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OSCILLOGRAPH DEVICE

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Fig. 1

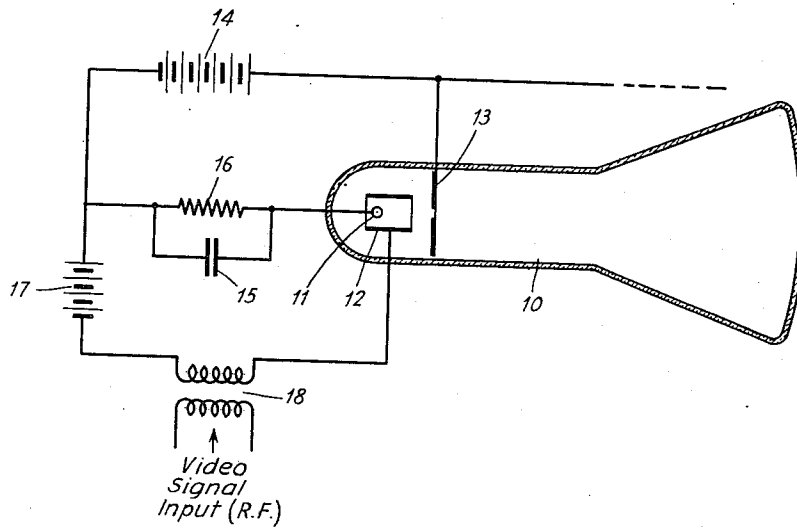
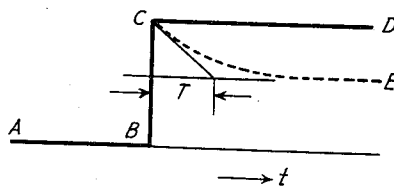


Fig. 2



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OSCILLOGRAPH DEVICE

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3 Claims. (Cl. 178—7.5)

This invention is concerned with a circuit or-
ganization for cathode ray or Braun tubes for re-
ceiving television or video signals. According to
the form of the invention herein to be described,
the cathode ray or so-called Braun tube is ener-
gized or fed with a radio-frequency voltage which
is modulated in accordance with the shading value
of picture units or points.

According to this invention, the circuit of the
control grid of the cathode ray tube contains a
parallel arrangement comprising a resistance and
a condenser traversed by its plate current.

An exemplified embodiment of one form of
the invention is schematically illustrated by Fig.
1 of the annexed drawing and the operation is
further explained by the curves of Fig. 2.

Referring to the drawing, the cathode ray tube
includes the glass envelope 10 having at one end
a luminescent screen and at the opposite end a
cathode 11 and an associated control grid or
shield 12 which, in the instance here shown may
be a Wehnelt cylinder. The anode 13 of the tube
10 is united with the positive pole of a D. C. source
14. Between the negative pole of the D. C. source
14 and the cathode or filament 11 is included a
resistance 16 connected in parallel to a condenser
15. A D. C. source 17 furnishes a constant nega-
tive potential for the shield or control grid 12,
while a transformer 18 serves as the connecting
means by which the cathode ray or Braun tube
is fed with a radio-frequency voltage being modu-
lated in accordance with the picture brightness or
shading values, so that these signals are known
as the video or image signals.

The cathode ray tube 10 is caused to operate
(because of the application of potential 17 which
could also be dispensed with if a suitable disposi-
tion and suitable dimensions of the control means
12 are chosen) at the lower bend or knee of the
characteristic which connects the anode current
and the control-grid voltage. So far as the modu-
lated R.F. voltage is concerned which is fed by
way of the transformer 18, the discharge path
cathode 11 and anode 13 therefore represents a
rectifier stage with the result that the anode cur-
rent and thus the stream of cathode-rays pene-
trating through the anode aperture will be varied
at the rhythm of the modulation impressed upon
the radio-frequency voltage.

To explain the operation of the condenser 15
and the resistance 16 the assumption shall be
made that across the secondary terminals of the
transformer 18 a voltage having a time-shape as
indicated by the curve ABCD arises (see Fig. 2).
This voltage is distributed first in accordance with

the capacities over the path cathode 11 and con-
trol grid or shield 12 as well as condenser 15, and
it then follows the dotted portion of the curve CE.
The portion T indicates the time-constants of the
mesh 15, 16. Hence, at the control grid arises the
voltage ABCE rather than the voltage ABCD in
which the higher frequencies, which exist at the
point of sudden irregularity to in particularly
great volume, arise more strongly than the lower
ones. The mesh or network comprising con-
denser and resistor 15, 16 respectively, can be
readily so proportioned that its time constant is
somewhat greater than the period which corre-
sponds to the highest frequency occurring in the
picture, so that the greater loss of high frequen-
cies which is due, for instance, to the finite di-
mensions of the spots scanning the outgoing pic-
ture and re-creating the incoming image and also
to capacity losses in the transmission path or
medium, can be diminished or equalized.

Having now described the invention, what is
claimed is:—

1. A cathode ray tube system comprising a
cathode ray tube including a cathode, control
electrode and anode electrodes, means for bias-
ing the cathode of said tube with respect to the
control grid thereof whereby said tube operates
on the lower bend of its control grid voltage-
anode current characteristic, a source of picture
signals, means for impressing said signals onto
the control electrode of said tube whereby said pic-
ture signals are directly detected by said tube, and
a time constant circuit having a time constant
greater than the highest modulation frequency of
the picture signals, said time constant circuit
being connected in the cathode circuit of said
tube for peaking the high frequency components
of the picture signals.

2. A cathode ray tube system comprising a
cathode ray tube including a cathode, control
electrode and anode electrode, means for biasing
said electrodes relatively to each other whereby
said tube operates at a bend in its control grid
voltage-anode current characteristic, a source of
high frequency signals modulated in accordance
with picture signals, a time constant circuit for
peaking the high frequency components of the
picture, and means for impressing the high fre-
quency modulated signals onto the control elec-
trode of the tube whereby said signals are de-
tected directly by said tube.

3. A cathode ray tube system comprising a
cathode ray tube including a cathode, control elec-
trode and anode electrode, means for biasing said
electrodes relatively to each other whereby said

5 tube operates at a bend in its control grid voltage-anode current characteristic, a source of high frequency signals modulated in accordance with picture signals, a time constant circuit for peaking the high frequency components of the picture, the secondary winding of a high frequency transformer, a series electrical circuit comprising the control electrode of said tube, said secondary

winding, a source of direct current electrical energy and the cathode of said tube, a primary winding positioned cooperatively with respect to said secondary winding and means for impressing the high frequency modulated signals onto said primary winding whereby said signals are detected directly by said cathode ray tube. 5

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