued February 10, 1948, which assemblies are useful as so-called intermediate frequency transformers and for certain other purposes. In some circuits in connection with which devices of the above character may be used, it is necessary to provide capacity units additional to those disclosed in the above mentioned Ketcham patent, and in certain instances an extra terminal strip or strips may be desirable, even when no additional capacity unit be needed.

The invention aims to satisfy special requirements of the above character, which are difficult to provide for in a practical manner in view of the space and design limitations with which such devices are subject. Further objects and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained which, taken in conjunction with the accompanying drawings, discloses a preferred form of condenser and coil assembly constructed to operate in accordance with the invention; the disclosure however should be considered as merely illustrative of the invention in its broader aspects. In the drawings—

Figs. 1 and 2 are side views, taken at right angles to each other, of a condenser and coil assembly constructed in accordance with the invention, certain parts of the exterior housing being cut away.

Fig. 3 is an end view taken from the bottom of Fig. 1.

Fig. 4 is a section on the line 4-4 of Fig. 1 looking in the direction of the arrows.

Fig. 5 is an exploded perspective view of the condenser assembly.

Fig. 6 is a central transverse section through the condenser assembly, the latter being shown detached.

Figs. 7 and 8 are side views of the condenser assembly shown in Fig. 6, taken at right angles to each other.

Figs. 9 to 12 are schematic diagrams illustrating various circuit connections to which assemblies constructed in accordance with the present invention are applicable.

The assembly is shown in Figs. 1 to 4 as contained within an outer housing 1 which may be of metal and clamped to a chassis or the like to serve as an electrostatic shield as set forth in the Ketcham patent above mentioned. For present purposes the coil and core structure need not be described in detail; in Fig. 2 I have shown

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two cores 2, which may be understood as held in position between frame pieces 3 by U-shaped clips 4 in the manner described in the Ketcham patent, the frame pieces 3 extending longitudinally of the coils and cores on opposite sides thereof, and being provided with extensions 5 (Fig. 1) which overlap and hold between them the main supporting block 6 which carries the condenser assembly.

The construction of the condenser will be best understood by reference to Fig. 5. As there shown the supporting block 6 is provided with corner posts 7 receiving between them a pressure distributing plate 8 in such manner that the laminae of the condenser are clamped between opposed faces of the members 6 and 8 by a hollow rivet 9 or equivalent clamping member which passes through aligned central holes in the elements of the condenser and engages a spring washer 10 which overlies the plate 8. The parts 6 and 8 will usually be of molded plastic.

The condenser assembly is shown as having three capacity units served respectively by the terminal strips 11, 12, the terminal strips 13, 14, and the terminal strips 15, 16. In assembling the condenser the terminal strip 16 is first inserted through a groove 17 of inverted T cross section in block 6, until its contact arm 16a lies against the inner face of block 6. It should be noted that the groove 17 in general lies between two of the corner posts 7 but is displaced somewhat inwardly toward the center of block 6; also the contact arm 16a is laterally offset with respect to the terminal strip 16, to extend partially around the clamping member 9 and in spaced relation thereto when the latter is inserted. Then a dielectric sheet 18 of mica or the like is placed over the contact arm 16a, this insulating sheet 18 having opposed conducting films 18a (Fig. 6) which may be of silver or the like, upon its opposite surfaces. Then the terminal strip 15 is inserted in a groove 17a in block 6, which groove is similar to the groove 17 and located in the opposite side wall of the block, until the contact arm 15a of terminal strip 15 engages against the adjacent conducting film 18a, the contact arm 15a being laterally offset similarly to the complementary contact arm 16a, but in the opposite direction so as to overlie the latter. Thus the two conducting films 18a constitute a capacity unit served by the terminal strips 15 and 16.

Then a dielectric sheet 19 is laid over the contact arm 15a, this insulating sheet carrying on its opposite surfaces opposed conducting films 19a. The terminal strip 12 is then inserted through

one of the grooves 17b adjacent a corner of block 6, until its contact arm 12a engages the adjacent conducting film 19a. Thus the two conducting films 19a constitute a second capacity unit served by the terminals 12 and 15.

The terminal strip 14 is also inserted through another one of the slots 17b adjacent another corner of block 6, until its contact arm 14a engages the upper surface of insulating sheet 19. It will be noted that this contact arm is shaped to provide oppositely displaced raised portions 14b (Fig. 5) which in effect double the thickness of the contact arm. This is done to balance the thickness of the laminae which lie respectively on the left and right hand sides of Figs. 5 and 6; as shown in Fig. 6, for example, the insulating sheets 18 and 19 bend downwardly somewhat on the right hand side of the figure, and the raised portions 14b add extra thickness to this right hand side.

Then a dielectric sheet 20 is placed over the contact arms 12a and 14a, said sheet having upon its opposite surfaces, opposed sets of conducting films 20a and 20b. The lower conducting film 20a engages certain raised portions 14b of the terminal strip 14, and the lower film 20b engages the contact arm 12a.

The terminal strip 11 is then inserted through one of the slots 17b adjacent one of the corners of block 6 until its adjacent contact arm 11a engages with the top conducting film 20b. Also the terminal strip 13 is inserted through the groove 17b near the remaining corner of block 6, said last mentioned terminal strip having a contact arm 13a provided with raised portions 13b similar to the parts 14b previously described. Thus the conducting films 20a constitute a capacity unit served by the terminals 13 and 14, and the conducting films 20b constitute another capacity unit served by the terminals 11 and 12. The pressure plate 8 and washer 10 may be then placed in position on top of the assembly above described, and the rivet 9 applied under pressure to hold the parts in the form shown in Figs. 6 to 8; with the pressure applied to the contact arms.

The above type of construction accordingly results in a condenser assembly in which two rows of three terminal strips each are provided along two opposite sides of the block 6, with the terminals 15 and 16 occupying an intermediate position and the remaining terminals located near the respective four corners of block 6. This leaves the central spaces between the two remaining sides of block 6 free to allow the base 21 (Figs. 1 and 2) of a U-shaped spring metal mounting clip to pass across the end of the assembly between the two rows of terminals, said spring clip having lugs 22 (Fig. 1) which lock releasably in complementary recesses in housing 1, to clamp the assembly to a chassis 23.

To accommodate the conductors leading from the coils above mentioned to the condenser terminals, each of the frame pieces 3 is shown as provided with lacing lugs 24 (Fig. 1) spaced along one side edge thereof and having spaced sets 25 and 26 (Fig. 4) of conductor receiving notches. As shown at the left of Fig. 1, a conductor 27 leading from a coil is laced through the notches 26 and through the adjacent groove 17b to the terminal strip 12. An adjacent conductor 28 is laced through the notches 25 and is then received in a passageway 29 (Figs. 1 and 3) which runs along the extension 5 of the frame piece to the adjacent groove 17a, from whence the conductor 28 runs to terminal strip 15. In the illustrated

form of the invention the remaining side edges of the frame pieces are provided with locking lugs 30 (Figs. 1 and 4) having a single set of notches 31 therein to accommodate conductors leading respectively to the terminal strips 11 and 13, the terminals 14 and 16 being served in the manner above described in respect to the terminals 12 and 15 respectively.

Figs. 9 to 12 illustrate various circuit connections of the coils and capacity units which may be made with the aid of assemblies of the type above described, Fig. 9 showing an AM hook-up appropriate for use with diode sections and involving the utilization of all six of the terminal strips previously described, the terminal strips adjacent the corners of the condenser assembly being marked A, B, C and D, and the intermediate terminal strips being marked E and F. Fig. 10 shows a hook-up sometimes used in both AM and FM circuits, in which the coils and the capacity units are separately terminated. Fig. 11 shows an FM discriminator hook-up involving the use of the five terminal strips A, B, C, D and F, the intermediate terminal strip E being idle in this instance. Fig. 12 shows a modified FM hook-up which also involves the use of five of the terminal strips, and is appropriate for use as a ratio detector. The above diagrams are illustrative of various capacity unit and coil combinations and connections which may be readily obtained by assemblies of the type above described.

While the invention has been disclosed as embodied in an assembly of the above described specific construction, it should be understood that changes may be made therein without departing from the invention in its broader aspects, within the scope of the appended claims.

I claim:

1. A multi-unit condenser assembly of the character described including a supporting block having rows of terminal strips disposed respectively adjacent opposite sides thereof, a plurality of insulating laminae adjacent one face of said block having opposed sets of conducting film constituting a plurality of capacity units, said terminal strips having contact arms engaging films of said units, a central clamping member extending through said block and laminae, at least one of said rows including a terminal strip located in the intermediate portion of one of said first mentioned sides of said block, said last mentioned terminal strip having a contact arm offset to extend partially around said clamping member into engagement with one of said conducting films.

2. A multi-unit condenser assembly of the character described including a supporting block having rows of terminal strips disposed respectively adjacent opposite sides thereof, a plurality of insulating laminae adjacent one face of said block having opposed sets of conducting film constituting a plurality of capacity units, said terminal strips having contact arms engaging films of said units, a central clamping member extending through said block and laminae, each of said rows including a terminal strip located in the intermediate portion of its respective side of said block, said last mentioned terminal strips each having a contact arm offset to extend partially around said clamping member into engagement with one of said conducting films.

3. A multi-unit condenser assembly of the character described including a supporting block having rows of terminal strips disposed re-

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spectively adjacent opposite sides thereof, a plurality of insulating laminae adjacent one face of said block having opposed sets of conducting films constituting a plurality of capacity units, a central clamping member extending through said block and laminae, certain of said sets of conducting films being spaced to receive said clamping member between them, said rows of terminal strips including certain terminal strips respectively disposed near the corners of said block and other terminal strips respectively located in the intermediate portions of said first mentioned sides of said block, said last mentioned terminal strips having said clamping

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member interposed between them, and each of said last mentioned terminal strips having a contact arm off-set to extend partially around said clamping member into engagement with one of said conducting films.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,435,630	Ketcham	Feb. 10, 1948