Feb. 17. 1925.

1,526,931

F. RAUCHWETTER

TOTALIZER ENGAGING MECHANISM FOR CALCULATING MACHINES

Filed May 19, 1921 5 Sheets-Sheet 1

Fig.1.

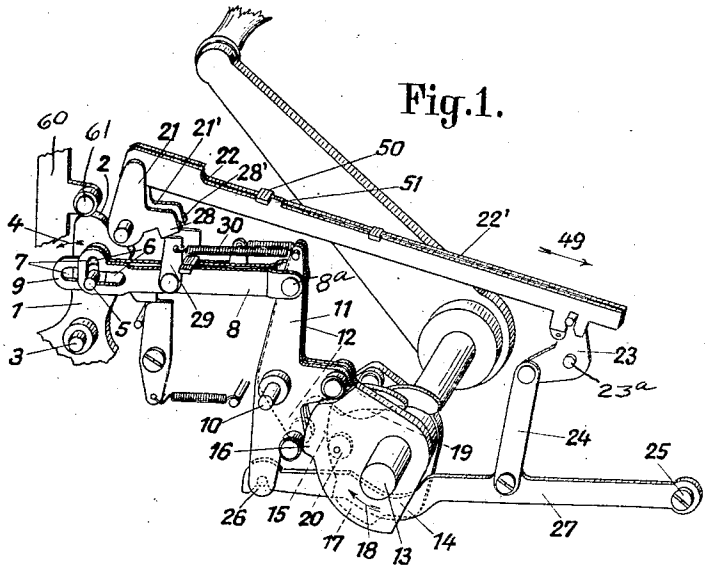
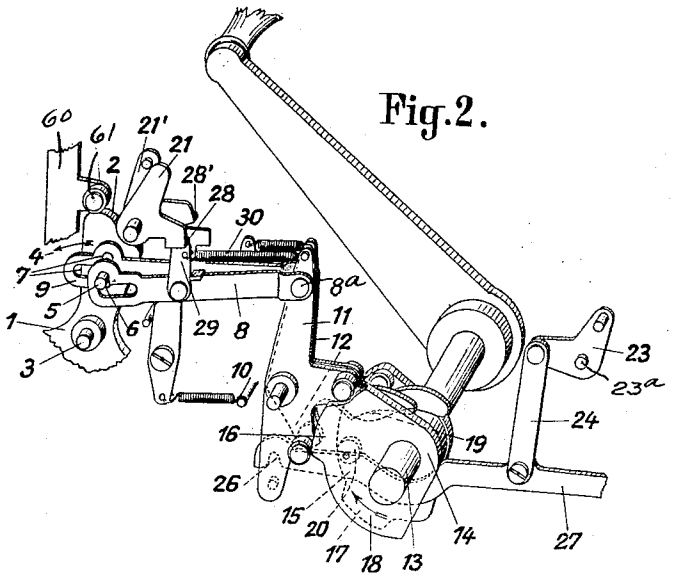


Fig.2.



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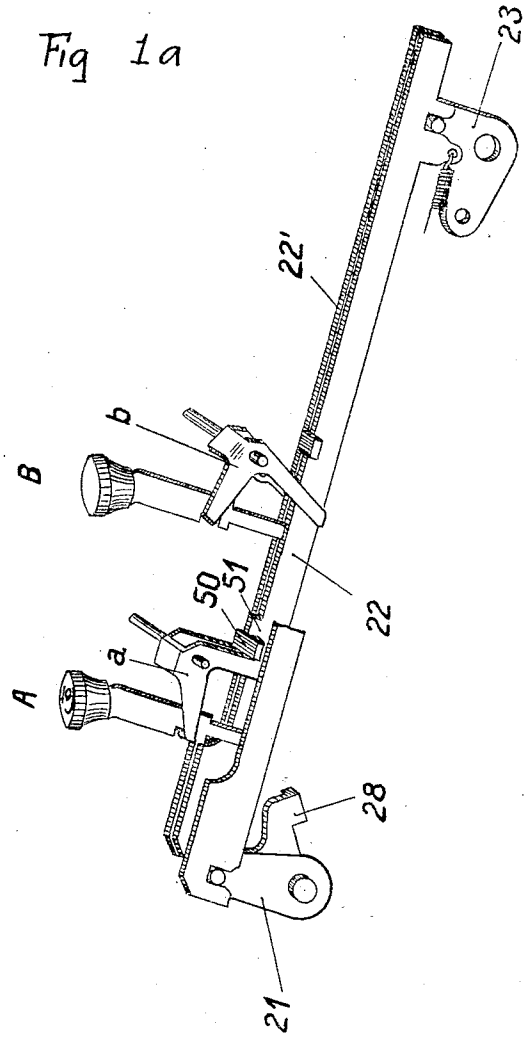
1,526,931

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TOTALIZER ENGAGING MECHANISM FOR CALCULATING MACHINES

Filed May 19, 1921 5 Sheets-Sheet 2

Fig 1a



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Feb. 17, 1925. 1,526,931

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TOTALIZER ENGAGING MECHANISM FOR CALCULATING MACHINES

Filed May 19, 1921 5 Sheets-Sheet 3

Fig.3.

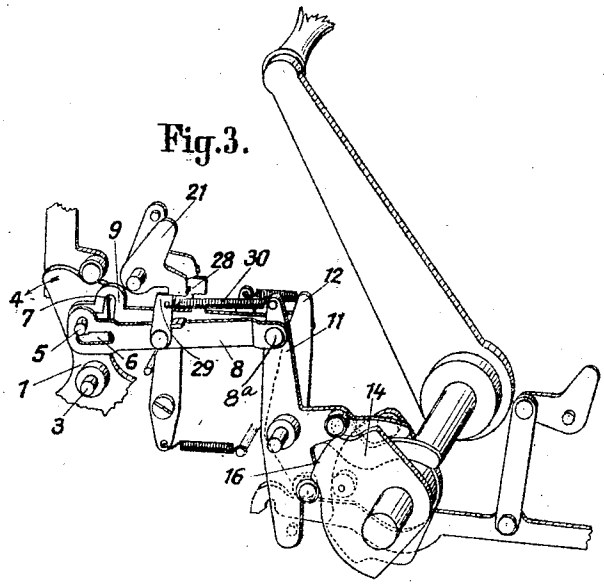
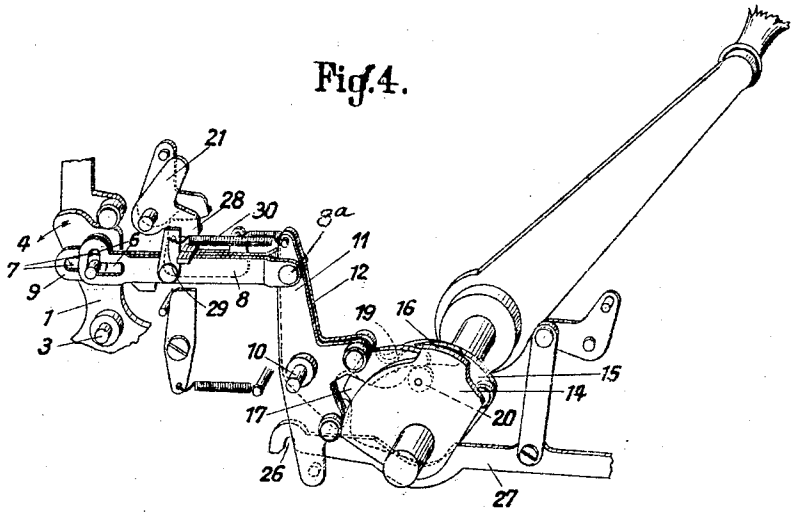


Fig.4.



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TOTALIZER ENGAGING MECHANISM FOR CALCULATING MACHINES

Filed May 19, 1921 5 Sheets-Sheet 4

Fig.5.

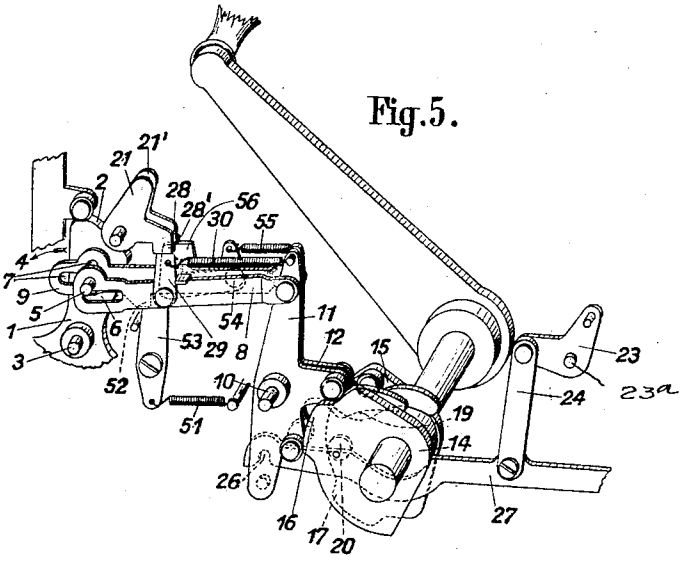
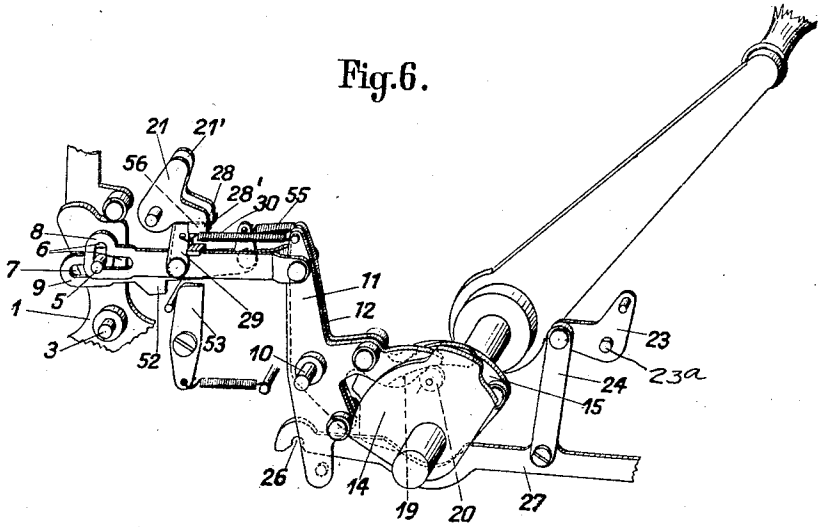


Fig.6.



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TOTALIZER ENGAGING MECHANISM FOR CALCULATING MACHINES

Filed May 19, 1921

5 Sheets-Sheet 5

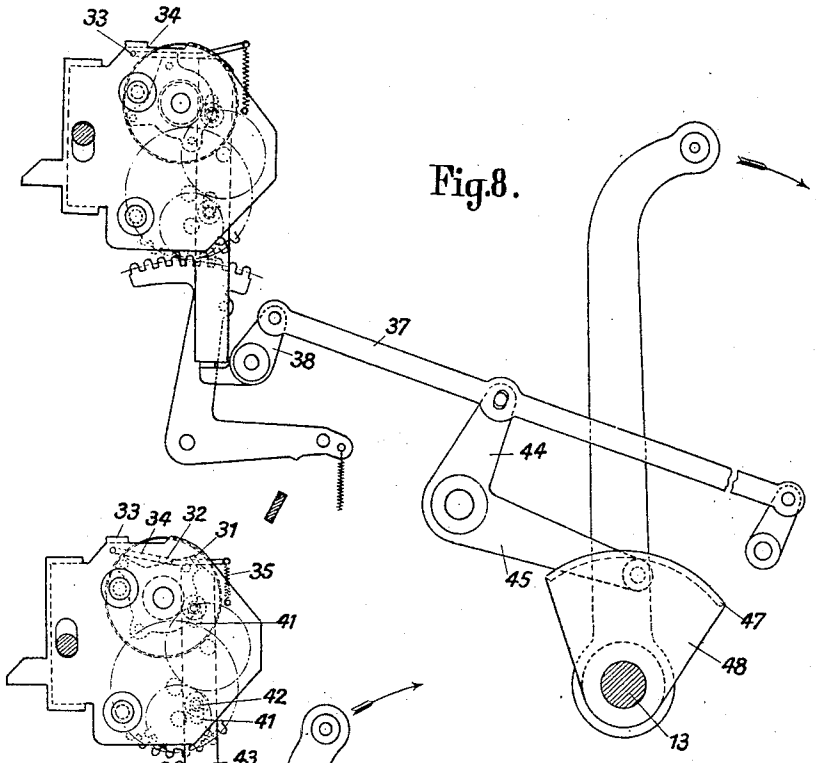


Fig.8.

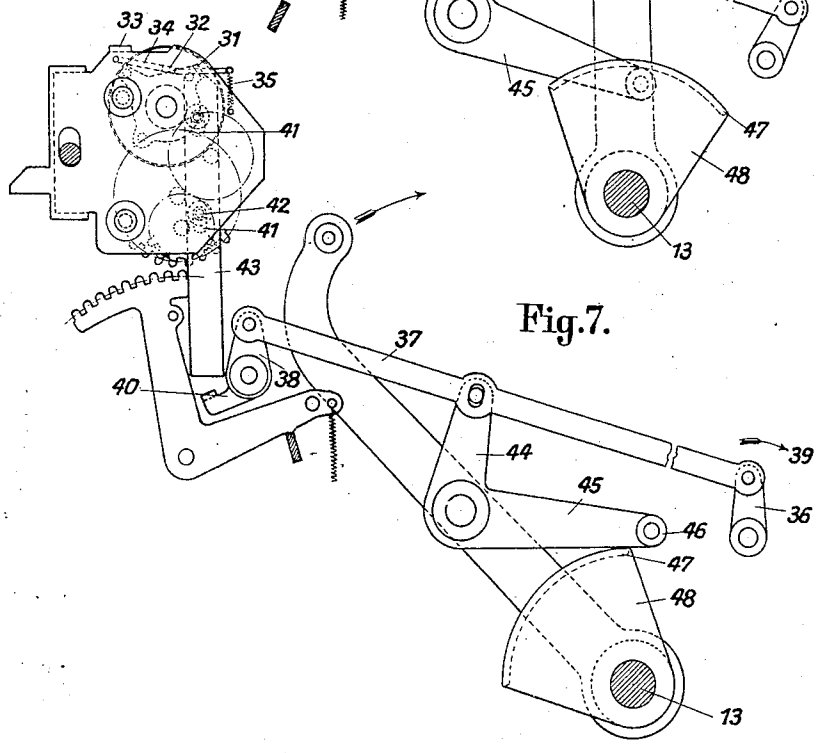


Fig.7.

Witnesses:
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Patented Feb. 17, 1925. 1,526,931

UNITED STATES PATENT OFFICE.

FRANZ RAUCHWETTER, DECEASED, LATE OF BERLIN-FRIEDENAU, GERMANY, BY ANNA RAUCHWETTER, GEB. BÖHME, ADMINISTRATRIX, OF BERLIN-FRIEDENAU, GERMANY; ALFRED FLATER PRESENT ADMINISTRATOR OF SAID FRANZ RAUCHWETTER, DECEASED.

TOTALIZER-ENGAGING MECHANISM FOR CALCULATING MACHINES.

Application filed May 19, 1921. Serial No. 471,013.

To all whom it may concern:

Be it known that FRANZ RAUCHWETTER, deceased, late a citizen of the German Republic, and residing at Berlin-Friedenau, Germany, has invented certain new and useful Improvements in Totalizer-Engaging Mechanism for Calculating Machines, of which the following is a specification.

This invention relates to calculating machines and more especially to adding machines which are provided with printing mechanism and refers to that class of such machines in which means are provided for printing at will (*a*) the items set on the keyboard, (*b*) sub-totals (*c*) the grand totals.

A calculating machine of this type is shown and described in my pending United States patent-application Serial No. 471015, filed simultaneously with the present application, i. e. also on May 19, 1921.

With machines of this class it is necessary to provide means so that the gearing of the counter mechanism may be brought into and out of engagement with the differential mechanism, or in other words the counter may be lowered and raised at differing phases of the operation of the machine, according to whether it is desired to print (*a*) items set on the keyboard, (*b*) sub-totals or (*c*) the grand totals. The means for effecting these changes have been brought into operation or set into position on the actuation of suitable keys provided for the purpose.

Various mechanisms have been used for causing the counter to be lowered and raised at the required times and it has been proposed in a machine for printing sub-totals and grand totals to provide a controlling device comprising two segments positively connected with the operating mechanism which by means of a system of levers bring the counting mechanism into the necessary positions at the required phases of the operation of the machine.

It has also been proposed to employ a pair of cams controlling a pair of slides co-operating with a counter supporting plate.

According to my invention, I provide a cam disc upon which the counter rests, the said disc being operated by two sliding rods, such rods being formed at their ends in engagement with the cam disc, with right angled slots, so disposed that when the horizontal portions of such slots pass over the pin connecting them to the cam disc, such cam disc is not moved but is only moved when one or other of such horizontal portions has passed or is prevented from passing over the pin, the sliding rods being actuated through lever and other mechanism by suitably disposed cams driven from the operating handle of the machine.

If a number is to be printed from the keyboard the raising and lowering of the counting mechanism is effected from the cam disc in such a manner that when the operating handle has been moved forward into the extreme position the counting mechanism is lowered into gear with the differentially set toothed segments at the same time the number set upon the keyboard is printed. Upon moving back the operating handle the gearing of the counting mechanism is operated according to the movements of the differentially set toothed segments and at the end of the backward travel of the operating handle the counting mechanism is raised.

If, on the other hand a sub-total shown in the counting mechanism is to be printed, the lowering of the counting mechanism takes place immediately the operating handle begins to move forward, the keyboard at the same time being disconnected by a special mechanism. During the further movement of the operating handle the toothed segments move back until the discs of the counting mechanism show zero stops, which have been set in position. At the end of this movement of the toothed segments printing takes place, the impression taken representing the number in the counting mechanism, because the counting mechanism limits the movement of the toothed segments. When the backwards movement of the operating handle commences, the toothed segments move the number of discs back again to the original numbers, and at the end of this movement of the operating handle the counting mechanism is lifted out of gear with the toothed segments so that in the counting mechanism the sub-total shown which has been printed is left unaltered.

For printing the grand total, the cam disc upon which the counting mechanism is supported, is swung over immediately the operating handle starts to move. Thereby the counting mechanism is lowered and during the continued movement the toothed segments are moved so far over that the counting mechanism shows zero. However when the operating handle starts to move back, the cam disc carrying the counting mechanism is swung back again at once. The counting mechanism is thereby lifted and brought out of engagement with the toothed segments. It therefore continues to show zero, and the toothed segments move back without imparting their movement to the counter gears whilst the grand total is printed in the printing mechanism.

The drawing shows an example of how a machine according to the invention may be constructed.

Fig. 1 is a perspective view of the raising and lowering gear for the counting mechanism in the position prepared for printing items set on the keyboard.

Fig. 1[a] is a detail view of a part of the mechanism shown in Fig. 1.

Fig. 2 is a similar view of the same apparatus, in the position prepared for printing a sub-total.

Fig. 3 is also a perspective view of the mechanism as set in Fig. 2 but in the position when the operating handle commences to move.

Fig. 4 shows another position of the gear according to the setting at Fig. 2, after the movement of the operating handle has been completed.

Fig. 5 shows the raising and lowering gear for the counting mechanism in the position prepared for printing the grand total, and

Fig. 6 shows the mechanism as set in Fig. 5 after the movement of the crank has been completed.

Figs. 7 and 8 show the prepared and final positions of the zero stops of the counting mechanism with their respective drives for printing sub-totals and grand totals.

(I). *Controlling the counting mechanism for printing items from the keyboard.*

The cam disc supporting the counting mechanism is marked 1. The counting mechanism, of which merely a portion of a lever 60 provided with a roll 61 is shown, rests upon the cam surface 2 of said disc by means of said rollers 61 and the cam disc can be swung over on the pivots 3. If the cam disc 1 is moved over to the left in the direction of the arrow 4 the counting mechanism is lowered owing to the shape of the cam 2 provided on the disc 1. This lowering and raising movement (the latter during the return of the disc) of the counting mechanism takes place during the printing of a number set upon the keyboard by means of a reciprocating mechanism which is designed as follows:—

The pivot 5 of the cam disc 1 works in right angled slots 6 and 7 of two adjacent slide rods 8 and 9. In the normal position of the cam disc 1 i. e. in the raised position of the counting mechanism, the slots 6 and 7 of the slide rods 8 and 9 are placed symmetrically in such a manner that the vertical parts of the slots come directly over the pivot 5. The slide rods 8 and 9 are hinged to two adjacent levers 11 and 12, which can swing on the pivot 10, the slide rod 8 being connected to the lever 11 and the slide rod 9 to the lever 12. These levers 11 and 12 are moved by two adjacent lifting discs 14 and 15 fastened side by side upon the crank shaft 13, this movement being effected by the cam 16 of the lifting disc 14 pushing against corresponding arms of the lever 11, and by cam 17 of the lifting disc 15 pushing against corresponding projections of the lever 12. As the cams 16 and 17 are set at an angle of about 45°, and as the cam 17 lags behind the cam 16, the slide rod 8, when the operating handle starts to move i. e. when the lifting disc 14 and 15 turns in the direction of the arrow 18, is first pushed ahead. By virtue of the horizontal part of the angular slot 6 it slides smoothly over the pin 5 of the cam disc 1.

Thereupon the cam 17 of the lifting disc 15 hits upon corresponding arms the lever 12, so that the slide rod 9 is now pushed ahead. During this movement, however, it must carry the pivot 5 and thereby the cam disc 1 along with it to the left, because with the rear edge of its angular slot 6 it rests against the pivot 5 in the normal position. This means that the counting mechanism is lowered. This lowering therefore takes place at the end of the movement of the operating handle see Fig. 4. During the return movement of the operating handle the counting mechanism must at first remain lowered as by means of the toothed segments set from the keyboard the number discs of the counting mechanism must be turned according to the numbers set upon the keyboard. If the crank of the machine is rotated in rearward direction, also the cam 15 with its cam surface 17 is turned in the same direction whereby the lever 12 is turned back into its initial position. As the lever 12 is connected with the thrust-bar 9, this latter is shifted correspondingly and the horizontal part of the angular slot of this bar moves freely away over the pivot 5 without taking this latter along with it, that is to say, without turning the cam-disk 1 so that the parts 61 and 60 remain supported by this cam-disk. When then the crank is still further

rotated, the cam surface 16 (of the cam 14) which is located at an angle of 45° relatively to the cam-surface 17 contacts with the lower part of the lever 11 so that also this lever is swung back into its initial position and pulls the thrust bar 8 along with it. As the slot 6 of this bar contacts at its rear flank with the pivot 5 of the cam disk 1 (Fig. 6) also this pivot is taken along by the bar 8 and the cam-disk 1 is turned back into its initial position whereby the counting mechanism is raised.

During this cycle of movement the following operations have taken place:—

(1) Printing the items set upon the keyboard at the end of the differential setting of the toothed segments of the keyboard mechanism.

(2) Adding the numbers set on to the counter during the return movement of the operating handle i. e. during the movement of the toothed segments back to their starting position.

(3) The raising of the counting mechanism after the addition of the number has taken place.

(II). *Control of the counting mechanism for printing subtotals.*

In order to print sub-totals it is first of all necessary as has been stated to disconnect the keyboard so that the differential toothed segments will not be influenced from the keyboard but only from the numbered discs of the counting mechanism 21, Fig. 1 is a lever which is operated in order to cause the printing keys to be set from the counting mechanism, this lever being arranged so that it may be rocked over by means of the sliding rod 22.

By the bar 22 also the lever 27 is raised by the intermediary of the members 23 and 24, and the further actuation of the bar 22 may be effected in known manner, or by known means respectively (not shown), for instance by the so-called sub-total key. The lever 27 or rod swings on the pivot 25 which is guided in a longitudinal slot of the frame of the calculating machine. Lifting the lever or rod 27 is effected by means of the bell-crank lever 23 which is mounted on the pivot 23^a, and by means of the link rod 24, whereby the rod 27 cannot participate in the swinging movement of the lever 11 caused by the lifting disc 14.

This bar 27 is however the auxiliary bar through which the locking or catch bar for the depressed key is operated which serves for controlling the stops for the toothed segments corresponding to the number value of the keys pressed down.

If therefore the rod or bar 27 is lifted (Fig. 2) by the mechanism just described so that it no longer participates in the reciprocating movement of the swinging lever 11 the stops for the toothed differential segments can be no longer set by pressing down a key on the keyboard, so that these segments first of all travel through the entire angular distance possible to them i. e. to the angular distance corresponding to the number "9."

It will thus be seen that this lifting of the rod 27 locks the keyboard and now the toothed segments may be operated from the counting mechanism until the number discs of the counting mechanism have been brought back to zero from the number previously set (the sub-total), this being effected by special "zero" stops as will be explained below.

The control of the counting mechanism must be effected in such a manner that, when the operating handle starts to move, it is first lowered, and during the further movement of the operating handle it is turned by the toothed segments up to the zero stops, at the same time setting into position and operating the printing types. During the return movement of the operating handle the number discs of the counting mechanism are returned again into their original position; and the final movement of the operating handle lifts the counting mechanism.

This is effected in the following manner:—

The lever 21 which was swung over from the sub-total key (Fig. 2) presses with the projection or tooth 28 upon the arm 29 of the slide rod 8 swinging on the lever 11, so that the slide rod 8 which is normally held up by the tension spring 30, is depressed for such a distance that the upper edges of the vertical part of the slot 6 come against the pin 5 of the cam disc 1, the pin 5 thereby being caught in the vertical part of the slot 6. The consequence is that, during the sliding movement of the rod or link 8, initiated by the lever 11 in the direction of the arrow 4, the pin 5 and thereby the cam disc 1 are carried along at once, the counting mechanism being lowered immediately into gear with the toothed segments, so that when the operating handle is pulled over, the gearing of the counting mechanism is at once engaged by the differential toothed segments and the numbered discs of the counter are turned from the numbers set to zero i. e. to the zero stops, as will be described hereafter.

The printing types which are coupled to the toothed segments are moved by a like amount, thus effecting the printing of the sub-total.

After the impression of the sub-total has been made, the counting mechanism must be adjusted again so as to show the sub-total; it must therefore remain lowered when the operating handle starts to move back. Whereas the slide rod 8 has taken the cam disc 1 along at once, the slide rod 9 driven from the lever 12 slides with the horizontal part

of the slot 7 loosely over the pin 5 of the cam disc 1 as shown in Fig. 3. The slide rod 8 remains pressed down (Figs. 2 and 3) until the lever 29 has passed the arm 28 of the lever 21. In order to make more clear how the arm 29 can pass the arm 28 if the top of the cam 16 is in circumferential line with the axis as a centre, I point out what follows: The bar 8 is hinged to the lever 11 by means of a pivot 8^a (Figs. 1–4). If, in the position shown in Fig. 1, the lever 11 is depressed by the bar 22, the bar 8 will be caused to swing downwards on said pivot 8^a so as to assume the position shown in Fig. 2. When then the operating crank of the calculating machine is rotated, viz, from the position shown in Fig. 2 into that shown in Fig. 3, the depressed bar 8, the vertical part of the slot of which surrounds the pivot 5, will turn the cam-disk 1 first into the position shown in Fig. 3 and then into the position shown in Fig. 4, and in that moment in which the pawl 29 has moved, with its upper frontal surface, past the rear edge of the nose 28 the bar will, under the pull of the spring 20, turn again upwards on its pivot at the lever 11 so that the pivot is now located in the horizontal part of the slot 6 (Fig. 4). When the parts in question have arrived in this position, the bar 8 can be moved rearwards when the lever 11 is turned in rearward direction, that is to say, into its initial position, as the pawl which is retained by the nose 28 can give way to the left and can pass along below said nose, the spring 30 being correspondingly expanded.

After having passed this lever (Fig. 4) the arm 29 jumps up again under the influence of the spring 30, the slide rod thereby assuming its normal position. Fig. 4 therefore represents that position of the mechanism in which both slide rods 8 and 9 have completed their rearward travel, this position being opposite, apart from the position of the lever 21, to the position of the mechanism at the end of the forward travel of the slide rods 8 and 9 according to Fig. 1. In the initial position of the crank the upper, projecting rim of the cam surface 16 contacts with an upper lug of the lever 11, so that when the crank is turned in proper direction this lever is turned at one to the left. During the further movement of the crank the cam surface 17 which is located behind the other cam-surface by 45° (of the cam disk 15) contacts with the corresponding lug of the lever 12 and turns also this lever to the left (Fig. 4). When then the crank is turned in the reverse direction, i. e. rearwards, the cam-surface 17 of the cam-disk 15 moves to the left, past the upper lug of the lever 12, without interfering therewith, and then the projecting lower edge of the cam-surface 17 contacts with the lower lug of the lever 12 (Fig. 4) and turns now this lever back into its initial position. Then the cam-surface 16 of the cam-disk which (the cam-surface) is arranged at an angle of 45° relatively to said other cam-surface contacts at its lower edge with the lower lug of the lever 11 which is still directed to the left and moves also this lever back into its initial position. During this period the number discs which were standing at zero are set again for the subtotal by the toothed segments returning into their position of rest. If the lever 11 is now moved forward by the cam disc 14 and the cam 16, the slide rod 8 by means of the back edge 6 resting against the pin 5 takes the cam disc 1 forward i. e. the counting mechanism is lifted out of gear with the toothed segments into its upper position. In order that the discs of the counting mechanism may be moved back from the numbers of the sub-total into the cipher position special zero stops or catches are provided (Figs. 7 and 8), Fig. 7 shows the position of this zero stop mechanism in its normal released position whilst Fig. 8 shows it in the engaged position.

For every number disc this mechanism consists of a tooth or catch 31 provided at the side of the number disc, and a rest or catch 32 which may be lowered into the path of this tooth or catch or lifted away from it. To effect this the catch 32 is mounted upon a flap 34 which can swing about the pivot 33 and is held down by a spring 35 so that normally the catch 32 is situate outside the path of the tooth or catch 31 i. e. the number disc may be turned independent of the catch 32. If it is desired, in order to print a sub or grand total, to bring the catch 32 into the path of the tooth or catch 31 this may be done by means of a special mechanism, likewise controlled by the sub or grand total key. This mechanism (Fig. 7) consists of a lever 36 swinging on the same pivot 23^a as the lever 23 and being coupled to this latter lever. The lever 36 is provided with a link rod 37 to which bell crank lever 38 is connected so that by the movement of the lever 36, in the direction of the arrow 39 the lever 38 is swung over and its lower arm 40 is raised into the position shewn at Fig. 8. From the counting mechanism (which can be raised and lowered) a rail 43 is suspended freely by the slots 41 and pins 42, the upper front edge of this rail being situated below the hinged flap 34.

If the counting mechanism is lowered while the subtotal or grand total key is pressed down i. e. while the arm 40 of the lever 38 is raised, the rail 43 cannot drop down as well but remains in its upper position, whereby the flap 34, which is hinged to the frame of the counting mechanism at 33 is lowered and swung up with respect to

the counter. Thereby the catch 32 is moved into the path of the tooth or the catch 31 and consequently the number disc of the counting mechanism can only turn until the teeth 31 come against the catches 32, the teeth 31 are attached to the number discs in the position corresponding to the ciphers.

In the extreme position the lever 38 must be securely locked, and must remain so whilst the impression of the numbers is made. For this reason a special locking arrangement has been provided for this position of the lever 38 and the slide rod 37 respectively. This consists (Fig. 7) of a bell crank 44 hinged to the slide rod 37 the arm 45 of the bell crank being provided with a roller 46. In the normal position of the slide rod 37 this roller 46 is outside the path of a flange 47 of a segment 48 mounted upon the driving shaft 13. In the locking position of the slide rod 37 and the lever 38 respectively (Fig. 8) the lever 44 is swung over in such a way that the roller 46 comes in the path of the lower side of the flange 47. It therefore remains locked to the driving shaft whilst the segment 38 is swung over, locking thus being assured. At the same time the segment 48 may also be used as a safe guard against accidental shifting of the slide rod 37 if the sub-total and grand total keys have not been pressed down, this being effected by the outer edge of the flange 47 being so dimensioned that in the normal position of the slide rod 37 it can move freely below the roller 46, thereby preventing an unintentional movement of the lever 44. This arrangement renders it impossible to press down the sub or grand total keys during the turning of the operating handle.

(III). *Control of the counting mechanism during the printing of the grand total.*

For printing the grand total the movements of the mechanism regarding the locking of the keyboard and the setting of the zero stops for the number discs are repeated in an identical manner to that described with regard to the sub-totals.

The lowering of the counting mechanism is the same i. e. the counting mechanism is lowered immediately the operating handle starts to move and consequently during the further movement of the operating handle the counter shows zero: the printing types being operated corresponding to this zero position. During the return movement of the operating handle however the counter is at once raised out of engagement. This is effected by the mechanism used for the raising and lowering of the sub-total printing gear, the mechanism being merely supplemented by a few auxiliary levers, as represented in the special positions shown in Figs. 5 and 6. A rod 21 is moved from the grand total key (Fig. 1) this rod being located alongside the rod 22 and moving in a direction of the arrow 49 of the Fig. 1. This rod is provided with a lateral projection 50 which in the direction of the movement comes in front of a stop 51 of the rail 22. If during the operation of the grand total key the rod 22^1 is moved it takes the rod 22 along with it, whereas during the operation of the sub-total key the rod 22 is moved alone i. e. rod 22^1 is not taken along. The rod 22^1 is pivoted to the lever 21^1 placed alongside the lever 21. Therefore when the grand total key is operated the levers 21 and 21^1 are swung over simultaneously by the rods 22, 22^1 as shown in Fig. 5. As a result of this the sliding rod 8 is first lowered in the same manner as for the printing of the sub-total. The slide rod 9 cannot be lowered as its projection or tooth 52 rests upon the supporting lever 53. When the slide rods 8 and 9 are moved in the direction of the arrow, the arm 28^1 of the lever 21^1 presses upon the trip lever 56 fastened to the slide rod 9 in such a manner that it can turn under the influence of a spring 55 on the trunnion 54, and presses it downward, without however the slide rod 9 being lowered because it is locked by the lever 53. When however, during the further sliding movement of the rod 9, the tooth 52 has passed the front face of the lever 53 as shown in Fig. 6, the slide rod 9 is lowered, with the result that the pin 5 of the cam disc 1 is caught in the vertical part of the slot 7 of the slide rod 9. During the return movement of the slide rod 9 (at the beginning of the movement rearward of the operating handle) the cam disc 1 is carried along at once i. e. the counting mechanism is lifted out of engagement with the toothed segments and for this reason the number discs remain at zero, the toothed segments are now moved back again into their normal position during the further return movement of the operating handle.

I claim:

1. In a total taking mechanism for calculating machines, the combination, with an accumulator adapted to be raised and lowered, of a cam disk adapted to raise said accumulator; pivots projecting laterally from said cam-disk; pairs of push-bars having angular slots engaged by said laterally projecting pivots; double-levers coupled with said push-bars; and means for actuating said double-levers, for the purpose as described.

2. In a total taking mechanism for calculating machines, the combination, with an accumulator adapted to be raised and lowered, of a cam disk adapted to raise said accumulator; pivots projecting laterally from said cam-disk; pairs of push-bars having symmetrically arranged angular slots, the slots of each pair being engaged by the

laterally projecting pivots of said cam-disk; double-levers coupled with said push-bars; and means for actuating said double-levers, for the purpose as described.

3. In a total taking mechanism for calculating machines, the combination, with an accumulator adapted to be raised and lowered, of a cam-disk adapted to raise said accumulator; pivots projecting laterally from said cam-disk; pairs of push-bars having angular slots engaged by said laterally projecting pivots; double-levers having projecting arms and being coupled with said push-bars; a crank and a crank shaft; and cam disks affixed to said shaft and contacting at the peripheries of their cam-portions with the said double levers, for the purpose as described.

4. In a total taking mechanism for calculating machines, the combination, with an accumulator adapted to be raised and lowered, of a cam disk adapted to raise said accumulator; pivots projecting laterally from said cam-disk; pairs of push-bars having angular slots engaged by said laterally projecting pivots; arms attached to said push-bars and extending upwards from them; springs so arranged as to be adapted to act upon said arms; bell-crank levers bearing with practically horizontal arms upon the before-mentioned arms; intermediate sum keys and connections between them and the other arms of said bell-crank levers; and means for actuating the said push-bars, for the purpose as described.

5, In a total taking mechanism for calculating machines, the combination, with an accumulator adapted to be raised and lowered, of a cam disk adapted to raise said accumulator; pivots projecting laterally from said cam-disk; pairs of push-bars having angular slots engaged by said laterally projecting pivots; a bell-crank lever supported by one of said push-bars; a spring so arranged as to be adapted to act upon said bell-crank lever; another bell-crank lever bearing with the frontal end of one of its arms upon a member of the mechanism; a total sum key and a connection between it and said other bell-crank lever; an abutment forming part of the bar supporting the first-mentioned bell-crank lever; a lever also adapted to oscillate upon a pivot of the transfer gear and to co-operate with said abutment; and means for actuating said push-bars, for the purpose as described.

6. In a total taking mechanism for calculating machines, the combination with an accumulator adapted to be raised and lowered, of a cam-disk adapted to raise said accumulator; pivots projecting laterally from said cam-disk; pairs of push-bars having angular slots engaged by said laterally projecting pivots; other pivots located below the push-bars; double-levers coupled at their upper ends with the said push-bars; a crank and a crank-shaft; and incomplete disks having radially projecting cams in staggered arrangement and being adapted to co-operate with the lower arms of the said double-levers, for the purpose as described.

7. In a total taking mechanism for calculating machines, the combination, with an accumulator adapted to be raised and lowered, of a cam-disk adapted to raise said accumulator; pivots projecting laterally from said cam-disk; pairs of push-bars having angular slots engaged by said laterally projecting pivots; a double-armed lever adapted to be moved by a key of the machine; another double-armed lever coupled with the before-mentioned double-armed lever; a slidable bar adapted to be displaced by the free arm of said other double-armed lever; catches adapted to be operated by said displaceable bar; counting disks and sprockets forming parts of them and being adapted to co-operate with said catches, for the purpose as described.

8. In a total taking mechanism for calculating machines, the combination, with an accumulator adapted to be raised and lowered, of a cam-disk adapted to raise said accumulator; pivots projecting laterally from said cam-disk; pairs of push-bars having angular slots engaged by said laterally projecting pivots; double-levers also adapted to oscillate upon the pivots of the transfer gear and being coupled with said push-bars; upwardly extending arms hinged to said push-bars; pairs of bell-crank levers located above the push-bars and bearing each with one arm upon one of the said bars; springs so arranged as to be adapted to move said arms back into normal position after a deviation; pairs of connecting-rods, of which one is coupled with one of said bell-crank levers, the other with the other of the said bell-crank levers; another bellcrank lever coupled with said connecting rods at their lower ends; a link hinged to this bell-crank lever; a one-armed lever connected with said link and forming a hook at its other end; and a coupling member between the hook and the associate double-lever, for the purpose as described.

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

Frau ANNA RAUCHWETTER, geb. BÖHME,
Administratrix of Franz Rauchwetter, deceased.

Witnesses:
HERMANN REISING,
WALDEMAR WARSINSKI.