V. VOGEL.

CALCULATING MACHINE.

APPLICATION FILED DEC. 11, 1909.

**1,012,483.**

Patented Dec. 19, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

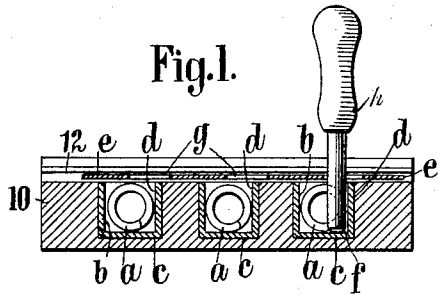



Fig. 4.

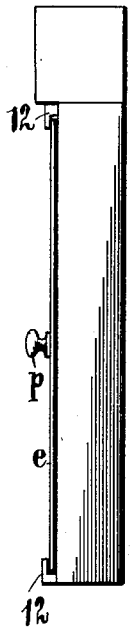



Fig. 2.

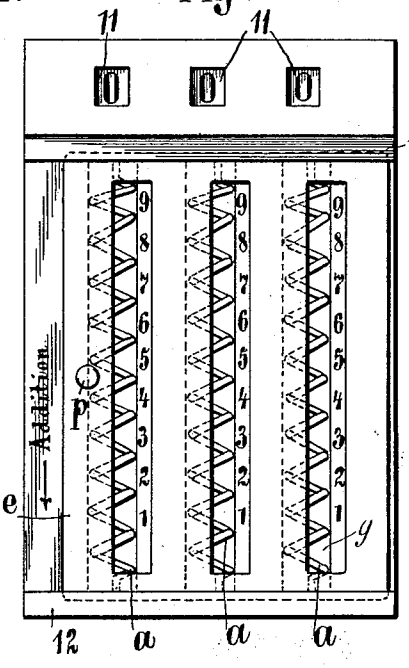
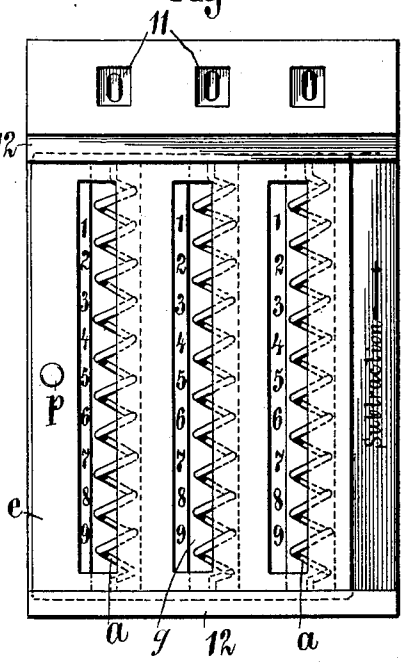



Fig. 3.




WITNESSES

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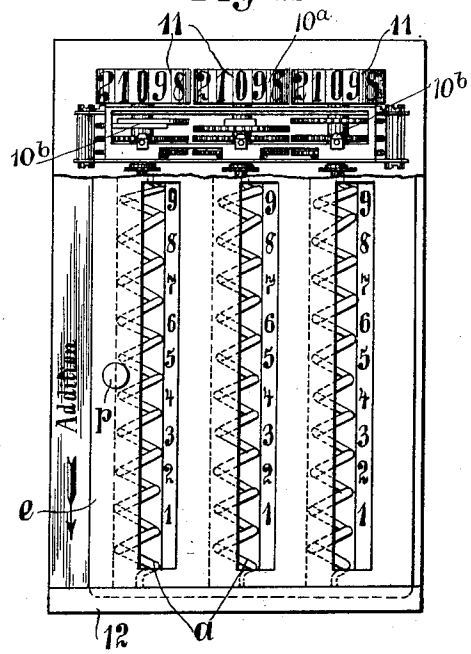
2 SHEETS—SHEET 2.

Fig. 5

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# UNITED STATES PATENT OFFICE.

VICTOR VOGEL, OF RIGA, RUSSIA.

## CALCULATING-MACHINE.

1,012,483. Specification of Letters Patent. Patented Dec. 19, 1911.

Application filed December 11, 1909. Serial No. 532,573.

*To all whom it may concern:*

Be it known that I, VICTOR VOGEL, a subject of the Czar of Russia, and a resident of Riga, Russia, have invented a new and Improved Calculating-Machine, of which the following is a full, clear, and exact description.

This invention relates to calculating machines, and more particularly to calculating machines having an indicating device, and a spiral member operatively connected with the same and constituting the actuating agency for the indicating device, the spiral member being adapted to be actuated by a member movable in the direction of the length of the spiral member and in engagement therewith, means being provided for guiding the member which is used to operate the spiral member.

The object of the invention is to provide improvements in calculating machines having spiral actuating members and registering devices, by means of which a pointer or other member used to operate the spiral is guided so that its action is positive, and the danger of having the member slip or become displaced is obviated, in which the guiding means are operable when the machine is used for addition as well as for subtraction, which are simple and inexpensive, and which can be applied to different forms of calculating machines of the above-described type.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a transverse section of a calculating machine having an embodiment of my invention applied thereto; Fig. 2 is a plan view of the machine; Fig. 3 is a similar view showing one of the parts in a different position; Fig. 4 is a side elevation of the machine; and Fig. 5 is a plan view of the machine with part of the casing removed to show the connection between the indicating devices and the spirals.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that the same is intended for use with different forms of calculating machines in which the registering devices are actuated or controlled by members having spiral guide ribs, grooves or the like, and which are mounted to rotate, so that when a pointer or other member is brought into engagement therewith and forced in the direction of the length of a spiral member, that is, axially with respect thereto, the spiral member is caused to rotate and thereby serve to actuate its registering device. An example of this type of calculating machine is shown for instance, in the German Patent No. 112,230. I have found that the operating member, that is, the pointer or like device, when brought into engagement with a coil of the spiral at the side of the same, and moved in the direction of the length of the spiral, is apt to slip from engagement, as it is not constrained to move in one direction. When the machine is used for calculating rapidly, this fact is liable to cause considerable inconvenience and loss of time and labor. I therefore provide means for guiding the pointer or other actuating member, as will appear more clearly hereinafter. I have also found that in calculating machines of the above-mentioned type now in use, it is necessary to employ the same side of the spiral member for addition as well as for subtraction, and difficulty is found in properly reading the numbers, one row of which serves for addition and the other row for subtraction, so that considerable possibility of error obtains. To avoid this difficulty I have so improved the machine that both sides of the spirals are available for engagement by the pointer or actuating member, as will appear more clearly hereinafter.

Referring more particularly to the drawings, I provide a frame or casing 10 in which are mounted the indicating devices $10^a$. These present figures, which are visible through sight openings 11 of the casing, are of any suitable kind adapted for the purpose. They are actuated by spiral members *a* mounted to rotate, and which, as shown for example, herewith, may consist of helices, formed from wire or the like.

The members *a* are connected with the indicating devices by means of suitable mechanism $10^b$. Each spiral member is located in a guide channel having walls *b*, *c*, and *d*, arranged at both sides of the spiral and underneath the same. These guide channels have the walls arranged closely adjacent to the

spiral members, but do not in any way interfere with the rotation thereof.

A cover *e* is movably mounted upon the casing, for example in guides 12. The cover *e* has a button *p* by means of which it can be slidably manipulated. Its movement may be limited by suitable stops. The cover has slots *g* so arranged that in predetermined positions of the cover each slot discloses one side or the other of one of the spiral members, as is shown in Figs. 2 and 3. The face of the casing at each side of each of the spiral members has indicated thereon series of numerals which consist of the numbers from 1 to 9 inclusive. It also has indicated thereon for example, the words "Addition" and "Subtraction" one of which is concealed in each position of the cover.

A suitable, spiral-actuating member *f* is employed in connection with the calculating machine, and is inserted through one of the slots *g* so that it can be brought into operative engagement with the corresponding spiral member. It is provided with a handle *h* by means of which it can be manipulated. It will be understood that owing to the provision of the guide channels as well as of the slotted cover, the actuating member *f* is so guided that it cannot slip, the only possible movement of which it is capable other than one longitudinally of the axis of the spiral member, being a movement outward, through the slot, and as the pressure of the hand tends to force it into the slot, the impossibility of accidental displacement of the member is quite obvious.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent:

1. In a calculating machine having a casing, an indicating device, and an actuating spiral for said device, a movable cover upon said casing and having a guide slot permitting an actuating member to be brought into engagement with said spiral at either side thereof in accordance with the position of said cover.

2. The combination, with a casing having a channel, a spiral rotatably mounted in said channel and adapted to be actuated by a movable member, and an indicating device operatively associated with said spiral, of a cover movably mounted upon said casing and adapted to extend over either side of said spiral, in accordance with the position of said cover, whereby a spiral-actuating member can be brought into engagement with either side of said spiral, said cover serving as guiding means for said spiral-actuating member.

3. The combination, with a casing having a channel, a spiral rotatably mounted in said channel and adapted to be actuated by a movable member, and an indicating device operatively associated with said spiral, of a cover movably mounted upon said casing and adapted to extend over either side of said spiral, in accordance with the position of said cover, whereby a spiral-actuating member can be brought into engagement with either side of said spiral, said cover serving as guiding means for said spiral-actuating member, said casing having series of figures indicated thereon at each side of said spiral and serving to coöperate with the latter when the calculating machine is used respectively, for addition and subtraction, said cover in each of its positions concealing one of said series of figures.

4. In a calculating machine having a plurality of rotatable spirals, registering devices operatively associated with said spirals, a movable cover having a plurality of slots each adapted to disclose one side of one of said spirals in a predetermined position of said cover, and to disclose the other side of said spiral in another predetermined position of said cover, said slots serving to guide a spiral-actuating member, said cover having means whereby it can be manipulated.

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

VICTOR VOGEL.

Witnesses:
N. HARTMANN,
EDMUND NEWGEBAUER.