

G. MEYER.

INTEREST CALCULATING APPARATUS.

No. 484,538.

Patented Oct. 18, 1892.

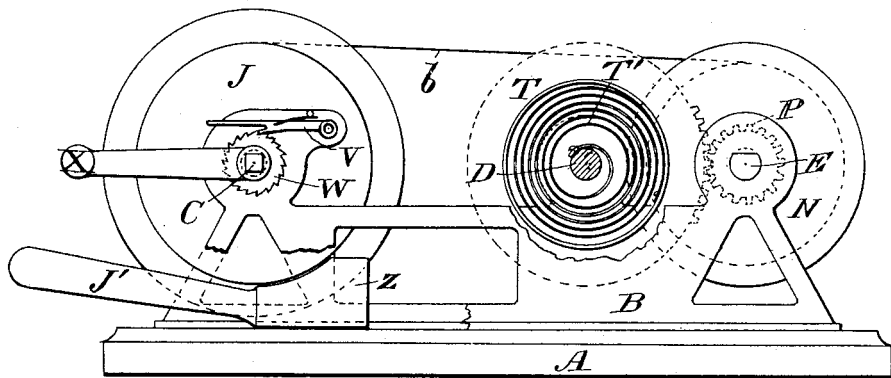


Fig. 1.

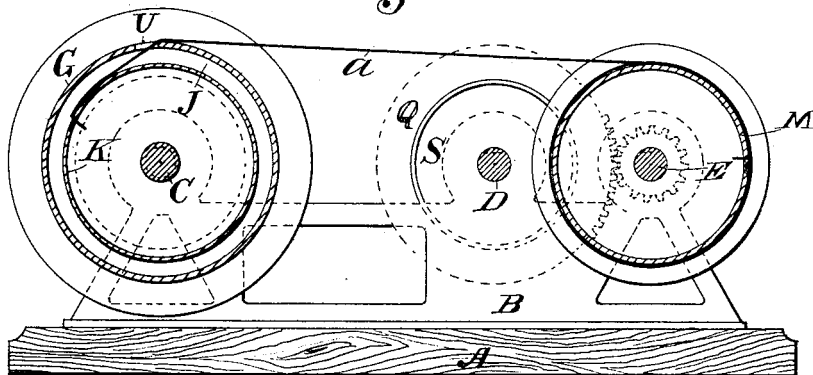


Fig. 3.

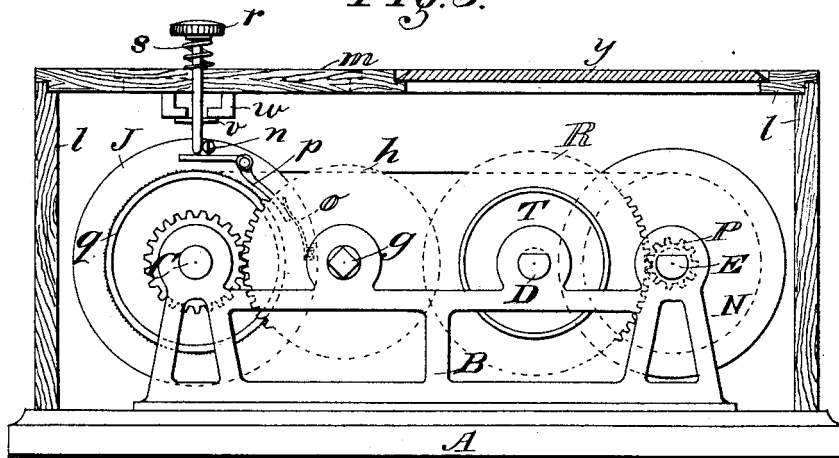


Fig. 4.

Witnesses.

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Inventor.

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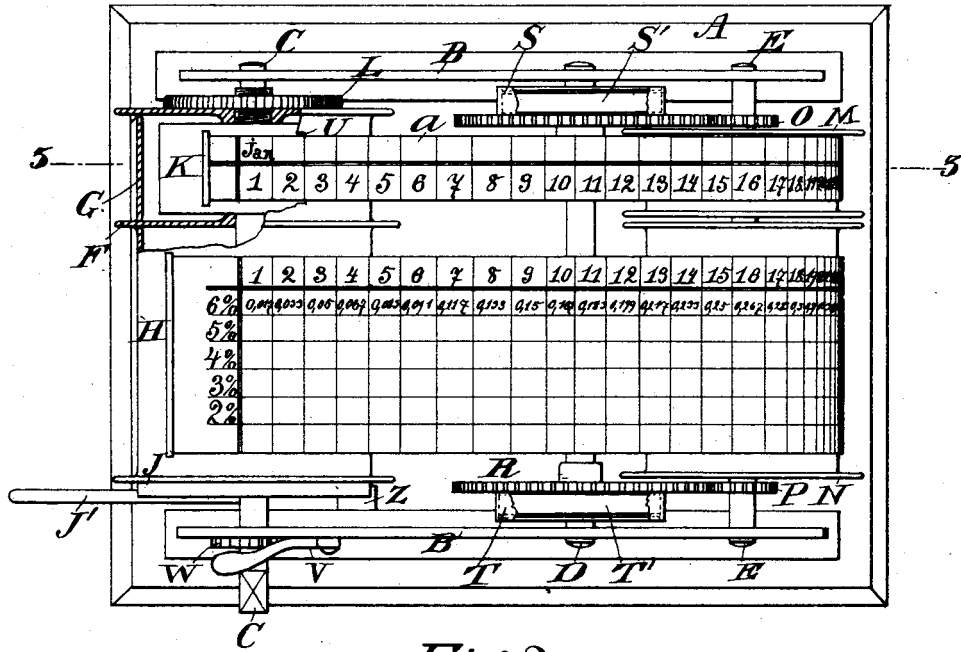


Fig. 2.

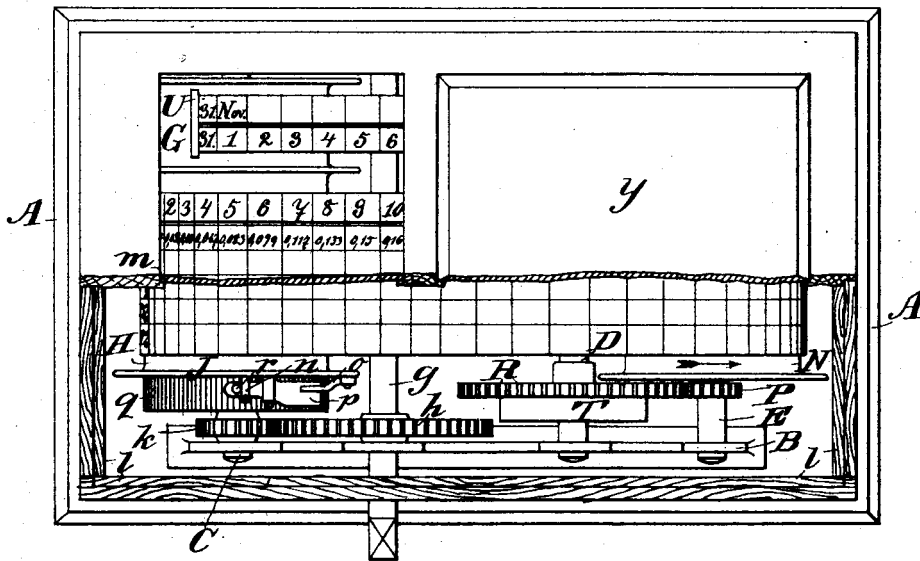


Fig. 5.

Witnesses.

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UNITED STATES PATENT OFFICE.

GUSTAV MEYER, OF PRAGUE, AUSTRIA-HUNGARY.

INTEREST-CALCULATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 484,538, dated October 18, 1892.

Application filed June 9, 1892. Serial No. 436,066. (No model.) Patented in Germany August 23, 1891, No. 61,642; in France October 2, 1891, No. 216,493; in Belgium February 20, 1892, No. 98,437, and in Austria-Hungary February 25, 1892, No. 49,527 and No. 81,765.

To all whom it may concern:

Be it known that I, GUSTAV MEYER, a subject of the Emperor of Germany, and a resident at Prague, Bohemia, Austria-Hungary, have
5 invented new and useful Improvements in Interest-Calculating Apparatus, (for which I have obtained patents in Germany, dated August 23, 1891, No. 61,642; in France, dated
10 October 2, 1891, No. 216,493; in Austria-Hungary, dated February 25, 1892, No. 49,527 and No. 81,765, and in Belgium, dated February 20, 1892, No. 98,437,) of which the following is a specification.

This invention has for its object an apparatus the employment of which considerably
15 facilitates the calculation of interest on stocks or capital and renders any recalculation of the interest unnecessary, as the apparatus must always work correctly, and the handling of the
20 same is so simple that an error cannot arise.

The mode of operation of the apparatus consists in marking on a strip at given distances
25 apart the figures "1," "2," "3," "4," &c., up to "360" or "365," over or under which are inserted the interest-figures of one mark, calculated out for the various necessary rates of interest and number of days from one to three
30 hundred and sixty or three hundred and sixty-five. A second strip, which is divided into the same number of columns as the first strip by dividing-lines like the first strip, runs parallel to such strip—that is, to the one which is provided with the figures "1" to "360" or "365,"
35 representing the number of the days and the interest product at the various rates of interest for each given number of days. In these columns the twelve months, with the days one to thirty or thirty-one, are continuously entered.

If it be now desired to calculate the interest on a given sum at a certain rate of interest from a certain date to another—for instance, from January 11 to December 20—the strip provided with the figures "1" to "360" or
45 "365," on which, also, the interest-figures of one mark for each number of days from one to three hundred and sixty or three hundred and sixty-five stand at the various rates of interest is adjusted with the column in which
50 the figure "1" stands directly in line with

the day of the respective month from which the interest is to be calculated. Assuming this to be the 11th of January, the figure "1" stands directly in line with the "11th January." Thereupon the two strips are wound
55 upon a drum, preferably simultaneously, up to the point at which the day is visible at which the interest is to be reckoned. The number which stands in line with this day—for instance, in this case, in line with the
60 "20th December"—gives the number of days for which interest is to be reckoned, and the interest-figures standing in the same column give direct the amount of interest on one
65 mark for this given number of days at the various current rates of interest. It is then only necessary to multiply the sum on which it is desired to calculate the interest by the interest-figure in question, in order to obtain
70 the interest on the same.

This improved apparatus for calculating the interest on stocks and capital may be the more easily understood by reference being had to the accompanying drawings, in which—

Figure 1 is a side view of the apparatus
75 with parts of the framing broken away to show the working parts. Fig. 2 is a plan view of the same; Fig. 3, a longitudinal section on the line 3 3 of Fig. 2. Figs. 4 and 5 are section and plan, respectively, of a somewhat
80 modified form of construction of the interest-calculating apparatus.

As shown on the drawings, this new apparatus consists of a stand A, on which are secured two brackets B, in the bearings of which
85 are seated a movable axle C and two fixed axles D and E. On the movable axle C there is a drum J, divided by means of a partition F into two parts G and H, one of which G is hollow and contains a roller K, Figs. 2 and 3,
90 which is firmly attached to the movable axle C. A nut L, fitted on the movable axle C, enables its drum J when necessary to be fixed on the axle C. On the fixed axle E two drums M and N are arranged, which may revolve
95 independently of each other. Each of these drums M and N is provided with a spur-wheel O and P, in which suitable gear-wheels Q and R on the other fixed axle D engage. These gear-wheels Q and R, which freely revolve on
100

axle D, are subject to the action of spiral springs S' T', which are inserted in spring-cases S T and the ends of which are on the one hand attached to the gear-wheels Q R and on the other hand to the fixed axle D. These springs S' and T' are both represented as exposed to view in Fig. 2 by breaking away parts of their cases S T, and the spring T' is exposed in Fig. 1 by omitting the head of its case T and breaking away the framing of the apparatus.

There is a ratchet-wheel W on the movable axle C, which can be stopped by means of a pawl V. A brake-block Z is also arranged at a suitable point for stopping the drum J on the movable axle from time to time, and the axle C is revolved by means of a crank X.

The brake-block Z is represented as a simple wedge arranged to slide on the base of the apparatus under the wheel J, as shown in Fig. 1, and furnished with a handle J' for manipulating it by hand.

The hollow drum G on the movable axle C is provided with a slot U, through which the months and days ribbon *a* passes, which has one end attached to the fixed roller K on the movable axle and the other end attached to the drum M on axle E. The second part H of the drum J on the movable axle and the other drum N on axle E carry the ribbon *b* with its corresponding ends stretched out, on which there are marked the figures "1" to "360" or "365" and beneath them the interest-figures for each of the respective numbers of days at the desired rate of interest.

The mode of working this new apparatus will become immediately apparent by describing an example. If, for instance, interest at six per cent. is to be calculated on a given sum from the 11th of January to the 20th of December, with the machine in the position shown in Fig. 2 of the drawings, the nut L on the movable axle is first released and the drum J thereupon is fixed by a suitable adjustment of the brake-block Z. Hereupon by means of the crank X the movable axle C is revolved until the ribbon *a* is wound through the slot U in the drum G (see Figs. 2 and 3) so far on the fixed roller K that the "11th January" comes to a stand exactly in line with the number "1" of the other ribbon *b*. The nut L is then again screwed tight against the drum J, so that this latter is again firmly attached to the axle C. The said strips *a* and *b* are situated side by side and have corresponding dividing-lines. On the strip *a* are marked the months and the days of the months, and on the strip *b* are marked the figures "1," "2," "3," "4," &c., up to "360" or "365," and above or below these figures in their proper subdivisions are inserted the interest-figures of one mark calculated at the various necessary rates of interest for each of the days from one to three hundred and sixty or three hundred and sixty-five. The drum J is then released by a suitable adjustment of the brake-block Z, and by revolving its axle C by means of the crank X

the two ribbons *a* and *b* are wound perfectly evenly on the two parts G and H, of equal diameters of the drum J, until the "20th December" appears at a suitable point, the ribbons *a* and *b* of course becoming unwound from the rollers M and N on axle E and distending the spiral springs contained in the boxes S and T. By reading the number standing in line with the "20th December" on the ribbon *b* first the number of days is obtained for which the interest is to be reckoned, and from the column in question under this number the amount of interest at the desired rate of interest for this given number of days on one mark may be read off. If then the sum to be calculated be multiplied by the interest-figures, the interest will be directly obtained. By releasing the ratchet-wheel W by raising the pawl V away from engagement therewith and unscrewing the nut L the ribbons *a* and *b* are again wound on the drums M and N by the action of the spiral springs contained in the boxes S and T and brought into a suitable position for adjusting the ribbons *a* and *b* to allow of other interest being calculated. In order not to have to revolve the crank X so frequently, the same may also engage with the axle *g* of a spur-wheel *h*, which engages with a translation device in connection with a small spur-wheel K, arranged on the movable axle C of the apparatus. (See Figs. 4 and 5.)

It is preferable to cover the entire interest-calculating apparatus with a cover *l*, (see Figs. 4 and 5,) which is provided at suitable points with a slot covered with glass *m*, of such a breadth that only one column or less on the ribbons *a* and *b* may be seen through the same, so that the adjustment of the ribbons *a* and *b* to each other as well as the reading off of the interest-figures may be done with certainty.

In a modified form of construction (shown in Figs. 4 and 5) the brake-block Z, above referred to, is replaced by a pin *n*, which is screwed into the edge of the drum J on the movable axle. The check-nut L is also omitted in this construction and the same is replaced by a double-armed brake-lever *p*, actuated by means of a spring *o*. One arm of this brake-lever *p* is provided with fine teeth and bears on a wheel *q*, which is also provided with fine teeth and is attached to the drum J on the movable axle, and in this manner connects the drum J with the drum X and the axle C. If, on the contrary, pressure be applied to the knob *r*, projecting through the cover, which is usually held raised by means of a spring S, the brake-lever *p* is lifted off its toothed wheel *q*. The drum J of the movable axle is then prevented from revolving by the pin *n* striking against the pressure-knob *r*, so that only the inner drum K can revolve. In order to obviate the necessity of continually holding the knob *r* down by hand during the adjustment, the same is provided with a pin *v*. When the knob *r* is pressed down and turned about

ninety degrees, this pin *v* rests against brackets *w*, and thus prevents the knob *r* from springing up.

When the apparatus has been adjusted in the manner above described, the knob *r* is again turned back about ninety degrees, it springs up, the brake-lever *p* bears on the brake-wheel *q*, and the two drums *J* and *K* are again coupled.

In the lid of the box *l* a writing-tablet *y* may be advantageously inserted, on which the necessary multiplications may be carried out.

The above-described apparatus may also be employed for the calculation of the interest for several years. In such case the dates of two, three, or more years must be marked on the respective strips, as well as the figures be carried out on the other ribbons up to "720" (or "730") or "1080" (or "1095,") and also naturally the interest for the corresponding percentages must be reckoned out and marked thereon.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, what I claim as my invention, and desire to secure by Letters Patent, is—

In combination, a shaft *E* and supports therefor, rollers *M* and *N*, mounted on said shaft independently of each other, a shaft *C* and supports therefor, a roller *J*, revolubly mounted on the said shaft *C* and having a slot *U* therein, a roller *K* within the roller *J* and fixedly secured to the shaft *C*, a ribbon *b*, having subdivisions denoting the number of days in a year and interest on a given amount for said days, said ribbon being secured at one end to the roller *N* and at its other end to the roller *J*, a ribbon *a*, having subdivisions denoting the days of the months of a year, the said subdivisions corresponding with the subdivisions on the ribbon *b*, the said ribbon *a* being secured at one end to the roller *M* and passing through the slot *U* in the roller *J* and secured at its other end to the roller *K*, and means for locking the roller *J* at will to the shaft *C*, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GUSTAV MEYER.

Witnesses:

ARTHUR V. RIMAY,
EDWARD SCHWARS.