Nov. 3, 1936. F. POTT 2,059,652

KEY CANCELING ARRANGEMENT FOR CALCULATING MACHINES

Filed Aug. 25, 1933 2 Sheets-Sheet 1

Fig. 1

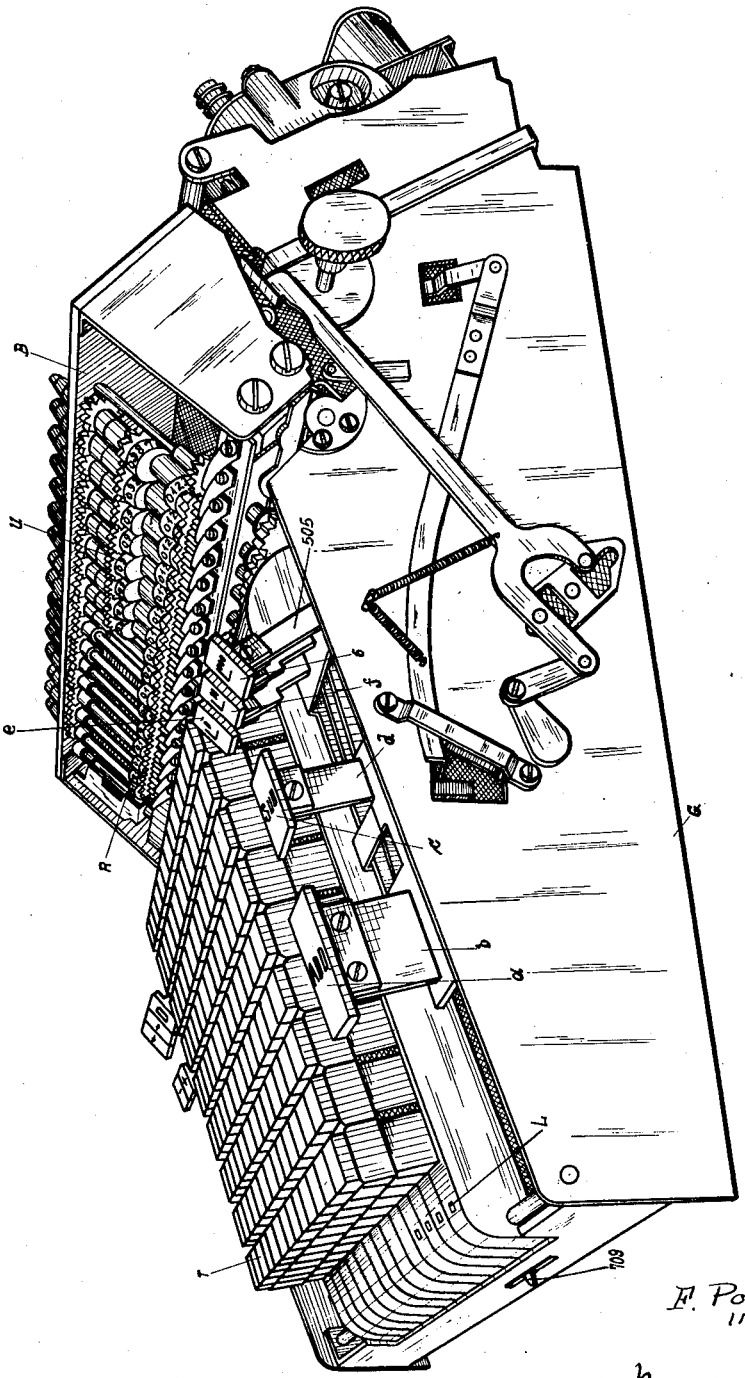

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Fig. 2

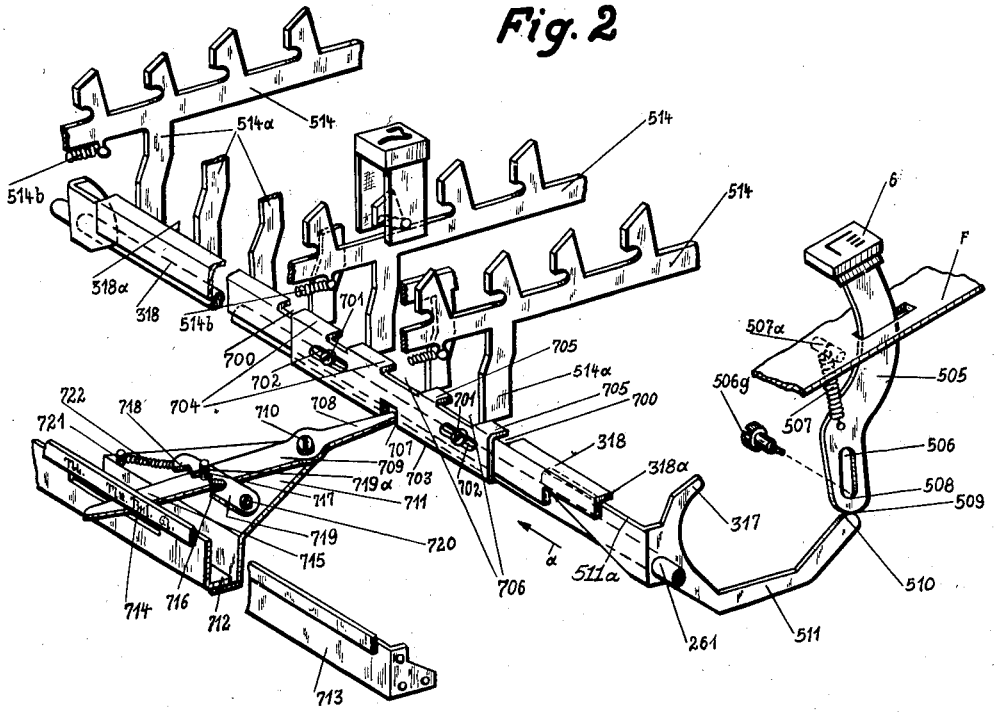
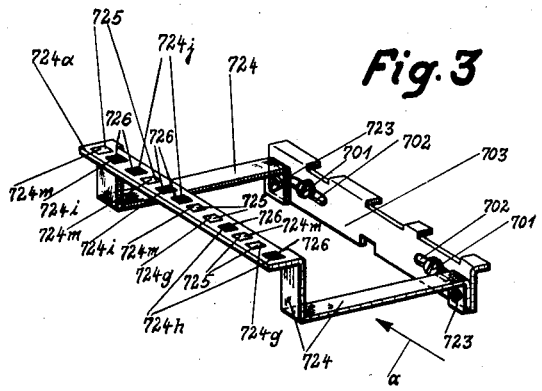


Fig. 3



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KEY CANCELING ARRANGEMENT FOR CALCULATING MACHINES

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7 Claims. (Cl. 235—27)

The invention relates to a key canceling arrangement for calculating machines, in which the key canceling member is capable of being brought out of the working position in relation to a number of key rows at will, by means of a control device.

According to the invention, a particularly simple form of this arrangement is obtained, while the control device consists of a rack-like member adjustably arranged on the key canceling bar. Further, by this construction it is rendered possible for different key rows to be brought out of the working position at will in the simplest manner, while by the arrangement and construction of the teeth of the rack-like member, according to the position of the same, a variable number of teeth enter the working position.

In the drawings, a form of construction of the invention is illustrated by way of example and as applied to a Mercedes-Euklid machine.

Figure 1 shows a perspective elevation of the machine in which for purposes of illustration, the cover plate is partly removed.

Figure 2 shows a perspective elevation on an enlarged scale of the key canceling arrangement controlled by the canceling key, in which arrangement the invention is incorporated.

Figure 3 shows a perspective representation on an enlarged scale of an indicating mechanism for the partial canceling device.

On the right-hand side of the machine, as known, besides the key slide, *b*, (Fig. 1) carrying the addition key, *a*, the key slide, *d*, carrying the subtraction key, *c*, the canceling keys *e*, (L') and *f*, (L'') for canceling the revolution totalizer U, and the result totalizer, R, there is also arranged the canceling key **6** (L''') for canceling the set of keys T with which key, **6**, the invention is associated and will be described in detail hereafter.

The key-board canceling key, **6**, carrying the reference L''' (Figures 1 and 2) is connected to a slide, **505**, which is guided in a guide plate, F, and is vertically displaceable by means of an elongated hole, **506**. A spring, **507**, which is attached to the slide, **505**, and which on the other side is connected to a pin, **507***a*, fixed in the housing, holds the slide, **505**, in its normal position which is determined by the striking of the face, **508**, of the elongated hole, **506**, against a screw, **506***g*, screwed into the right-hand side of the machine housing, G, and projecting through the elongated hole. The slide, **505**, acts in its downward movement with its face, **509**, on the face, **510**, of an arm, **511**, of a key canceling bar, **318**, which is pivotally mounted on a shaft, **261**, supported in the machine housing, G. The key canceling bar, **318**, preferably has the form of a bail which lies with its face, **318***a*, against projections, **514***a*, of the known key locking bars, **514**.

The key canceling bar, **318**, (Fig. 2) is provided with a recess, **700**. On the key canceling bar, **318**, a bar, **703**, is displaceably arranged, and is attached by means of the screws, **701**, which project through the elongated holes, **702**. On the upwardly directed part of the bar, **703**, lugs, **704** and **705** are bent, which project into the recess, **700**, of the key canceling bar, **318**. These bent lugs, **704** and **705**, of the bar, **703**, in their operation, displace the angular canceling bar, **318**. The lugs, **704** and **705**, are so arranged that in one position of the bar, **703**, only the lugs, **704**, co-act with the corresponding projections **514***a*, of the key locking bars, **514**, and the projections, **514***a*, of the locking bars, **514**, which otherwise co-act with the lugs, **705**, lie opposite to the recesses, **706**, of the bar, **703**, while in another position of the bar, **703**, the lugs, **704**, as well as the lugs, **705**, co-act with the corresponding projections, **514***a*, of the key locking bars **514**. Moreover, the bar, **703**, can be displaced into a position in which none of the lugs, **704** and **705**, can co-act with the corresponding projections, **514***a*, of the key locking bars, **514**.

The bar, **703**, has further, a recess, **707**, (Fig. 2) into which projects an arm, **708**, of a two-armed lever, **709**, which is pivotably mounted on a screw, **710**, on a supporting member, **711**. The supporting member, 711, constructed according to Fig. 2, is further by means of screws, not represented, fixed to a right-angled bent-off part, **712**, of a ledge, **713**, arranged on both side walls of the machine. The ledge, **713**, is provided with a slot, **714**, through which projects the other arm, **715**, of the two-armed lever, **709**. The lever, **709**, is capable of being set in three positions and is held in these positions by means of a lever, **719**, provided with notches, **716**, **717**, **718** which co-act with a pin, **719***a*, of the lever, **709**. The lever **719**, is pivotably mounted on the supporting members, **711**, by means of a screw, **720**. By means of a spring, **722**, attached at one end to the pin, **721**, of the supporting member, **711**, and at the other end to the setting lever, **719**, the setting lever is acted on round the screw, **720**, in the anti-clockwise direction, whereby it is held in the operative position by the pin, **719***a*, of the lever, **709**, engaging in one of the three notches **716**, **717**, **718**. The lever **709**, can be set by hand in one of these three positions by means

of its end which projects from the machine. With this arrangement, the number of the lugs, **704** or **705**, of the bar, **703**, which co-act with the projections, **514***a* of the key locking bars, **514**, may be as desired according to the object to be achieved.

If the forward end **715**, of the lever, **709**, is in its left-hand position, then the keys of the three left-hand key rows only are canceled, which position is indicated by the marking, Tl.L.; if, however, it is in the position represented in Figure 2, the keys of the three left-hand rows and the keys of the two intermediate rows are canceled which position is indicated by the marking Tl.u.Tm.L. The cancellation of all the keys takes place in the right-hand position of the lever, **709**, which position is indicated by the marking GL.

By means of the screws, **723**, (Fig. 3) an indicator bar, **724**, constructed correspondingly to Fig. 3, is mounted on the bar, **703**. On the upwardly directed face of the right-angled bent ledge, **724***a*, red-black markings are applied, which are visible to the eye of the operator of the machine through inspection apertures, L. of the machine. With this arrangement, the red fields indicate that in the corresponding calculating positions, no cancellation takes place, while the black fields, **726**, indicate that cancellation takes place in the corresponding calculating positions.

The operation of the invention is as follows:—

If the value registered in the set of keys is to be totally canceled, the lever, **709**, is swung to the right of the position shown in Fig. 1, and set on to the mark GL (total-cancellation) whereby the pin, **719***a*, moves out of the notch, **717**, of the setting lever, **719**, and enters the notch, **716**, of the setting lever, **719**, whereby the lever, **709**, is held in the set position.

In the swinging movement of the lever, **709**, to the right, therefore in the rotation of the lever, **709**, in the anti-clockwise direction, the bar, **703**, is acted on in the direction of the arrow "*a*", whereby the lugs, **705**, of the bar, **703**, move in front of the projections, **514***a*, of the locking bars, **514**, of both the right-hand calculating positions. The lugs, **704**, of the bar, **703**, which in the position of the bar, **703**, represented in Fig. 2 were already in the operative position in relation to the projections, **514***a*, of the locking bars, **514**, then slide along on the projections, **514***a*, but remain, however, in the working position in relation to the same. On the displacement of the bar, **703**, in the direction of the arrow "*a*", the indicator bar, **724**, attached to the same by means of the screws, **723**, naturally participates in this movement, so that in the inspection apertures, L, the red fields, **724***g*, disappear, and the black fields, **724***h*, of both the right hand positions are visible in the inspection apertures. Simultaneously, the black fields, **724***j*, move into the places of the black fields, **724***i*, in both the positions following on the left, so that from the black fields appearing in the inspection apertures, it is evident that all the values registered in the set of keys are being canceled.

If now, the canceling key **6**, (L''') for the keyboard is depressed, the key slide, **505**, then acts on the lever, **511**, so that this is swung round the shaft, **261**, in the clockwise direction. In this swinging movement, the canceling bar, **318**, fixed on the arm, **511***a*, of the lever, **511**, participates. This acts with its edge, **318***a*, on the projections, **514***a*, of the key locking bars, **514**. The key locking bars, **514**, of the three left-hand key rows are thus moved against the action of their springs, **514***a*, and the depressed keys are released.

In the swinging movement of the canceling bar, **318**, in the clockwise direction, the bar, **703**, arranged on the same, participates in this movement. As above described the lugs, **704** and **705**, are located in the path of movement of the projection **514***a*, of both of the intermediate and of both of the right-hand key locking bars, **514**, so these are moved against the action of their springs, **514***b*, and the corresponding depressed keys released. After release of the key, **6**, the parts, **505**, **511**, **318** and **514**, return again under the action of the springs, **514***b* and **507**, into their rest position as illustrated in Fig. 2.

If the lever, **709**, is now swung out of the right-hand position and into the position illustrated in Fig. 2 (Tl.u.Tm.L.), then the pin, **719***a*, moves out of the notch, **716**, of the lever, **719**, into the notch, **717**, of the lever, **719**, whereby the lever, **709**, is held in the position illustrated in Fig. 2.

In this swinging movement of the lever, **709**, in the clockwise direction, the bar, **703**, is displaced in the opposite direction to that of the arrow "*a*", whereby both of the right-hand lugs, **705**, move out of the path of movement of the corresponding projections, **514***a*, of both of the right-hand key locking bars, **514**, while both of the lugs, **704**, of the bar, **703**, remain still in the operative position with the projections **514***a*, of both of the intermediate key locking bars, **514**.

In the displacement of the bar, **703**, the indicator bar, **724**, likewise participates. The red fields, **724***g* are now visible in the inspection apertures of both of the right-hand calculating positions, from which it will be evident that both of these calculating positions are not being canceled in the cancellation of the remaining keys, T, while in both of the inspection apertures following on the left, the black fields, **724***i*, are visible.

If now the key, **6**, is depressed, then the canceling bar, **318**, and the bar, **703**, are swung in the clockwise direction around the shaft, **261**, by means of the parts, **505**, **511**, whereby the edge, **318***a*, of the canceling bar, **318**, and the lugs, **704**, act on the corresponding projections, **514***a*, of the key locking bars, **514**, and move these against the action of their springs **514***b* and release the depressed keys.

As the lugs, **705**, of the bar, **703**, have moved out of the path of movement of the projections, **514***a*, then the projections **514***a*, of the key locking bars, **514**, in the swinging movement of the canceling bar, **318**, have entered the recesses, **706**, of the canceling bar, **318**, and in consequence have not been acted upon, so that the amount registered in both of the right-hand calculating positions of the set of keys was not canceled.

If now finally the lever, **709**, is swung to the left out of the position illustrated in Figure 2, and therefore set on the mark "Tl.L", the pin, **719***a*, of the lever, **709**, moves out of the notch, **717**, into the notch, **718**, of the setting lever, **719**, and is thereby held in its set position. In this swinging movement of the lever, **709**, in the clockwise direction, the bar, **703**, is displaced in the opposite direction to that of the arrow "*a*", whereby both of the lugs, **704**, of the bar, **703**, now move out of the path of movement of the projections, **514***a*, of the key locking bars, **514**.

As the indicator bar, **724**, participates in the dis-

placement of the bar, **703**, the red fields, **724***m*, are now visible in the inspection apertures of the key frame, from which it will be evident that in the four right-hand calculating positions, no cancellation is being effected.

On the depression of the canceling key, **6**, and through the parts, **505**, **511**, the canceling bar, **318**, acts now with its edge, **318***a*, on the projections, **514***a*, of the key locking bars, **514**, whereby these move against the action of their springs **514***b*, and the depressed keys, T, are released.

As the bar, **703**, arranged on the canceling bar, **318**, participates in the swinging movement of the canceling bar **318**, and as none of the lugs, **704** and **705**, however, lie in the path of movement of the projections, **514***a* of the key locking bar, **514**, so the corresponding key locking bars remain uninfluenced and the value in the four right-hand key rows is not canceled.

After release of the key, **6**, the parts, **505**, **511**, **318** return under the action of the springs, **514***b* and **507**, into their rest position.

This device is of particular advantage in the setting up of dividend and divisor as well as in the calculating operations mentioned at the commencement.

For example, the dividend can be set up in the left-hand side of the keyboard, and the divisor simultaneously at the right-hand side thereof. It may be noted that the bar **318** is rocked in any machine operation which is brought about by the depression of the addition key *a* or the subtraction key *c* in the same direction as by the depression of the canceling key **6**. By depression of the addition key, *a*, both values are then transferred to the result totalizer, R. According to what has been stated above, the dividend is automatically canceled through the rotation of the principal shaft initiated by the depression of the addition key, *a*. By depression of the subtraction key, *c*, the divisor is withdrawn again from the result totalizer, R, and simultaneously the **1** appearing in the revolution totalizer U, in the first working operation.

Now the totalizer carriage, B, is moved to the right and following thereon commences with the division.

If no partial key canceling was employed, then the divisor on the key board, T, in the first working operation would have been canceled. The setting of the divisor therefore could have been effected only after the dividend had been brought into the result totalizer, R. This method occupies more time than that which is rendered possible by partial key canceling.

The canceling potentialities also may according to requirements, be still further sub-divided, consequently this device can also be applied when two separate control devices are provided for particularly wide key boards.

I claim:—

1. In a calculating machine, a key cancelling arrangement having in combination with movable key locking members, an oscillatably arranged canceling bar arranged to move said locking members, operating means for oscillating said canceling bar, an inoperative part on said canceling bar, a toothed member slidably arranged on said canceling bar within the inoperative part thereof, a lever for positioning said toothed member relatively to said canceling bar in a plurality of positions, said toothed member having a plurality of series of teeth of different breadth cooperating with a variable number of said locking members in its different positions.

2. In a calculating machine, having a number of key rows and a key canceling arrangement in combination with movable key locking members, an oscillatably arranged canceling bar arranged to move said key locking members, an inoperative part on said canceling bar, a key for oscillating said canceling bar, a toothed member slidably arranged on said canceling bar, within the inoperative part of said canceling bar, means for selectively setting said toothed member in three positions, said member having two series of teeth of different breadth adapted to co-operate in two of the positions of said member with a part or with all of said locking members lying within the reach of said member and in the third position to be ineffective for operation of any locking member.

3. In a calculating machine, the combination with denominational rows of keys, and similar rows of movable key locking bars, of key canceling mechanism including a rocking bail, a member on said bail differentially settable along the same into and from operative relation to one or more successive pairs of said bars, and manually manipulative means for setting said member.

4. In a calculating machine, the combination with denominational rows of keys, and similar rows of movable key locking bars, of key canceling mechanism including a rocking bail, a member on said bail settable along the same into and from operative relation to either a single pair of said bars, or, to two successive pairs thereof, and manually manipulative means for setting said member.

5. In a calculating machine, the combination with denominational rows of keys, and similar rows of movable key locking bars, of key canceling mechanism including a rocking bail, a member on said bail movable along the same into and from operative relation to either a pair of said bars or to two successive pairs thereof, manually manipulative means for setting said member, and indicating means moved by said member for indicating into which position the latter has been set.

6. In a calculating machine, the combination with denominational rows of keys, and similar rows of movable key locking members, of key canceling mechanism including an oscillatable bar having a part operative against some of said members and a part inoperative against other of said members, a toothed member slidable on said bar along said ineffective part into and out of operative position relative to said other key locking members, a manipulative member for sliding said toothed member, and indicating means connected with said toothed member for indicating the actual position of the teeth of said slidable member with regard to said other key locking members.

7. In a calculating machine, the combination with denominational rows of keys, and similar rows of movable key locking members, of key canceling mechanism including an oscillatable canceling bail comprising a bridge portion having a part operative against some of said members and a part inoperative against other members, operating means for oscillating said bail, and a toothed member slidable on said bail along said inoperative part thereof for cooperative relation to said other members.

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