N° 15,435 A.D. 1907

Date of Application, 4th July, 1907—Accepted, 24th Oct., 1907

COMPLETE SPECIFICATION.

Improvements in Calculating Machines

I, WILLIAM GEORGE CORDINGLEY 85 Gracechurch Street, London, E.C. Merchant 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 improvements in calculating machines, of the type described and is intended to provide a machine of inexpensive construction, and of such a form as to be adapted for resting on the leaves of an open book, or placed on a desk for general office use in adding or subtracting money, weights, or figures and ensuring a correct result.

And the particular object of the present invention is to provide a stylus-set mechanism for adding or subtracting money, weights, or figures without the aid of springs, or pawls for the purpose of transferring or zeroizing, and adopting an improved device for bringing the dials to zero at will. To this object, I provide, in a suitable casing, dials marked to represent money, weights, or figures, the said dials being actuated by the particular mechanism as herein described. The dials in the following description, I make to represent English money and numerals.

A farthing's dial A Fig 1 of bronze, or other suitable material, divided into 4 equal parts, and numbered from 0 to 3 from right to left on the outer edge from the semicircular hole B in the casing; and numbered nearer the centre with smaller figures from 0 to 3 from left to right from the bar S or zero point in the casing.

Between these sets of numbers are an equal number of depressions, into which a stylus is inserted to rotate the dials.

A pence dial A 1 of bronze, or other suitable material, divided into 12 equal parts, similarly numbered to the farthing's dial, but from 0 to 11 and having the same number of depressions.

A shilling's dial A 2 of aluminium, or other suitable material, divided into 20 equal parts, similarly numbered to the pence dial, but from 0 to 19, and having the same number of depressions.

A series of dials A 3, A 4, A 5, A 6 and as Fig 4 in brass, or other suitable material, to represent pounds (or numerals when used separately from the shilling's pence and farthings dials), each divided into 10 equal parts, and similarly numbered to the shilling's dial, but from 0 to 9, and having the same number of depressions C Fig 4. These dials are to represent units, tens, hundreds, thousands, tens of thousands of pounds, and so on, or of numerals, according to the number of dials used. The large figures D on the dials are in an upright position when seen through the semicircular hole in the top of the casing.

The small figures E on the dials are in an upright position when arriving at the bar or zero point on the casing. The several dials may be operated by the farthing's dial, operated separately, or each dial operating one, several, or all of those to the left of it, as may be required.

The farthings dial has attached to its hub F, a ratchet wheel G, with 4 teeth, and an arc H, which latter, at every complete revolution of the dial, engages

[*Price* 8*d*.]

with the small cog wheel J geared to the cog wheel K of the pence dial, and so turns the latter dial to the right one division.

The penco dial has attached to its hub F 1, a ratchet wheel G 1, with 12 teeth, a cog wheel K geared to the small cog J at the right of it, and an arc H 1, which latter, at every complete revolution of the dial, engages with the small cog wheel J 1 geared to the cog wheel K 1 of the shilling's dial, and so turns the latter dial one division to the right.

The shillings dial has attached to its hub F 2, a ratchet wheel G 2, with 20 teeth, a cog wheel K 1 geared to the small cog J 1 on the right of it, and an arc H 2, which latter, at every complete revolution of the dial, engages with the small cog wheel geared to the cog wheel of the pound's dial, and so turns the latter dial one division to the right.

The pounds' or numeral dials each have attached to the hub a ratchet wheel with 10 teeth, a cog wheel geared to the small cog wheel on the right of it, and an arc, which latter, at every complete revolution of the dial engages with the small cog wheel geared to the cog wheel at the left of it, and so turns the latter dial one division to the right. In the case of the last pound's or numeral dial, however, this has no arc attached to its hub, there being no other dial to rotate.

The backward movement of each dial is prevented by the spring retarding pawl L Fig. 3, pivoted to the case, and engaged with the ratchet of each dial. The dials, the large cog wheels, and the arcs, are all attached to a barrel or hub to rotate round the fixed upright pillars M as shewn in Fig. 1.

The small cog wheels at the side of and engaged with the large ones, run free on an upright pin, as N on Fig 1.

The device for clearing the dials to zero consists of arcs, which engage to cog wheels on the hubs, Fig 5, by pulling a lever P to the right or left until the arcs Q, meet that part of the cog wheels R having one or more teeth missing, which indicates the zero point on the dials, and then permits the arcs to pass on to their full length and be returned to their original position without a further movement of the cogs or dials.

In the casing are holes, with every number to be used stamped or marked round the outside, as shewn in Fig 1, a portion of the hole or casing being left in from the centre to the right hand side to form a bar or zero point, as at S, the said bar being secured to the upright pillar on which the hub of the dials revolve.

The numbers on the casing are in the opposite direction to those of a clock face, the 0 or zero point being preferably on a level with the zero bar.

Beneath the holes in the casing are the dials A, A 1 and so on, and a semi-circular hole B, at the top of the casing, permits only one of the large figures on the dial to be seen at a time.

The mode of operation being:—

To make an addition, a stylus is inserted into the depression opposite the required number on the casing and the dial turned until the stylus arrives at the bar or zero point.

To make a subtraction, the larger amount is put on the machine at the zero bar by inserting a stylus into the depression against the required small figure on the dial, and the dial turned until the stylus reaches the zero bar. The smaller amount is then taken away by inserting the stylus into the depression of the figure required, as shewn on the casing, and the stylus brought to the zero bar, when the required amount is indicated there.

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) In an adding machine, the mechanism, for transferring the indications of one dial to that of a higher denomination, consisting of arcs and cog wheels, substantially as described, and as illustrated in the accompanying drawing.

(2) In an adding machine of the type referred to, placing a double set of

figures on the dials, as shewn, and using the stop bars as the indicators instead of the holes in the casing, whereby the machine is made to subtract as well as add.

(3) The device, as described, whereby the dials can be instantly brought to zero, consisting of toothed arcs pivoted to a sliding bar and engaging with interupted cog wheels fixed on the hub of the discs, substantially as shewn in the drawing Fig 5.

(4) In an adding machine of the type described, each dial to have a distinguishing colour. In the case of the money calculator described herein, the farthings and pence dials to be of bronze, the shillings dial of aluminium, and the pounds or numeral dials of brass, or other suitable materials.

(5) In an adding machine, arranging the indicator openings at the top or bottom of the holes in the lid or casing, but preferably at the top, so as to separate the figures shewn in the openings of each denomination from each other and from the figures on the casing, as described and as shewn on the drawings.

Dated this 4th day of July 1907.

W. G. CORDINGLEY.

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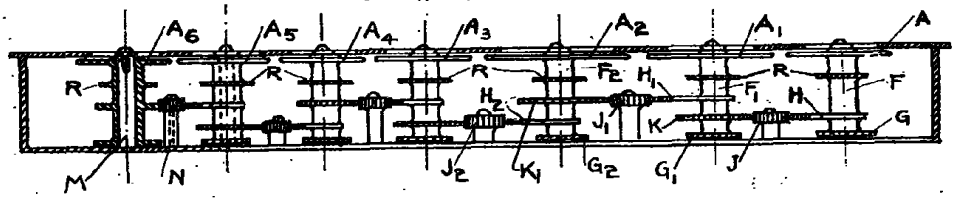
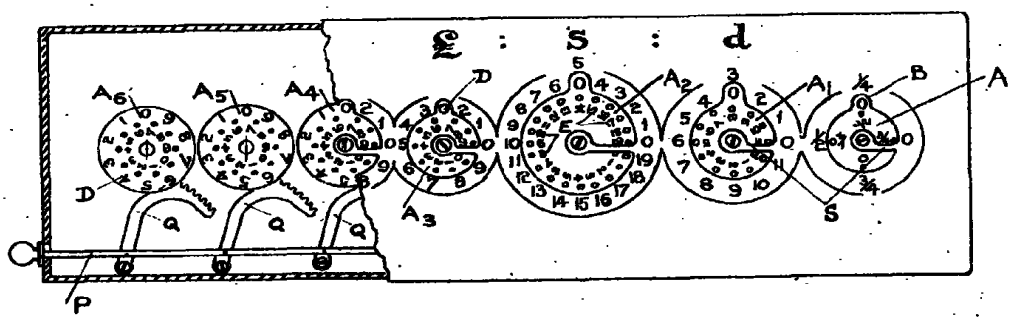
CORDINGLEY'S COMPLETE SPECIFICATION.

(1 SHEET)

FIG. 1.





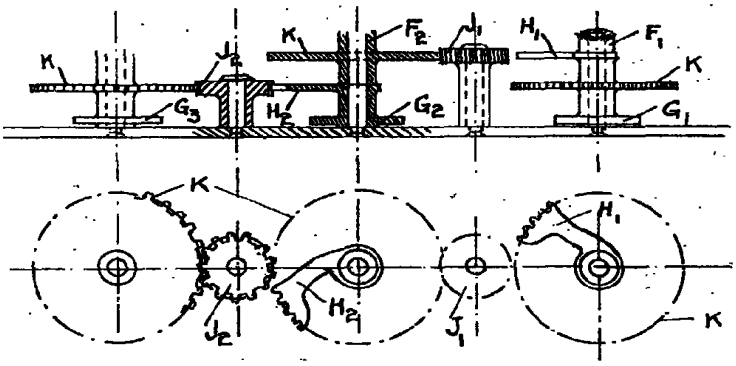


FIG. 2.

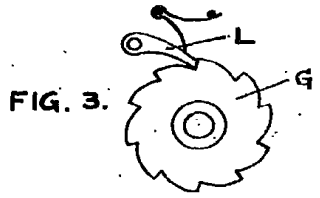


FIG. 3.

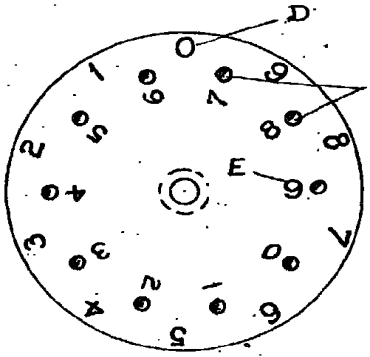


FIG. 4

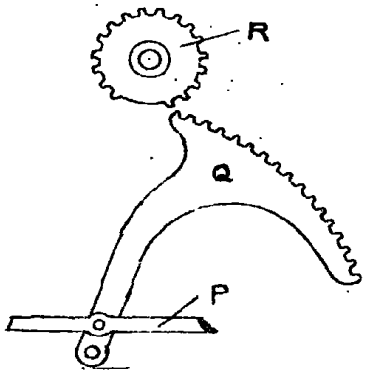


FIG. 5.

Malby&Sons, Photo-Litho.