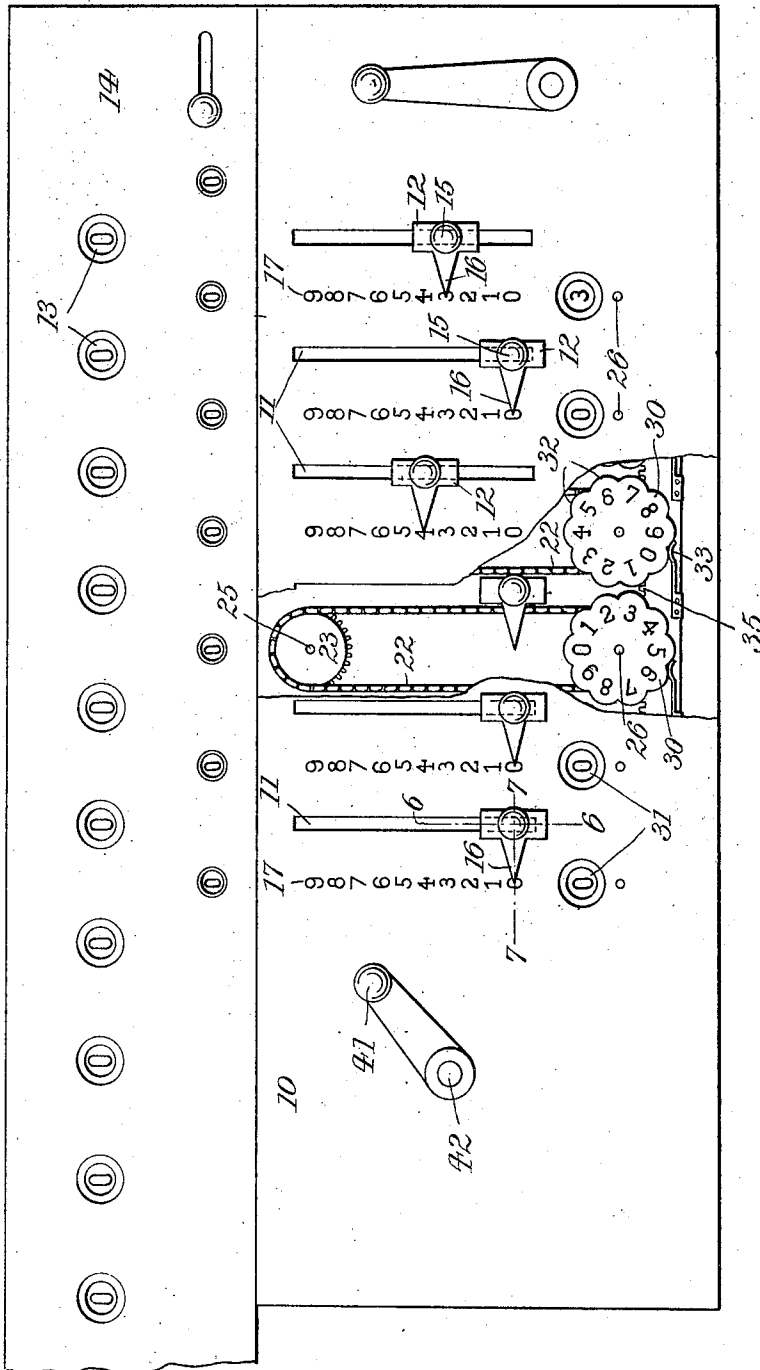


J. GRABER.
 SETTING DEVICE FOR CALCULATING MACHINES.
 APPLICATION FILED MAY 12, 1909.

934,401.

Patented Sept. 14, 1909.
 2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
 Arthur E. Zimmmer.
 W. R. Schulz.

Inventor
 Julius Graber
 By his Attorney
 Frank R. Rineer

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Fig. 2.

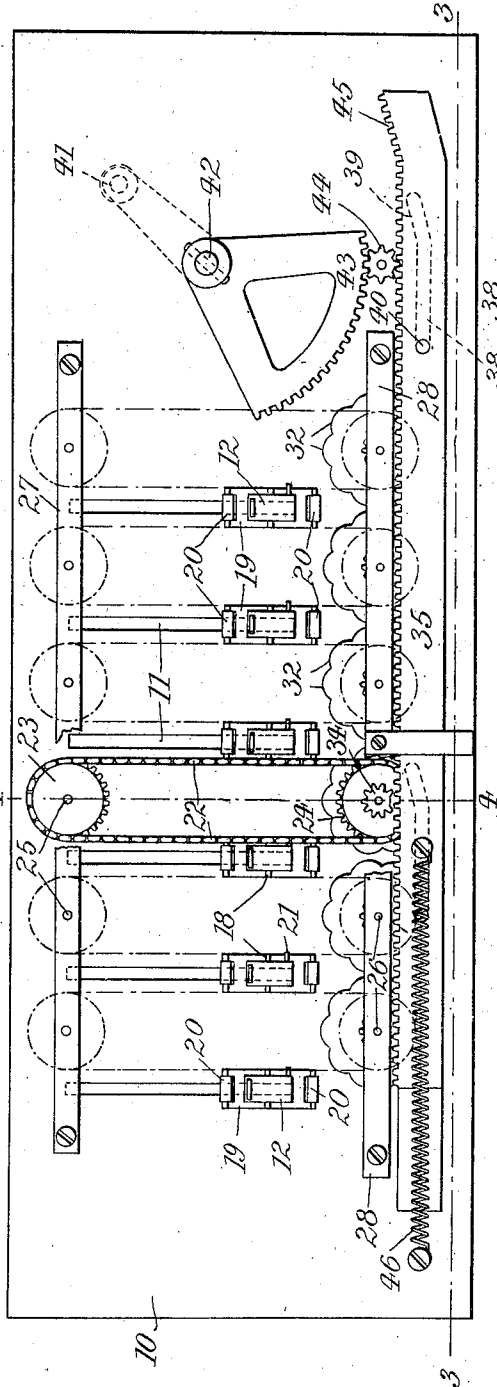


Fig. 5.



Fig. 3.

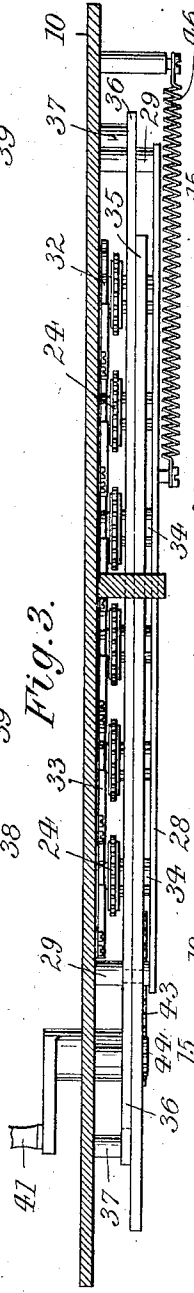
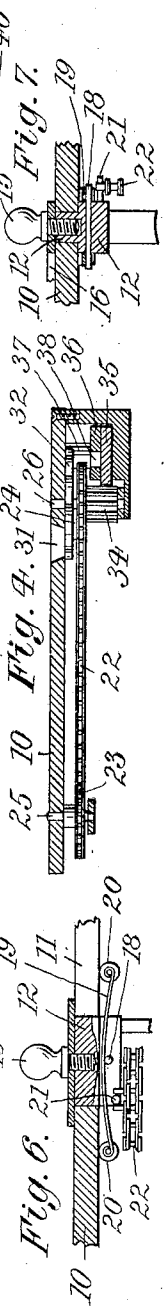


Fig. 6. 21



Witnesses:
 Arthur E. Zumpfer
 H. P. Schulz

Inventor
 Julius Graber
 By his Attorney
 Frank P. Briesen

UNITED STATES PATENT OFFICE.

JULIUS GRABER, OF NEW YORK, N. Y., ASSIGNOR TO UNITED STATES CALCULATING MACHINE CO., A CORPORATION OF NEW YORK.

SETTING DEVICE FOR CALCULATING-MACHINES.

934,401.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed May 12, 1909. Serial No. 495,423.

To all whom it may concern:

Be it known that I, JULIUS GRABER, a citizen of the United States, residing at New York city, Manhattan, county and State of New York, have invented new and useful Improvements in Setting Devices for Calculating-Machines, of which the following is a specification.

This invention relates to an improved setting device for calculating machines of the class illustrated, for example, in Patent No. 897,659, issued to L. Rein, September 1, 1908.

As is well known, the setting device consists essentially of a suitable number of slides which, on being advanced, so engage a unit, ten, hundred, etc., cylinder that, upon turning a crank, the desired calculation in addition, subtraction, etc., is automatically effected.

The invention comprises more particularly improved means for retracting all the slides, so as to return them to their zero position, and improved means for conspicuously displaying the numbers to which the slides are set, so that errors in the manipulation of the device may be avoided.

In the accompanying drawings: Figure 1 is a plan of my improved setting device, showing the setting plate partly broken away; Fig. 2 a bottom view thereof showing the parts in a different position; Fig. 3 a longitudinal section on line 3—3, Fig. 2; Fig. 4 a cross section on line 4—4, Fig. 2; Fig. 5 a detail of the rack guide; Fig. 6 a longitudinal section through one of the slides, on line 6—6, Fig. 1, and Fig. 7 a cross section thereof, on line 7—7, Fig. 1.

A setting plate 10 is provided with a suitable number of parallel slots 11 for accommodating the setting slides 12 which are adapted to operatively engage the unit, ten, hundred, etc., cylinders, (not shown), of the calculating mechanism. The result of the calculation appears through the openings 13 of a face plate 14 arranged in proximity to setting plate 10. Each slide 12 is provided with a knob 15 and a pointer 16 moving along a scale 17 which embraces the numbers from 0 to 9. At its lower side, there is secured to slide 12, by pin 18, a leaf spring 19 carrying at each end a roller 20 that bears against plate 10, so that in this way the slide is held in frictional engagement with said plate. Each slide is connected by

a pin 21 to an endless chain 22 passing over a pair of sprocket wheels 23, 24, the arbors 25, 26 of which are journaled in plate 10, and in a pair of longitudinal rails 27, 28 secured to the back of said plate by posts 29. Fast upon arbors 26 of wheels 24 are dials 30 bearing the numbers 0 to 9. Plate 10 is provided below each scale 17 with a window 31 arranged within the path of the dial-numbers. The co-relation of the parts is such, that when any one of the slides is set to one of the numbers of its scale 17, the like number on dial 30 will be displayed through window 31 below said scale, so that in this way the proper position of the slide is checked.

The periphery of each dial 30 is scalloped, being provided with a bulge 32 for each of its figures. The recesses intermediate these bulges are engaged by a resilient detent 33 which serves to control the position of the dial and consequently that of slide 12 in such a manner that the latter must be carried squarely opposite one of the numbers of scale 17.

Upon each arbor 26 is mounted a mutilated pinion 34, the several pinions being adapted to be simultaneously engaged by a slidable rack 35. Each pinion is provided with nine teeth and is so set on its arbor 26, that its blank space is diametrically opposite the cipher on dial 30. Rack 35, in addition to its longitudinal movement, has a slight transverse movement, so that in its position of rest it will clear pinions 34, to permit a free manipulation of slides 12. When, however, the rack is advanced, it will, during the first portion of its stroke, be shifted laterally to carry it toward pinions 34, and cause it to simultaneously engage all those pinions which present a tooth to the rack. The means for shifting rack 35 consist of a guide-bar 36 secured to the bottom of plate 10 by posts 37. Bar 36 is provided with a pair of slots 38 which are inclined at one end as at 39. These slots are engaged by pins 40 extending upwardly from rack 35, so that, as the rack is reciprocated longitudinally, it will be simultaneously shifted laterally. Rack 35 is operated by a handle 41 mounted on shaft 42 which carries a toothed sector 43. This sector engages a pinion 44 which also engages the rack. In order to prevent a disengagement of the latter from pinion 44 when the rack is shifted

away from pinions 34, the end of the rack is provided with an inclined section 45, the dip of which corresponds, substantially, to that of slot-section 39.

5 A spring 46 serves to return the rack to its normal position upon the release of handle 41.

In operation, the pinions 34 of all those slides 12 which have been shifted, to make a
10 calculation, will present a tooth to the rack, while the pinions of all those slides which have not been shifted will present their mutilated section to the rack. If it is desired to simultaneously return all the slides, which
15 have been manipulated, to the zero mark, a turn of handle 41 will shift and advance rack 35 and thereby rotate all those pinions 34 which have come into engagement with the rack, until the mutilated sections of such
20 pinions face the rack, when their further movement will of course cease. In this way all the displaced dials 30, as well as their slides 12, are returned to their zero position. Upon the release of handle 41, spring 46 will
25 retract rack 35 without interfering with pinions 34, because all pinions will now face the rack with their mutilated section. At the end of its back stroke, the rack will be again carried away from pinions 34 by pins 40, so
30 that the pinions are again freely rotatable and thus permit slides 12 to be re-set for the next operation.

It will be seen that by the means described, a turn of handle 41 will quickly and accurately
35 return all the slides and dials to their zero-mark, regardless of the difference in position to which they had been advanced for making a calculation.

I claim:

40 1. A device of the character described, comprising a slotted setting plate, a slide engaging the same, an endless chain connected to the slide, a dial and a pinion actuated by the chain, and a rack adapted to operatively engage said pinion.

45 2. A device of the character described, comprising a slotted setting plate, a slide engaging the same, a mutilated pinion operatively connected to the slide, and a rack adapted to engage said pinion.

3. A device of the character described, comprising a slotted setting plate, a slide engaging the same, a mutilated pinion operatively connected to the slide, a rack adapted to engage said pinion, means for moving
55 the rack longitudinally, and means for shifting the rack laterally.

4. A device of the character described, comprising a slotted setting plate, a slide engaging the same, a mutilated pinion operatively connected to the slide, a rack adapted to engage said pinion, means for moving
60 the rack longitudinally, and inclined guides for shifting the rack laterally.

5. A device of the character described, comprising a slotted setting plate, a slide engaging the same, a mutilated pinion operatively connected to the slide, a rack adapted to engage said pinion, means for moving
65 the rack longitudinally, a bar having inclined slots, and pins on the rack engaging said slots.

6. A device of the character described, comprising a slotted setting plate, a slide engaging the same, a mutilated pinion operatively connected to the slide, a spring-controlled rack having an inclined section, a
75 handle intergeared with the rack, and means for shifting the rack laterally.

7. A device of the character described, comprising a slotted setting plate, a slide engaging the same, an endless chain connected to the slide, a pair of sprocket wheels engaged by the chain, a mutilated pinion actuated by one of said wheels, a rack adapted
85 to engage said pinion, means for moving the rack longitudinally, and means for simultaneously shifting the rack laterally.

8. A device of the character described, comprising a setting plate, a setting slide, a
90 dial and a mutilated pinion operably connected to the slide, and a rack adapted to engage said pinion.

Signed by me at New York city, (Manhattan,) N. Y., this 11th day of May, 1909. 95

JULIUS GRABER.

Witnesses:

W. R. SCHULZ,

FRANK V. BRIESEN.