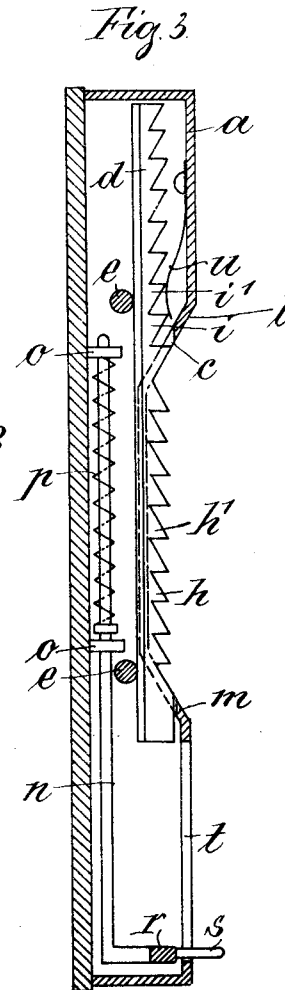
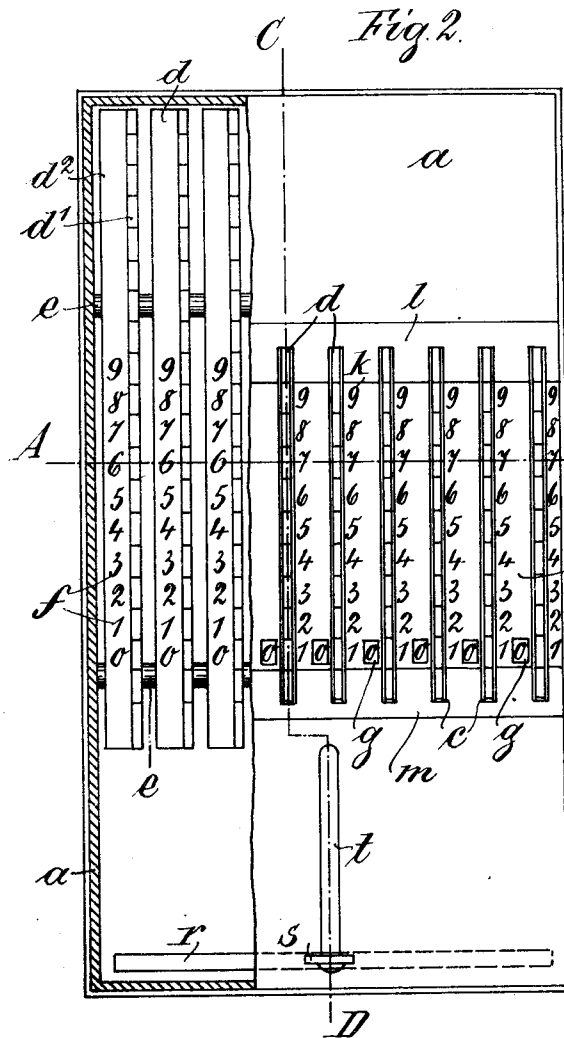
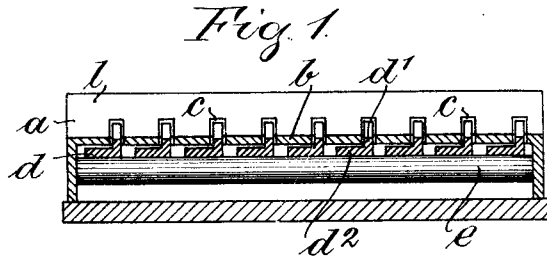


M. KLACZKO.
 ADDING APPARATUS.
 APPLICATION FILED MAY 4, 1913.

1,056,912.

Patented Mar. 25, 1913.

2 SHEETS—SHEET 1.



Witnesses:
 L. Cadars
 C. A. Brown.

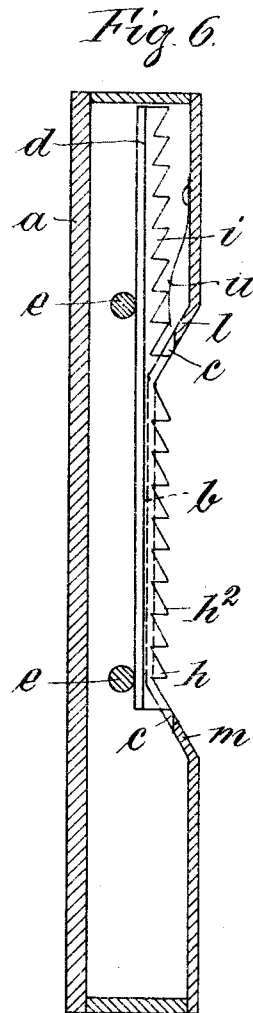
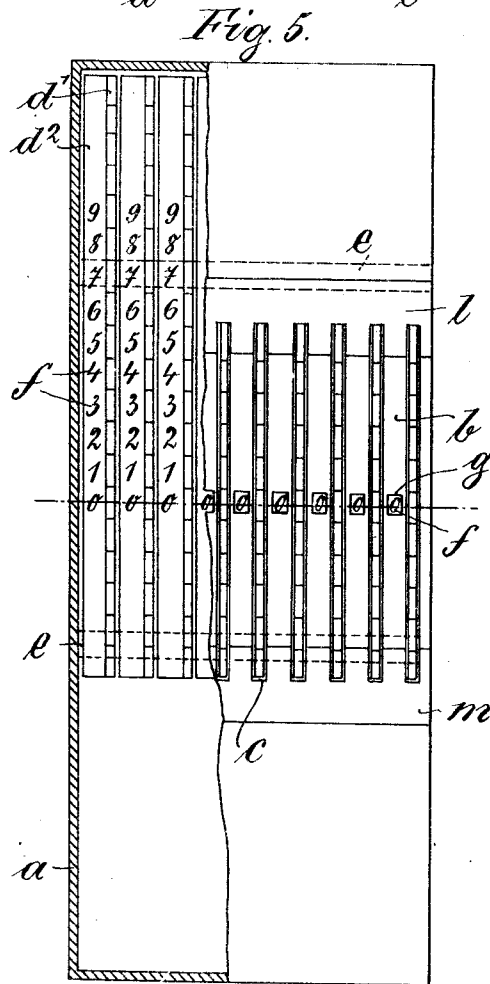
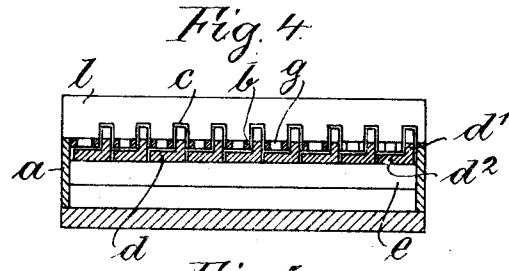
Inventor:
 Max Klaczko.
 by
 Foster & Freeman
 Attorneys.

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2 SHEETS—SHEET 2.



Witnesses:

L. Cadarr.
 C. D. Brown.

Inventor:
 Max Klaczko.

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UNITED STATES PATENT OFFICE.

MAX KLACZKO, OF BERLIN, GERMANY.

ADDING APPARATUS.

1,056,912.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed May 4, 1912. Serial No. 695,082.

To all whom it may concern:

Be it known that I, MAX KLACZKO, a subject of the Emperor of Russia, and resident of 44 Rosenthalerstrasse, Berlin, Germany, have invented a new and useful Adding Apparatus, of which the following is a specification.

This invention relates to adding apparatus of the type in which the digits are indicated on bars slidable longitudinally in both directions between suitable guides, the sliding movement in one direction corresponding to the normal digit and the movement in the other direction to the complement of the digit.

The object of the present invention is to simplify and improve the construction of such adding apparatus and more particularly to provide improved means whereby the particular direction in which the bars, when in any given position, should be moved, is readily indicated to the operator, at the same time facilitating the use of the apparatus and providing ready means for limiting the movement imparted to the bars.

In order that the invention may be more clearly understood, reference is made to the accompanying drawings which show by way of example two methods of carrying out the invention.

Figure 1 is a transverse section on the line A B of Fig. 2, which illustrates in plan, with part of the upper cover removed, an adding apparatus constructed according to the present invention. Fig. 3 is a longitudinal section on the line C—D of Fig. 2, Figs. 4, 5 and 6 are views corresponding to Figs. 1, 2 and 3, showing a slight modification of the adding apparatus.

The apparatus comprises a box *a* having a depression *b* in its cover and slots *c* in said depression. Slidable through said slots is a corresponding series of angular bars *d*, whose vertical webs *d'* are guided within the slots *c* and the horizontal webs *d''* of the bars *d* are guided between the depression *b* in the box *a* and rollers or guide bars *e*.

The horizontal webs *d''* of the angular bars *d* carry the indicating digits *f* which are adapted to individually appear beneath sight apertures *g* in the depression *b* of the box.

The vertical webs *d'* of the slidable bars are provided with two sets of teeth *h* and *i* of a pitch equal to the distance between the numerals *f* on the horizontal webs

d''. The set of teeth *i* at one end is directed in the opposite direction to the set of teeth *h* at the other end of the slidable bar *d*, as may be readily seen in Fig. 3. The upper side of the depression *b* is provided with numerals *k* corresponding to the numerals *f* on the slidable bars, as seen in Fig. 2, the numerals *k* serving for the purpose of indicating the position to which the teeth *h* of the slidable bars *d* are to be set. The upper cover of the box *a* at each end of the depression *b* is provided with inclined surfaces *l m* which are inclined at an angle corresponding to the inclination of the teeth *h* and *i* respectively, so that when the operator places his finger between one of the teeth on the bars *d* and moves the bar in the one direction or the other, this movement of the finger is limited by the inclined surfaces *l m*.

The direction of the teeth *h* and *i* indicates to the operator the direction in which the bar *d* is to be moved and at the same time facilitates the operation of the sliding bar. If for example the numeral 6 is to be set in the machine, the tooth *h'* which is in line with the numeral 6 of the setting numerals *k*, is engaged by the finger of the operator and as the tooth is downwardly directed with reference to Fig. 3, the slide bar *d* will be moved downwardly until the finger of the operator contacts with the inclined surface *m* of the depression *b*, whereupon the numeral 6 of the numerals *f* carried by the slide bar, will be visible through the sight aperture *g* in the depression *b*. If now the number 6 is to be added to the last 6, the tooth which is now opposite the setting numeral 6 of the setting numerals *k*, which in this case would be the tooth *i'*, is in like manner engaged by the finger of the operator and as this tooth is directed upwardly with reference to Fig. 3, the slide bar *d* must be moved upwardly, until the finger of the operator contacts with the inclined surface *l* whereupon the indicating numeral 2 of the indicating numerals *f* will appear beneath the aperture *g*. The ten must then be carried forward to the next slide bar *d* by moving the next slide bar *b* one place in a manner similar to that already described, so that the resultant 12 will appear beneath the aperture *g*.

The resetting device comprises a rod *n* slidable through suitable lugs *o* on the bottom of the box *a* against the action of a

spring *p*, the rod *n* carrying at its forward end a transverse bar *r* adapted to engage the ends of the slide bars *d* and to be operated by means of a projecting handle *s* projecting through a slot *t* in the cover of the box *a*. A spring *u* secured to the cover of the box and bearing on the teeth *i* of the slide bars is adapted to control the sliding movement of the latter.

In the apparatus illustrated in Figs. 1 to 3 the apertures *g* beneath which the numerals *f* are adapted to appear, are arranged at the lower end of the depression *b*, but in certain cases this arrangement is undesirable owing to the fact that the finger of the operator covers the aperture *g* and is also likely to work dust and dirt into the aperture *g* in the course of time. To obviate the foregoing disadvantage the apertures *g* may be arranged midway of the depression *b*, as illustrated in Figs. 4, 5 and 6. In this case the indicating numerals *f* are so arranged on the horizontal webs *d'* of the slide bars *d* that the digit *o* normally appears beneath the aperture *g* while the remaining digits are arranged in consecutive order in the rear thereof. If the numeral 4 is to be set for example in the machine according to Figs. 4-6, the fourth tooth *h'* of the teeth *h* is engaged by the finger of the operator and the slide bar *d* thereupon moved downwardly in the manner hereinbefore described, so that the numeral 4 of the indicating numerals *f* will appear beneath the apertures *g*.

In the arrangement illustrated in Figs. 4, 5 and 6 the provision of setting numerals *k* may be dispensed with, as there is no difficulty in ascertaining the respective tooth projecting above the depression *b*, which is to be manipulated, as the operator can readily calculate either upwardly or downwardly from the apertures *g*, there being four teeth above the aperture *g* and four teeth below the aperture *g* in each case, the lower four teeth corresponding to the numerals 1 to 4 respectively, and the upper four teeth to the numerals 6 to 9 respectively, while the tooth in line with the aperture *g* corresponds to the numeral 5.

By the arrangement illustrated in Figs. 4, 5 and 6 the apertures *g* are left clear to view while the numbers may with greater facility be read off owing to the result being arranged in the middle of the apparatus and constantly uncovered, inasmuch as the fingers at the end of the setting movement rest against either the incline *l* or incline *m*. Moreover by arranging the apertures *g* in the middle of the apparatus, less possibility occurs of the fingers being passed over said apertures and thus causing dirt to enter the same, which may be the case in the apparatus illustrated in Figs. 1 to 3. Moreover by this arrangement it is unnecessary to pro-

vide an additional series of setting numerals *k* on the upper side of the depression *b*, as in Fig. 1, owing to the facility with which the teeth above and below the apertures *g* can be overlooked. By dispensing with the setting numerals *k* the results can also be much more easily read off and the apparatus manipulated. The apparatus may also be narrowed in width, as it is unnecessary to space the slots *c* in the depression *b* so wide apart, as when the setting numerals *k* are employed. It will of course be understood that, if desired, the slide-bars *d* can be connected to suitable gear wheels driving any known type of adding mechanism with or without mechanism for carrying forward the tens, hundreds and so on, and if desired, a printing mechanism may also be provided.

I claim:—

1. In a calculating machine comprising a box having a depression in the top thereof and longitudinal slots and a transverse series of openings in said depression, and bars mounted to slide in said box and project through said slots, said bars each bearing the cipher and digits in numerical order adapted to be individually visible through said openings, each of said bars having two sets of teeth projecting upwardly through said slots, the teeth of one of said sets being directed in the opposite direction to the teeth of the other set whereby said teeth afford an indication of the direction in which said bars are to be slidably moved.

2. A calculating machine comprising a box having transverse inclined finger guides and a depression between them, a series of longitudinal slots and a transverse series of openings in said depression, bars mounted to slide in said box and project through said slots, said bars each bearing the cipher and digits in numerical order adapted to be individually visible through said openings, and a series of teeth projecting upwardly from each of said bars through said slots, one half of each series of teeth being directed toward, and inclined at the same angle as, one of said finger guides and the other half of each series of teeth being directed toward and inclined at the same angle as, the other finger guide, whereby said teeth afford an indication of the direction in which said bars are to be slidably moved.

3. A calculating machine comprising a box having transverse inclined finger guides and a depression between them, a series of longitudinal slots and a transverse series of openings in said depression, a series of angle bars whose vertical webs are slidably guided in said slots and project therethrough, transverse guide bars adapted to guide the horizontal webs of said bars between them and said depression, each horizontal web bearing on its upper face the cipher and digits in numerical order adapted to be individually

visible through said openings, and a series of teeth projecting upwardly from each of said bars through said slots, one half of each series of teeth being directed toward, and inclined at the same angle as, one of said finger guides and the other half of each series of teeth being directed toward, and inclined at the same angle as, the other finger guide, whereby said teeth afford an indication of the direction in which said bars are to be slidably moved.

4. A calculating machine comprising a box having a depression in the top thereof and longitudinal slots and a transverse series of openings in said depression, bars mounted to slide in said box and project through said slots, said bars each bearing the cipher and digits in numerical order

adapted to be individually visible through said openings, each of said bars having two sets of teeth projecting upwardly through said slots, the teeth of one of said sets being directed in the opposite direction to the teeth of the other set whereby said teeth afford an indication of the direction in which said bars are to be slidably moved, a spring-pressed transverse returning bar in said box and means for actuating said returning bar from the exterior of said box.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

MAX KLACZKO.

Witnesses:

VAMANCE HILL,
MARY STRASDE.