April 25, 1967 P. THEVIS 3,315,889

CONTROL KEY ARRANGEMENT FOR A CALCULATOR

Filed April 26, 1965 4 Sheets-Sheet 1

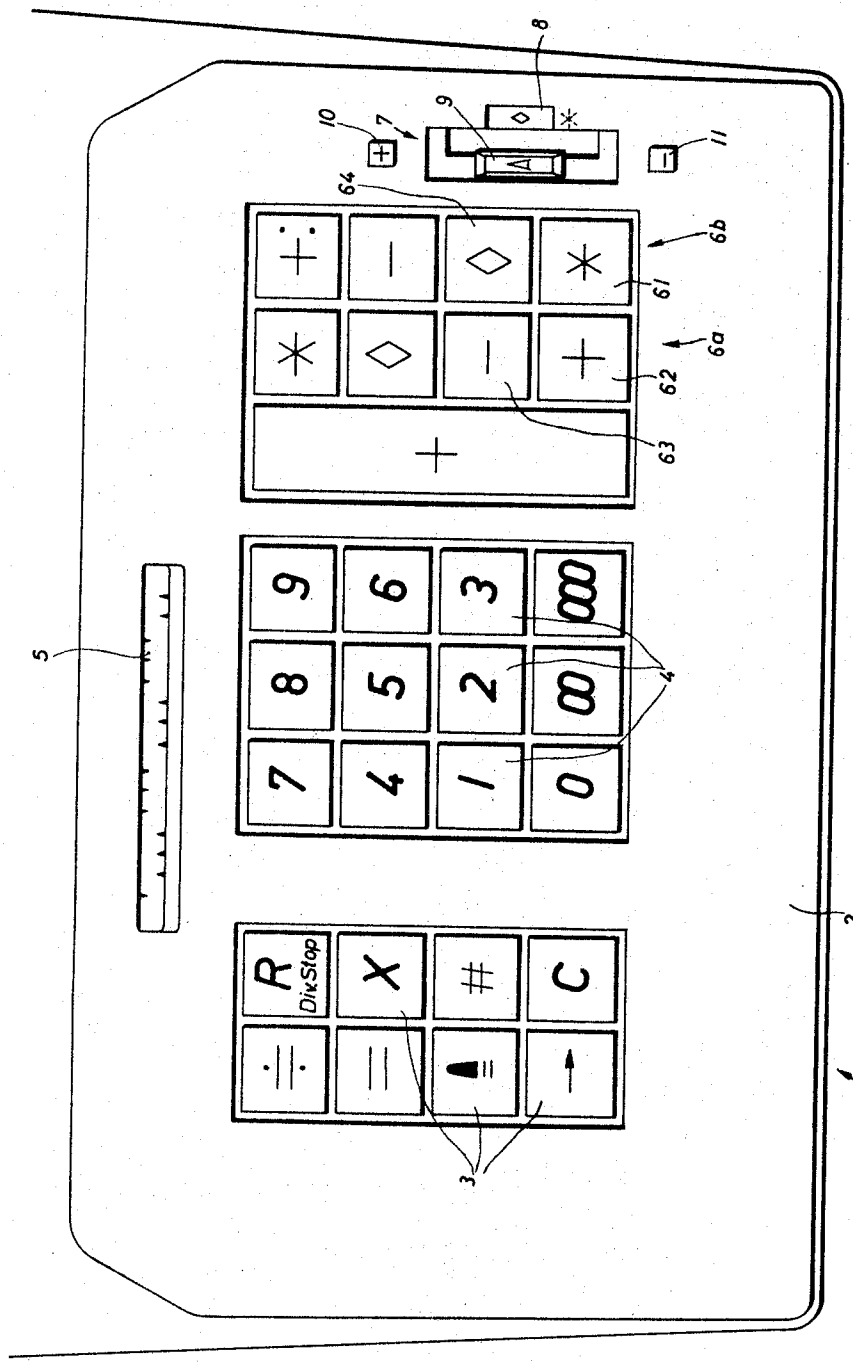


FIG. 1

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April 25, 1967 P. THEVIS 3,315,889

CONTROL KEY ARRANGEMENT FOR A CALCULATOR

Filed April 26, 1965 4 Sheets-Sheet 2

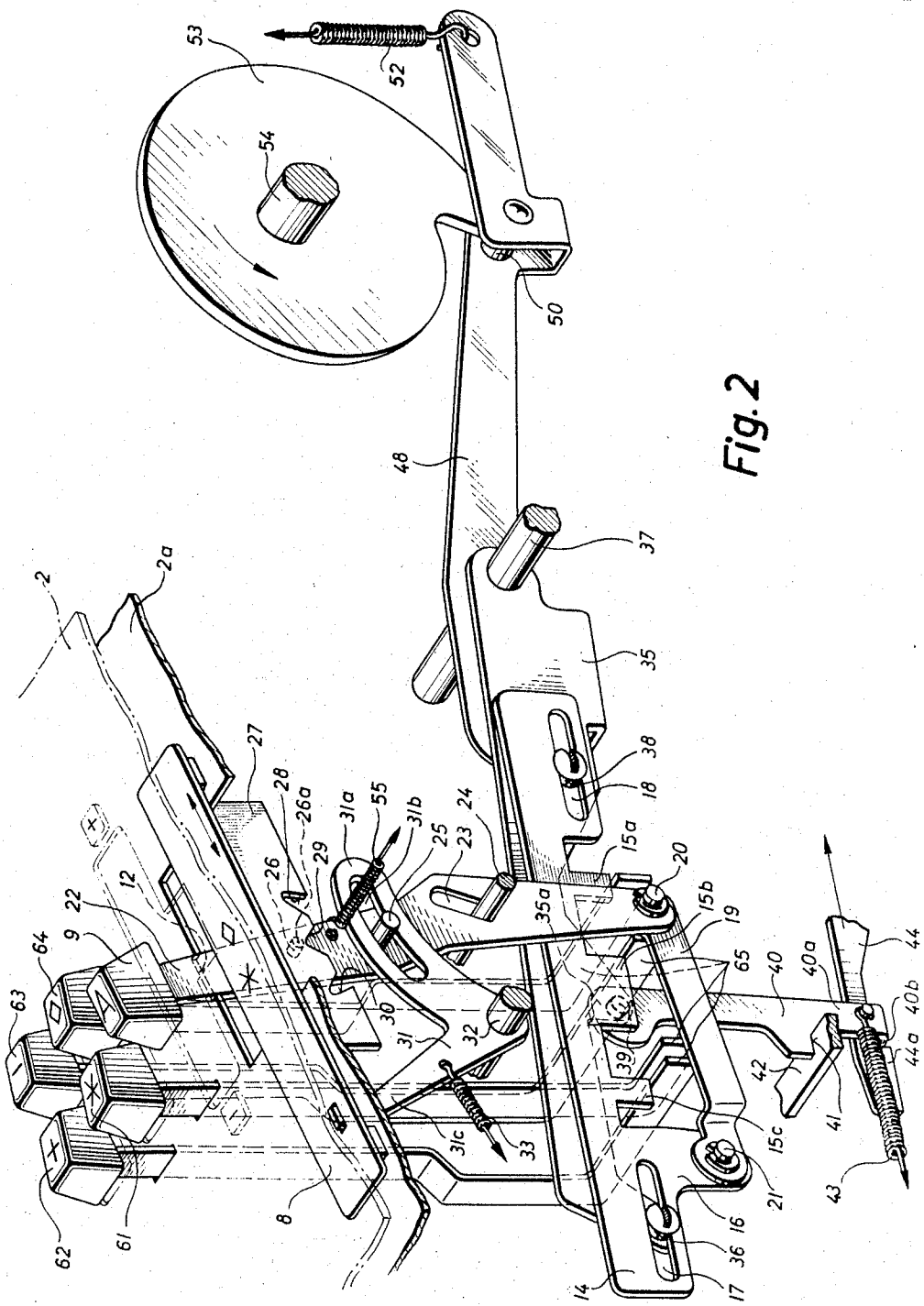


Fig. 2

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April 25, 1967 P. THEVIS 3,315,889

CONTROL KEY ARRANGEMENT FOR A CALCULATOR

Filed April 26, 1965 4 Sheets-Sheet 3

FIG. 3b

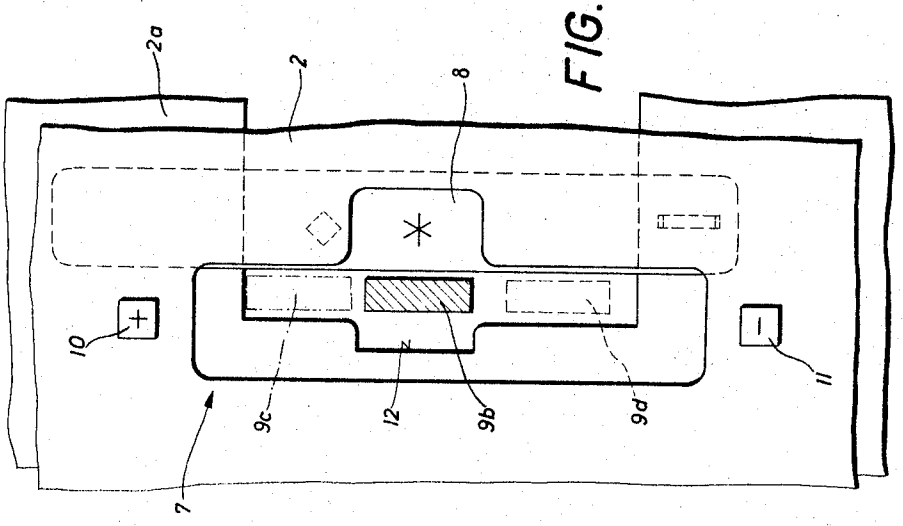
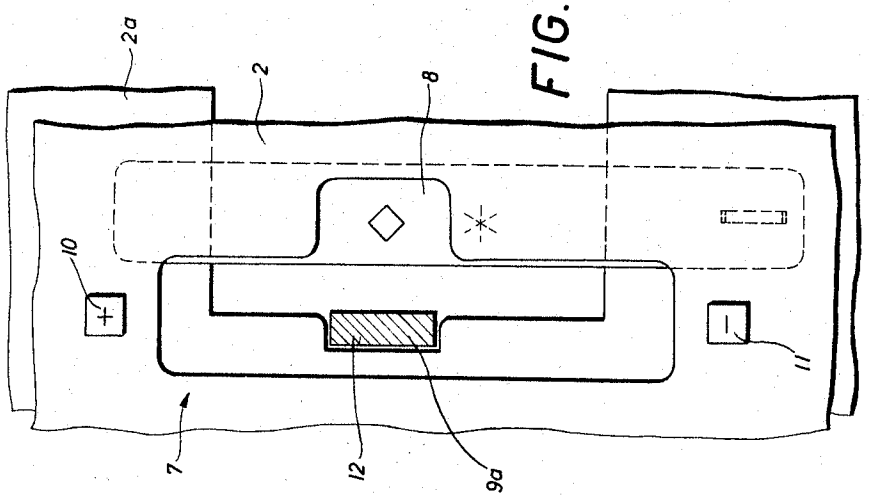


FIG. 3a



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April 25, 1967 P. THEVIS 3,315,889

CONTROL KEY ARRANGEMENT FOR A CALCULATOR

Filed April 26, 1965 4 Sheets-Sheet 4

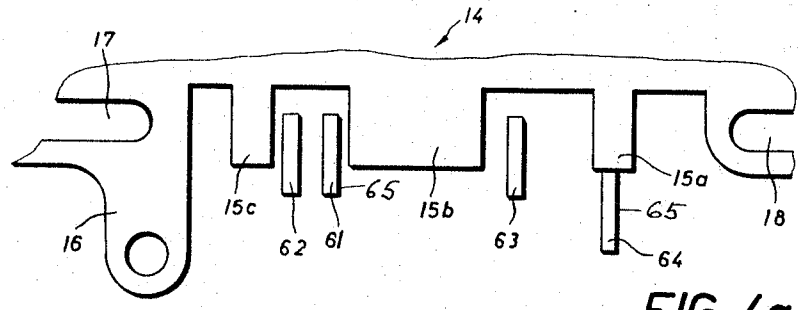


FIG. 4a

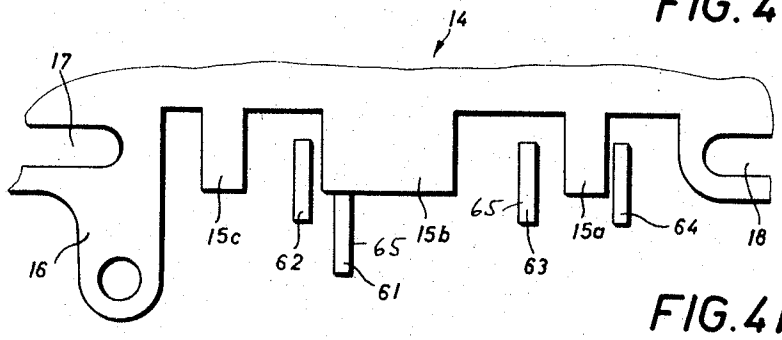


FIG. 4b

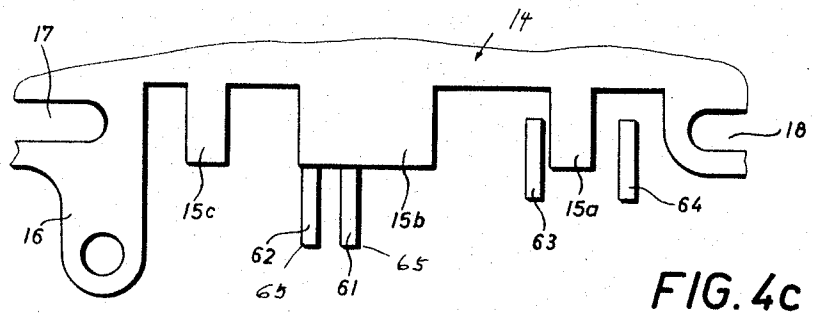


FIG. 4c

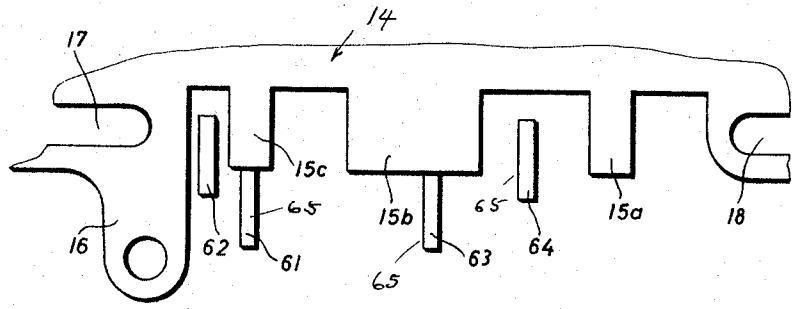


FIG. 4d

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United States Patent Office 3,315,889 Patented Apr. 25, 1967

3,315,889

CONTROL KEY ARRANGEMENT FOR A CALCULATOR

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Filed Apr. 26, 1965, Ser. No. 451,077
Claims priority, application Germany, Sept. 21, 1964, O 10,391
19 Claims. (Cl. 235—145)

The present invention relates to a control key arrangement for a calculator, and more particularly to a control key for selecting and starting certain operations of a calculator, particularly a calculator capable of performing three or four species operations.

In calculators of this type, an automatic control of total taking operations and subtotal taking operations, and the positive or negative storing of values is desired.

On the other hand, it is necessary to provide a simple keyboard so that it is undesirable to add a great number of special keys to the calculator. Such additional special keys confuse the operator, who may hesitate to operate a machine having an unfamiliar keyboard.

It is one object of the present invention to provide a multifunction control key movable between several positions, for example, four positions, for selecting different calculating operations.

Another object of the invention is to provide a multifunction control key movable between a plurality of positions for starting subtotal taking operations, total taking operations, and positive and negative storing operations.

Another object of the invention is to achieve a maximum of calculating operations by actuation of one control key.

Another object of the invention is to provide a keyboard with a multifunction control key for selecting a plurality of different calculating operations.

With these objects in view, the present invention relates to a multifunction control key which is movable between a plurality of positions for causing the calculator to perform a plurality of different operations. In the preferred embodiment of the invention, the control key is mounted for movement between four positions, respectively associated with the automatic taking of a subtotal, the automatic taking of a total, the automatic positive storing of a total, and the automatic negative storing of a total.

The control key is mounted for a translatory movement between a normal position and a depressed position, and for turning movement between two other positions. Before the control key can be turned, it must first be depressed.

In the preferred embodiment of the invention, the shifting of the control key between the four positions, causes a coupling means to move between four coupling positions for connecting the drive means of the calculator with actuating members, for example, actuating keys, by which certain calculating operations are started.

It is preferred to mount the control key adjacent the actuating keys which are automatically operated by the drive means when the control key is shifted between its four positions. Preferably, an indicating member carrying indicia "total" and "subtotal" is operated by the control key to indicate the calculating operations obtained by setting the control key to different positions.

The normal position of the multifunction control key corresponds to the automatic taking of a subtotal. When the control key is depressed, a total is automatically taken. When the control key is turned to one position, a total is positively stored in an automatic operation, whereas in the other turned position of the control key, a total is negatively stored in an automatic operation.

The indicating member which is controlled by the control key is constructed in such a manner that in the depressed position of the control key, the indicia "total" is in the indicating position.

In order to obtain the automatic calculating operations, coupling means are provided for coupling the drive means of the calculator with the actuating keys which are associated with several operations, respectively. By operation of the control key, the coupling means is shifted between four different coupling positions for connecting selected actuating keys with the drive means of the machine. More particularly, the coupling means includes a shiftable coupling member having projections which are respectively located opposite coupling projections of the actuating keys in the several coupling positions of the coupling member in which the latter is placed by operation of the control key. For example, the stem of the control key is provided with a slanted slot in which a guide pin is located so that the depressed control key is shifted for shifting the coupling member between two coupling positions. The turning of the control key effects a corresponding shifting of the coupling member between two other coupling positions.

In the preferred embodiment of the invention, the drive means include an operating lever which is urged by a spring to move the coupling member to a position engaging the respective coupling portion of the respective actuating key for shifting the latter. The spring-loaded operating lever is normally locked, but is released to move to the engaging position during an operational cycle of the machine, for example, after completion of a multiplication operation. The operating lever is reset to its initial position by a rotary cam.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

FIG. 1 is a plan view illustrating the keyboard of a calculator according to the invention;

FIG. 2 is a fragmentary perspective view illustrating one embodiment of the invention;

FIG. 3*a* is a fragmentary plan view on an enlarged scale, partially in section, and illustrating the normal position of a control key according to the invention;

FIG. 3*b* is a plan view corresponding to FIG. 3*a* but illustrating other operational positions of the control key; and

FIGS. 4*a* to 4*d* illustrate different coupling positions of the coupling means connecting the drive means of the machine with the actuating keys.

Referring now to the drawings, and more particularly to FIG. 1, the keyboard **1** of a ten key calculator has a cover plate **2** provided with cutouts in which the standard keys of the calculator are disposed, namely function keys **3** including a multiplication key, number keys **4**, a row of special actuating function keys **6***a* associated with a storage register, and a row of actuating keys **6***b* associated with the result register and with corresponding calculating operations.

Adjacent the keys **6***b* which cause the entry of results into a result register, a cutout **7** for a control key **9** is provided in cover plate **2**. As will be described hereinafter in greater detail, the control key **9** has a normal position and can be depressed to another position, and turned with its stem **22** between the ends of cutout **7** to two other positions, **9***c* and **9***d*, so that control key **9** has altogether four positions. In the normal position illustrated in FIG. 1, the control key **9** is prevented from

turning movement since its stem **22** is located in a cutout **12** in a plate **2***a*, as shown in FIG. 3*a*.

Another cutout **8***a* in the cover plate **2** is provided for viewing an indicia on a shiftable indicating member **8** which is located under the cover plate, and is shifted between indicating positions when control key **9** is depressed. Since the normal position of control key **9** corresponds to the automatic taking of a subtotal, the corresponding indicia is visible in FIGS. 1 and 3*a*, the normal position of the control key being designated by a reference numeral **9***a* in FIG. 3*a*. When the control key is depressed, the indicia indicating "total" is visible in cutout **8***a*. Evidently, other indicia could be provided on indicating member **8**.

On the opposite ends of the slot or cutout **7**, indicia **10** and **11** indicating positive and negative values are secured to cover plate **2**, and the two turned positions **9***c* and **9***d* of the control key **9**, shown in FIG. 3*b*, are identified by indicia **10** and **11**.

Referring now to FIG. 2, four actuating function keys **61**, **62**, **63**, and **64**, also shown in FIG. 1, have stems which have transverse coupling portions **65**, also shown in FIGS. 4*a* to 4*c* and identified in FIGS. 4*a* to 4*c* also by the reference numerals of the respective actuating keys. Control key **9** has a stem **22** carrying a pivot **20** with a connecting link **19** articulated by another pivot pin **21** to a lug **16** on a coupling member **14** in the form of a plate having a pair of slots **17** and **18**, and projections **15***a*, **15***b*, **15***c*. As best seen in FIG. 4*a* to FIG. 4*c*, coupling member **14** can be shifted on a pair of guide pins **36**, **38** located in slots **17** and **18** between four coupling positions in which different portions **15***a*, **15***b*, **15***c* cooperate with coupling portions **65** of actuating keys **61** to **64**.

Pins **36** and **38** are respectively secured to an operating lever **35** mounted on a stationary shaft **37** for turning movement, and having an arm **48** connected to a spring **52** which biases operating lever **35**, **48** to turn in counterclockwise direction to the position illustrated in FIGS. 4*a* to 4*c* for moving engaged coupling portions **65** downward together with the respective keys **61** to **64**. A locking member **40** is connected by a pivot pin **39** to operating lever **35** and has a projection with a shoulder **41** resting on a locking member **42**. In the position illustrated in FIG. 2, operating lever **35** cannot be turned by spring **52** in counterclockwise direction, and holds coupling member **14** in a higher normal position in which projections **15***a*, **15***b*, **15***c* are located above the level of the upper edges of coupling portions **65** of actuating keys **61** to **64** while the latter are in the normal higher inoperative position. Locking member **40** has a portion **40***b* cooperating with a hook **44***a* of a releasing member **44**. When releasing member **44** is moved to the right as viewed in FIG. 2 and in the direction of the arrow against the action of a spring **43**, locking member **40** turns about pin **39** to a position in which shoulder **41** releases locking member **42**, so that the operating lever **35**, **48** is released and can be turned by spring **52** in counterclockwise direction for depressing selected actuating keys **61** to **64**.

Control key **9** has a stem **22** provided with a slanted slot **23** receiving a stationary guide pin **24** which is secured to the frame, not shown, of the machine. When control key **9** is depressed from its normal higher position in a translatory movement to a lower position, stem **22** is displaced in a transverse translatory movement due to the slanted position of slot **23**, and shifts coupling member **14** in longitudinal direction thereof from a normal position corresponding to the position of FIG. 4*a*, to the position shown in FIG. 4*b*. However, FIGS. 4*a* and 4*b* show coupling member **14** already lowered by operating lever **35**, **48**, as will be explained hereinafter in greater detail. During the translatory movement of control key **9** and the consequent displacement of coupling member **14**, the lower edges of projections **15***a*, **15***b*, **15***c* are located above the level of the coupling portion **65** so that shifting of coupling member **14** is possible. When control key **9** is transversely displaced from the position **9***a* of FIG. 3*a* to the position **9***b* of FIG. 3*b*, it is no longer confined in cutout **12**, and can be turned between the positions **9***c* and **9***d*. Such turning movement causes corresponding displacement of pivot pin **20** and link **19** and shifting of coupling member **14** to two other coupling positions corresponding to the positions of coupling member **14** shown in FIGS. 4*c* and 4*d*, but located higher than illustrated in FIGS. 4*d* and 4*b*.

Arm **48** of operating lever **35** has a U-shaped portion with a cam follower pin **50** cooperating with a rotary cam **53** driven by drive shaft **54** during the operational cycle of the machine. When locking means **40**, **41**, **42** are released, and coupling member **14** is lowered by lever **35**, **48** and spring **52**, the lug of rotary cam **53** engages pin **50**, lever **48**, **35** is turned in clockwise direction until locking member **40** again engages locking member **42** under the action of spring **43** and locks lever **35** in its higher position in which coupling member **14** is also in the higher normal position in which the lower edges of projections **15***a*, **15***b*, **15***c* are located above coupling portions **65**. The guide pins **36** and **38** are thus locked in a position in which they guide coupling member **14** for translatory movement between four coupling positions under the control of control key **9**.

Stem **22** of control key **9** carries a fixed pin **25** located in an elongated slot **31***b* of an angular shifting lever **31** which is mounted on a stationary shaft **32** for turning movement. One arm **31***c* of shifting lever **31** engages a cutout in indicating member **8** so that the same is shifted when shifting lever **31** is turned. A spring **33** is secured to shifting lever **31** and urges the same to turn in counterclockwise direction as viewed in FIG. 2 so that indicating member **8** assumes the normal position in which the indicia related to a subtotal is visible in cutout **8***a*, as shown in FIG. 3*a* and FIG. 1. When control key **9** is depressed, shifting lever **31** is turned in clockwise direction and shifts indicating member **8** to another indicating position in which another indicia representing a total is located in cutout **8***a*, as shown in FIG. 3*b*. Turning of control key **9** does not affect shifting lever **31** due to the provision of slot **31***b*, and the corresponding positions **9***c* and **9***d* of control key **9**, see FIG. 3*b*, are indicated by the fixed indicia **10** and **11**.

Below cover plate **2**, another fixed plate **2***a* is provided on which indiciating member **8** is guided for translatory movement. Below plate **2***a*, an arresting plate **27** is mounted which has three notches **28**, **29**, **30** cooperating with an arresting pin **26** secured to stem **22** of control lever **9**.

In the normal higher and central position of control key **9**, the end face **26***a* of arresting pin **26** abuts a lateral face of arresting plate **27** under the action of a spring **55** secured to stem **22** and urging the same from the position **9***a* shown in FIG. 3*a* to the position **9***b* shown in FIG. 3*b*.

When control key **9** is depressed, end face **26***a* of arresting pin **26** slides off the lateral face of arresting plate **27** and snaps into recess **29**, arresting control key **9** in the lower depressed position. In this lower position, stem **22** is transversely displaced and no longer located in cutout **12** so that control key **9** can be turned about pin **24** between two positions in which arresting pin **26** is located in notches **28** and **30**, respectively for arresting control key **9**. Cover plate **2** is illustrated in thin lines in FIG. 2 so that it is apparent that the lower plate **2***a* is provided with cutout **12** while the corresponding edge of the slot **7** in cover plate **2** is straight.

In the illustrated embodiment, actuating key **61** is the total key associated with the result register, actuating key **62** is the plus key for a storage register, actuating key **63** is the minus key for the storage register, and actuating key **64** is a subtotal key for the result register.

In the initial normal position **9***a* of control key **9**,

stem **22** is located in cutout **12** of plate **2***a*, and control key **9** cannot be turned, but only depressed in a translatory movement to a lower position. Spring **33** acting through shifting lever **31** and pin **25** biases control key **9** to assume its higher normal position.

In the normal position of control key **9**, connecting link **19** is also in a higher position. Operating lever means **35**, **48** is also held in a higher position, and the lower edges of projecting portions **15***a*, **15***b*, **15***c* of coupling member **14** are located above the level of the upper edges of coupling portion **65** of keys **61** to **64**.

When a machine operation is started, releasing member **44** is shifted with hook **44***a*, and locking member **40** is turned to a position releasing locking member **42** so that spring **52** turns operating lever **48**, **35** in counterclockwise direction to the position illustrated in FIG. 4*a*. Since in the normal position of control key **9**, coupling member **14** is held in a coupling position in which projection **15***a* is located above coupling portion **65** of key **64**, turning of operating lever **35**, **48** causes through coupling portion **65** downward movement of key **64** as shown in FIG. 4*a*, whereas the coupling portion **65** of the other keys **61**, **62**, **63** are not influenced since they are located opposite corresponding cutouts of coupling member **14**. The normal position of control key **9**, and actuating key **64** which is automatically operated in the normal position of control key **9**, are associated with the taking of a subtotal from the result register and entering of the same again into the result register. Therefore, no manual operation of control key **9** or of actuating key **64** is necessary for the performance of this operation.

The shifting of releasing member **44** is carried out after the completion of a multiplication so that the subtotal taking operation is carried out with the result of the multiplication. At the end of the operational cycle, rotary cam **53** engages with its lug pin **50** of operating lever **48**, **35** and returns the same in clockwise direction to its initial position, raising at the same time coupling member **14** and locking member **40** so that the same snaps into its locking position engaging locking member **42** with shoulder **41** under the action of spring **43**.

When control key **9** is depressed from its normal higher position in a translatory movement to a lower first position, the slot and guide pin connection **23**, **24** causes a translatory movement of stem **22** in the direction of slots **17**, **18** so that coupling member **14** is sihfted to a position in which projection **15***b* is located above coupling portion **65** of key **61**, while at the same time shifting lever **31** shifts indicating member **8** to a position in which the "total" indicia appears in cutout **8***a*. Arresting pin **26** slides along the lateral face of arresting plate **27** and snaps into notch **29** so that control key **9** is arrested in the lower position. When releasing member **44** is shifted after a completed multiplication, locking member **40** is released, and spring **52** turns operating lever **35**, **48** to move coupling member **14** downward to the engaging position shown in FIG. 4*b* in which projection **15***b* engaging coupling portion **65** depresses total key **61** which effects in a known manner the taking of a total from the result register. Rotary cam **53** thereupon causes return of all displaced elements to the normal initial position, with the exception of control key **9** which has to be manually moved from the position **9***b* shown in FIG. 3*b* to the position **9***a* shown in FIG. 3*a* so that arresting pin **26** releases notch **29**, and spring **33** with shifting lever **31** raise control key **9** to its normal position. The corresponding turning of shifting lever **31** and the displacement of indicating member **8** causes appearance of the normal subtotal sign in the cut out **8***a*.

If a total is to be taken from the result register and entered positively in a storage register, control key **9** is first depressed and then turned to the position **9***c* shown in FIG. 3*b*. Control key **9** moves toward indicia **10** so that the positive operation is indicated by the plus indicia **10**. At the same time, arresting pin **26** snaps into notch **28** and arrests control key **9**.

The lower end of stem **22** displaces through link **19** coupling member **14** to a position in which the wider coupling projection **15***b* is located above the coupling portions **65** of keys **61** and **62** of which key **61** is associated with the total taking, and key **62** is associated with the entry of a positive value. At the end of a multiplication releasing means **44** will release locking member **40** so that operating lever **35**, **48** moves coupling member **14** downward to the position shown in FIG. 4*c* causing downward movement of coupling portion **65** of keys **61** and **62** corresponding to a depression of keys **61** and **62** so that the corresponding operations are started in a well known manner. Since key **62** is associated with the storage register, the total is taken from the result register and positively added in the storage register.

In order to automatically obtain a total, and to store the same as a negative value, control key **9** is depressed, shifted to position **9***b*, and then turned to position **9***d*. The negative indicia **11** indicates this position of control key **9**. Arresting pin **26** snaps into notch **30** of arresting plate **27** and locks control key **9**. Stem **22** turns and coupling member **14** is shifted by link **19** to the right until projection **15***b* is located opposite coupling portion **65** of key **63**, and projection **15***c* is located opposite coupling portion **65** of key **61**. Key **63** is associated with the negative storing operation, and key **61** is associated with the total taking. After a completed multiplication, releasing means **44** releases locking member **40** and spring **52** actuates operating lever **35**, **48** to move coupling member **14** down so that keys **61** and **63** are moved to a depressed position causing the corresponding storing and total taking operations so that during the operational cycle of the machine, the total is taken from the result register and entered as a negative value into the storage register.

After every operation of the control key **9** to positions **9***c*, **9***d*, the same is manually shifted first to the position **9***b* shown in FIG. 3*b*, and then laterally shifted to the position **9***a* so that pin **26** releases the notch **29** of arresting member **27** and control key **9** is raised to its normal position by biassing means **33**, **31**, **31***b*.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of calculators differing from the types described above.

While the invention has been illustrated and described as embodied in a calculator having a multifunction control key shiftable between four positions for causing the automatic performance of four different operations by the calculator, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a calculator, in combination, four actuating members for starting different operations of the calculator; drive means; coupling means movable between four coupling positions for respectively connecting said actuating members with said drive means so that different operations are initiated in said four coupling positions; and a control key having four positions and connected to said coupling means for placing the same in a different coupling position in each of said positions of said control key so that by selective actuation of said control key said drive means are connected to selected actuating members for initiating different operations of the calculator.

2. In a calculator, in combination, four actuating members for starting different operations of the calculator; operating means biased to move to an operative position; locking means for locking said operating means in an inoperative position; releasing means for releasing said locking means during an operational cycle of the calculator; coupling means movable between four coupling positions for respectively connecting said actuating members with said operating means so that different operations are initiated in said four coupling positions; and a control key having four positions and connected to said coupling means for placing the same in a different coupling position in each of said positions of said control key so that by selective actuation of said control key said operating means are connected to selected actuating members for initiating different operations of the calculator.

3. A calculator as set forth in claim 2, wherein said actuating members are actuating keys having stems with coupling portions cooperating wtih said coupling member so that in each of said four coupling positions of said coupling member, said coupling portion of a different actuating key is engaged and displaced by said coupling member upon movement of said operating means to said operative position whereby the respective actuating key is operated for starting an operation of the calculator.

4. A calculator as set forth in claim 3, wherein said coupling member has a plurality of projections respectively located opposite said coupling portions in said coupling positions; and wherein said operating means includes an operating lever connected to said coupling member for moving the same to an engaging position in which one of said projections thereof engages the respective coupling portions of at least one of said actuating keys for operating the latter.

5. A calculator as set forth in claim 4 and including spring means for urging said operating lever to turn in one direction to move said coupling member to said engaging position; said locking means locking said operating lever for preventing movement of said coupling member to said engaging position; and resetting means for turning said operating lever to its initial position opposite to said one direction at the end of the operational cycle of the calculator.

6. A calculator as set forth in claim 5, wherein said resetting means include a rotary cam having a cam lug for engaging said lever and for turning the same in said opposite direction during each revolution of said rotary cam.

7. In a calculator, in combination, four actuating members for starting four different operations of the calculator; drive means; coupling means movable between four coupling positions for respectively connecting said actuating members with said drive means so that different operations are initiated in said coupling positions; a control key; and means mounting said control key for translatory movement between two first positions, and for turning movement between two second positions, said control key being operatively connected to said coupling means for placing the same in a different coupling position in each of said positions of said control key so that by selective actuation of said control key said drive means are connected to selected actuating members for initiating different operations of the calculator.

8. A calculator as set forth in claim 7 and including arresting means for arresting said control key in said positions thereof, and including an arresting plate having three notches, said control key having an arresting pin located in said three notches, respectively, in said second positions, and in one of said first positions of said control key, and laterally abutting said plate in the other first position of said control key; and spring means for urging said control key to said other first position, and to positions in which said pin is located in said notches, respectively, when said control key is manually moved to said other first position, or to said second positions.

9. A calculator as set forth in claim 7 wherein said control key has a stem formed with a slot slanted to the direction of said translatory movement; a stationary guide pin located in said slot for displacing said stem during said translatory movement; and wherein said coupling means include a coupling member shiftable between said four coupling positions and operatively connected with said stem to be shifted between two of said coupling positions when said control key is moved in said translatory movement between said first two positions.

10. A calculator as set forth in claim 9, and including connecting means connecting said stem with said coupling member for shifting the same to the other two coupling positions when said control key is turned between said two second positions.

11. In a calculator, in combination, four actuating keys for starting four different operations of the calculator, and including a total key and a subtotal key for taking result values from a result register, and two keys for entering positive and negative values into a storage register; drive means; coupling means movable between four coupling positions for respectively connecting said actuating members with said drive means so that different operations are initiated in said coupling positions; a control key; and means mounting said control key for translatory movement between two first positions, and for turning movement between two second positions, said control key being operatively connected to said coupling means for placing the same in a different coupling position in each of said positions of said control key so that by selective actuation of said control key said drive means are connected to selected actuating members for initiating different operations of the calculator, one of said first positions being a normal position of said control key and effecting the automatic taking of a subtotal, the other first position being a depressed position of said control key and effecting the automatic taking of a total, one of said second positions being a depressed and rearwardly turned position of said control key and effecting the automatic positive storage of a total, and the other of said second positions being a depressed and forwardly turned position of said control key and effecting the automatic negative storage of a total.

12. A calculator as set forth in claim 11 and including an indicating member carrying indicia; a shifting lever connected with said indicating member and having a slot, and a pin secured to said control key and located in said last mentioned slot for turning said shifting lever and for moving said indicating member when said control key is moved between said first positions.

13. In a calculator, in combination, four actuating members for starting four different operations of the calculator; drive means; coupling means movable between four coupling positions for respectively connecting said actuating members with said drive means so that different operations are initiated in said coupling positions; a control key; means mounting said control key for translatory movement between two first positions, and for turning movement between two second positions, said control key being operatively connected to said coupling means for placing the same in a different coupling position in each of said positions of said control key so that by selective actuation of said control key said drive means are connected to selected actuating members for initiating different operations of the calculator, one of said first positions being a normal position of said control key and effecting the automatic taking of a subtotal, the other first position being a depressed position of said control key and effecting the automatic taking of a total, one of said second positions being a depressed and rearwardly turned position of said control key and effecting the automtaic positive storage of a total, and the other of said second positions being depressed and forwardly turned position of said control key and effecting the automatic negative storage of a total.

14. In a calculator, in combination, a manually operable control member having four positions; and means

controlled by said control member in said four positions, respectively, to set the calculator to perform four different operations, the first operation of said operations effecting the automatic taking of a subtotal, the second operation effecting the automatic taking of a total, the third operation effecting the automatic positive storing of a total, and a fourth operation effecting the automatic negative storing of a total.

15. In a calculator, in combination, a manually operable control member having four positions; means controlled by said control member in said four positions, respectively, to set the calculator to perform four different operations; and means mounting said control member for translatory movement between two first positions, and for turning movement between two second positions, one of said first positions being a normal position of rest of said control member and effecting the automatic taking of a subtotal, the other first position being a depressed position of said control member, and effecting the automatic taking of a total, one of said second positions being a depressed and rearwardly turned position of said control member and effecting the automatic positive storage of a total, and the other of said second positions being a depressed and forwardly turned position of said control member and effecting the automatic negative storage of of a total.

16. A calculator according to claim **15** and including a casing having a slot through which said control member projects out of said casing, said control member being located at the ends of said slot in said second positions; plus and minus indicia fixedly secured to said casing at the end of said slot; an indicia carrying member movably mounted on said casing adjacent said slot; and means for connecting said control member with said indicia carrying member for movement therewith in said first positions of said control member so that said indicia carrying member is shifted between two indicating positions when said control member is moved between said first position.

17. In a calculator, in combination, a plurality of function keys, each function key being manually movable between an inoperative position and an operative position for effecting different operations of the calculator; operating means; a manually operable control member; means mounting said control member for movement between a plurality of control positions; and means operated by said control member in each of said control positions to connect said operating means with at least one group of said function keys so that the function keys of said group are simultaneously and automatically moved by said operating means to said operative position thereof whereby no manual operation of said function keys of said group is required when said control member is preset to a selected control position.

18. In a calculator, in combination, four function keys, each function key being manually movable between an inoperative position, and an operative position for effecting different operations of the calculator, and including a total key and a subtotal key for taking result values from a result register, and plus and minus keys for entering positive and negative values into a storage register; drive means; a manually operable control member; means mounting said control member for movement between a plurality of control positions; and means operated by said control member in each of said control position to connect said drive means in two of said control positions with said total key and said subtotal key, respectively, and in two other control positions simultaneously with said total key and said plus key, and simultaneously with said total key and said minus key, respectively, so that the respective connected keys are automatically moved by said drive means to said operative position thereof whereby no manual operation of said function keys is required after a multiplication when said control member is preset to a selected control position.

19. A calculator according to claim **18** wherein said mounting means mount said control member for translatory movement between a first control position which is the normal position of said control member, and a second depressed control position, and for turning movement between a third control position and a fourth control position.

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