MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A
We, STANDARD TELEPHONES AND CABLES PTY. LIMITED, of 252-280 Botany Road, Alexandria, Sydney, New South Wales, Australia, hereby apply for the grant of a Patent for an invention entitled "VOLTAGE RIPPLE DETECTOR" which is described in the accompanying provisional specification.

Our address for service is:

PATENT DEPARTMENT,
STANDARD TELEPHONES AND CABLES PTY. LIMITED,
252 - 280 BOTANY ROAD,
ALEXANDRIA, 2015,
SYDNEY, NEW SOUTH WALES,
AUSTRALIA.

Dated this sixth day of November, 1975.

STANDARD TELEPHONES AND CABLES PTY. LIMITED.

TO: The Commissioner of Patents.
Form 7.

COMMONWEALTH OF AUSTRALIA
PATENTS ACT 1952-1969

DECLARATION IN SUPPORT OF AN APPLICATION FOR A
PATENT OR A PATENT OF ADDITION 19170/76

In support of the Application made by STANDARD
TELEPHONES AND CABLES PTY. LIMITED for a patent for an invention entitled
"VOLTAGE RIPPLE DETECTOR"

I, WILLIAM LESLIE VENESS,
c/- STANDARD TELEPHONES AND CABLES PTY. LIMITED, 252 - 280 Botany Road, Alexandria, Sydney, New South Wales, Australia, do solemnly and sincerely declare as follows:

1. I am authorised by STANDARD TELEPHONES AND CABLES PTY. LIMITED, the applicant for the patent to make this declaration on its behalf.

2. BRUCE ROBERT HUNTER of 4/99 Grande Parade, Brighton Le Sands, N.S.W. 2216 is the actual inventor of the invention, and the facts upon which STANDARD TELEPHONES AND CABLES PTY. LIMITED is entitled to make the application are as follows:

STANDARD TELEPHONES AND CABLES PTY. LIMITED IS THE ASSIGNEE OF THE SAID INVENTOR.

Declared at Sydney this sixth day of November, 1975

STANDARD TELEPHONES AND CABLES PTY. LIMITED.

Declarant

TO: The Commissioner of Patents.
CLAIM 1. A ripple voltage detector adapted to detect a ripple of a predetermined frequency and equal to or greater than a predetermined minimum amplitude in a voltage source, the detector comprising a threshold detector adapted to be connected across the source and including a potential divider to the output of which the base of a first transistor is connected, the first transistor being biassed to conduct when the applied voltage exceeds the threshold level, the collector current of the first transistor directly driving the base of a second transistor having an output transducer in its collector circuit, the output of the second transistor being fed back to the base of the first transistor via a time delay circuit, the time delay being sufficient to obtain a response from the transducer and in which the transducer is a light emitting diode and the time delay is at least of such a duration that the persistence of vision of an observer will detect a visual indication.
COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED

"VOLTAGE RIPPLE DETECTOR"

The following statement is a full description of this invention, including the best method of performing it known to us:-

This document contains the amendments made under Section 49.
and is correct for printing.

9 Oct 1979
This invention relates to voltage perturbation detection circuits and is particularly useful in the detection of ripple and drift voltages in the output of power supplies.

Often, when it is desired to detect a certain level of ripple in a D.C. supply voltage, simple A.C. detection of the ripple is not effective particularly for low levels of ripple. In addition the use of a amplifier frequently is ineffective in cases where the ripple only just exceeds the set limits as the resulting mark-space ratio is insufficient to drive the detection circuits.

This specification describes a ripple voltage detector adapted to detect a ripple of a predetermined frequency and predetermined minimum amplitude in a voltage source, the detector comprising a threshold detector adapted to be connected across the source and including a potential divider to the output of which the base of a first transistor is connected, the first transistor being biased to conduct when the applied voltage exceeds the threshold level, the collector current of the first transistor directly driving the base of a second transistor having an output transducer in its collector circuit, the output of the second transistor being fed back to the base of the first transistor via a time delay circuit, the time delay being sufficient to obtain a response from the transducer.

The invention will now be described with reference to the accompanying drawing which shows an embodiment of the invention.

The circuit comprises an input potential divider made up of resistor R1 and potentiometer Pl with an output from the wiper W of the potentiometer. Capacitor Cl provides an A.C. bypass direct to the wiper W. This wiper is connected to the base of transistor T1 via resistor R2. T1 is connected in common emitter configuration and its collector is connected to the base of common emitter transistor T2 via resistor R4. The collector of T2 is connected to the base of T1 by holding capacitor C2 in parallel with feedback resistor R3. A load resistor RL and an L.E.D. Dl form the collector load of T2.

The operation of the circuit will now be described.

Assume transistors T1 and T2 to be initially non-conducting.
The base of T1 is biased by the potential divider of resistor R1 and potentiometer P1 so that ripple above the set limit is added to this bias and turns T1 on. This in turn via R4 makes T2 conduct and energises the L.E.D. D1 via load resistor RL. This takes the positive end of capacitor C2 to the positive rail, holding T1 in conduction until the capacitor is charged even if the ripple has disappeared before this. Resistor R3 provides positive feedback ensuring that T1 and T2 have only two states, conducting and non-conducting. Thus if the time constant of the charging circuit of C2 is of the same order as or greater than the repetition time of the ripple, D1 appears to be continuously energised. For example, if the ripple were 50Hz then the space ratio could approach 0.02sec. In this case, if the L.E.D. were excited for about 1/3 of this time, a visual indication may be obtained due to optical hysteresis.

The A.C. coupling capacitor C1 causes the total ripple voltage to appear across the portion of the potentiometer between the wiper and the negative bus so that the total ripple is applied to the base of transistor T1 via R2.

The potentiometer P1 is used to adjust the bias on the base of T1 and so the level of the ripple required to switch on transistor T1 and hence controls the sensitivity of the ripple detector. Resistor R1 may be chosen to scale the circuit to the desired D.C. level.

In the absence of capacitor C1 the circuit may be used as a voltage drift detector and, of course, large ripple voltages may be detected without C1.
The claims defining the invention are as follows:-

1. A ripple voltage detector adapted to detect a ripple of a predetermined frequency and equal to or greater than a predetermined minimum amplitude in a voltage source, the detector comprising a threshold detector adapted to be connected across the source and including a potential divider to the output of which the base of a first transistor is connected, the first transistor being biassed to conduct when the applied voltage exceeds the threshold level, the collector current of the first transistor directly driving the base of a second transistor having an output transducer in its collector circuit, the output of the second transistor being fed back to the base of the first transistor via a time delay circuit, the time delay being sufficient to obtain a response from the transducer and in which the transducer is a light emitting diode and the time delay is at least of such a duration that the persistence of vision of an observer will detect a visual indication.

2. A detector as claimed in claim 1 including an A.C. shunt from the input of the circuit to the input of the first transistor.

3. A ripple voltage detector as herein described with reference to the accompanying drawing.

DATED THIS ELEVENTH DAY OF SEPTEMBER, 1979

STANDARD TELEPHONES AND CABLES PTY.LIMITED