

N^o 12,717



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Complete Specification Left, 2nd Dec., 1912—Accepted, 29th May, 1913

PROVISIONAL SPECIFICATION.

Improvements in or relating to Slide Rules.

I, FRANK CHARLES FARMAR, of 2, Neville Road, Waterloo, near Liverpool, in the County of Lancaster, Slide Rule Manufacturer, do hereby declare the nature of this invention to be as follows:—

5 This invention relates to slide rules, and in construction comprises a roller or cylinder (preferably a wooden roller) the ends of which are preferably reduced and fitted within metal clamp bearings; a rod or bar firmly secured between the respective members of the clamps; and a slide disposed between said roller and said fixed rod or bar, being connected with the latter by means of a tongue and groove in the customary manner of slide rules. Preferably, a ratchet
10 arrangement is employed in connection with the roller so that the scales thereon shall assume and retain their correct positions as the roller is moved step by step.

15 The end or edge of said slide adjacent to the roller is preferably grooved or recessed somewhat in order to permit of the revolution of the latter, and an extremity of said roller preferably protrudes beyond its bearing and terminates in a wheel handle or finger and thumb piece to facilitate rotation.

20 Upon said roller are placed in any convenient manner, and arranged in logarithmic series, lines of the desired expressions, say, by way of example, money expressions extending from one penny to £4 (four pounds): and on the slide are placed in any convenient manner, as by means of a strip of paper, celluloid, zylonite, or the like, scales indicating, say, discount, profit on sales, and profit on cost, respectively.

A rule—in which the roller contains money expressions, and the slide discount *etcetera*, as before referred to—may be used in the following manner:—

25 Given the cost price and rate of profit, to find the selling price:—Rotate the roller, if necessary, until the line upon which the cost price in question appears is brought adjacent to the slide, set “par” on slide to the cost price on roller, then over the required percentage of profit on the slide will appear the selling price on the roller.

30 Given the cost price and selling price to find the rate of profit:—Set “par” on slide to the cost price on roller, then under the selling price on roller will appear the percentage of profit on the slide.

35 Given the selling price and rate of profit to find the buying price:—Set the required percentage of profit on the slide to the selling price on the roller, then over “par” on slide will appear the buying price on the roller.

On the reverse side of the rule there may appear upon the slide and the fixed rod or bar, respectively, logarithmic scales for general calculation purposes. Preferably these scales appear on celluloid strips which are let into the rod and slide respectively.

40 Dated this 29th day of May, 1912.

JOHN HINDLEY WALKER,
139, Dale Street, Liverpool,
Agent for the Applicant.

[Price 8d.]



Farmar's Improvements in or relating to Slide Rules.

COMPLETE SPECIFICATION.

Improvements in or relating to Slide Rules.

I, FRANK CHARLES FARMAR, of 2, Neville Road, Waterloo, near Liverpool, in the County of Lancaster, Slide Rule Manufacturer, 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 flat slide rules, and has for its object to provide a 5 rule for commercial calculations, which, for a given size, shall have large calculating capacity, and which may be easily read.

A slide rule, according to my invention, essentially comprises a flat slide and a revoluble roller (or rollers), tube, cylinder, or the like, fitted or mounted in the rule, and arranged to operate with said flat slide, on one of which, preferably the roller, are arranged a plurality of logarithmic graduations of money 10 expressions, and on the other of which are arranged logarithmic graduations of discount, profit on turnover, or profit on cost, or any two or all of such graduations. Particular features or characteristics are hereinafter described and pointed out in the claiming clauses concluding this specification. 15

In the accompanying sheet of explanatory drawings there is illustrated a rule according to this invention.

Fig. 1 is a front view, Fig. 2 an end elevation, and Fig. 3 a rear view, of the rule.

Fig. 4 shows the complete expressions which appear around the circumference 20 of the roller or cylinder.

a represents a frame rod, or bar, the respective ends whereof are firmly secured to and between the respective pairs of sheet metal end clamps *b*. *c* indicates a slide which is positioned between said rod *a* and two wooden or like filling pieces or blocks *d* disposed and secured between clamps *b* on the principle of 25 the tongue and groove—see Fig. 2.

e designates a tube or cylinder constructed of transparent celluloid, within each end whereof is fitted a closing piece or plug *f* of wood, cork, metal, or other suitable material, provided with a pin *g* which is adapted to revolvably fit in a socket provided for it within the adjacent filling piece or block *d*; alternatively, 30 a metal rod may be passed through said tube or cylinder *e* and through apertures provided in the closing or filling pieces or blocks *d*, so that the protruding ends, by projecting into sockets provided in the rule frame, form pivots for roller *e*; or pivot pins may project from the ends of the rule frame into sockets in said filling pieces *f*. 35

The end or edge of slide *c* which is adjacent to said roller *e* is grooved or recessed somewhat (Fig. 2) for the purpose of accomodating the latter.

The logarithmic graduations of money expressions are printed preferably from a copper plate on a sheet *h* of paper, and this after being suitably bent or mounted round a thin cardboard tube is fitted within said transparent celluloid 40 cylinder *e*, so that the expressions or graduations may be viewed from the outside thereof; the ends of said sheet *h* are firmly held by a friction fit between the inner wall of cylinder *e* and the closing or end pieces or plugs *f* (see Fig. 1); thus said cylinder and sheet will revolve as one, the sheet being thoroughly protected by the celluloid casing. 45

Alternatively, said sheet may be mounted round a hollow or solid roller of wood, or other suitable material, and varnished or otherwise treated to render it washable; or the graduations and figures may be engraved or inscribed on a roller of wood or other suitable material. In order, however, to provide an

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accurate rule at a low cost of production, I prefer to employ said tube or cylinder of transparent celluloid and a printed paper fitted within same.

On the roller, which is rotated by the finger and thumb of the user, are arranged logarithmic graduations of money expressions extending from and to any desired amount and in any system of coinage. As illustrated in Fig. 4 the expressions range from 1d. to £20 (twenty pounds) arranged in parallel lines in the following order:—

1d. to 4d.; 2½d. to 10d.; 6d. to 2/-; 1/3 to 5/-; 2/6 to 10/-; 5/- to 20/-; 10/- to £2; 25/- to £5; £2/10/- to £10; and £5 to £20.

On slide *c* which co-operates with said cylinder *c* are arranged divisions indicating discount, profit on turnover, and profit on cost, respectively; these divisions cover a range extending preferably—as illustrated—from 40% discount to 60% profit on turnover and 150% profit on cost; they may be printed or inscribed on paper, celluloid, or other suitable material which is secured to the slide, or may be engraved or inscribed on the material thereof.

As a modification, the scales may be reversed, the money expressions appearing on the slide and the profit and discount graduations on the roller.

On the reverse side of the rule are two scales marked A and B respectively on frame *a* and slide *c*; these scales facilitates calculations beyond the limits of roller *e*; these may also be used for general calculating purposes when desired.

If found necessary or desirable, I may employ a pawl and ratchet arrangement in connection with the roller *e* for the purpose of positively maintaining it in any one position until wilfully moved therefrom. Further, an end of said roller *e* may protrude beyond the rule frame *a* and a wheel-handle or finger and thumb piece be fitted thereon. Or, if the rule be constructed of wood, the ends may be reduced and fitted in a revoluble manner within metal end clamps.

I may employ two or more revoluble rollers on a single rule, with the object of increasing the calculating capacity thereof.

EXAMPLES OF THE USES OF A RULE SCALED AS ILLUSTRATED IN THE DRAWING
ANNEXED HERETO:—

PROFIT.

Set "par" on slide to 4/- on roller (turning the roller, if necessary, until the line containing 4/- is in close proximity with the upper edge of slide *c*).

This single setting answers each of the three following questions, *viz*:—

(1). An article costs 4/- and is sold for 5/-. What is the percentage profit on the cost and turnover, respectively?

Answer 25% on the cost.

do. 20% on the turnover.

2. An article costs 4/-. What must be the selling price to gain 20% on the turnover?

Answer 5/-.

3. An article sells at 5/-. What must be the buying price to gain 20% on the turnover?

Answer 4/-.

N.B. In the first two examples "par" on slide has been set to the cost price on roller; then the selling price and percentage profit simultaneously appear. In the third case the percentage profit has been set to the selling price and the roller looked at over "par" for the buying price.

DISCOUNT.

Set "par" on slide to 5/- on roller.

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The rule as now set answers simultaneously each of the following questions, viz:—

1. An article is bought (or sold) at 5/-, less 5% discount. What is the net buying (or selling) price?

Answer 4/9. 5

2. An article is sold nominally at 5/- but actually at 4/9. What rate of discount is that?

Answer 5%.

3. What is 5% off 5/-?

Answer 3d. (*viz*: the difference between 4/9 and 5/-). 10

N.B. In all of the three foregoing examples "par" has been set to the buying or selling price; and the net price and rate of discount simultaneously appear.

PROFIT AND DISCOUNT COMBINED.

Set "5% discount" on slide to 5/- on roller. 15

The rule as now set answers simultaneously each of the three following questions *viz*:—

(1). An article costs 5/-. At what price must this be sold in order that 5% discount may be allowed off the selling price and 20% profit made on the turnover? 20

Answer 6/7.

(2). An article costs 5/- and is sold for 6/7 less 5% discount. What is the net percentage profit on the turnover?

Answer 20%.

3. An article sells at 6/7 less 5% discount. What must it be bought for in order to realize 20% net profit on the turnover? 25

Answer 5/-.

N.B. In the first two cases the rate of discount has been set to the cost price; then the gross selling price and net percentage profit simultaneously appear. In the third example the required net percentage profit has been set to the gross selling price, and the roller looked over at the rate of discount for the buying price. 30

A cursor may be used—if necessary—with the rule to facilitate reading.

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:— 35

1. In a slide rule, the combination of a flat slide and a revoluble roller (or rollers), tube, cylinder, or the like fitted or mounted in the rule, on one of which—preferably the roller—are arranged a plurality of logarithmic graduations of money expressions, and on the other of which are arranged logarithmic graduations of discount, profit on turnover, or profit on cost, or any two, or all, of such graduations. 40

2. In a slide rule as characterised by the preceding claim, the provision of "A" and "B" logarithmic graduations; substantially as described.

3. The complete slide rule substantially as hereinbefore described with reference to the drawing annexed hereto. 45

Dated this 29th day of November, 1912.

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139, Dale Street, Liverpool,
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Fig. 1.

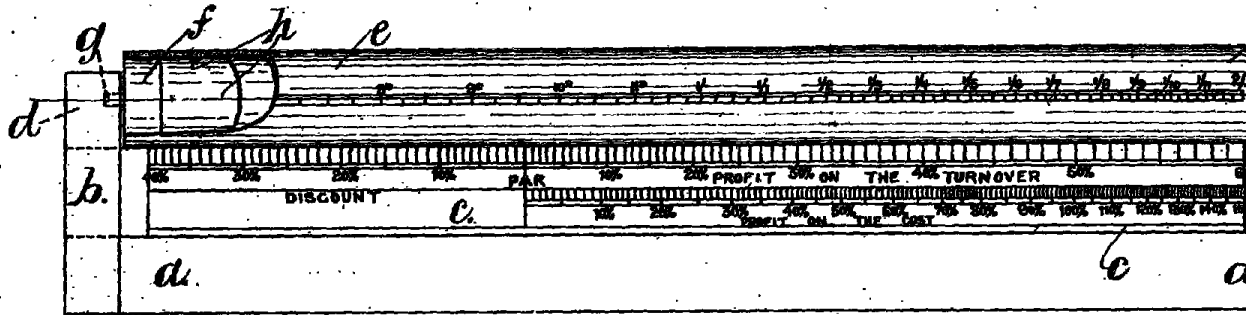


Fig. 4.

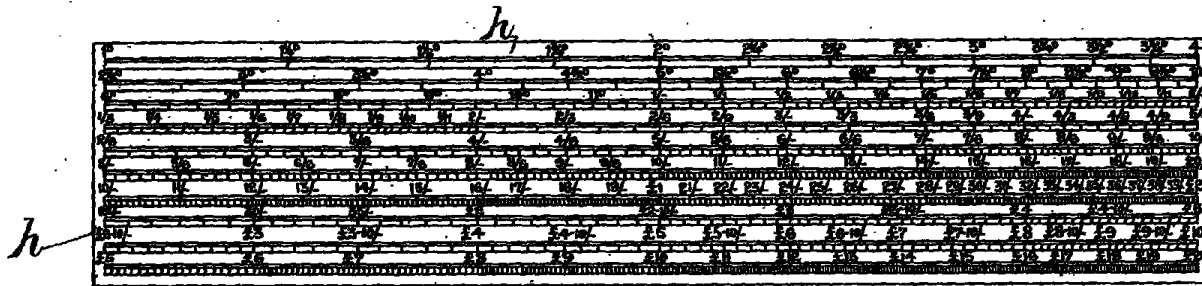
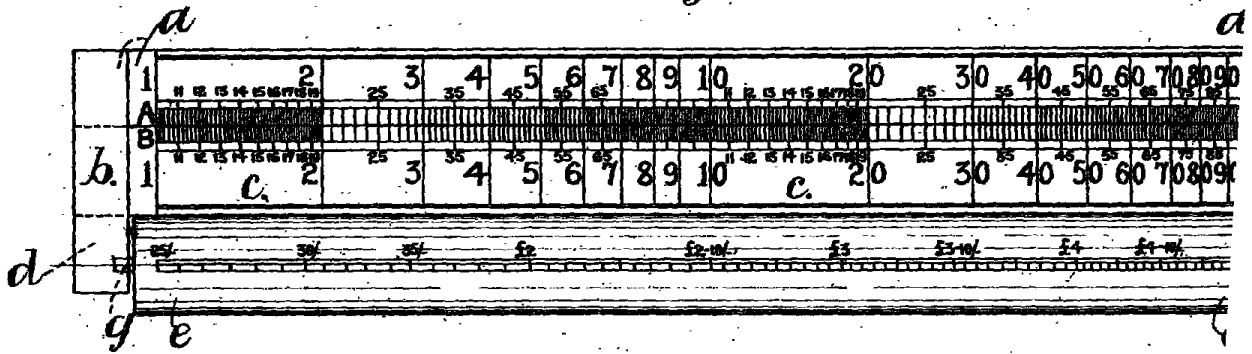
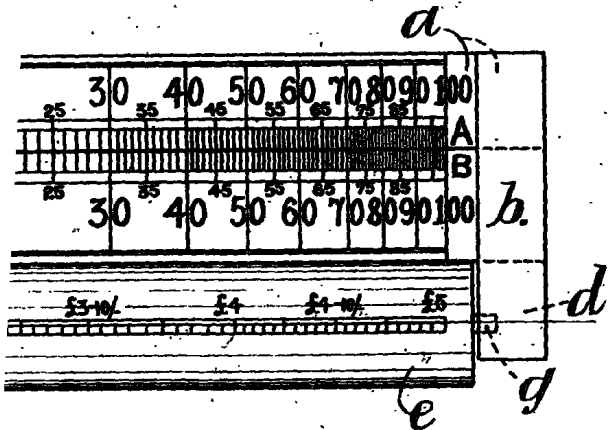
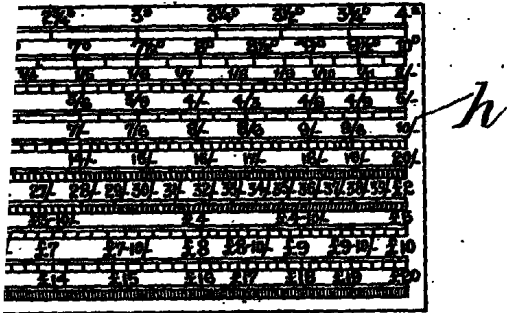
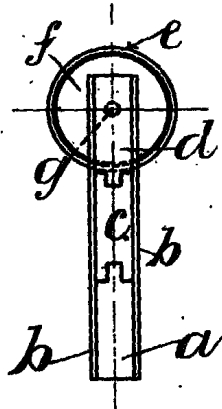
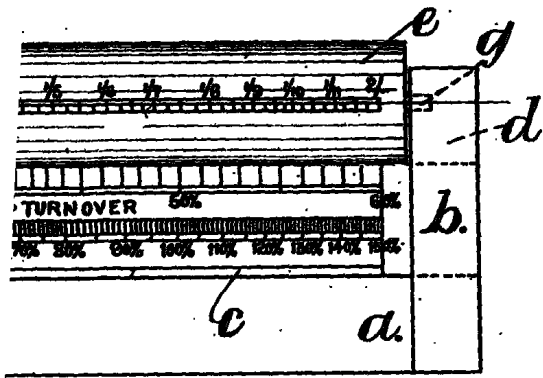


Fig. 3.



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

Fig. 2.



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