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AUTOMATIC CONTROL OF BAND WIDTH IN BAND-PASS FILTERS

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Fig. 1

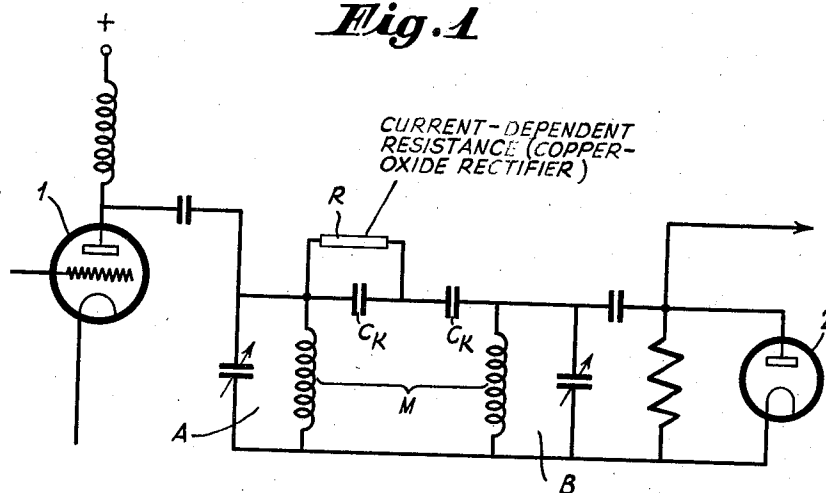
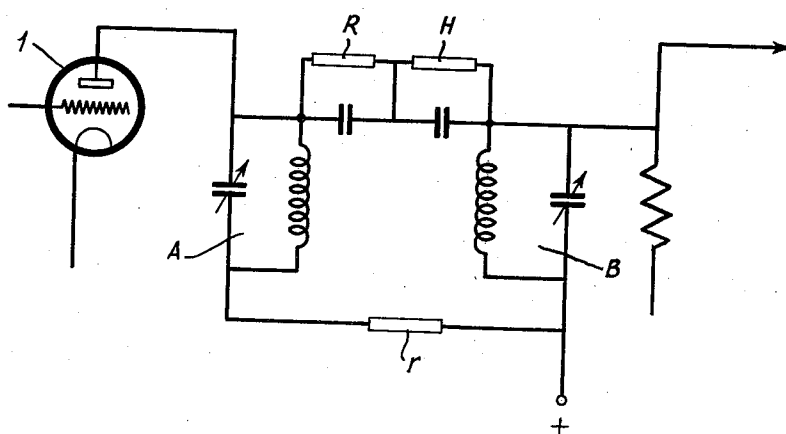


Fig. 2



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AUTOMATIC CONTROL OF BAND WIDTH IN BAND-PASS FILTERS

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2 Claims. (Cl. 178—44)

Regulation or control of the band width and
thus of selectivity is desirable in receiver ap-
paratus. With this end in view it is usual to
change the damping or the coupling, or both
simultaneously. By mechanical means such a
change or regulation is readily and easily feasible,
though it is more desirable to attain the
identical end by electrical means in order that
regulation of selectivity may be accomplished
automatically, for instance, as a function of the
input amplitude or the amplitude or level of
stray or noise.

Ways and means adapted to change the damp-
ing attenuation electrically are known in the
prior art. For this purpose a damping or at-
tenuator tube has been connected in parallel
relation to the oscillation circuit. This invention
discloses an electric method designed to insure
a change in coupling. According to the inven-
tion a change in coupling is effected by a current-
dependent resistance which varies a coupling
impedance.

The invention shall be explained in more de-
tail by reference to the accompanying drawing
wherein Figs. 1 and 2 show different modifica-
tions of interstage band-pass filters according to
the invention and where the coupler impedance
referred to consists in each case of a capacity.

Referring to Fig. 1 M denotes an inductive
coupling of the two oscillation circuits A and B
connected respectively to the output of tube 1
and to the input of tube 2. The inductive
coupling is in a sense such that it counter-acts
the capacitive coupling constituted by the two
condensers Ck. One of these two condensers is
bridged or shunted by a current-dependent re-
sistance, say, a copper-oxide type rectifier.
According to the intensity of the radio frequency
current flowing through the said resistance R,
the value of the resistance will be changed with
the result that the shunted capacity Ck will be
more or less active. As the radio frequency
amplitude grows, the current will be caused to

increase in value and as a result the resistance
R will drop with an incidental growth of the
coupling capacity. The usefulness of this circuit
scheme is dependent upon the application of a
high radio frequency potential across the oscilla-
tion circuits. In order that the coupling
capacities may not have to be chosen too low
they may be applied in well known manner to
taps on the inductances of the oscillation cir-
cuits A and B.

In Fig. 2 there is shown a circuit organization
in which an auxiliary direct current serves for
insuring a change in the coupling rather than
the radio frequency current itself. The direct
current component of the plate current of tube 1
flows across the resistance r. The fall of
potential occasioned across this resistance re-
sults in a current which flows through the re-
sistance R and the auxiliary resistance H which
is high in contrast to the coupling capacity.
With a view to regulating the selectivity
manually, resistance R may be made variable.
In addition, however, there occurs an automatic
regulation if the grid potential of tube 1 is ad-
justed for the purpose of insuring fading com-
pensation or volume control. As a result there
is also changed the plate current flowing through
the resistance r.

What I claim is:

1. An interstage coupling circuit comprising a
pair of tuned circuits, inductive coupling be-
tween said circuits, a pair of series-connected
condensers connected between high potential
points of said circuits to provide capacitive
coupling, and an element whose resistance value
varies with the current flow through it connected
in shunt to each of the series-connected coupling
condensers.

2. An interstage coupling circuit as defined in
claim 1 wherein a second resistance element
similar to the first is connected between the low
potential terminals of the tuned circuits.

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