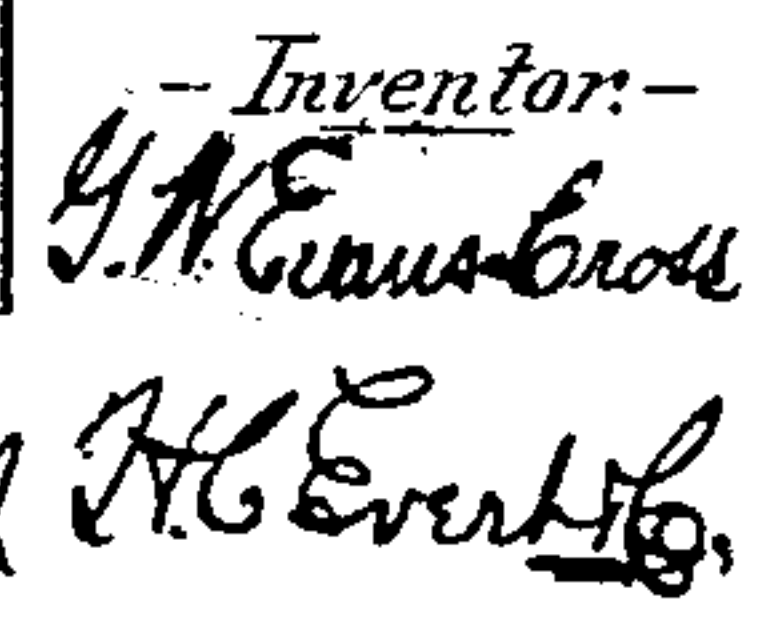
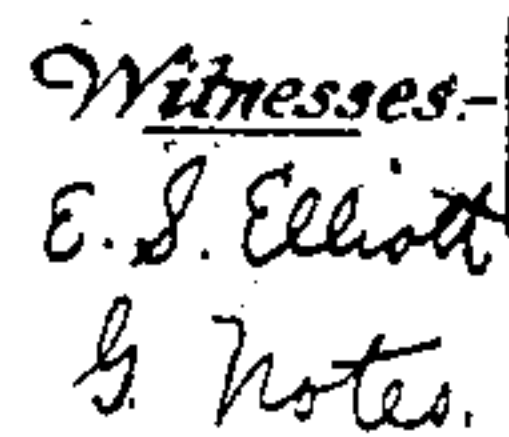


913,483.

2 SHEETS—SHEET 1.

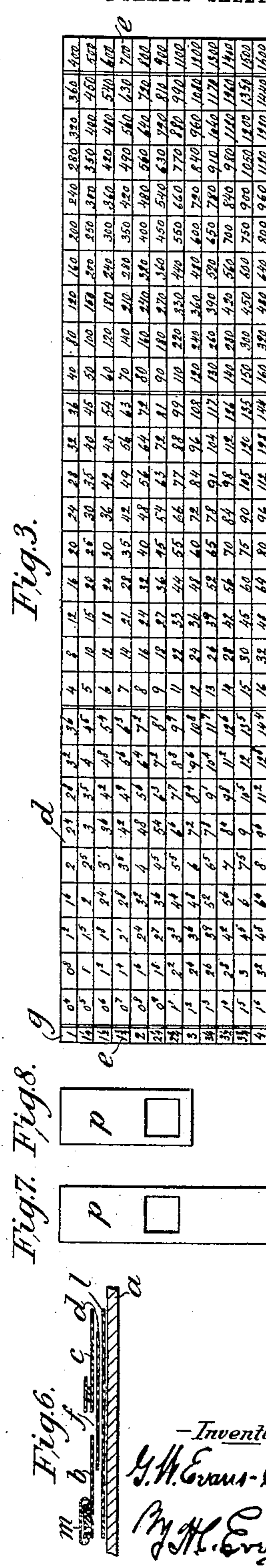
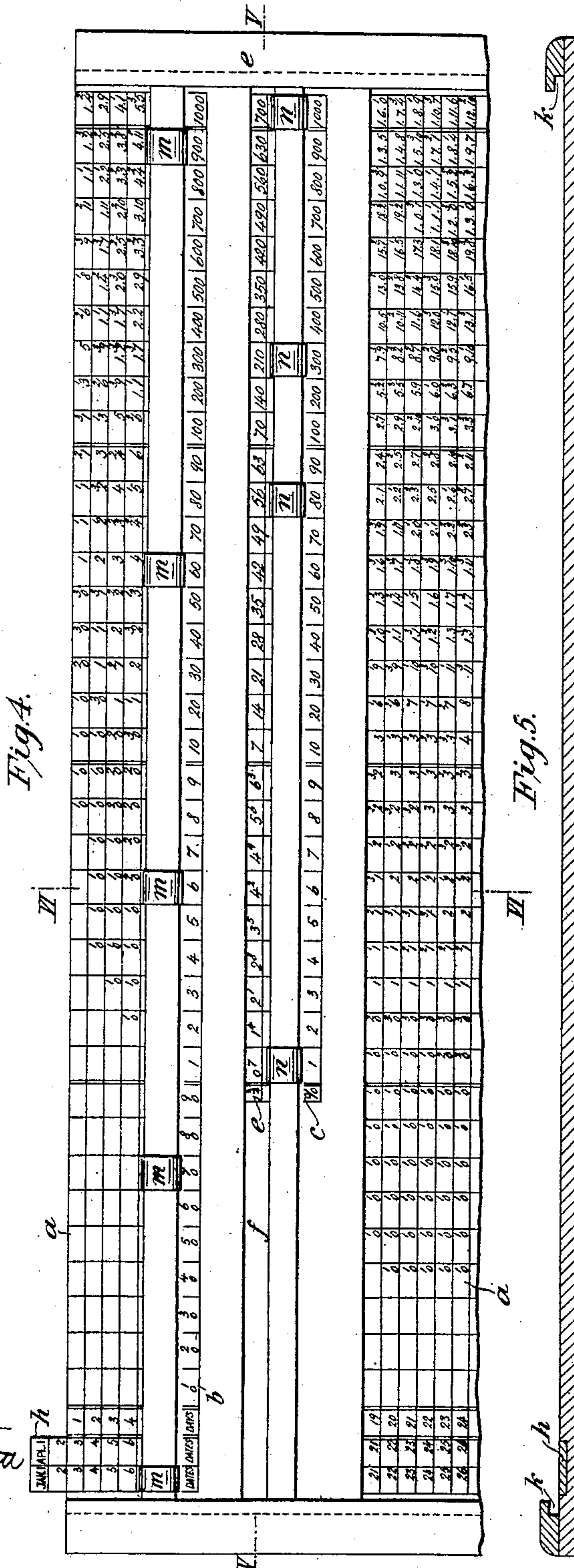


G. W. EVANS-CROSS.
CALCULATING APPLIANCE.
APPLICATION FILED MAR. 12, 1907.

913,483.

Patented Feb. 23, 1909.
2 SHEETS—SHEET 2.

Witnesses—
E. S. Elliott
G. W. Evans.



UNITED STATES PATENT OFFICE.

GEORGE W. EVANS-CROSS, OF BALHAM, ENGLAND.

CALCULATING APPLIANCE.

No. 913,483.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed March 12, 1907. Serial No. 362,077.

To all whom it may concern:

Be it known that I, GEORGE WILLIAM EVANS-CROSS, a subject of the King of Great Britain and Ireland, residing at 22 The Boulevard, Balham, in the county of Surrey, England, have invented certain new and useful Improvements in Calculating Appliances, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an appliance designed to facilitate the determination of interest on different principal sums, at different rates per cent., and for different periods of time, wherein the interest on the various principals for various times is tabulated on a base plate at one standard rate per cent. only and there are provided in combination with the base plate auxiliary scales or tables movably mounted thereon, whereby the interest at other rates per cent. can be determined from the table on the base plate.

The accompanying drawings show an apparatus according to this invention.

Figure 1 is a plan of the main base plate; Fig. 2 is a plan of the main and auxiliary slide plates mounted upon this base plate and adapted to slide thereon; Fig. 3 is a plan of the auxiliary base plate; Fig. 4 is a plan showing the base plate with various scales in position thereon; Fig. 5 is a longitudinal section through the base plate on the line V—V of Fig. 4; Fig. 6 is a transverse section through the base plate and its scales on the line VI—VI of Fig. 4; and Figs. 7 and 8 are views of shields hereinafter referred to.

On the base plate *a* there is tabulated in successive horizontal lines the interest at a standard rate of $2\frac{1}{2}$ or 10 quarters per cent. and to a degree of accuracy sufficient in practice on the series of principal shown on the horizontal line *b* of Fig. 2 for periods ranging from one to twenty-four days. The upper auxiliary scale or slide-plate mounted on the base plate *a* and adapted to slide thereon contains besides the series of principal sums *b* already mentioned, a second series of principals *c*. The monetary units employed in the tables shown are the £ s. d. and farthings of the English coinage; the principals shown at *b* ranging from $\text{£}\frac{1}{10}$ to $\text{£}\frac{9}{10}$; from £1 to £9; from £10 to £90 and from £100 to £1000; while those shown at *c* are similarly arranged except that the series of tenths of £1 to the left are omitted.

In the columns of the base *a* vertically

over the respective principal sums of *b* and *c* the interest on these sums from one to twenty-four days is indicated in pounds, shillings, pence and farthings, the latter for the sake of compactness being indicated by small figures above the pence. Beneath the scales *b* and *c* there is arranged to slide the auxiliary scale or under-slide *d* shown in Fig. 3, one horizontal line, say for example the line *e* being visible through the slot *f* between the scales *b* and *c* (Fig. 2). On the scale *d* there is tabulated on successive horizontal lines, and vertically under the series of principals *c*, four, five, six, seven, eight, nine, eleven &c. up to sixteen-tenths of these principals, corresponding to $1, 1\frac{1}{4}, 1\frac{1}{2}$ up to 4 per cent. as shown in the vertical column *g* and hereinafter more fully explained. For the sake of clearness tenths of £ are indicated by small figures written above the integers; thus the entry at the top left-hand corner denotes $\text{£}0\frac{4}{10}$. At the left of Fig. 1 is shown a slide rule or scale of dates *h* which enables the interest between two given dates to be ascertained without having to count the number of intervening days.

The manner in which the tables *a*, *b*, *c* and *d* are assembled, and applied to the solution of an interest problem is illustrated in Figs. 4, 5 and 6. In Fig. 4 the scales *b*, *c* and *d* are adjusted for the solution of the problem hereinafter stated by way of example. The scales *b*, *c*, *d* and the support *l* on which these scales are mounted slide in the grooves *k* (Fig. 5). These scales and support may conveniently be of cardboard, the scale *d* being adapted to slide between the support *l* and the scales *b*, *c* so as to exhibit one or other of its horizontal lines through the aperture *f*.

With regard to the determination of interest at the standard rate of $2\frac{1}{2}$ or $\frac{10}{4}$ per cent.; the amount can be read off directly from the base plate *a*, the principal being indicated by sliding indicators *m* on the scale *b*. For example: Let the interest be required, at $2\frac{1}{2}$ per cent. on £966.14.0 for the period between January 2nd and 6th. First adjust the scale of dates as shown in Figs. 1 and 3, then set the indicators *m* to 900, 60, 6, and $\frac{7}{10}$, and adjust the scale *b* to the line corresponding to January 6 on the base plate. The interest, shown on the base-plate above the indicators $m = 4\text{s. } 11\frac{1}{4}\text{d.} + 4\text{d.} + \frac{1}{2}\text{d.} + 0 = 5\text{s. } 3\frac{3}{4}\text{d.}$ For the determination of interest at other than the standard rate, the auxiliary scales *c* and *d* are employed. For example, let

the interest at $1\frac{3}{4} = \frac{7}{10}$ of the standard rate, be required, from January 2nd to 6th on £1381. This is equivalent to the interest at the standard rate on $\frac{7}{10}$ of £1381, and the principle of the apparatus is to enable this auxiliary principal to be determined practically without calculation. For this purpose the scale d is moved so as to bring into view through the aperture f the line e corresponding to $1\frac{3}{4}$ per cent. and having thereon $\frac{7}{10}$ of the principals on the scale c . The given principal, £1000 + 300 + 80 + 1 is then denoted by the indicators n on the scale c and the auxiliary principal £700 + 210 + 56 + $\frac{7}{10} = £966\frac{7}{10}$ is read off on the line e (Fig. 4). This auxiliary principal is then indicated by the indicators m on the scale b whereupon the desired amount of interest is read off from the base plate = 5s. 3 $\frac{1}{4}$ d. It will be observed that no zeros have been provided so that it would be difficult to indicate, say on the scale c , £1301. To obviate this difficulty while economizing the space that would be taken up by zero columns, there are provided small shields p of the form shown in Figs. 7 and 8 adapted to be placed over the indicators m or n . One of these shields would for instance in the case mentioned be placed upon the indicator n standing at £80 on the scale c thus showing that no reading is to be taken at this indicator. It will be understood that the structural details of an appliance in accordance with my invention may be considerably modified without departure from the principle thereof.

What I claim is:—

A calculating appliance for the computation of interest on a given principal at a

given rate per cent. and for a given period, comprising a main base-plate having tabulated thereon in vertical sections and columns and in horizontal lines the amounts of interest at a standard rate per cent. on various principals and for various times, each vertical column containing the interest at such standard rate on a given principal for successively increased periods of time and each horizontal line the interest for the same period on successively increasing principals; a slide rule arranged parallel to said columns and graduated to represent the times for which interest is tabulated in said columns; a slide-plate arranged on said base-plate parallel to said lines and movable thereon parallel to said columns, said slide-plate being graduated similarly to said columns and bearing under each column the principal sum whereon the interest is tabulated in said column; sliding indicators longitudinally movable on said slide-plate, an auxiliary slide-plate mounted on said base-plate and bearing a series of principal sums and an auxiliary slide plate likewise mounted on said main base-plate and adapted to move under said auxiliary base-plate and having tabularly arranged in columns and lines a series of proportional parts of those sums; and sliding indicators movable lengthwise of the said auxiliary slide plate.

In testimony whereof I affix my signature in the presence of two witnesses.

G. W. EVANS-CROSS.

Witnesses:

S. F. PAUL,

I. H. PHELPS.