

N<sup>o</sup> 7081



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Complete Specification Left, 28th Dec., 1903—Accepted, 10th Mar., 1904

### PROVISIONAL SPECIFICATION.

#### Improvements in Textile Calculators or the like

We, ERNEST LORD of 57, Devonshire Road, Burnley, in the County of Lancaster, Mill Manager, and WILKINSON LORD of 61 Queen Victoria Rd. Burnley aforesaid, Taper, do hereby declare the nature of this invention to be as follows;—

5 The invention relates to certain improvements in textile or like calculators, and its object is to enable all the particulars of a problem and the answers in regard to such calculations as are required for cost in cloth *etc.* to appear on the dials simultaneously.

10 The instrument is made in a watch form. The dial consists of four parts. Three concentric rings, and one central disc. The numbers are expressed on the various parts of the dial on the same principle as a slide rule to represent prices and ordinary numbers.

15 The outer ring and the central disc are fixed with the numbers appearing on them holding a certain definite relationship, being different for cotton, woollen, linen or worsted calculations.

The outer fixed ring is marked on its inner edge only for prices. The two inner rings are movable, and are marked on both their inner and outer edges with numbers common to both for obtaining ordinary numbers.

20 Each of the two inner movable rings is fitted on its back face with a crown wheel, into which gears a small gear wheel carried by a spindle, which is operated by a milled knob from the exterior of the casing. The two milled knobs may be a suitable distance apart from each other.

25 The central fixed disc is marked on its outer edge with numbers in a reverse direction to those on the other rings or discs, and is of use for obtaining ordinary numbers but in a reverse order.

Dated this 26th. day of March 1903.

RICHMOND & Co.  
Chartered Patent Agents,  
254, Colne Rd. Burnley.

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### COMPLETE SPECIFICATION.

#### Improvements in Textile Calculators or the like.

We, ERNEST LORD of 57, Devonshire Road, Burnley, in the County of Lancaster, Mill Manager, and WILKINSON LORD of 61, Queen Victoria Road, Burnley aforesaid, Taper, 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;—

The invention relates to certain improvements in textile or like calculators, and its object is to enable all the particulars of a problem and the answers in

[Price 8d.]

*E. and W. Lord's Improvements in Textile Calculators or the like.*

regard to such calculations as are required for cost in cloth *etc.* to appear on the dials simultaneously.

The instrument is preferably in watch form, so as to be convenient for pocket use, but it may be made of any size or shape desired.

The dial consists of four parts, three concentric rings and one central disc. The numbers are expressed on the various parts of the dial on the same principle as a slide rule to represent prices and ordinary numbers. 5

The outer ring and the central disc are fixed with the numbers appearing thereon holding a certain definite relationship, being different for cotton, woollen, linen or worsted calculations. 10

The outer fixed ring is marked on its inner edge only for prices. The two inner rings are separately movable, and are marked on both their inner and outer edges with numbers common to both representing ordinary numbers.

Each of the two inner movable rings is fitted on its back face with a crown wheel, into which gears a small gear wheel carried by a spindle, which is operated by a milled knob from the exterior of the casing. The two milled knobs are a suitable distance apart from each other. 15

The central fixed disc is marked on its outer edge with numbers in a reverse direction to those on the other rings or discs, and is necessary for obtaining the particulars and answers required all in one view in this class of problems. 20

Our invention will be readily understood by reference to Fig. 1 of the accompanying drawing, which represents our improved calculator in pocket form. The dial consists of four parts, a central disc A, and three concentric rings B, C and D. A and D are fixed, while B and C are movable by turning the knobs E and F. The knob E operates the ring C, while the knob F turns the ring B by means of gear wheels in a manner common to this class of calculator, or in any other suitable manner. 25

A and D are fixed in a certain relative position *i.e.* the starting point 10 on the two parts are not in the same radius. The positions of A and D, as represented, are suitable for cotton calculations, and the relative positions of the numbers appearing on the edges of the two respective discs vary according to the class of goods required to be calculated, being one relationship for cotton, another for woollen, and another for worsted, and so on. Thus, for cotton, 840 or 84 on A is on the same radius as 10 on D. For worsted, 560 or 56 on A is opposite the same radius as 10 on D. For linen, the number is 300 or 30 on A, which is opposite the radius of 10 on D. These numbers represent the yards in one hank in the respective class of yarns, cotton, worsted, or linen. 30 35

The object of this arrangement is to enable the particulars of problems in connection with cost in cloths in different materials, when put in a certain form on the dial, and also the answers to those particulars, *i.e.* weight and value at any price, to appear simultaneously, and also any other answers that are usually required from those particulars. Thus, it will give weight and value of any ends in any counts, in any length at any price per pound, all in one view, or for any width in reed, any reed or pick, any count in any length at any price, also for other usual calculations in connection with textiles. Also for proportion, multiplication, division, and other arithmetical calculations. 40 45

In addition to the advantage of having all the results usually required from the particulars visible along with the particulars, our improved calculator also reduces the number of operations required as compared with previous instruments—only two movements being necessary to put any usual textile problem on the instrument along with the answers. 50

The numbers on A, B and C may be read any power of 10, higher or lower, the dials being divided on the same principle as a slide rule, with the exception that D is divided to represent prices, and the units of this dial are divided in eighths, quarters and halves, for this purpose. 55

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*E. and W. Lord's Improvements in Textile Calculators or the like.*

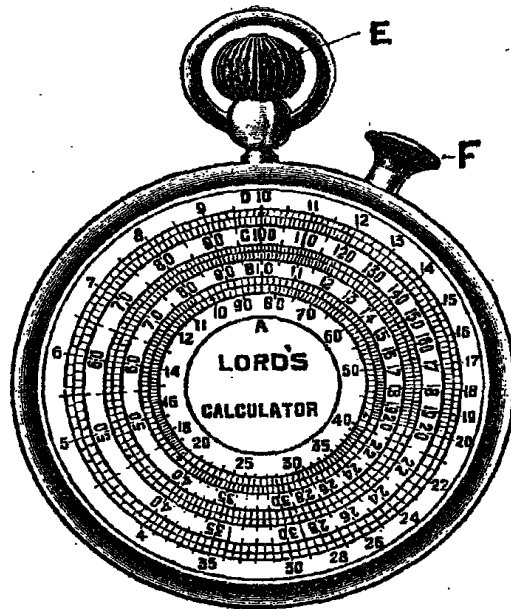
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Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A textile calculator or the like having a dial consisting of four parts, and  
5 arranged so that all the particulars of a problem and the answers in regard to such calculations as cost in cloths *etc.* may appear thereon simultaneously, substantially as described.
2. A textile or like calculator having a graduated dial consisting of four  
10 parts, two of such parts being fixed and in definite relationship with each other, and the other two parts being movable and arranged substantially as and for the purpose described.
3. In a textile calculator or the like, a graduated dial consisting of four  
15 parts, a central disc A and three concentric rings B, C and D, A and D being fixed, and B and C movable, substantially as and for the purpose described and illustrated.

Dated this 23rd. day of December 1903.

RICHMOND & Co.  
Chartered Patent Agents,  
254, Colne Rd. Burnley.



— FIG-1 —

*[This Drawing is a full-size reproduction of the Original.]*