UNITED STATES PATENT OFFICE

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WIRELESS RECEIVER

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There are available a multitude of receivers
for broadcast radio-waves. They include gen-
erally a chassis, carrying the members of the
various amplifier-circuits, a dial and a loud-
speaker, the whole mounted in a housing or in
a cabinet of wood. Considering the dimensions
of the loudspeaker, which it is necessary to pro-
vide for obtaining good musical reproduction,
this housing or cabinet has of necessity rela-
tively great dimensions. As a consequence
thereof, the designers have a tendency to give
this housing the shape of a more or less orna-
mented piece of furniture. In fact however,
these receivers require a considerable space and
it would therefore seem desirable to decrease
their dimensions without prejudice to the quality
of the reproduction of the receiver.

The loudspeaker being furthermore placed of
necessity at a near distance from the tuning-
circuits, there takes place a reaction between
the loudspeaker and these circuits, reaction which
produces a coupling effect called “acoustic cou-
pling.” This coupling effect makes it impossible
to utilize fully the power of amplification of the
amplifier.

The object of the present invention is a rece-
iver for broadcast-waves, which consists of a
dial and at least a part of the amplifying circuits
necessary for feeding the loudspeaker, such an
arrangement reducing the inconveniences men-
tioned, by the fact, that at least the part of the
receiver carrying the tuning-circuits is separated
from the loudspeaker and that essential parts of
the amplifier-circuits of the said part of the
receiver are located in the same plane parallel
to any one of the generating straight lines in
the surface-plane of the dial.

The drawing attached shows schematically
and as a matter of example two forms of execu-
tion of the receiver.

Fig. 1 is a perspective view of the receiver.
Fig. 2 shows a longitudinal cross-section along
plane I—I of Figure 3.
Fig. 3 is a side view and Fig. 4 a cross-section
in the plane IV—IV of the Figure 2.

In the form of execution as shown in Figures
1 to 4, the receiver comprises, as is the ease in
most of today’s receivers, a mixing tube 1, a
medium-frequency tube 2, a low-frequency pre-
amplification tube 9 and an output-tube 10.

The receiver has the shape of a parallelepipo-
don, one face of which contains the dial 1. This
dial is enclosed by a frame 2, the dimensions of
which determine two of the dimensions of the
parallelepipedon. The third dimension of the
latter is small compared with the two first men-
tioned and corresponds approximately to the
thickness of the dial plus the diameter of an
electronic tube.

The knobs 3, 4, 5, 6 for operating the tuning
devices are arranged on the two smallest faces
of the parallelepipedon. From the rear-face
(opposite to the dial) emerges a flexible cable
23, containing the conductors necessary for con-
necting the receiver to the loudspeaker and to
the supply-system.

Figures 2 and 3 show the disposition of the
essential circuits of the receiver, viz. the elec-
tronic tubes 7, 8, 9, 10, the variable condensers
11, the tuning coils 12, the coils of the oscillator-
circuit 13 and the coupling-transformers 15. All
of these organs are arranged side by side in
the same plane 16, parallel to the plane of the dial
1 and occupy approximately half of the volume
of the parallelepipedon. The other half of this
volume is taken up by the mechanical transmis-
sion members connecting the knobs with the
members of the oscillating-circuits, for selection
at will the desired station, and further by the
resistances, by condensers, by connections and
by other small members of fixed characteristics,
necessary for the good functioning of the rece-
iver.

Knob 3 controls simultaneously the two com-
mutator-switches 17 and 18, one of which puts
in or out the different sections of the tuning coils
12, whereas the other switch controls the cutting
in or out of the various sections of the coils 13
of the oscillator-circuit. By means of a cable
19 passing over small pulleys 20, the knob 4
controls the displacements of the variable con-
denser 11 and of an index-pointer 21, travelling
along the graduated scales on the dial 1. The
knob 5 operates a commutator-switch, for modi-
ifying the characteristic frequency-curve of the
low frequency stages. It permits thus of choos-
ing and fixing the tonality of the receiver. Last-
ly, the knob 6 controls a device 22, for choosing
and fixing the output-volume desired. This
knob permits also of cutting in or off of the
supply-system of the receiver.

As will be noted, the overall-dimensions of
the receiver described above are much smaller
than the ones of the chassis of a receiver of the same
output and of a known type. The receiver de-
scribed does not require any luxurious and ex-
spensive housing, since one of its faces is entirely
or nearly entirely occupied by the dial. As a mat-
ter of fact, the dimensions of the front-face of the
parallelepipedon are determined by the dimen-

sions of the dial, viz. by the precision of readability and regulation desired. The small dimensions of the receiver permit it to be incorporated for example in a table or another piece of furniture. It may also be simply placed on a table and maintained in a slightly inclined position by a suitable support. It may also be very easily transported from one place to another.

The loudspeaker, the dimensions of which cannot be preserved, may be placed at a hidden place as for example in a cupboard or behind a paneling. In such a case, baffles or a resonance-box may be provided in order to profit of all the qualities of the loudspeaker and receiver, a condition which it is not possible to obtain with receivers of the actual design and which combine receiver and loudspeaker in the same housing. Since the loudspeaker is at great distance from the tuning circuits of the receiver, there cannot possibly occur any reaction between the same and for this reason, so-called "acoustic coupling" is to be feared, even when tuning the circuits very closely to their points of resonance, in order to take advantage of all the amplifying power of the set.

It is evident, that the receiver described above may have different forms of execution. It is particularly possible to add or to omit other amplifier-stages. It is also evident, that the heterodyne receiver described above as a matter of example, may be replaced by any other type of receiver. Lastly, if it is desired to still not to reduce the overall-dimensions to a minimum, there may be mounted behind the dial only the high-frequency and medium-frequency stages or stages, which are equipped with tuning-circuits. The low-frequency stage or stages and the rectifier may be placed in a housing, near the loudspeaker.

For principal reasons, the rectifier, which is a relatively heavy piece of apparatus, due to the large volume of iron of its transformer, should of preference not be incorporated in the receiver, but should be placed somewhere outside, as for example near the loudspeaker or any other place desired. However, in the case of there being employed electronic tubes, supplied directly with the voltage of the supply-system, the rectifier may also be mounted behind the dial, inside of the housing enclosing the receiver.

In the form of execution as shown in Figures 1 to 4, the members of the amplifier-circuits are mounted on a chassis 24, which in turn is fixed by any known means to either the dial or to the walls of the parallelepiped. As an alternative form of execution, it would however be possible to omit the chassis and to fix these organs directly to, either the dial or its frame, or to the walls of the parallelepiped.

It is evident, that the dial may be arranged in different manners, with respect to the amplifier-stages, provided that the essential members of the amplifier-stages near the dial be located in one plane and that this plane be parallel to any one of the straight lines contained in the surface of the said dial.

I claim:
1. A radio broadcast receiver for feeding a remotely located loudspeaker comprising a parallelepiped cabinet having a dial forming one side wall thereof, a plurality of electronic tubes mounted in alignment with their axes lying in a plane spaced from but parallel to said dial, a plurality of elements including transformers, condensers, variable condensers, tuning coils and oscillator coils in the plane of said electronic tubes, a plurality of adjusting devices positioned in proximity to said elements and having movable elements, the movable elements of said variable condensers, tuning coils and adjusting devices having axes of rotation or translation lying substantially in said plane, and control members coupled to said movable elements and projecting through end walls of said cabinet, all of said elements and adjusting devices having a thickness approximating the diameter of said tubes, and the distance between the dial and the opposite wall of said cabinet being substantially equal to the external diameter of one of said electronic tubes.

A. NICOLE.

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