Oct. 27, 1931. E. BREITLING 1,829,084

BLOCKING THE SETTING MEANS OF CASH REGISTERS

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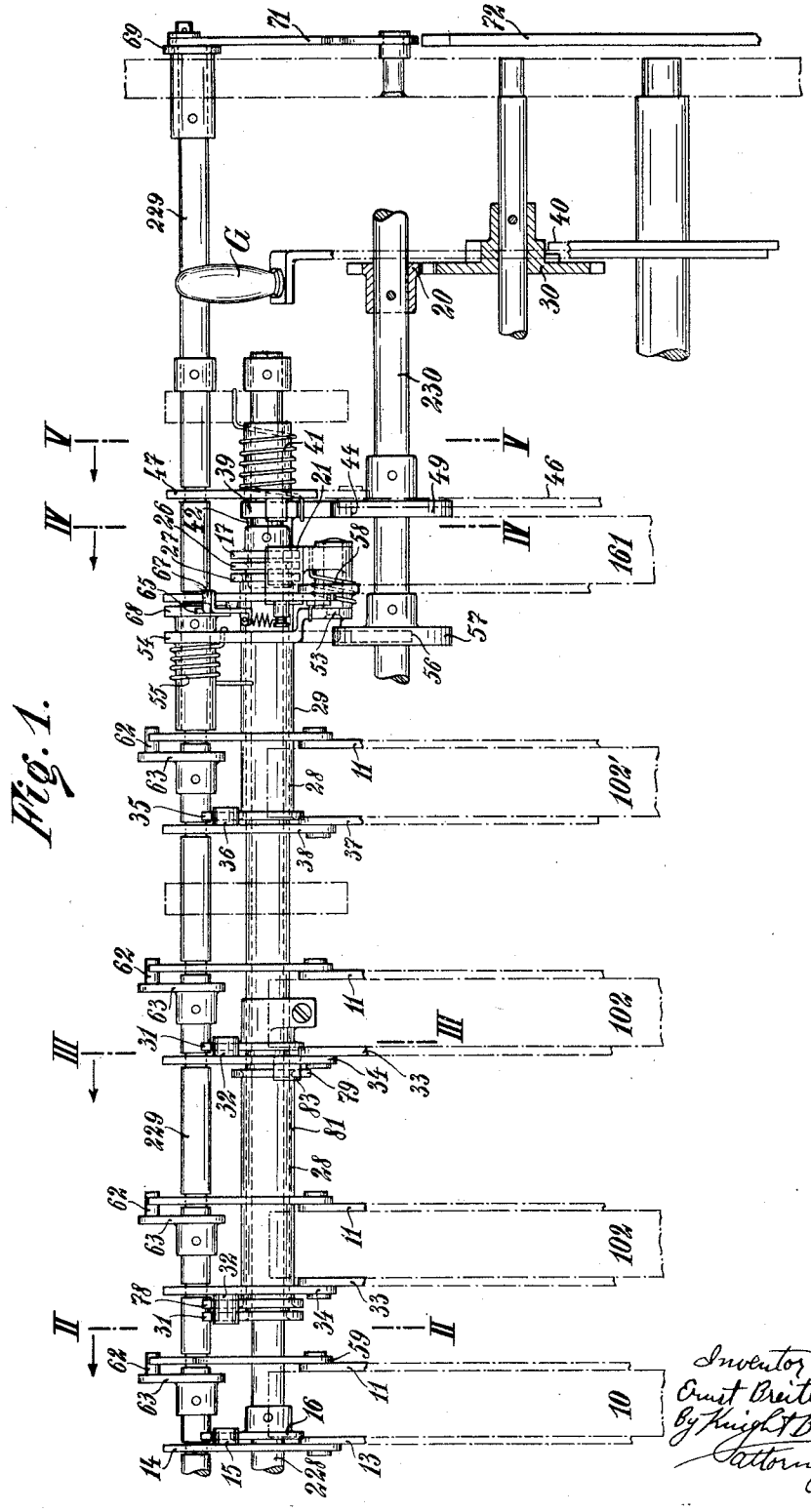

Fig. 1.

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Fig. 2.

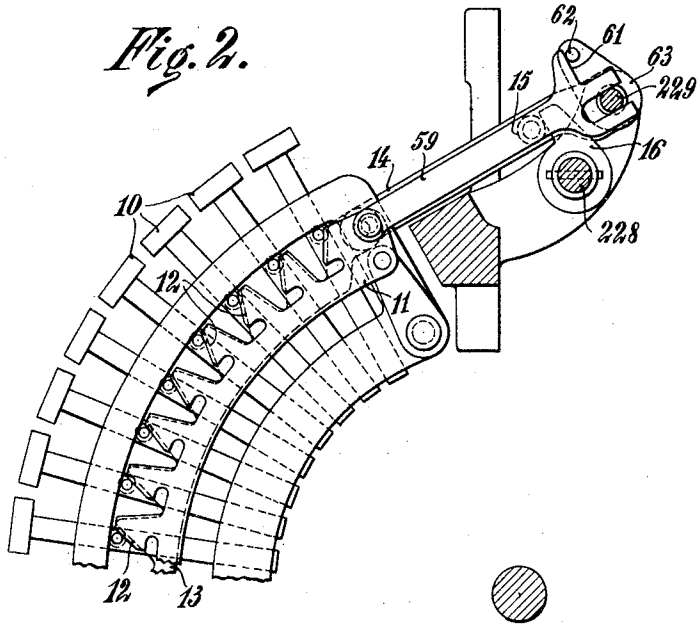

Fig. 3.

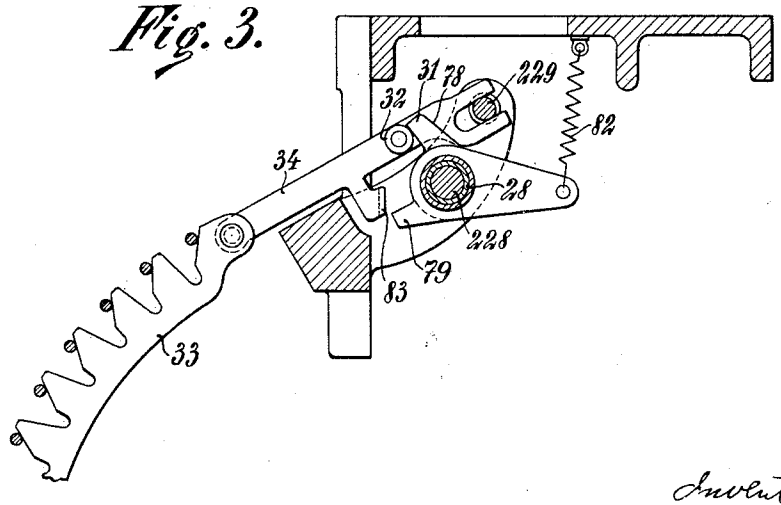

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Fig. 4.

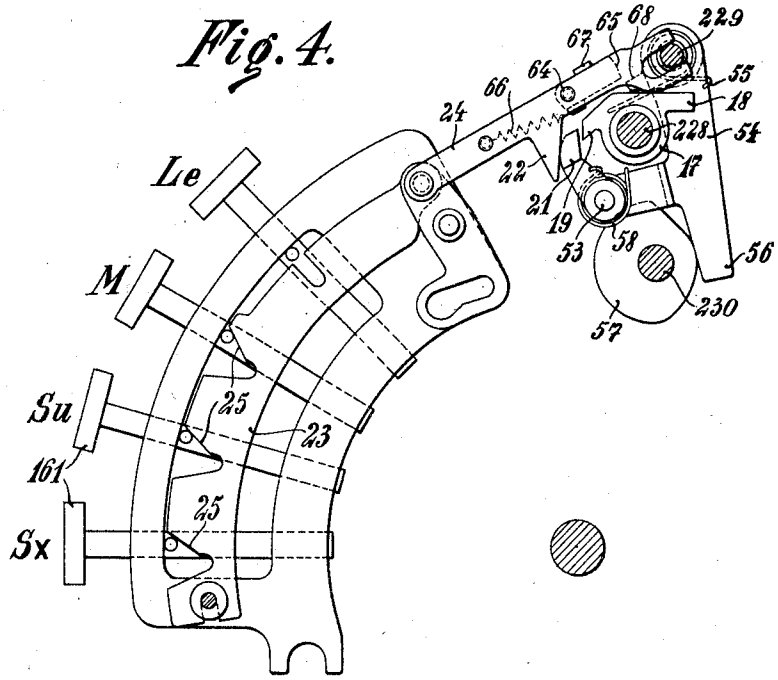

Fig. 5.

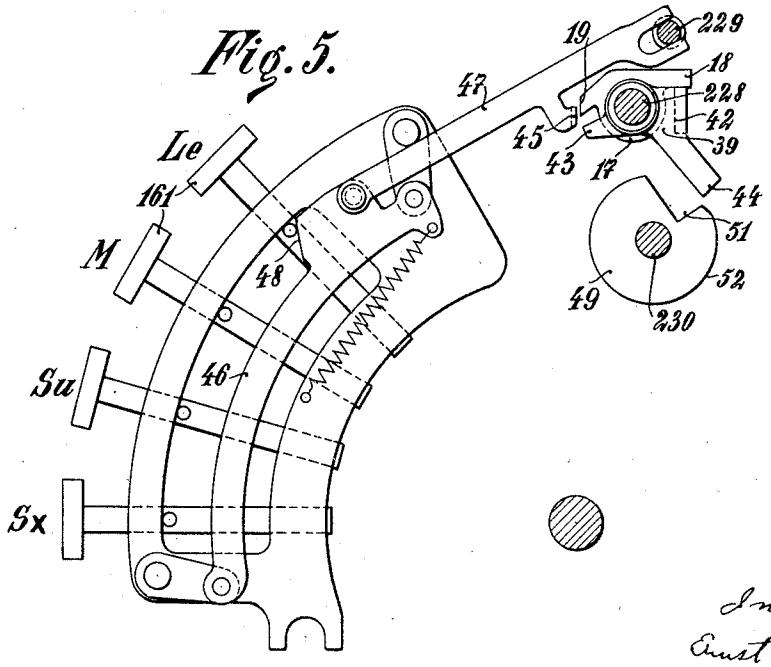

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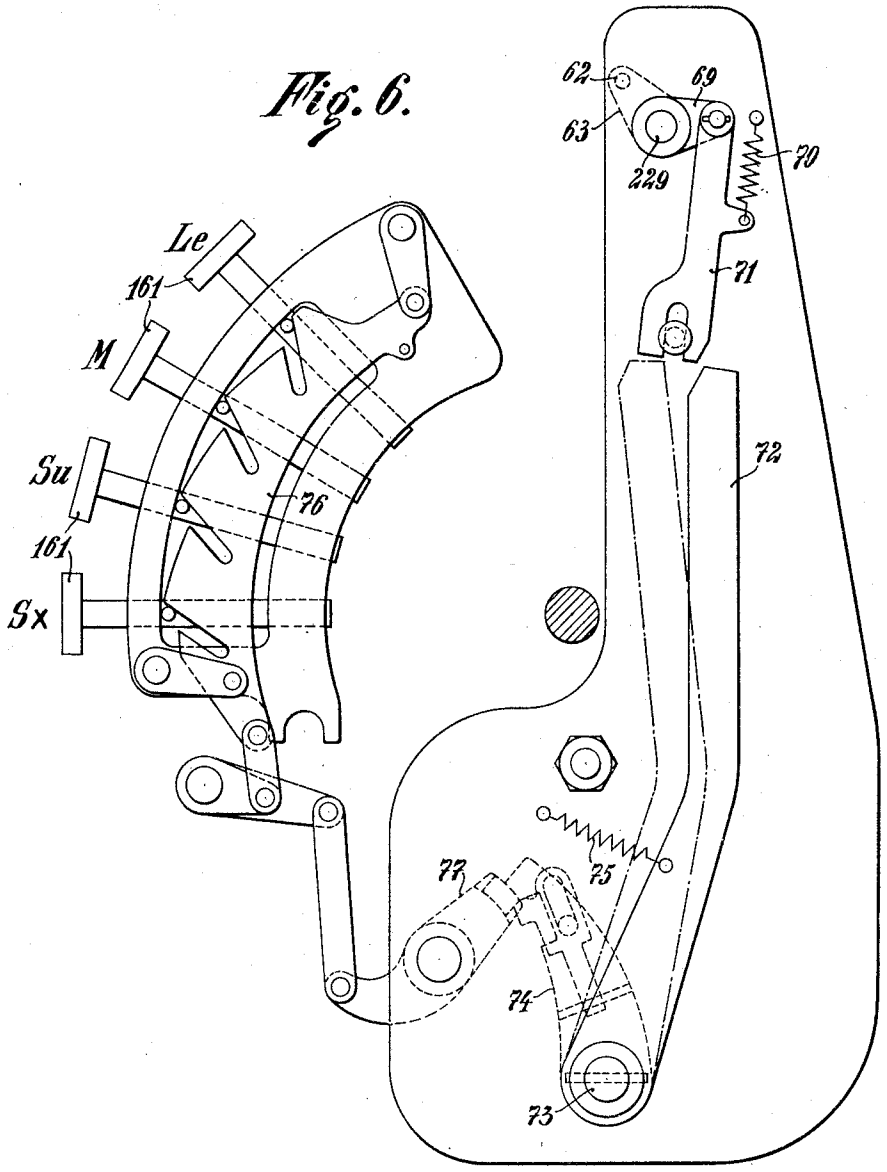
Fig. 6.



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UNITED STATES PATENT OFFICE

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BLOCKING THE SETTING MEANS OF CASH REGISTERS

Application filed April 15, 1929, Serial No. 355,374, and in Germany April 25, 1928.

The invention relates to cash registers having a plurality of totalizers, of kinds of keys and of means for setting the line of business of the machine, and has for its particular object to further improve the blocking means of the setting mechanism as described in the co-pending patent application of Lehmann and Breitling Serial Number 296,445, filed July 31st, 1928. In this blocking mechanism on the one hand an amount key and totalizer key of two groups of totalizer keys have to be depressed in a determined order to release a motor key tripping the operation of the machine; upon however one of the mode of operation levers being set to "Taking total", on the other hand, the amount and totalizer keys are blocked and the motor keys released.

In order to simplify this arrangement of the main application, according to the invention the group of amount keys and each group of totalizer keys has allotted to it a blocking member that is in the range of a freely movable and rockingly arranged filling piece that serves to block the motor keys as long as a key both of the groups of amount keys and totalizer keys has not been depressed.

In order that my invention can be more easily understood, a preferred embodiment of the same is illustrated by way of example in the accompanying drawings in which

Figure 1 is a top view of our new mechanism, the keys being omitted,

Figure 2 is a lateral sectional view on line II—II of Figure 1, of the amount key board,

Figure 3 is a fragmentary lateral sectional view on line III—III of Figure 1, of one of the totalizer key boards,

Figures 4 and 5 are lateral sectional views on lines IV—IV and V—V, respectively of Figure 1, of the motor key board, and

Figure 6 is a lateral view of the mechanism, seen from the right.

The setting mechanism of the machine comprises a plurality of amount key rows 10, Figures 1 and 2, two rows of keys 102 of the totalizer group I, Figures 3 and 1, one row 102′ of keys of the totalizer group II,—one row 161 of motor keys, Figures 5 and 1, and a mode of operation lever G. Behind this setting mechanism are mounted in the machine frame a blocking shaft 229, another blocking shaft 228, and a reversing shaft 230, Figures 1, 4, 5. With the rows of amount keys 10 co-operate in known manner spring-influenced hooked locking bars 11, Figure 2, which hold the keys in depressed position. On the left-hand side of each amount key board, Figure 1, is further arranged a spring-influenced locking bar 13, Figure 2, having inclined faces 12, this bar being shifted upward upon one of the keys of the respective row being depressed. When this takes place, a rod 14 is entrained which is hinged on bar 13 and guided by its bifurcated other end on blocking shaft 229, Figure 2. By a roller 15 rod 14 engages an arm 16 fixed on shaft 228 whereby the latter is turned in clockwise direction. In the plane of the row of motor keys 161, Figure 1, is fixed on shaft 228 a locking member 17 the shape of which is to be seen best from Figure 4, this member possessing an extension 18 and a locking lug 19. When no amount key 10 is down, lug 19 is in the path of a filling piece 21, Figures 1, 4, that with its back co-operates with a lug 22, Figure 4, of a rod 24. The latter is pivotally connected to a locking bar 23 of the motor key board 161. In the range of the motor keys M (additions), Su (single item totals) and Sx (totals) bar 23 is provided with slope faces 25 and is lifted by depression of one of these keys.

Beside the locking member 17, Figure 1, two further locking members 26, 27 of the same configuration are provided, member 26 being rigidly fixed on an inner tubular shaft 28 and member 27 on an outer tubular shaft 29. The former has rigidly fixed on it in the range of the two rows of totalizer keys 102 each an arm 31, Figures 1, 3, cooperating with a roller 32 which is mounted on a rod 34 connected to a locking bar 33 of the respective key row. In an analogous manner the outer tubular shaft 29, Figure 1, in the range of the totalizer key row 102′ is provided with an arm 35 co-operating with a roller 36 of a rod 38 connected to the locking bar 37 of this

key row. The shafts 28, 29 and shaft 228 are held in position of rest, in which the lugs 19 of the locking members 17, 26, 27 are in the path of the filling piece 21, see Figure 4, and lock the motor keys M, S*u*, and S*x* against being depressed, by a piece 39 mounted on shaft 228, Figures 5 and 1, the lateral extension 42 of which piece under the action of a spring 41, Figure 1, extends below the extensions 18, Figure 5, of the locking members 17, 26, 27. When an amount key is depressed, the respective lug 19, Figure 4, leaves the range of the filling piece 21, the same is the case with the lugs 19 of the locking members 26, 27 upon one of the totalizer keys 102 or 102′ being depressed. Only after all three lugs 19 have been rocked out of the range of the filling piece 21, bar 23 can be lifted. To release the motor keys M, S*u*, and S*x* thus the previous depression of each a key of the group of amount keys and of each of the totalizer key groups is required, the sequence of these depressions being immaterial.

Piece 39, Figure 5, carries two locking lugs 43, 44 the former of which co-operates with a lug 45 of a rod 47 hingedly connected to a locking bar 46 of the motor key board 161. Bar 46 has a slope face 48 on which the blank stroke key L*e* may act. Upon key L*e* being depressed which key trips a blank operation to prepare a total-taking operation, lug 45 arrives over lug 43 and locks piece 39 and thereby the tubular shafts 28, 29, Figure 1, and shaft 228 against rotation in clockwise direction, so that no amount or totalizer key can be depressed. When on the other hand one of these keys is depressed while the blank stroke key is not down, piece 39 is so rocked in clockwise direction by the respective extension 18, that lug 43 enters the path of lug 45 and locks key L*e* against depression.

The other lug 44 of piece 39 co-operates with a locking disk 49 rigid on the reversing shaft 230, a recess 51 of this disk in the position of rest being opposite to lug 44. Shaft 230 is so connected by means of a gear train 20, 30, 40, Figure 1, to a mode of operation lever G serving to set "Addition", "Taking sub-total", and "Taking total", that it is turned out of position of rest as soon as lever G is set to "Taking total". When this takes place, the full section 52, Figure 5, of disk 49 arrives opposite lug 44, so that all amount and totalizer keys 10, 102, 102′ are locked against depression. These keys can be depressed only as long as lever G is at rest. Upon this depression lug 44 enters recess 51 of disk 49 whereby lever G is locked in position of rest. In the arrangement described in the above-mentioned co-pending parent patent application the reversing shaft 230 is so influenced by two different mode of operation levers G and S*u*, that it is turned out of position of rest when one of these levers is set to "Total taking". The present invention can be adapted without difficulty also to this arrangement.

In order to allow depression of a motor key to trip an operation of the machine, if one of the mode of operation levers has been set to "Taking total", the locking action of members 19, 21, 22, Figure 4, must be eliminated, because in this case no amount or totalizer key is down. This is made in the following manner: By means of a pin 53 the filling piece 21 is mounted on a carrier 54 adapted to rock about the locking shaft 229 which carrier under the action of a spring 55 abuts with an extension 56 on a cam disk 57 fixed on the reversing shaft 230. By a spring 58 the filling piece 21 is permanently held in contact with lug 22 in order to not engage the lugs 19. Upon setting lever G to "Taking total", carrier 54 is rocked toward the right by disk 57 whereby the filling piece 21 is lowered and comes out of the range of the lugs 19, so that a motor key can be depressed.

In the same manner as with the amount keys 10, a hook bar 11, Figures 1, 2, is provided on the right-hand side of each board of totalizer keys 102, 102′ which bar is connected to a rod 59 guided by its bifurcated end on shaft 229. This rod has an extension 61 which co-operates with a pin 62 of an arm 63 rigid on shaft 229. When one of the keys 10, 102, or 102′, is depressed, the respective hook bar 11 executes a to and fro turning motion which is transmitted to shaft 229. The rod 24, Figure 4, of the motor key board has hingedly mounted on it by a pin 64 a locking piece 65 that under the action of a spring 66 abuts with a lateral lug 67 on the upper narrow face of rod 24.

An arm 68 rigid on shaft 229 in the range of locking piece 65 does not prevent, as long as in position of rest, Figure 4, the rearward motion provided by the depression of a motor key M, S*u*, S*x*, of the locking piece 65. When however an amount or totalizer key 10, 102, 102′ is depressed and a to and fro motion is imparted hereby to shaft 229 by the respective hook bar 11, arm 68 temporarily arrives behind the locking piece 65 and prevents the motion of bar 23. As soon as the key in consideration has been depressed completely, bar 11, shaft 229 and arm 68 return to position of rest, so that bar 23 is released again and one of the motor keys M, S*u*, or S*x* can be depressed. The machine operation thus cannot be tripped by the motor keys (the blank stroke key L*e* is locked by the members 43, 45, Figure 5) as long as one of the amount or totalizer keys is down only incompletely. It is prevented hereby that an operation is tripped by incomplete depression and re-extraction of an amount or totalizer key. The resilient arrangement of the locking piece 65 on rod 24 is necessary to enable the upward motion of

arm 68 imparted to it by the releasing motion of the hook bars 11 at the end of the operation.

The locking of the amount and totalizer keys 10, 102, 102′ during the operation is effected likewise through the intermediary of shaft 229. This shaft has rigid on its right-hand end, Figure 1, an arm 69, Figure 6, on which is hinged a slide 71 influenced by a spring 70 and co-operating with a locking arm 72 of the machine-releasing shaft 73. The releasing lever 74 of this shaft normally rests under the action of a spring 75 on a rest lever 77 which is connected to an inclinedly slotted key bar 76 of the motor key board. By depressing one of the motor keys 161 a clockwise rotation is imparted to rest lever 77 so that the releasing lever 74 can swing in counter-clockwise direction to trip the machine operation. At the same time locking arm 72 engages from below slide 71 and locks it against downward motion whereby also all hook bars 11 are fixed, that means all amount and totalizer keys are locked in depressed or undepressed position.

By the co-operation of the locking arm 72 with the slide 71 it is further prevented that the releasing lever 74 can swing into releasing position while an amount or totalizer key is still in an intermediate position, because upon one of these keys being depressed, the lower end of slide 71 arrives opposite arm 72. This action of slide 71 however does not take place here, as locking arm 72 cannot be released as long as one of the amount or totalizer keys is down, due to the action of the locking members 65, 68, Figure 4.

In order to enable depression of one key only of the two rows of totalizer keys 102, a mutual locking arrangement is provided between these key rows which is formed by a tube 81 mounted on tubular shaft 228, Figure 1, and having rigid on it two locking arms 78, 79. Arm 78, Figure 3, under the action of a spring 82 abuts on roller 32 of rod 34, Figure 3, connected to the blocking bar 33 of the left-hand key board 102, Figure 1, whilst arm 79 co-operates with a locking lug 83 of rod 34 connected to bar 33 of the right-hand key board 102. Upon depressing a key 102 of the left-hand row, arm 79 is moved into the path of lug 83 whereby the right-hand key row 102 is locked. When, on the other hand, a key of the latter row is depressed, lug 83 arrives over arm 79 whereby the left-hand key row 102 is locked.

I claim:—

1. A blocking arrangement for the setting mechanism of cash registers fitted with a plurality of groups of totalizer keys, a group of amount keys and a group of motor keys, in which is provided an independent locking member for each of said groups of totalizer keys and for the group of amount keys, a locking mechanism for said motor keys, each of said locking members being in the path of said locking mechanism to block the same against movement, means actuated by the depression of a key in each of said totalizer and amount key groups for moving its associated locking member from the path of said locking mechanism, said locking mechanism locking said motor keys as long as a key of each of said totalizer and amount key groups is not depressed.

2. An arrangement according to claim 1 characterized by the fact that said locking mechanism includes a filling piece, and in which is provided a mode of operation lever, means connected with said mode of operation lever for moving said filling piece out of the range of said locking members when said mode of operation lever is set to "Taking total" whereby said motor keys are released.

3. An arrangement according to claim 1 characterized by the fact that said locking mechanism includes a filling piece, and in which is provided a swing lever, said filling piece being mounted on said swing lever, a cam disk mounted on a shaft, said swing lever abutting on said cam disk and said shaft being influenced by a mode of operation lever, said disk turning upon one of said levers being set to "Taking total" so as to turn said swing lever and filling piece so that said filling piece is moved out of the range of said locking members, thereby releasing the motor keys.

4. An arrangement according to claim 1 characterized by the fact that there is provided a blank stroke key which acts as a motor key, said blank stroke key being out of operative connection with said locking mechanism whereby this key can be depressed without previous depression of an amount and totalizer key, additional locking means associated with said amount and totalizer keys, said additional locking means preventing depression of said blank stroke key with depressed amount and totalizer keys.

5. A blocking arrangement for the setting mechanism of cash registers fitted with a plurality of groups of totalizer keys, a group of amount keys, a group of motor keys and a mode of operation lever in which is provided mutual locking means between the groups of totalizer keys and the amount of keys on the one hand, and the mode of operation lever and a blank stroke key on said motor keys group on the other hand, said locking means locking said mode of operation lever and said blank stroke key upon depression of an amount or totalizer key, and inversely locking said totalizer and amount keys when said blank stroke lever is depressed, or said mode of operation lever is set to "Taking total".

6. An arrangement according to claim 5 characterized by the fact that said locking member when locked in a position of rest locks said totalizer and amount keys, said locking member being resiliently held in said position

of rest and having two locking extensions, one of which cooperates with a locking disk positively connected to the mode of operation lever, and the other of which cooperates with a slide shifted by the blank stroke key, whereby said locking member is locked in a position of rest upon the blank stroke key being depressed or the mode of operation lever being set to "Taking total", said locking member being moved from said position of rest and locking said mode of operation lever and said blank stroke key upon depression of an amount or a totalizer key.

7. A blocking arrangement for the setting mechanism of cash registers fitted with a plurality of groups of totalizer keys and a group of amount keys, a locking bar for each of said groups of keys, a shaft connected to said locking bars so as to be turned by said locking bars when one of said keys is depressed, a slide connected to said shaft, a releasing lever, an arm rigidly connected to said releasing lever which in the operative position of said releasing lever arrives under the slide, thereby locking the said keys in their momentarily depressed or undepressed positions, while on the other hand a releasing motion of said arm is prevented as long as a key is depressed incompletely.

8. A blocking arrangement for the setting mechanism of cash registers fitted with a plurality of groups of totalizer keys and a group of amount keys, a locking bar for each of said groups of keys, a shaft connected to said locking bars so as to be turned by said locking bars when one of said keys is depressed, a group of motor keys, a slide associated with said motor keys so as to be operated when one of said motor keys is depressed, a locking piece resiliently mounted on said slide, an arm rigid on said shaft, said arm arriving behind said locking piece during depression of one of said first named keys to temporarily lock said motor keys.

The foregoing specification signed at Cologne, Germany, this 28th day of March, 1929.

ERNST BREITLING.