

# PATENT SPECIFICATION



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International Classification:—G01d. G04b. G06g.

## COMPLETE SPECIFICATION

### DRAWINGS ATTACHED

## Improvements in or relating to Instruments of the Slide-Rule or Like Type for Making Calculations Appertaining to Time, Speed and Distance

I, HAROLD ALEXANDRE BABBINGTON BLACKWELL, a British Subject, of Thermetal House, Garston, Liverpool 19 in the County of Lancaster, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention is for improvements in or relating to instruments of the slide-rule or like type for making calculations appertaining to speed or distance travelled in a given time. Such an instrument is of particular value to motorists who may for example wish to know quickly and easily the distance which they should have travelled in a given time at a predetermined average speed or alternatively what their average speed has been over a given distance.

According to the present invention there is provided a calculator comprising relatively-movable co-operating logarithmic scales and including a clock having a hand or the like which is driven by the clock mechanism so as to provide an automatically positioned time-dependent index or "cursor" for a scale of the calculator.

According to a further feature of the present invention there is provided an instrument for use in making calculations appertaining to speed and distance comprising a clock having a hand or index which is driven by the clock mechanism and serves as a pointer to a logarithmic time scale, a logarithmic scale graduated in distances and in juxtaposition to said time scale and adjustable relatively thereto, a logarithmic scale graduated in speeds and a pointer working over said speed scale for setting the distance scale relatively to the time scale according to a particular speed.

One particular embodiment of the invention will now be described as applied, for

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example, to an instrument which could conveniently be mounted in the dashboard of a motor car. In the following description reference is made to the drawing accompanying the provisional specification which shows diagrammatically a face view of the instrument.

The instrument comprises a 9-hour clock having a single hand. The dial of the clock has a linearly graduated time scale around its periphery, the graduations of which are extended to form a logarithmic time scale C hereinafter referred to as the time scale. The clock and the time scale C are fixed. It will be noted that the clock is set eccentrically relative to the time scale C. This has been done to obtain the least possible confusion of the lines extending from the graduations around the clock dial to the time scale C.

Adjustable angularly about the scale C is a member 12 which carries a scale D in juxtaposition to the scale C. The scale D is a logarithmic scale and is graduated in distances, e.g. miles or kilometres.

The member 12 also carries a logarithmic scale C1 which is graduated in speeds of, for example, 30 to 50 miles per hour or 30 to 50 kilometres per hour, these figures merely being given by way of example. The scale C1 is adapted to work against a fixed pointer 13. The clock 10, pointer 13 and time scale C could of course be made movable and the member 12 carrying the scales D and C1 fixed if desired.

Assuming that a motorist has been travelling for 1 hour 20 minutes at an average set speed of 40 miles an hour as shown in the case illustrated on the drawing, then by following the line extending from the clock dial and indicated by the hand of the clock, to the distance scale D, it will be observed that he should have travelled a distance of approxi-

mately 53 miles. By comparing this distance with the actual distance travelled as indicated for example by a mileometer, the motorist can tell quickly whether he has fallen below or exceeded the desired average speed which in this case is 40 miles per hour. Alternatively, the motorist could first ascertain from a mileometer the actual distance travelled in a given time by the clock and then set this actual distance on the D scale against the position on the time scale C indicated by the clock hand. The pointer 13 will then indicate to what extent he has deviated from the desired average speed to which said pointer was set before this adjustment of the distance scale D was effected.

If desired contacts may be provided around the dial of the clock and the hand 11 may be arranged to engage these contacts at predetermined intervals of time (e.g. every half-hour) so as to close an electric circuit and sound an alarm and/or illuminate an indicating lamp corresponding to the position of the clock hand, several such indicating lamps being arranged around the time scale C. Thus, a motorist will be reminded automatically at predetermined intervals to check distance travelled and/or average speed. Alternatively the clock hand may be illuminated and may at predetermined intervals of time pass under apertures arranged at intervals around the clock time-scale so as to remind a motorist at these times to check distance travelled and/or average speed.

35 WHAT I CLAIM IS:—

1. A calculator comprising relatively-movable co-operating logarithmic scales and including a clock having a hand or the like which is driven by the clock mechanism so as to provide an automatically positioned time-dependent index or "cursor" for a scale of the calculator.

2. An instrument for use in making cal-

culations appertaining to speed and distance comprising a clock having a hand or index which is driven by the clock mechanism and serves as a pointer to a logarithmic time scale, a logarithmic scale graduated in distances and in juxtaposition to said time scale and adjustable relatively thereto, a logarithmic scale graduated in speeds and a pointer working over said speed scale for setting the distance scale relatively to the time scale according to a particular speed.

3. A calculator or instrument as claimed in either of the preceding claims wherein the logarithmic scales are circular or arcuate.

4. A calculator or instrument as claimed in claim 3 wherein the clock is set eccentrically with respect to some of the scales (e.g. distance and speed) for the purpose herein described.

5. A calculator or instrument as claimed in any of the preceding claims wherein the clock-face is set in the face of the disc and has a linearly graduated time scale from which lines extend to logarithmic graduations around the periphery of said disc and wherein said disc is attached to or associated with a member so that the disc and said member can be adjusted angularly, the one relatively to the other, said member having a logarithmic scale in juxtaposition to the scale on the periphery of the disc and a further logarithmic scale which works against a pointer.

6. An instrument substantially as herein described with reference to the accompanying drawing.

Dated this 25th day of April 1957.

E. R. ROYSTON & CO.,

Chartered Patent Agents,

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#### PROVISIONAL SPECIFICATION

### Improvements in or relating to Instruments of the Slide-Rule or Like Type for Making Calculations Appertaining to Time, Speed and Distance

80 I, HAROLD ALEXANDRE BABBINGTON BLACKWELL, a British Subject, of Thermetal House, Garston, Liverpool 19 in the County of Lancaster, do hereby declare this invention to be described in the following statement:—

85 This invention is for improvements in or relating to instruments of the slide-rule or like type for making calculations appertaining to speed or distance travelled in a given time. Such an instrument is of particular value to motorists who may for example wish to know quickly and easily the distance which they should have travelled in a given time at a predetermined average speed or alternatively what their average speed has been over a given distance.

95 According to the present invention there is provided an instrument for use in making

calculations appertaining to speed and dis- dial graduated in periods of time, a logarithmic scale graduated in distances and in juxtaposition to said time scale and adjustable relatively thereto, a logarithmic scale graduated in speeds and a pointer working over said speed scale for setting the distance scale relatively to the time scale according to a particular speed a hand of the clock constituting an index or "cursor" along which distances which should have been travelled at the speed set on the speed scale can be read off as time elapses.

One particular embodiment of the invention will now be described as applied, for example, to an instrument which could conveniently be mounted in the dashboard of a motor car. In the following description refer-

ence is made to the accompanying drawing which shows diagrammatically a face view of the instrument.

The instrument comprises a 9-hour clock 5 10 having a single hand 11. The dial of the clock has a linearly graduated scale around its periphery, the graduations of which are extended to form a logarithmic time scale C hereinafter referred to as the time scale. 10 The clock and the time scale C are fixed. It will be noted that the clock is set eccentrically relative to the time scale C. This has been done to obtain the least possible confusion of the lines radiating from the graduations around the clock dial to the time scale C. 15

Adjustable angularly about the scale C is a member 12 which carries a scale D in juxtaposition to the scale C. The scale D is 20 a logarithmic scale and is graduated in distances, e.g. miles or kilometres.

The member 12 also carries a logarithmic scale C1 which is graduated in speeds of, for example, 30 to 50 miles per hour or 30 to 25 50 kilometres per hour, these figures merely being given by way of example. The scale C1 is adapted to work against a fixed pointer 13. The clock 10, pointer 13 and time scale C could of course be made movable and the member 12 carrying the scales D and C1 30 fixed if desired.

The scales D and C correspond in effect to the D and C scales of a slide-rule.

Assuming that a motorist has been travelling for 1 hour 20 minutes at an average set 35 speed of 40 miles an hour as shown in the case illustrated on the drawing, then by following the line radiating from the clock dial and indicated by the hand of the clock, 40 to the distance scale D, it will be observed

that he should have travelled a distance of approximately 53 miles. By comparing this distance with the actual distance travelled as indicated for example by a mileometer, the speed which in this case is 40 miles per 45 hour. The motorist could first ascertain from a mileometer the actual distance travelled in a given time by the clock and then set this actual distance on the D scale against the position on the time scale C indicated by the clock hand. The pointer 13 will 50 then indicate to what extent he has deviated from the desired average speed to which said pointer was set before this adjustment of the distance scale D was effected. 55

If desired contacts may be provided around the dial of the clock and the hand 11 may be arranged to engage these contacts at predetermined intervals of time (e.g. every half-hour) so as to close an electric circuit and 60 sound an alarm and/or illuminate an indicating lamp corresponding to the position of the clock hand, several such indicating lamps being arranged around the time scale C. Thus, a motorist will be reminded automatically at predetermined intervals to check distance 65 travelled and/or average speed. Alternatively the clock hand may be illuminated and may at predetermined intervals of time pass under apertures arranged at intervals around the scale C so as to remind a motorist 70 at these times to check distance travelled and/or average speed.

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PROVISIONAL SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

