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PATENT SPECIFICATION

Application Date: Oct. 7, 1939. No. 27439/39. 535,476

Complete Specification Left: Aug. 8, 1940.

Complete Specification Accepted: April 10, 1941.

PROVISIONAL SPECIFICATION

Improvements relating to Logarithmic Calculators

I, FREDERICK JOHN CUGLEY, of 31, Nevil Road, Bishopston, Bristol, 7, of British Nationality, do hereby declare the nature of this invention to be as follows:—

This invention relates to logarithmic calculators of the disc type that are adapted for use by tradesmen and others for the ready determination of data such as the actual selling price of a commodity at a desired percentage of profit, or the actual retail price or the actual cost price of the articles or parts of a commodity bought in bulk or in bottles, and it relates particularly to such a calculator for use in the wine and spirit trade.

The invention is illustrated in the accompanying drawing as applied to a logarithmic calculator of the type referred to for use by retailers of wines and spirits.

In the drawing Figure 1 is a plan view of the calculator and Figure 2 is an elevation taken in the direction of the arrow (Figure 1).

In carrying the invention into effect the calculator is constructed of two discs respectively 1 and 2, the disc 1 being a disc of larger diameter than the disc 2, and the discs being disposed together concentrically upon an axis that may take the form of a ferrule *a* or the equivalent such as a pin or equivalent part serving as an axis and provided at its respective ends with means by which the discs are held in position thereon, the discs being capable of relative rotation. The larger disc 1 extends with its peripheral edge 1*a* beyond the peripheral edge 2*a* of the disc 2, for the accommodation of two curvilinear scales or sets of graduations respectively indicated *b* and *c*, the graduations being radial to the axis of the pin or ferrule *a*, and the scale *b* being disposed immediately beyond the scale *c*. In the actual illustrated example the scale *b* is a scale for the determination of the cost in "pence per glass" of a liquid such as wine or spirit, while the scale *c* is a scale for the determination of the wholesale and/or retail price in "shillings per bottle". The smaller disc 2 has a radial line *d* extending from the centre of the disc 2 to the peripheral edge 2*a* to serve as the line from which the calculations are made. This line may be denoted on the disc as the zero line or the indicator or calculating line. At one part of the disc 2 near its peripheral edge 2*a* a "profit per cent" scale *e* is provided in which the graduations are radial and extend to the peripheral edge 2*a*, while in an adjacent position a scale *f* is provided for determination of the number of "glasses per bottle" that are available.

The respective scales are printed or impressed on the discs, and the discs may be provided of cardboard, Bristol board or the like or of any other material such as opaque cellulosic material or synthetic resin. Furthermore the "pence per glass" scale *b* of the disc 1 may be printed in black while the "shillings per bottle" scale of the disc 1 may be printed in red. Similarly the small disc 2 may have the scale of "profit per cent" printed in red, while the "glasses per bottle" scale may be printed in black. In this way the determinations may be easily made.

A cursor *g* is advantageously provided of a strip of celluloid or other transparent material, and is advantageously formed in one piece whereby the strip is folded in a middle position and the parallel disposed parts then extended to terminate at the respective outer sides of the discs in coincident positions, whereby the cursor may thus be mounted upon the axial pin or ferrule *a*, while the part of the cursor *g* extending across the faces of the discs 1 and 2 may in a central position be provided with a radial line g^1, whereby the reading from one scale to another may be facilitated and thus the determinations more conveniently made.

The instructions for the use of the calculator may be printed in a convenient position upon the central part of the small disc or upon the rear face of the large disc, or the instructions or other explanations may be otherwise made available.

In the use of the calculator for the determination of the retail price of a

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bottle when a certain percentage of profit is required which for example is 50%, the two scales *c* and *e* alone may be used. thus on the scale *c* of " shillings per bottle ", the cost price is identified, the small disc 2 is then rotated to bring the zero line *d* to coincide with the known cost price indicated on the scale, which, for example, may be 4/- and thus the line *d* will be brought into radial coincidence with the graduation marked " 4 " on the scale *c*, thereby indicating the selling price—6/- and the profit per cent. which equals 50% as shown in Figure 1.

To ascertain the retail " price per glass " the small disc 2 is rotated until the number of " glasses per bottle " shown on the scale *f* coincides with the selling price in shillings per bottle on the scale *c*. The answer is found on the scale *b* opposite the end of the zero line.

To ascertain the cost price per glass, the disc 2 is rotated until the number of " glasses per bottle " on the scale *f* coincides with the cost price in " shillings per bottle " on the scale *c*. Without moving the disc again the figure will be found on the " pence per glass " scale *b* in a position opposite to the end of the zero line *d*.

The calculator that is illustrated and described being not intended for the calculation of prices beyond 30/-, it is yet possible to use it for the determination of values beyond that indicated, by dividing the original sum so that the amount does not exceed 30/-, then determining the values by the calculator and then multiplying the answer by the original divisor. Thus, for example, if 54/- is the price, this could be divided by two, and the figure indicated on the calculator would then be multiplied by two.

To determine the price per bottle when the number of glasses per bottle and the price per glass are known the value per bottle may be determined as follows: the " pence per glass " may be found upon the scale *b*, the small disc may then be rotated to bring the zero line *d* to coincide with that figure. Without moving the disc again the answer will be found on the scale *c* coinciding with the number of glasses per bottle.

The " percentage of profit " when the cost price per bottle and the retail price are known may be determined as follow:—The small disc is rotated until the cost price on the scale *c* coincides with the zero line *d*. The percentage of profit will then be shown on the scale *e* at a position coinciding with the selling price.

Dated this 7th day of October, 1939.

EDWARD EVANS & Co.,
40—43, Chancery Lane, London, W.C.2,
Agents for the Applicant.

COMPLETE SPECIFICATION

Improvements relating to Logarithmic Calculators

I, FREDERICK JOHN CUGLEY, of 31, Nevil Road, Bishopston, Bristol, 7, of British Nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to logarithmic calculators of the disc type that are adapted for use by tradesmen and others in the wine and spirit trades for the ready determination of data such as the actual selling price of a commodity at a desired percentage of profit, or the actual retail price or the actual cost price of the articles or parts of a commodity bought in bulk or in bottles, and it relates particularly to such a calculator for use in the wine and spirit trade.

The invention is illustrated in the drawing accompanying the Provisional Specification as applied to a logarithmic calculator of the type referred to for use by retailers of wines and spirits.

In the said drawing Figure 1 is a plan view of the calculator and Figure 2 is an elevation taken in the direction of the arrow (Figure 1).

In carrying the invention into effect the calculator is constructed of two discs respectively 1 and 2, the disc 1 being a disc of larger diameter than the disc 2, and the discs being disposed together concentrically upon an axis that may take the form of a ferrule *a* or the equivalent such as a pin or equivalent part serving as an axis and provided at its respective ends with means by which the discs are held in position thereon, the discs being capable of relative rotation. The larger disc 1 extends with its peripheral edge 1*a* beyond the peripheral edge 2*a* of the disc 2, for the accommodation of two curvilinear scales or sets of graduations respectively indicated *b* and *c*, the graduations being radial to the axis of the pin or ferrule *a*, and the scale *b* being disposed immediately beyond the scale *c*. In the actual illustrated example the scale *b* is a scale for the

determination of the cost in " pence per glass " of a liquid such as wine or spirit, while the scale *c* is a scale for the determination of the wholesale and/or retail price in " shillings per bottle ". The smaller disc 2 has a radial line *d* extending from the centre of the disc 2 to the peripheral edge 2*a* to serve as the line from which the calculations are made. This line may be denoted on the disc as the zero line or the indicator or calculating line. At one part of the disc 2 near its peripheral edge 2*a* a " profit per cent." scale *e* is provided in which the graduations are radial and extend to the peripheral edge 2*a*, while in an adjacent position a scale *f* is provided for determination of the number of " glasses per bottle " that are available.

The respective scales are printed or impressed on the discs, and the discs may be provided of cardboard, Bristol board or the like or of any other material such as opaque cellulosic material or synthetic resin. Furthermore the " pence per glass " scale *b* of the disc 1 may be printed in black while the " shillings per bottle " scale of the disc 1 may be printed in red. Similarly, the small disc 2 may have the scale of " profit per cent." printed in red, while the " glasses per bottle " scale may be printed in black. In this way the determinations may be easily made.

A cursor *g* is advantageously provided of a strip of celluloid or other transparent material, and is advantageously formed in one piece whereby the strip is folded in a middle position and the parallel disposed parts then extended to terminate at the respective outer sides of the discs in coincident positions, whereby the cursor may thus be mounted upon the axial pin or ferrule *a*, while the part of the cursor *g* extending across the faces of the discs 1 and 2 may in a central position be provided with a radial line *g*^{1}, whereby the reading from one scale to another may be facilitated and thus the determinations more conveniently made.

The instructions for the use of the calculator may be printed in a convenient position upon the central part of the small disc or upon the rear face of the large disc, or the instructions or other explanations may be otherwise made available.

In the use of the calculator for the determination of the retail price of a bottle when a certain percentage of profit is required which for example, is 50%, the two scales *c* and *e* alone may be used. Thus on the scale *c* of " shillings per bottle ", the cost price is identified, the small disc 2 is then rotated to bring the zero line *d* to coincide with the known cost price indicated on the scale, which, for example, may be 4/- and thus the line *d* will be brought into radial coincidence with the graduation marked " 4 " on the scale *c*, thereby indicating the selling price—6/- for the profit per cent. which equals 50%, as shown in Figure 1.

To ascertain the retail " price per glass " the small disc 2 is rotated until the number of " glasses per bottle " shown on the scale *f* coincides with the selling price in shillings per bottle on the scale *c*. The answer is found on the scale *b* opposite the end of the zero line.

To ascertain the cost price per glass, the disc 2 is rotated until the number of " glasses per bottle " on the scale *f* coincides with the cost price in " shillings per bottle " on the scale *c*. Without moving the disc again the figure will be found on the " pence per glass " scale *b* in a position opposite to the end of the zero line *d*.

The calculator that is illustrated and described being not intended for the calculation of prices beyond 30/-, it is yet possible to use it for the determination of values beyond that indicated, by dividing the original sum so that the amount does not exceed 30/-, then determining the values by the calculator and then multiplying the answer by the original divisor. Thus, for example, if 54/- is the price, this could be divided by two, and the figure indicated on the calculator would then be multiplied by two.

To determine the price per bottle when the number of glasses per bottle and the price per glass are known the value per bottle may be determined as follows: The " pence per glass " may be found upon the scale *b*, the small disc may then be rotated to bring the zero line *d* to coincide with that figure. Without moving the disc again the answer will be found on the scale *c* coinciding with the number of glasses per bottle.

The " percentage of profit " when the cost price per bottle and the retail price are known may be determined as follows:—The small disc is rotated until the cost price on the scale *c* coincides with the zero line *d*. The percentage of profit will then be shown on the scale *e* at a position coinciding with the selling price.

It will be understood that the invention is not limited to the details herein-before specified. Thus, for example, the scales may be imprinted in one colour or they may be in certain cases of colours other than those specified. Again it is not essential that the cursor should be of

transparent material. It may be provided for example, in the form of a radial arm, one edge of which serves to determine the reading, such arm being of metal or other suitable material.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A logarithmic calculator of the disc type adapted for use by tradesmen and others in the wines and spirit trades for the determination of useful data, relating to the sale of wines and spirits, comprising two discs that are relatively rotatable about a common axis, each of the said discs having upon it a plurality of logarithmic scales of related factors such that by the setting of a scale on one disc to a scale on the second disc a required value of one of the factors may be determined.

2. Logarithmic calculators according to claim 1, wherein one of the discs is of greater diameter than the other and the scales upon the said disc are set out upon the exposed surface thereof.

3. Logarithmic calculators according to claim 1 or claim 2, wherein an index or zero indication is provided upon one of the discs.

4. Logarithmic calculators according to claim 1, 2 or 3, wherein a cursor is provided to facilitate the adjustment of a scale upon one of the discs with reference to a scale upon the second disc.

5. A logarithmic calculator for use in the wine and spirit trade, substantially as hereinbefore described with reference to and as illustrated in the drawing accompanying the Provisional Specification.

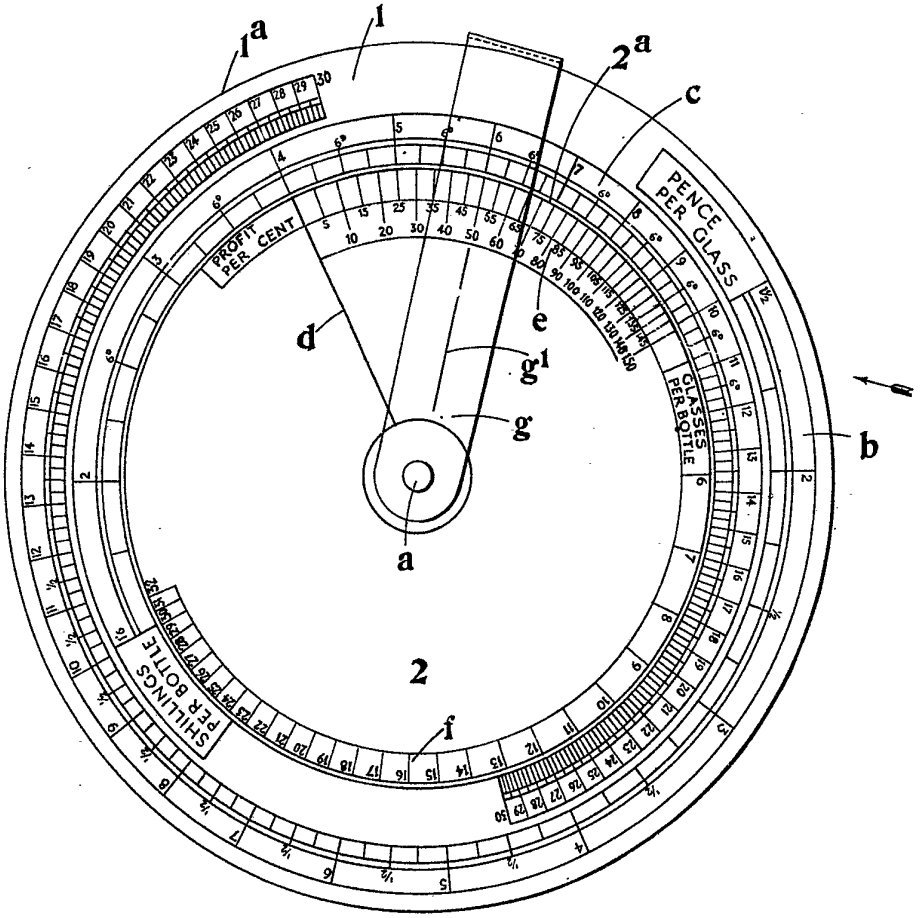
Dated this 8th day of August, 1940.

EDWARD EVANS & Co.,
40—43, Chancery Lane, London, W.C.2.
Agents for the Applicant.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1941.

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.



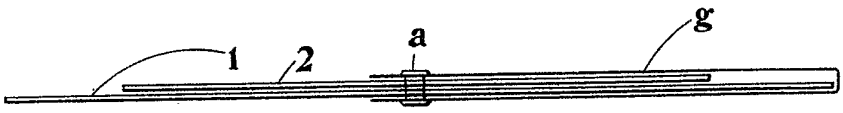


Fig. 2.

Malby & Sons, Photo-Lith.