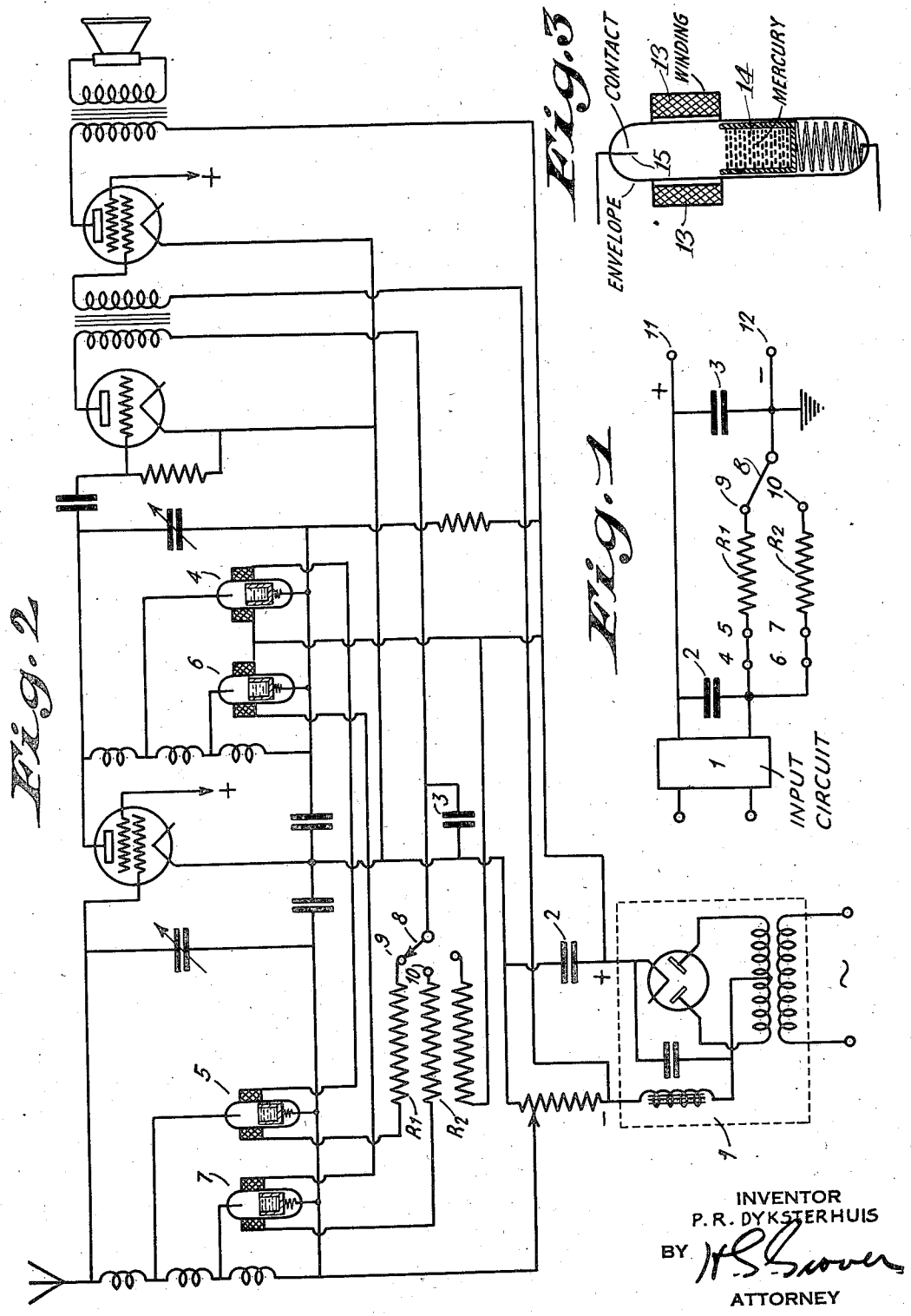
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WAVE RANGE CHANGING OVER DEVICE FOR RADIO RECEIVING APPARATUS

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WAVE RANGE CHANGING OVER DEVICE FOR RADIO RECEIVING APPARATUS

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3 Claims. (Cl. 250—20)

This invention relates to a wave range changing over device for radio receiving sets. Usually several high frequency circuits are changed over therewith. In order to render the operation of the apparatus more simple it is desired to change over all the parts entering into account therefor by a single manipulation. For this purpose a single switch arm was hitherto used to which the different switch contacts were mechanically connected. To the known switching devices for changing over from one range of wave lengths to another several difficulties are inherent. First of all one is not free in the arrangement of the parts, for instance the coils, to be changed over. If the switching device should be of a simple construction, said parts must lie within the range of the switch arm. In this case, however, the connecting wires must be comparatively long, which may constitute a serious drawback more particularly with short wave reception. Moreover, the mechanical construction of the changing over arrangement remains rather complicated, especially when the device is constructed for the reception of a large range of wave lengths. In fact, in order that the apparatus can receive oscillations having wave lengths of 10 to 2000 meters, which is especially required for tropical regions, this range must be divided in several parts, for instance of 10 to 20, 20 to 60, 60 to 200, and 1000 to 2000 meters. It goes without saying that a switch having a very large number of contacts is required therefore. A further drawback of the known arrangements is that the contact making is often unreliable and this drawback still increases in the course of time due to corrosion phenomena. Bad contacts in high frequency circuits may produce a strong hissing in the reception. This drawback particularly manifests itself in the above apparatus for receiving a large range of wave lengths, so that one was obliged hitherto to provide such apparatus only with interchangeable coils.

The present invention provides means for avoiding the said drawbacks.

According to the invention indirectly operated switches are used for changing over high frequency circuits. These switches may be provided at any desired point of the apparatus, for instance immediately adjacent or even in the coils to be changed over. Thereby the whole construction of the apparatus is simplified and, in addition, the connecting wires can be shorter than when directly operated switches are used. Since the switches are indirectly operated it is advantageous to construct them as vacuum switches. With these switches no corrosion occurs and they always afford a good contact. It is known per se to use mercury switches in radio receiving sets, but they are mechanically operated therewith. According to the invention preferably electromagnetically operated mercury switches are used, since these switches are cheap and consume little current. Of course, it will always be necessary to provide a controller drum for the controlling current. However, the contacts thereof carry no high frequency currents, so that the difficulties referred to above are no longer encountered. The invention is of particular importance for apparatus having many ranges of wave lengths, with which the number of contacts in the high frequency circuits can be materially reduced when using the invention. The controlling switch may be of a very simple construction, since with the construction according to the invention neither the arrangement of the high frequency coils nor electrical conditions which the high frequency circuits should satisfy, need be taken into account.

A further advantage as to the manufacture is that one or more switches can be easily added to the apparatus. This may be desired when a definite set must be provided with an additional tuned circuit, for instance, for increasing the selectivity or for other reasons. With mechanically working switches an increased number of contacts would entail a very complicated construction.

Figure 1 represents schematically a suitable arrangement for the coils of the switch. Figure 2 shows a receiving circuit employing a plurality of these switches wherein the windings of the switches also serve as smoothing impedances for the current supply. Figure 3 is a detail of the switch.

In the drawing **1** denotes the feeding apparatus which may comprise a transformer and a number of rectifiers, **2** and **3** being the smoothing condensers. The coils of the switches **4, 5, 6** and **7** are connected in series with resistances R_1 and R_2 for smoothing, **8** denotes the wave length switch. When the latter is connected to the contact **9**, as shown in the drawing, the coils **4** and **5** are excited and the corresponding mercury switch is switched on. When changing over to another range of wave lengths the switch **8** is connected to the contact **10** and the coils **6** and **7** are excited. This arrangement offers the advantage that the switch has always

earth potential. 11 and 12 denote the feeding terminals to which the anodes and the cathodes are connected. In this manner a plurality of switch groups can be operated.

The operation of the switch will be obvious from a glance at Figure 3.

The energization of the coil windings 13 will pull up the well of mercury enclosed in a cup 14 on three sides and cause it to contact electrically with the contact 15 leading to the associated circuit elements.

What is claimed is:

1. A high frequency receiving circuit having in combination, an antenna, a tuned input circuit comprising a plurality of serially connected inductance sections in parallel with a condenser coupled to said antenna, an electromagnetically operative wave range change-over mercury switch coupled across one or more of said inductance sections, said switch having a coil winding for rendering same operative, a source of current supply, and means for operatively associating said source to said coil winding.

2. A radio receiving system comprising an electron discharge device having an input circuit and an output circuit, and an electromagnetically operated wave range change-over mercury switch in each of said input and output circuits, said switches each having a coil winding for operatively associating the contacts thereof with said circuits, a source of current supply, and a manually operable contacting device for connecting the coil windings of both said change-over switches to said source for energizing same.

3. A system in accordance with claim 2, characterized in this that said source of current supply is a rectifier network, and said contacting device connects the coil windings of said switches in series with said network, whereby the current from said network is filtered.

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