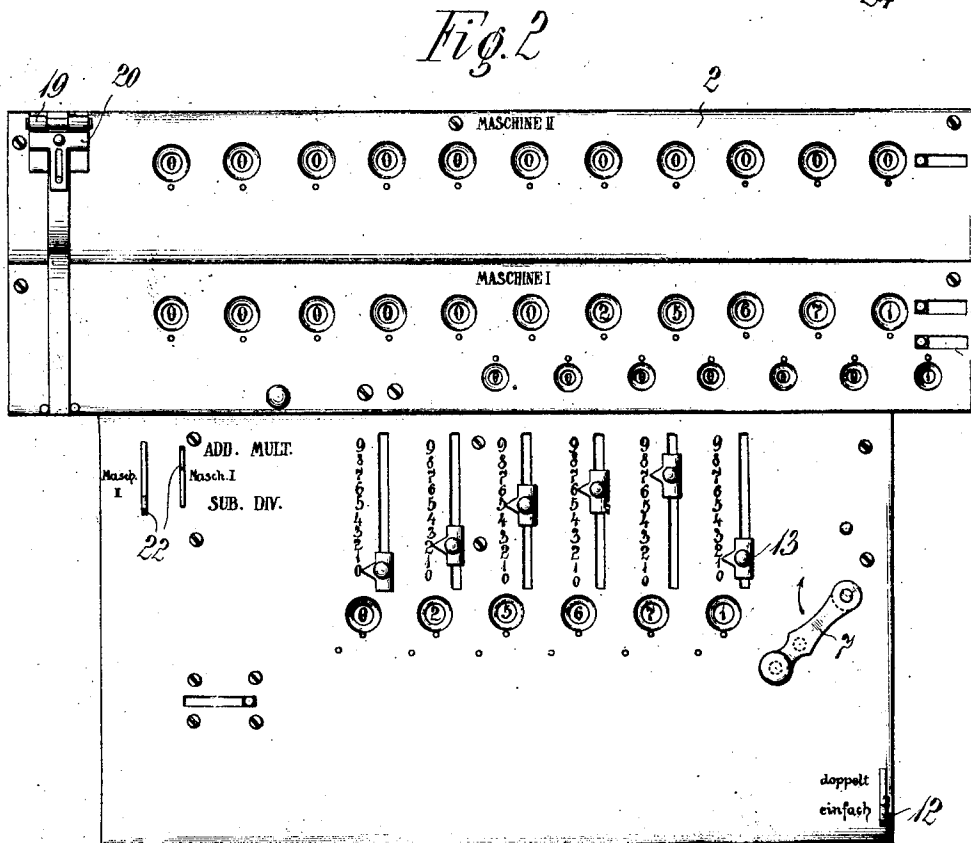
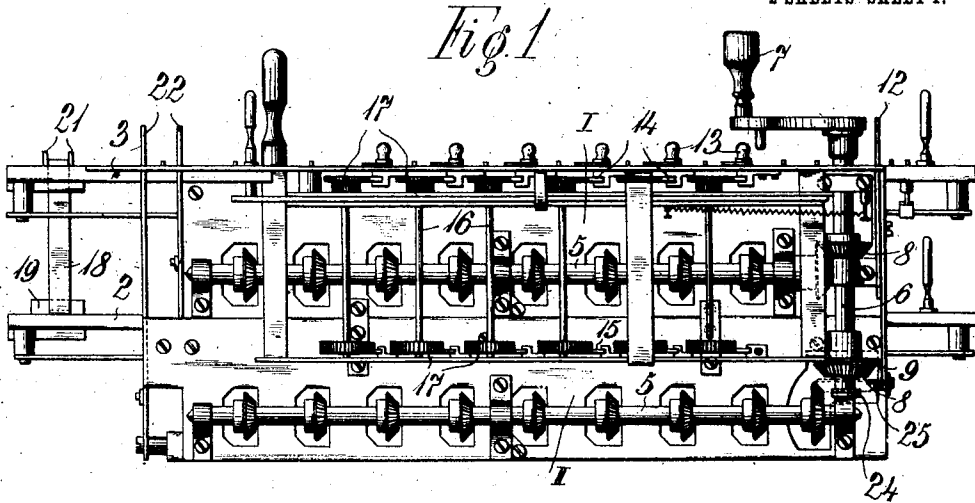


S. J. HERZSTARK.
 CALCULATING MACHINE.
 APPLICATION FILED DEC. 22, 1908.

1,058,303.

Patented Apr. 8, 1913.

2 SHEETS-SHEET 1.



Witnesses:
 Lambert Paulg.
 E. Brühl.

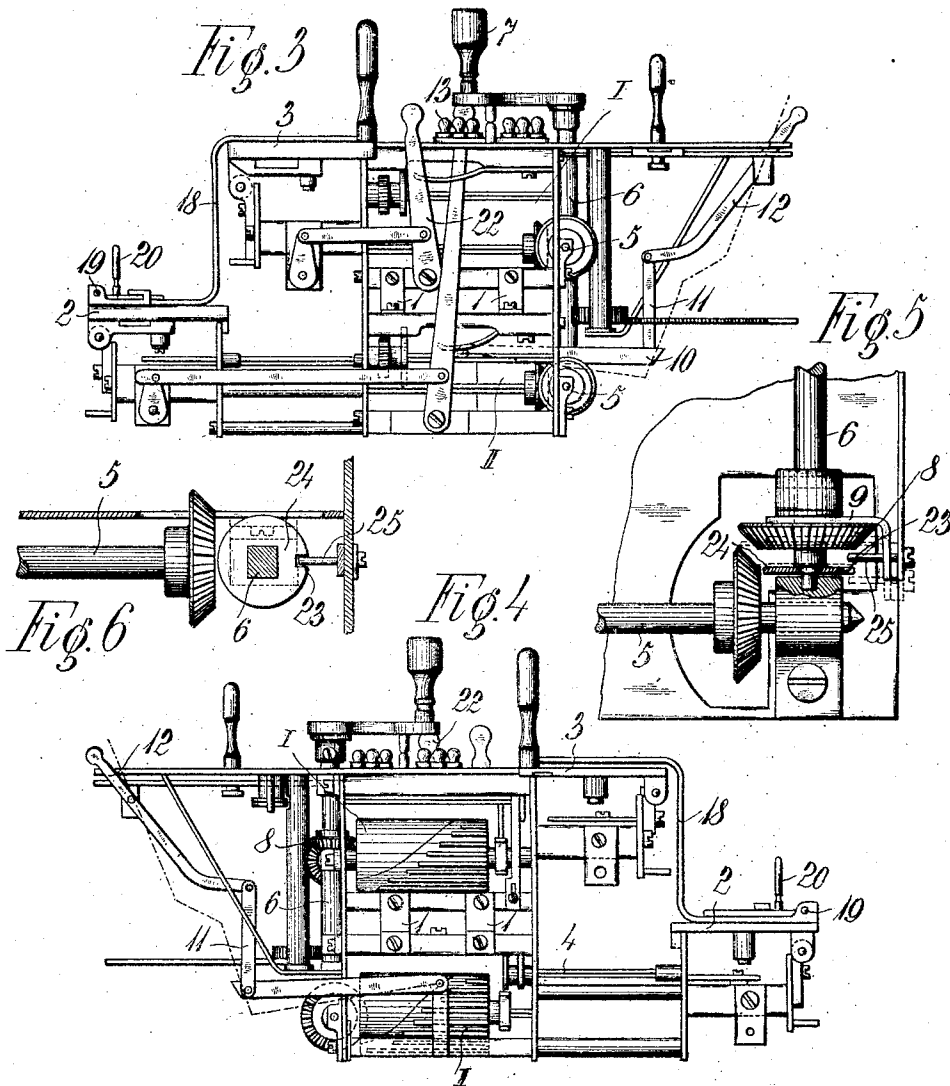
Inventor:
 Samuel Jakob Herzstark
 per *Anton W. W. W.*
 Attorney.

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Witnesses:
 Augustus Paul
 C. Brül

Inventor:
 Samuel Jakob Herzstark
 per *Arthur W. H. H. H.*
 Attorney.

UNITED STATES PATENT OFFICE.

SAMUEL JAKOB HERZSTARK, OF VIENNA, AUSTRIA-HUNGARY.

CALCULATING-MACHINE.

1,058,303.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed December 22, 1908. Serial No. 468,733.

To all whom it may concern:

Be it known that I, SAMUEL JAKOB HERZSTARK, a subject of the Austro-Hungarian Emperor, and resident of Vienna, V, Austria-Hungary, have invented an Improved Calculating-Machine, of which the following is a specification.

The present invention relates to an improved type of calculating machine.

After calculating machines had been known and in use for some time, a defect began to be discovered when doing certain calculations. This drawback lay in the fact that only one of the operations of addition, subtraction, multiplication and division could be performed at a time, while a machine was greatly desired by means of which two operations could be performed simultaneously, the two results being shown separately. This drawback was partially obviated by the construction of calculating machines with the so called double counting gear. These machines are however practically nothing more than two separate machines coupled together and having a common arrangement for setting the figures. These machines are made more complicated by the couplings, and are more liable to break down while the calculating gear of both machines must be actuated when the operator only desires to actuate one of the mechanisms showing the result. The latter drawback can only be obviated by uncoupling, an operation which wastes a lot of time. This disadvantage is specially obvious, in the machines of the "Thomas" type constructed with double calculating gear, as in this case the mechanism for indicating the result must not only be uncoupled, but must also be lifted out of the mechanism driving the calculating gear which latter, as already stated cannot be put out of action. This enforced removal of the calculating mechanism lays it open to outside influences, such as dust, damp, etc.

The object of this invention is to combine two calculating machines of the known "Thomas" type, in such a way that they can be made to operate independently of one another at will. In this invention two calculating machines of the "Thomas" type, whose calculating and result showing mechanism act exactly as in the usual "Thomas" machine, are combined. The mechanisms for setting the figures on each machine are com-

bined, so as to work together, and the mechanism for actuating this gear is so arranged as to work together or separately. The machine is therefore not merely a machine with two calculating devices, but a combination of two complete "Thomas" machines, which can be driven together or separately. The machines are combined by arranging them one above the other, the calculating gear of the lower machine, protruding under the upper one, so as to be visible.

In the accompanying drawings:—Figure 1 shows a front view of the machine. Fig. 2 is a plan of Fig. 1. Fig. 3 is a side view of Fig. 1, looking from the left. Fig. 4 is a view of Fig. 1 as seen from the right. Fig. 5 represents a detail. Fig. 6 is a cross section of Fig. 5.

The two "Thomas" machines I and II are placed one above the other in such a way that they are arranged on common vertical frame-plates, as seen by Fig. 3. The spindles 4 of the calculating mechanism, of the lower machine are prolonged so that the figure board 2 of the lower machine projects beyond figure board 3, of the upper one. (Figs. 3 and 4.) The driving spindles 5 of both machines are connected together by a common crankshaft 6, upon which is fixed the crank 7, so that when this crank is rotated, both machines are actuated. In order to be able to uncouple one machine and to continue calculating with the other one alone, one of the bevel wheels 8 is made axially movable on the shaft 6. A forked arm 9 fastened to a lever 10 engages in the hub of the wheel 8. The lever 10 is fastened to a hand-lever 12 by means of a connecting rod 11. When the hand-lever 12 is in the position shown dotted in Figs. 3 and 4, the shaft 5 of the lower machine 2 is positively coupled to the crank shaft 6, through the corresponding bevel wheel 8. If on the other hand the lever 12 is moved into the position shown full in Figs. 3 and 4, one of the bevel wheels 8 is moved axially and thereby the lower machine II is uncoupled and the upper machine I works alone. It can of course easily be arranged for the upper machine to be uncoupled. The devices for setting the figures on both machines are suitably connected so that both can be actuated simultaneously by the common slide 13. For this purpose the toothed racks 14 of the upper machine I are connected to the similar racks 15 of the lower

machine II by means of the shafts 16, on which are fitted toothed wheels 17 which engage with the toothed racks.

The two boards 2 and 3 both of which are slidably fixed to their respective machines in the known manner are connected by a bent bar 18, so that they can be raised and moved simultaneously. The bar 18 is hinged to the lower figure board 2 at the point 19 and its upper end is laid between two guidepins 21 on the upper board 3. A T shaped bolt 20 is fitted on the bar 18 with its cross piece under the bent up hook like hinges, thereby holding the bar 18 firmly onto the figure board so that the bar cannot be raised till the bolt 20 is pushed back, whereupon the two figure boards can be moved independently of each other.

The two calculating mechanisms can be reversed independently of each other in a well-known manner by means of two respective levers 22 on the setting plate, which are pivotally connected each by a bar 27 to a fork 28, which latter engages the reversing bevel wheels of the respective calculating mechanism. In order to prevent the coupling mechanism of one machine being operated in case the lever 7 is allowed to remain out of its normal position, a disk 24 provided with a slot 23 is fitted on the crank shaft 6 (Figs. 1 and 5). A locking pin 25 is fitted on the lever 10. These parts are so arranged that the locking pin, which is situated in the respective end positions of the coupling mechanism above and below, the disk 24, engages in the slot 23 in the latter during the engagement or disengagement of the coupling, if the hand lever is in its normal position. If, however, this lever is allowed to remain in any other position, the pin 25 strikes against the disk and prevents the motion of the coupling. In this manner the machines can only be coupled or uncoupled from one another, if the mechanism for setting the figures on both machines are in similar positions.

Having fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. An improved calculating machine, comprising in combination two complete calculating machines, arranged one above the other, each of said machines comprising a calculating mechanism, consisting of slides for setting the figures, result showing mechanism, toothed racks 14 on the upper and lower machines and steprolls, operating the result showing mechanism, means for connecting the figure-boards of both machines, the steprolls and the result showing mechanism being combined by bevel wheels with a driving spindle 5 in such a manner, as to be rotated simultaneously, the two driving spindles 5 of the two machines being connected by bevel-wheels 8 to a common driv-

ing shaft 6 having a crank 7 for operating simultaneously the two calculating mechanisms, one of the wheels 8 being slidable on the shaft 6 by means of a hand-lever 12, engaging said wheel 8, so that the lever 12 can move said slidable wheel axially, thereby coupling or uncoupling one of the machines from the other, substantially as described and shown.

2. An improved calculating machine, comprising in combination two complete calculating machines, arranged one above the other and each of the same comprising a calculating mechanism, consisting of slides for setting the figures, result showing mechanism and steprolls, operating the result showing mechanism, both the steprolls and this result showing mechanism being combined by bevel wheels with a driving spindle 5, the driving spindles of both machines being geared to a common driving shaft 6, having a crank 7, means for connecting the figure-boards of both machines, toothed racks 14 on the upper and lower machines, said toothed racks being driven together by means of toothed wheels 17 engaging with both racks and the toothed racks of the upper machine being connected each to its respective slide 13, substantially as described and shown.

3. An improved calculating machine, comprising in combination two complete calculating machines, each of said machines comprising a calculating mechanism, consisting of slides for setting the figures, result showing mechanism, toothed racks on the two machines and steprolls, operating the result showing mechanism, two driving spindles 5, actuating the steprolls and the result showing mechanism, a common driving shaft 6 and crank 7 for operating the two driving spindles 5, the two machines being adapted to be operated singly or together as desired by means for actuating the figure setting devices of both machines simultaneously and by means for connecting the figure-boards of both machines, so that they are raised simultaneously, substantially as described and shown.

4. An improved calculating machine comprising in combination two complete calculating machines, said machines being arranged one above the other and each of the same comprising a calculating mechanism, consisting of slides for setting the figures, result showing mechanism and steprolls, operating the result showing mechanism, toothed racks on the upper and lower machines, a driving spindle 5 on each machine, a common driving shaft 6 for the two spindles 5, the two machines being adapted to be operated singly or together as desired by means for connecting the figure boards of both machines, said means consisting of a bar 18, hinged to the figure board 2 of one

machine, guides 21 on the other figure board between which said bar engages, substantially as described and shown.

5. An improved calculating machine, comprising in combination two complete calculating machines, said machines being arranged one above the other and each of the same comprising a calculating mechanism, consisting of slides for setting the figures, result showing mechanism and steprolls, operating the result showing mechanism, toothed racks on the upper and lower machines, a driving spindle 5 on each machine, a common driving shaft 6 for the two spindles 5, the two machines being adapted to be operated singly or together as desired, means for actuating the figure setting devices of both machines simultaneously, a bar 18 connecting the figure boards of the two machines, said bar being hinged to the figure board 2 of one machine, guides 21 on the other figure board between which said bar engages, a bolt 20, holding said bar 18 down on said figure board 2, said bolt being arranged so that after moving the bolt, said bar can be swung back, thus uncoupling the two figure boards, substantially as described and shown.

6. An improved calculating machine, com-

prising in combination two complete calculating machines arranged one above the other and each of the same comprising a calculating mechanism, consisting of slides for setting the figures, result showing mechanism and steprolls, operating the result showing mechanism, toothed racks on the upper and lower machines, a driving spindle 5 on each machine, a common driving shaft 6 for the two spindles 5, the two machines being adapted to be operated singly or together as desired, means for actuating the figure setting devices of both machines simultaneously, means for detachably connecting the figure boards of both machines, a disk on the driving shaft, said disk having a slot 23, a pin 25 connected to said lever 12 by suitable connected rods, said pin being adapted to strike said disk and prevent the machine from being coupled or uncoupled unless the mechanisms for setting the figures on both machines are in similar positions, substantially as described and shown.

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

SAMUEL JAKOB HERZSTARK.

Witnesses:

ALFRED BEROM,

ROBERT W. HEINGARTNER.