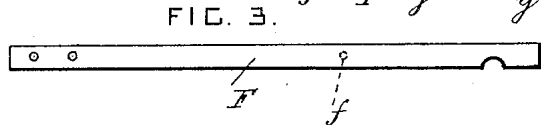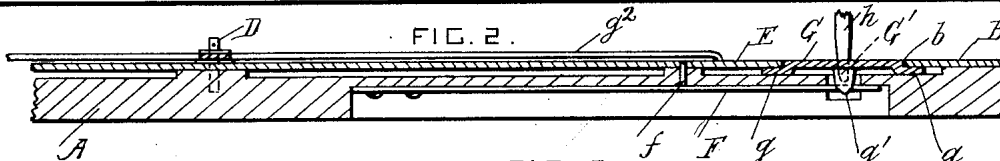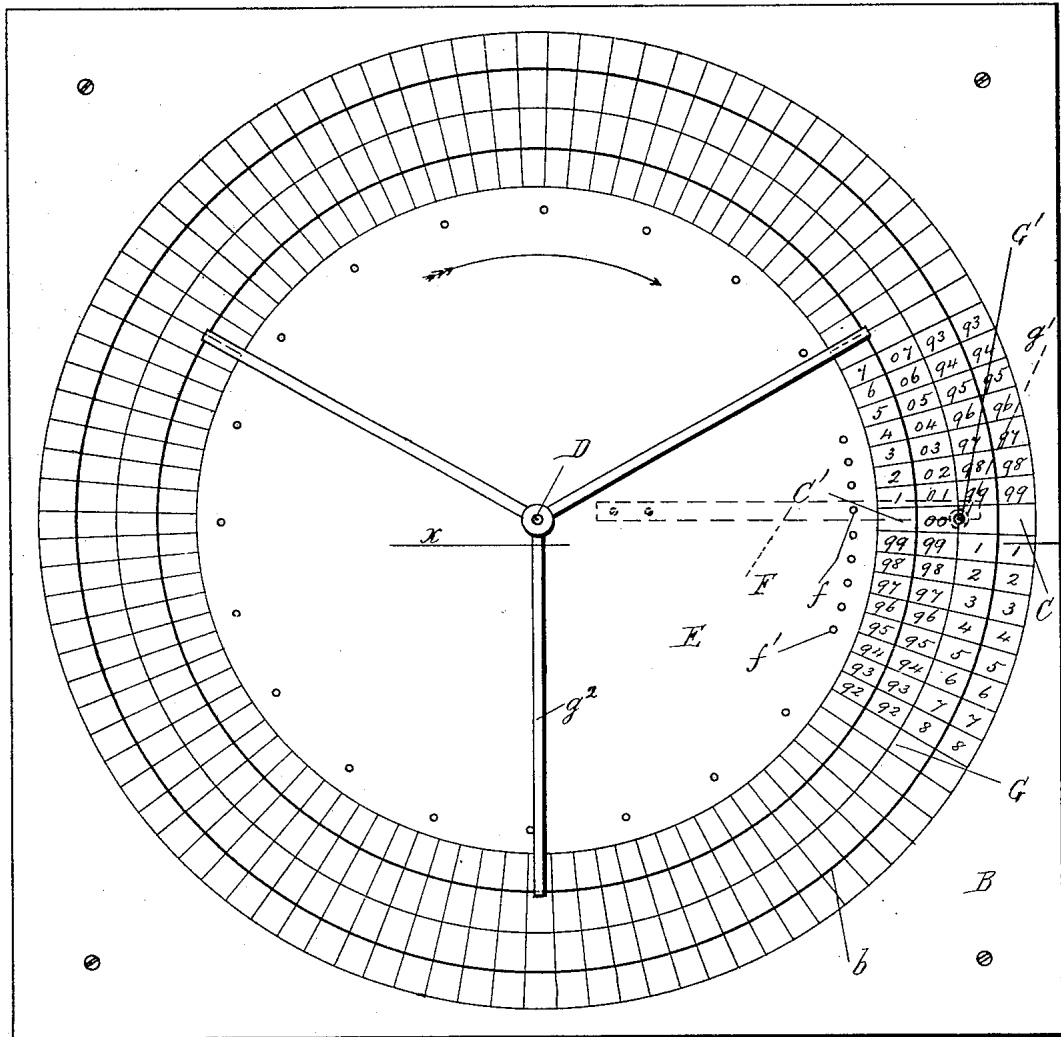No. 657,674.   Patented Sept. 11, 1900.

W. G. POWELL.
CALCULATING MACHINE.
(Application filed Jan. 19, 1900.)

(No Model.)

FIG. 1.

FIG. 2.

FIG. 3.

Witnesses   Inventor
J. Sterling Ruffin.   William G. Powell.
N. J. Crosson   By Attorney Herbert W. J. Jenner.

WILLIAM G. POWELL, OF JACKSONVILLE, FLORIDA, ASSIGNOR OF ONE-HALF TO FRANK CLARK, OF SAME PLACE.

CALCULATING-MACHINE.

To all whom it may concern:

Be it known that I, WILLIAM G. POWELL, a citizen of the United States, residing at Jacksonville, in the county of Duval and State of Florida, have invented certain new and useful Improvements in Calculating-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to calculating-machines; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a plan view of the machine. Fig. 2 is a cross-section taken on the line x x in Fig. 1 and drawn to a larger scale. Fig. 3 is a plan view of the spring.

A is the base of the machine.

B is a plate secured to the base and provided with a large circular hole b. The plate B is divided into one hundred equal spaces around the hole, and these spaces are numbered from "0" to "99," consecutively. The zero or reading space C is preferably arranged to the right hand, and the numerals are preferably arranged to read from the zero-space in the direction of motion of the hands of a watch.

D is a pivot-pin projecting from the base in the center of the hole b.

E is a disk which is journaled on the pin D and which rests on the base A. The disk E is divided into one hundred equal spaces around its edge, and these spaces are numbered from "0" to "99," consecutively.

C' is the zero or reading space of the disk E, and the numerals read from the zero-space in the reverse direction from the numerals on the plate. When the two zero-spaces are in line, the numerals "1" are in line with the numerals "99," and the numerals "2" are in line with the numerals "98," and so on.

F is a spring-catch or spring-actuated catch, which is secured to the base and provided with a projection f, which engages with a series of recesses f' in the under side of the disk E. The disk E has one hundred recesses f'—one for each of its said spaces—and the catch normally engages with one of these recesses and

prevents the disk from being revolved until the catch is depressed out of engagement with the disk.

G is a ring arranged in the space between 55 the disk and the plate. The upper surfaces of the said plate, disk, and ring are arranged flush with each other, and the ring is arranged to revolve freely. The ring is provided with any approved means for guiding it and keep- 60 ing it in position. Guide-flanges g are preferably provided and project under the disk E and the plate B; but, if desired, the ring may have guide-arms g² journaled on the pivot-pin D or it may have any other approved 65 guide. The guide-flanges g rest on the base and permit the ring to be revolved with very little friction. The catch F projects under the ring G, and the ring G is provided with a hole or socket G' in its upper side and a pro- 70 jection g' on its lower side.

The ring G is revolved by inserting the point of a handle h, such as a rod or pencil, into the hole or socket, and when the hole is a perforation the projection g' may be dis- 75 pensed with, as the point of the handle projects through the hole and forms a projection on the under side of the ring. Each time the ring is revolved its projection depresses the catch and releases the disk E. The disk E 80 is revolved step by step by frictional contact with the ring G, and the catch is made of such width that it is released by the projection in time to engage with the next adjacent recess of the disk. The disk is therefore revolved 85 step by step and is moved one numeral-space each time the ring is caused to make a complete revolution.

The ring G has two concentric series of spaces. Each series consists of one hundred 90 spaces corresponding with each other and with the spaces on the ring and plate. The outer spaces on the ring are numbered from "0" to "99," corresponding with the numerals on the plate, and the inner spaces are 95 similarly numbered to correspond with the numerals on the disk. The zero-spaces c of the ring are in line with each other and are normally in line with the zero-spaces of the plate and disk, as shown in the drawings. 100

The machine is used for addition or for subtraction. When used for addition, the ring

G is turned in the direction of the arrow on the drawings, with the numerals arranged as shown; but, if desired, the numerals may be arranged in the reverse order, and the ring should then be turned in the reverse direction. Subtraction is effected by working the machine in the reverse manner to working it for addition.

The machine is used for adding numerals of two figures in the following manner: Suppose the numerals "21," "97," and "80" are to be added together. The parts being in the relative positions shown in Fig. 1, the ring G is first turned in the direction of the arrow until its zero-spaces come opposite the space "21" of the plate B. The next numeral, "97," to be added is now found on the outer circle of the ring, and it will be observed that it comes opposite the numeral "18" of the plate B. The ring is therefore turned in the same direction as before until its zero-spaces come opposite the numeral "18" on the plate B. The numerals "118" are now displayed in line with the reading-space C on the disk and on the inner circle of the ring combined, the "1" being on the disk and the "18" on the ring, and one hundred and eighteen is the sum of twenty-one and ninety-seven. The next numeral "80" to be added is now found on the outer circle of the ring, without moving the ring, and it will be observed that it comes opposite the numeral "98" on the plate B. The ring is therefore turned in the same direction as before until its zero-spaces come opposite the numeral "98" on the plate B. The numerals "198" are now displayed in line with the reading-space C on the disk and inner circle of the ring combined, and one hundred and ninety-eight is the sum of twenty-one, ninety-seven, and eighty. Other numerals of two figures each can be added in a similar manner until the sum reaches ten thousand. Columns of four or more figures can be added by first adding the column of two figures at the right hand and using all the numerals of the sum except the two right-hand figures as carrying-figures to be added in with the second column of two figures. The disk is only moved by the ring when the numeral to be added increases the sum displayed in line with the reading-space C, so that a new numeral is required at the left hand to express the new sum. The disk is moved one step, therefore, each time the pencil or operating-rod crosses the catch and disengages it from the disk and turns the disk until the catch drops into the next recess of the series.

What I claim is—

1. In a calculating-machine, the combination, with a base, a revoluble disk, and a stationary plate; of a revoluble ring provided with a hollow projection on its under side which forms a socket for the operating-handle, a catch secured to the said base and arranged in the path of the said projection and normally preventing the said disk from revolving, and a handle for engaging with the said socket and revolving the said ring and disk, substantially as set forth.

2. In a calculating-machine, the combination, with a base, a revoluble disk, and a stationary plate; of a revoluble ring journaled between the said plate and disk and provided with offset flanges at its lower edges which rest on the base and support the body of the ring clear of the base, said ring having also a hollow projection on its under side which forms a socket for the operating-handle, a catch arranged under the said disk and ring in the path of the said projection and normally preventing the disk from revolving, and a handle for engaging with the said socket and revolving the said ring, substantially as set forth.

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

WILLIAM G. POWELL.

Witnesses:
C. D. RINEHART,
JAMES F. GLEN.