

W. AUGUSTIN.
 SETTING GEAR FOR CALCULATING MACHINES.
 APPLICATION FILED APR. 2, 1913.

1,104,763.

Patented July 28, 1914.

3 SHEETS—SHEET 1.

Fig. 1.

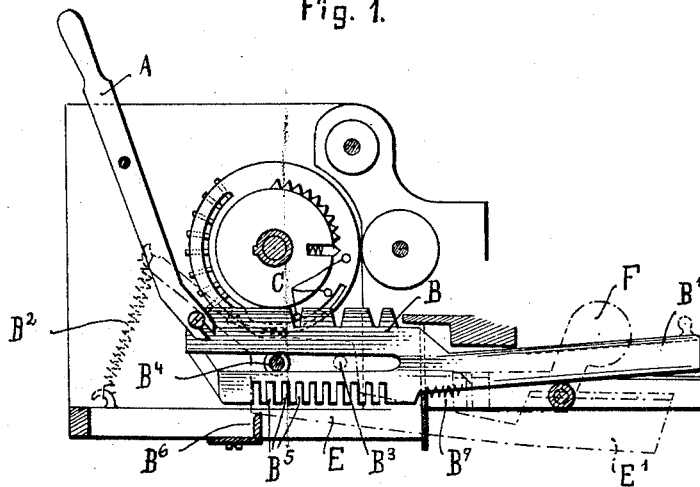
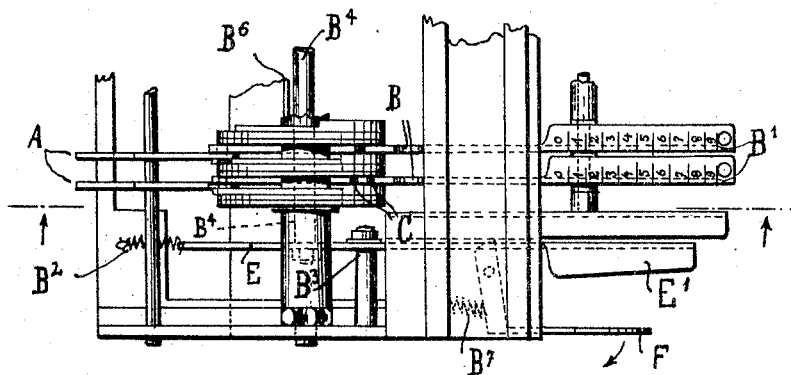


Fig. 2.



Witnesses:
 Henry Hopper
 Thomas Hought

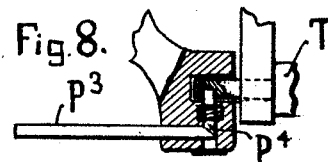
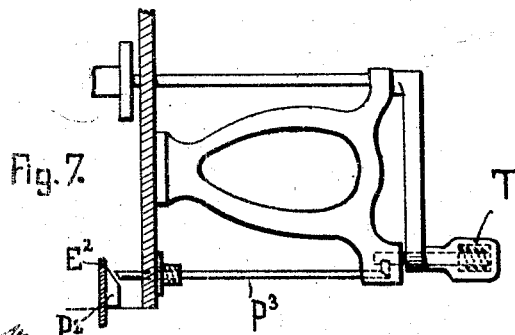
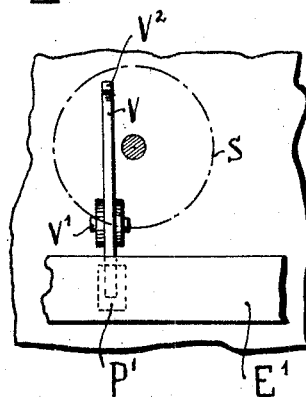
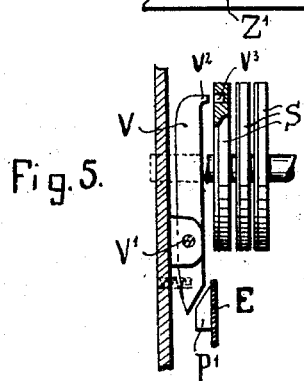
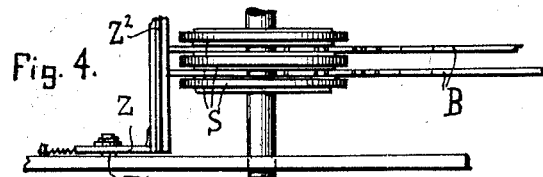
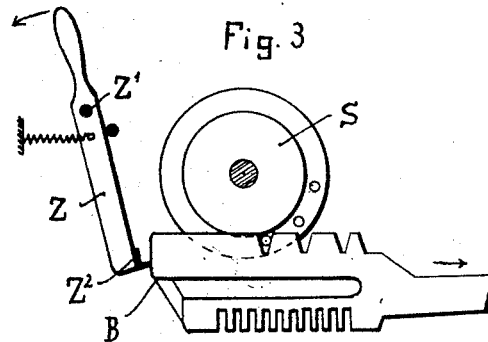
Inventor:
 Wilhelm Augustin

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3 SHEETS—SHEET 2.



Witnesses:
 Henry Kasper
 William Kauff

Inventor:
 Wilhelm Augustin

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3 SHEETS—SHEET 3.

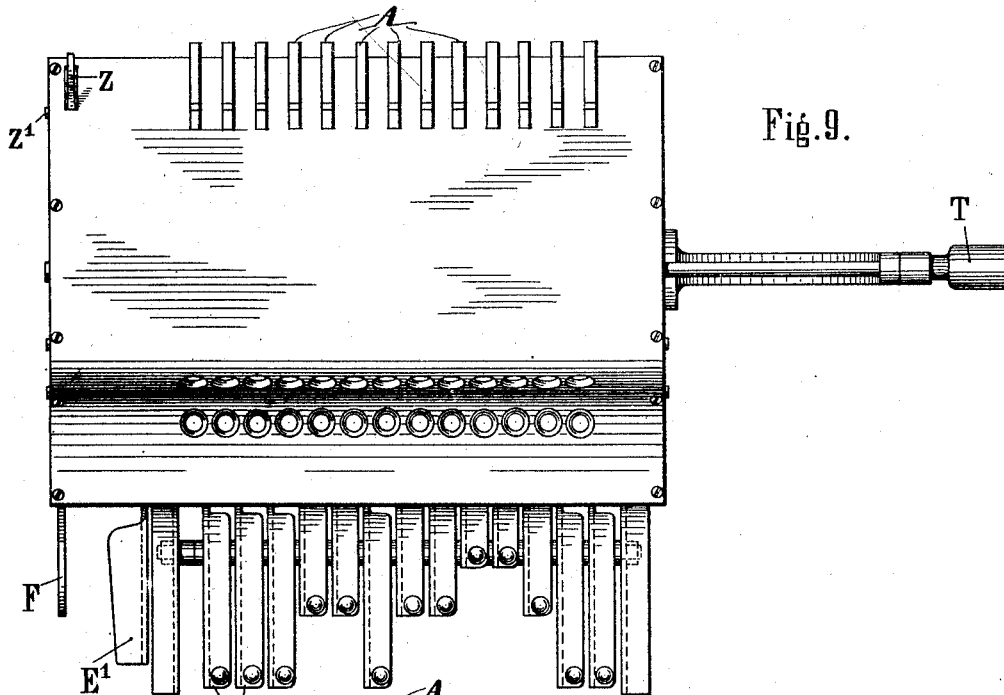


Fig. 9.

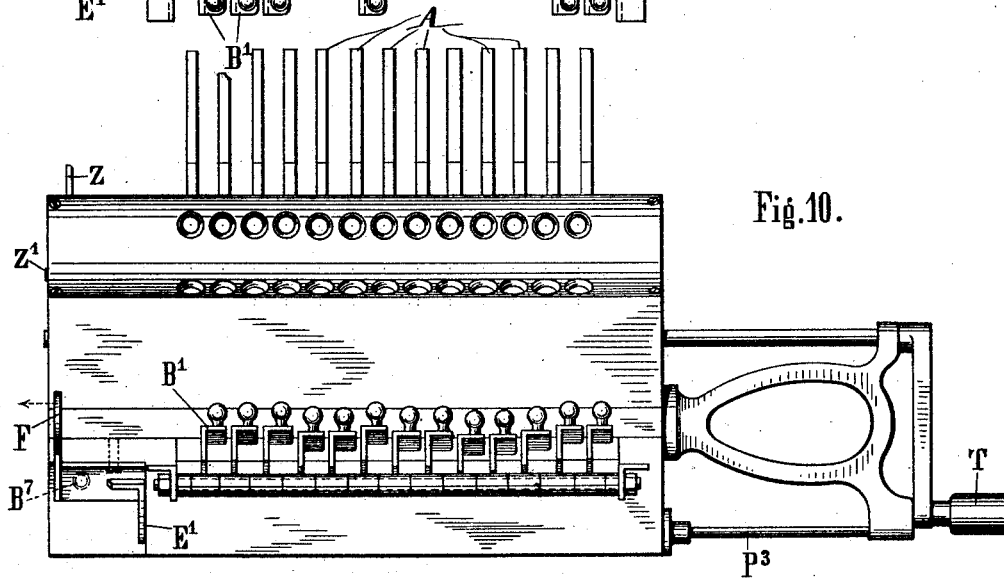


Fig. 10.

Witnesses:

Frieda Elman
Julius H. Fritz

Inventor:

Wilhelm Augustin
 by *Prisen & Zumpfe*
 Attorneys

UNITED STATES PATENT OFFICE.

WILHELM AUGUSTIN, OF CHARLOTTENBURG, GERMANY.

SETTING-GEAR FOR CALCULATING-MACHINES.

1,104,763.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILHELM AUGUSTIN, a citizen of the German Empire, residing at Charlottenburg, in the Empire of Germany, have invented new and useful Improvements in and Connected with the Setting-Gear of Calculating-Machines, of which the following is a specification.

Calculating machines, of the class herein-
after described as at present generally constructed, have the disadvantage that the cover of the machine must be provided with long slits for the setting levers and, by means of these slits, grit, dust, dirt, water or the like can reach the internal mechanism of the machine, thereby rendering the proper movement of the various parts very difficult, if not impossible.

The present invention has mainly for its object to obviate such disadvantage by constructing a machine, in which the objectionable slits in the top portion of the cover are dispensed with and this is rendered possible owing to the fact that, in place of the customary setting levers, setting slides or rack rods are used, which pass horizontally under the guide passage, into the machine and work directly upon the setting wheels not from above, but from below.

By this arrangement a further very important advantage is obtained as the stability of the machine is considerably increased owing to the setting mechanism being low down in the machine. This advantage cannot be underrated, as, with setting mechanism difficult to operate, there is danger of the machine being upset.

According to the present invention the point of application of the setting force lies so near the base of the machine that the machine cannot be readily overbalanced as the low-down center of gravity of the heavy mass of the setting mechanism serves to counteract any tipping movement.

Furthermore, it has hitherto been usual to bring the setting levers back to the zero position by means of special crank gear, but, under this invention, the operation is effected by a simple recall lever, the whole crank mechanism and its transmission wheels being dispensed with.

I will now proceed to describe my invention with reference to the accompanying drawings, in which—

Figure 1 is a vertical section of a calcu-

lating machine taken through the setting or starting gear. Fig. 2 is a plan view of same. Fig. 3 is a vertical section taken through the zero setting mechanism of the setting or starting gear. Fig. 4 is a plan view of same. Fig. 5 is a front elevation of the locking device for the setting or starting gear. Fig. 6 is a vertical section taken through the locking device for the setting or starting gear. Fig. 7 is a front elevation of the crank lock. Fig. 8 is a detail view of same to a larger scale. Fig. 9 is a plan of a calculating machine embodying my invention. Fig. 10 is a front elevation of same.

Similar letters of reference refer to similar parts in the views.

The characteristic feature of the new setting or starting gear is that the setting levers of the calculating machine work on the usual setting wheels S, not from behind or from above but from below. Through the mechanism of the rack rod B, the setting levers A can act on the three pins C fitted on the adjusting ring of the setting wheel, and put into operation the desired number of rungs or steps. On the rack rod B there is an extension B¹, with a scale of figures on it, so that the number introduced into the reckoning is shown automatically when the setting gear—i. e., the setting levers A—are put into operation. The extension B¹ of the rack rod B can further be used for setting the desired figure or number independently of the setting levers A. If the apparatus is made in this way, the setting levers A can be omitted entirely and a knob or handle provided on the extension B¹. Of course, it is to be understood that while three pins C are mentioned the applicant does not restrict himself to such number and the setting can be effected by means of any desired number of pins whatsoever.

To prevent the rack rods B interfering with the turning of the setting wheels S during the operation of calculation, a throw-out device is provided. This throw-out device preferably consists of a lever E with its extension E¹, and a locking lever F. The throw-out device is put in operation by pressing the locking lever F to the side thereby causing the lever E¹ to rise under the action of the spring B² fixed to the frame of the machine. In rising, the lever E¹ turns about the point B³ and depresses the

rod B⁴, thereby depressing the underlying fork-shaped and encircling rack rods of the setting gear. As those rack rods are depressed, one or other of the slots B⁵ therein enters the locking bar B⁶ fastened on the frame, so that the rack rods be held fast, in order that, when the setting wheels have returned to the position of rest, the pins C may reënter the corresponding notches in the rack rods B when the adjusting or setting gear is thrown into working position again. To put this gear into action again the lever E¹ is pressed down, against the action of the spring B² and, in consequence of the pressure of the spring B², the lever F moves over the lever E¹ and locks it in the depressed position.

It has hitherto been usual to bring the setting or starting levers to the zero position by means of special crank gear but in the present machine the operation is effected in a simple fashion by a laterally fitted recall lever Z so that the whole crank mechanism and its transmission wheels are dispensed with. According to this arrangement the recall lever Z (see Figs. 3 and 4) which is fitted at the side of the machine, is pivoted at Z¹. One of its arms is provided with a bar or rail Z², placed in such a way that it can come into contact with the rack rods B of the setting gear, with which the setting levers are connected. To bring the apparatus back into zero position, the lever Z is turned about its pivot Z¹ by means of a suitable handle, and the rack rods B are thus displaced by the rail Z², a spring or the like returning the lever Z back to its original position.

To prevent the throw-out gear coming into operation when the crank is turned by means of the handle T, (see Fig. 7) or to prevent the setting mechanism from moving upward, a small block P¹ (see Figs. 5 and 6) is provided on the side of the lever E¹ of the throw-out gear. This block, which can press against the lever V, causes said lever to turn about the point V¹ when pressure is exerted on the lever of the throw-out gear. It is, however, impossible for the lever V to turn unless the catch or nose V² thereof can enter a corresponding opening V³ in one of the setting wheels S of the machine. The position of the opening V³ is such that the catch or nose V² can enter it only when the crank is in its position of rest. If the crank is turning, no turning of the lever V, and consequently no movement of the lever of the throw-out gear can take place.

To prevent the crank turning or being turned before the setting mechanism is thrown out of gear, the handle T of the crank is made in such a way that it cannot be moved out of its position of rest unless the setting mechanism is actually thrown out. For this purpose the lever of the throw-

out gear is provided with a small block P², (see Fig. 7) which can press against a rod P³. The rod P³ is so arranged that it can move up against a pin P⁴ (see Fig. 8) which can enter a notch in the handle T of the crank. If the setting device is not thrown out of gear, the pin P⁴ is held in the aforesaid notch of the crank handle by the pressure of the block P² on the rod P³, and the result is that the crank cannot be moved out of its position of rest. At the moment when the setting mechanism is thrown out of gear the pressure of the block P² on the rod P³ ceases, the pin P⁴ leaves the notch in the handle of the crank and the crank is thus released.

In operation, the several extensions B' of rods B are so manipulated as to indicate the number to be introduced into the calculation. Catch F is then withdrawn from lever E, thereby permitting spring B² to lower rod B⁴ and thus withdraw the notched rods B from engagement with pins C. Owing to the tilting movement of lever E, pin P⁴ is withdrawn from the notch of handle T so that the latter may now be manipulated to perform the calculation desired. After this calculation has been completed, lever E is depressed to effect a reëngagement between rods B and pins C, while lever E is retained in its depressed position by catch F. The operation described may now be repeated.

I claim:

1. In a calculating machine, a rotatable setting wheel, a manually operable slide arranged therebelow, means intermediate said slide and wheel for transmitting motion from the slide to the wheel, and manually operable means for rendering said transmitting means inoperative.

2. In a calculating machine, a rotatable setting wheel, pins carried thereby, a spring-influenced toothed slide arranged below said wheel and adapted to engage said pins, and means for depressing the slide whereby the latter is thrown out of engagement with the pins.

3. In a calculating machine, a rotatable setting wheel, pins carried thereby, a spring-influenced toothed slide arranged below said wheel and adapted to engage said pins, a horizontally oscillatable lever, and means controlled by said lever for depressing the slide whereby the latter is thrown out of engagement with the pins.

4. In a calculating machine, a rotatable setting wheel, pins carried thereby, a spring-influenced toothed slide arranged below said wheel and adapted to engage said pins, a horizontally oscillatable lever, means controlled by said lever for depressing the slide whereby the latter is thrown out of engagement with the pins, and means for holding the depressed slide against longitudinal displacement.

5. In a calculating machine, a rotatable setting wheel, pins carried thereby, a spring-influenced toothed slide arranged below said wheel and adapted to engage said pins, a
5 horizontally oscillatable lever, means controlled by said lever for depressing the slide whereby the latter is thrown out of engagement with the pins, and means for returning the slide to its zero position.
- 10 6. In a calculating machine, a rotatable setting wheel, pins carried thereby, a spring-influenced toothed slide arranged below said wheel and adapted to engage said pins, a horizontally oscillatable lever, means controlled by said lever for depressing the slide
15 whereby the latter is thrown out of engagement with the pins, a crank adapted to ro-

tate the setting wheel, and locking means for said crank.

7. In a calculating machine, a rotatable 20 setting wheel, pins carried thereby, a spring-influenced toothed slide arranged below said wheel and adapted to engage said pins, a horizontally oscillatable lever, means controlled by said lever for depressing the slide 25 whereby the latter is thrown out of engagement with the pins, a crank adapted to rotate the setting wheel, locking means for said crank, and means for releasing the locking means upon the depression of the slide. 30

WILHELM AUGUSTIN.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.