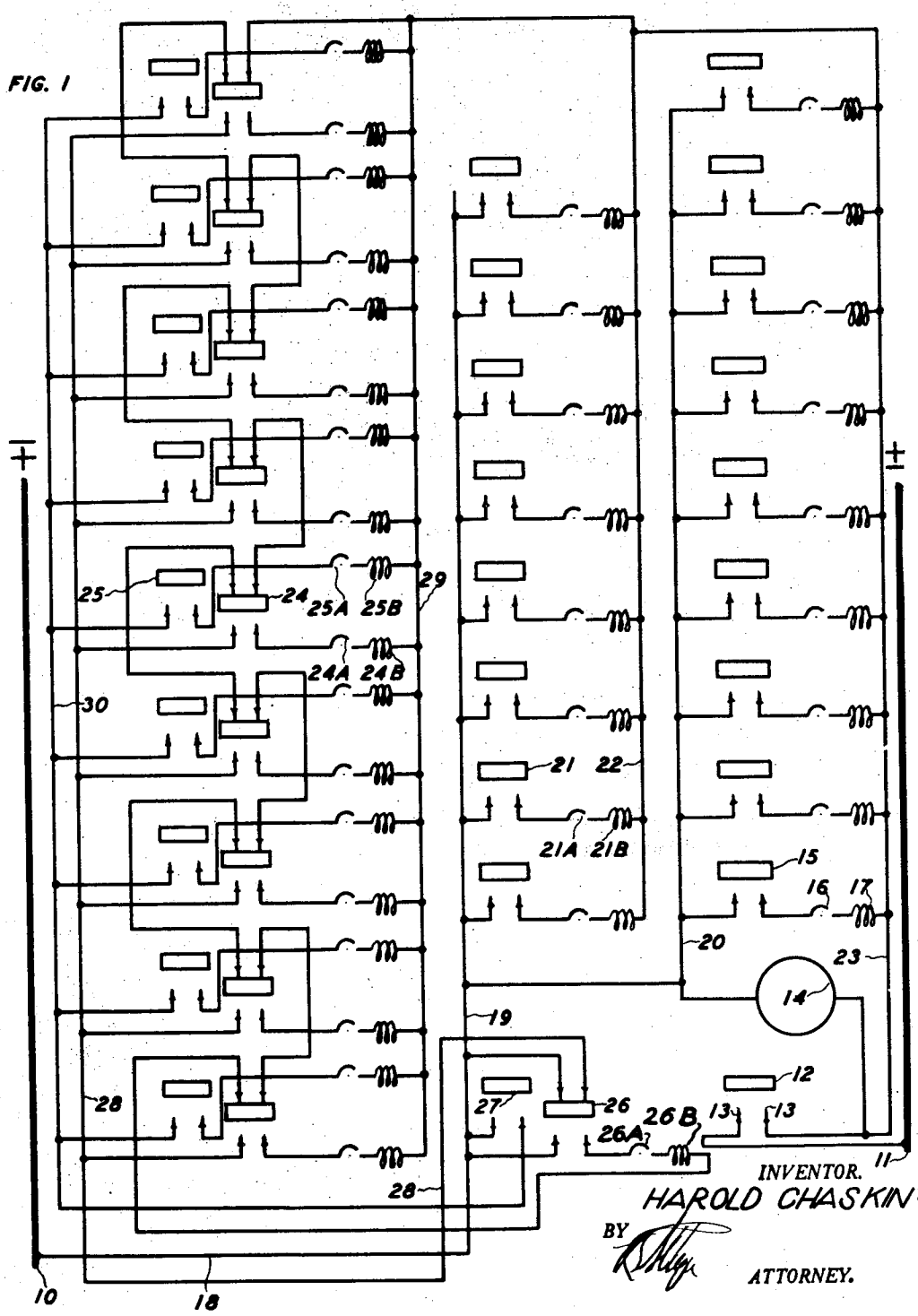
Sept. 26, 1939. H. CHASKIN 2,174,031

KEY ACTUATED SOUND PRODUCING MECHANISM

Filed June 9, 1937 3 Sheets-Sheet 1

FIG. 1



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KEY ACTUATED SOUND PRODUCING MECHANISM

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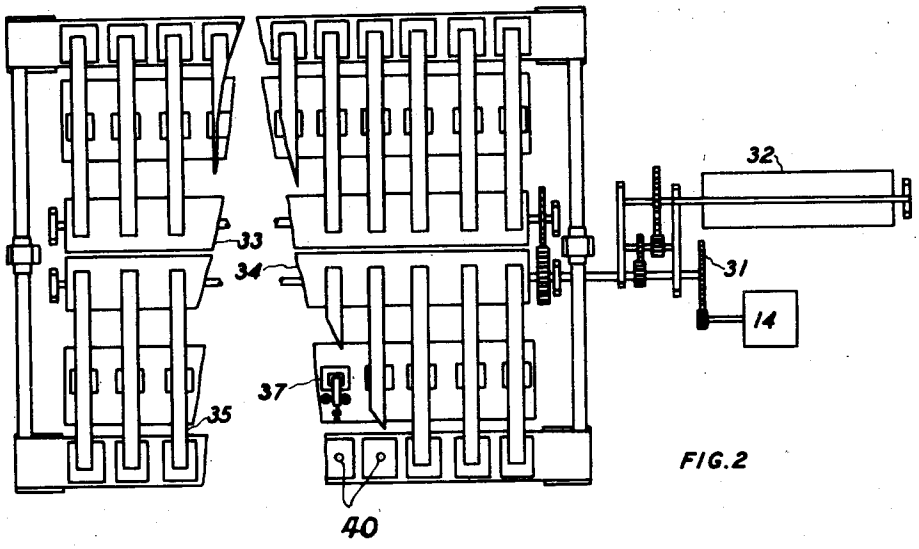

FIG. 2

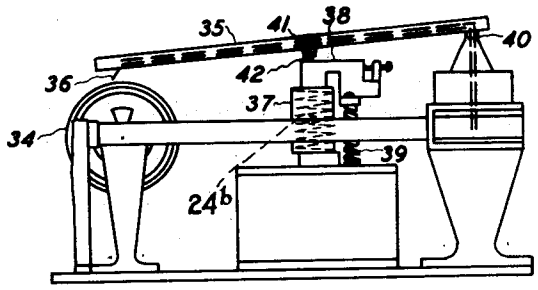

FIG. 3

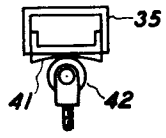

FIG. 4

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KEY ACTUATED SOUND PRODUCING MECHANISM

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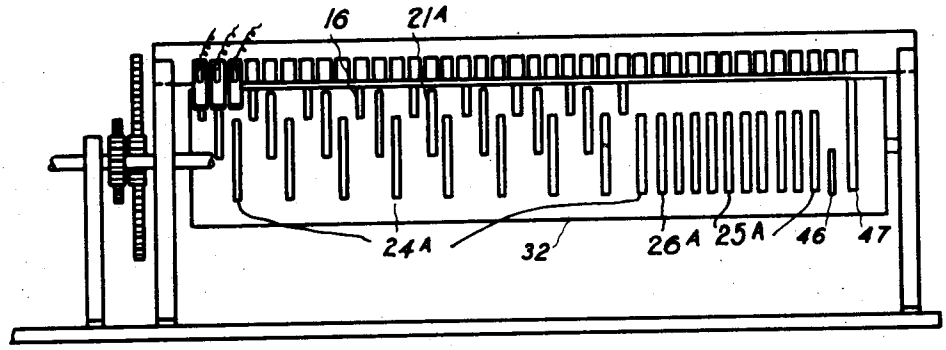

FIG. 5

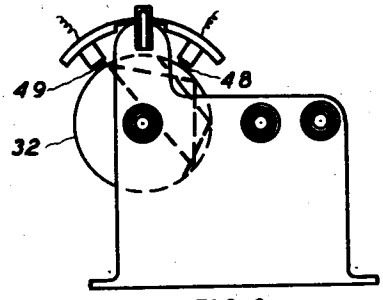

FIG. 6

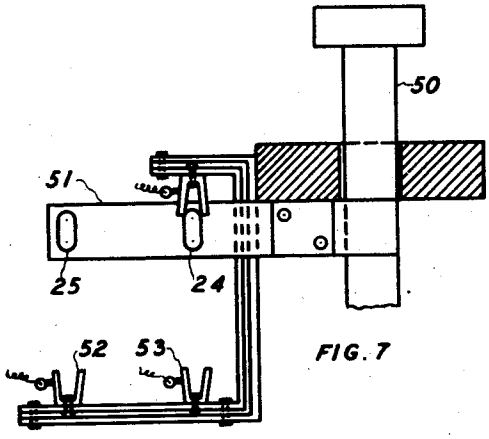

FIG. 7

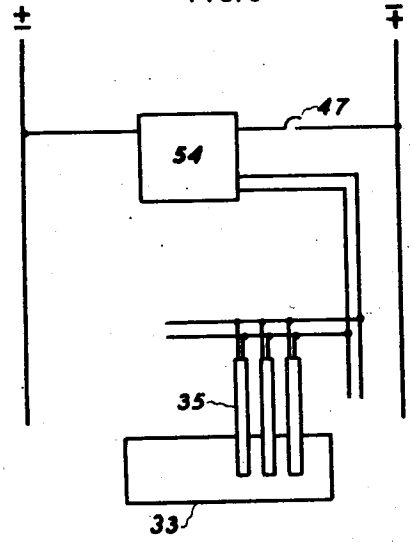

FIG. 9

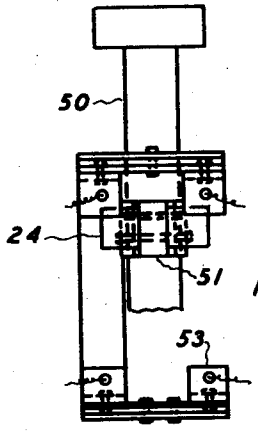

FIG. 8

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UNITED STATES PATENT OFFICE

2,174,031

KEY ACTUATED SOUND PRODUCING MECHANISM

Harold Chaskin, New York, N. Y.

Application June 9, 1937, Serial No. 147,219

3 Claims. (Cl. 235—7)

This invention relates to sound producing mechanisms which are responsive to key set motor actuated devices such as a cash register for example and has for its object to provide an improved device of this class.

Another object is to provide a sound producing mechanism capable of calling out any desired monetary value without the necessity of a separate key for each sound or value.

Referring to the drawings—

Fig. 1 is a wiring diagram of the key controlled switches.

Fig. 2 illustrates the sound producing records.

Fig. 3 shows one of the sound producing records, its stylus and arm.

Fig. 4 is a section through the arm of Fig. 3.

Fig. 5 is the timing mechanism.

Fig. 6 is an end view of the timing mechanism showing the brushes.

Fig. 7 shows the key operated switches.

Fig. 8 is a left side view of the device of Fig. 7.

Fig. 9 illustrates the wiring diagram for the sound producing mechanism and speaker.

Dishonesty of a sales clerk in ringing up the value of a purchase in a cash register may be minimized if a sound producing mechanism simultaneously notifies the purchaser of the value registered. Prior suggestions for such devices have required too many keys, especially in amounts ending in the teens. Another objection has been the necessity for pressing keys in the desired sequence, not always an easy matter for a hurried clerk.

According to this invention no separate keys are needed for the teens and the keys may be pressed in any sequence or simultaneously, yet the emitted sounds are properly timed.

For purposes of illustration this invention is shown applied for cash register keys for recording any amount from $.01 to $9.99 by the use of the usual twenty-seven keys, though of course the invention is applicable to key actuated devices having a more or less number of keys.

In Fig. 1 are shown switches actuated by three rows of keys, those on the left being responsive to the units or cents keys, the central ones being actuated by the dimes column keys and those on the right responsive to the keys of the dollars column. Of course the dollars actuated keys may be placed on the left and the cents on the right, if desired, without affecting this invention. Current is supplied from the busbars 10 and 11. An additional switch part 12 is responsive to an extra key located preferably at the bottom of the machine which must be pressed after the numbered key or keys have been actuated. On pressing this extra key the switch part 12 bridges the gap between the switch elements 13 closing the circuit through the electric motor 14 which drives the sound producing mechanism and timing device of this invention.

If the lower key of the right hand column is numbered to designate one dollar, then pressing this key causes the switch part 15 to bridge the gap illustrated below it closing the circuit until after the sound mechanism has operated. After closing the motor circuit the switch 16 of the timing mechanism closes the circuit through the magnet 17 at the proper time to cause a stylus to engage the sound mechanism. After closing the $1.00 key and actuating the lower key for switch part 12, the circuit is from the bus 10 through the wires 18, 19 and 20, switches 15, 16, magnet 17, wire 23, switch 12 and 13 to the bus 11, as well as actuating the motor by current flowing from the wire 19 through the motor and the switch 12, 13.

If the third key from the bottom in the middle column be numbered "3" to indicate 30¢ then on pressing this key the switch 21 is closed. After the motor has turned the timing device the switch 21A is later closed completing the circuit through the electromagnet 21B and current then flows from the wire 19 through the switch 21, switch 21A, magnet 21B to the wire 22 which is connected as illustrated to the wire 23. If both the $1.00 key and the 30¢ key are simultaneously depressed the timing device closes the switch 16 to cause the $1.00 sound to be emitted before closing the switch 21A to emit the 30¢ sound, as will be described hereinafter in connection with the timing device.

Assuming the fifth key from the bottom of the left column is numbered for 5¢, then on depressing this key both the switch parts 24 and 25 are depressed, switch part 24 opening the circuit from the contacts above it and closing the circuit through the contacts below it. Assuming that only this 5¢ key is depressed and no other monetary key actuated at the same time, then the circuit will be from the wire 18, 19, through the switch part 26 (to be described later), the wire 28, the contacts below the switch part 24, switch 24A, magnet 24B, wires 29 and 23 and switch 12 and 13 as before. The 10¢ key of the middle column depresses two switch parts 26 and 27. If the 10¢ key and the 5¢ key are depressed substantially simultaneously then the circuit is through the wire 18, switch part 27 closing the contacts below it, wire 30 through the contacts

below the switch part 25, timing switch 25A and magnet 25B, so that the sound "fifteen cents" is emitted.

If the 10¢ key alone is depressed without any of the keys in the cents column, then the circuit is through the wire 18, 19, the contacts below the switch part 26, timing switch 26A, magnet 26B from whence the circuit passes successively between each of the upper contacts closed when the cents keys are all raised or undepressed, and back through the wire 23 and the switch 12, 13 to the bus 11.

In Fig. 2 is shown the layout of the drive mechanism from the motor 14 through the gears 31 to the timing device 32 and the sound records 33 and 34. Adjacent each record are a plurality of arms 35, each carrying a stylus 36, as shown in Fig. 3. Beneath each arm is a magnet 37 containing a winding as illustrated in conection with Fig. 1. On actuation of the magnet 37 its armature 38 is depressed against the action of the spring 39 allowing the arm 35 to rest by gravity with the stylus upon the sound record. The travel of each stylus along the sound record is comparatively short and for the desired purpose each arm is pivoted at 40 to allow this limited travel.

On the underside of each arm 35 is an arcuate or cam surface 41 as shown in Fig. 4 resting on a roller 42 carried by the armature 38 so that when the magnet has been deenergized the spring 39 raises the armature 38 and arm 35 to disengage the stylus from the sound record. This cam surface 41 causes the arm 35 to be slightly rotated about its pivot 40 due to gravity in order that the stylus 36 may be returned to its original or starting position with respect to the sound record.

The timing device 32 is shown in Fig. 5 as being comprised of a number of segments each of which is adapted to bridge a pair of brushes. The segments 16 are each for closing the circuit through some one of the dollar switches. The segments numbered 21A are each for the dimes and those numbered 24A and 25A for the cents. The nine segments 24A are for the cents. Nine other segments 25A include the teen cents, that is for the cents when actuated in combination with the 10¢ key. A segment 26A is for the 10¢ key.

At the right end of the timer is a short segment 46 which controls the cash register motor. As is usual the cash register motor records the amount of the sale and also releases the depressed keys. The last and long segment 47 closes the circuit through the loud speaker.

In Fig. 6 brushes 48 and 49 are arranged for each of the segments so that while the segment bridges these brushes the circuit through them is closed. The angular extent of the segment and the spacing of the brushes control the duration of time that the circuit is closed through the particular electromagnet which actuates some one of the several styli.

There are altogether thirty six arms 35 and styli for the apparatus illustrated. The dollar segments 16 are in advance of the dime segments 21A in order that the dollars may be called out by the appropriate sound record before actuation of the desired sound record for the dimes column. The segments 24A, 26A and 25A being arranged still later cause the cents to be called out after the dollars and dimes.

In Fig. 7 is illustrated one of the unit or cents keys of a cash register mounted on a stem 50 to which is attached a horizontal member 51 preferably of insulating material carrying the switch parts 24 and 25. Beneath each of these switch parts are the contacts 52 and 53 adapted to be bridged by the conductor bars 24 and 25. Above only one of the contacts are the bridging contacts adapted to be closed when the key is in normal position as was described above in connection with the operation of the 5¢ key.

Fig. 8 is a side view of Fig. 7 and shows the switch parts attached to the keys of an existing cash register whereby the entire sound producing mechanism may be made as an attachment for cash registers. All of the arms 35 are connected in parallel with the loud speaker 54 as shown in Fig. 9 so that after the speaker segment 47 has been closed and any one of the arms 35 actuated, the sound produced is electrically transcribed by the speaker 54.

The separate key actuating the switch 12 must be depressed after the other key or keys have been actuated since the circuit is not closed until this master key is depressed. The use of this separate key controlling the switch 12 and 13 enables one of the keys in each of the columns to be depressed in any sequence so long as all are depressed before the control key 12 closes the circuit through the switch 12, 13.

If the wrong key in any column is depressed, then as is customary in cash registers and the like, it is only necessary to depress the correct key when the first or incorrectly operated key will be automatically raised without affecting the sound producing mechanism since the delay action or control switch 12 is not closed until the other keys have been correctly operated.

An especially noteworthy feature of this invention is the provision of two sound producing records for each of the unit keys whereby it is unnecessary to increase the number of keys by having a separate key for each of the teens. The timing mechanism is believed to be a noteworthy feature since it ensures the correct timing of the sounds from the dollars record, the dimes record and the cents record irrespective of whether the keys controlling these records were depressed simultaneously or in any sequence. In other words the sequence of the emitted sound does not depend upon the sequence with which the keys are depressed. On closing the circuit through the motor 14, the timer 32 of the sound records 33 and 34 are all set in motion. By the time the desired dollar segment has been bridged by its brushes the sound records will have gained their normal speed. Since the register motor, which is in addition to the motor 14, is controlled by the segment 46, it will be understood that all of the keys, including the control key, are released by the register motor breaking the circuit through the motor 14 and stopping the rotation of the timer and sound records.

On again closing the circuit and starting the motor 14 the timer may rotate a substantial angular distance while the sound records are attaining their desired speed and before any of the segments illustrated bridge their brushes, due to the angular location of the segments in the approximate manner illustrated. The device illustrated is for use primarily with cash registers of the type in which the depressed keys are held down until they are released by the register mechanism.

While the apparatus has been described using two motors, one for the timer and sound records and the other for the register, it will be understood that one motor may be used to take the

place of these two. Where one motor is used it would be started by the control key and stopped by the timer and instead of having the segment 46 start a separate motor this segment would control an electromagnet clutch to start the desired mechanism in operation from the already operating motor. Of course this last expedient is of interest principally with new registers to be manufactured, while the layout described is adapted to be applied as an attachment to existing registers.

In the drawings it will be understood that switches not numbered and described specifically correspond to different numbers from those which have been described.

This application is a continuation in part of my prior application Serial Number 110,580 filed November 13, 1936, for Sound apparatus attachment for cash registers.

I claim:

1. The combination with a key controlled mechanism including a number of unit keys numbered between 1 and 9, and tens keys numbered 1 and higher, of means for audibly calling the correct number resulting from combining any unit key with any tens key, means controlling the first means and including at least two circuits controlled by each of the unit keys, and means responsive to the position of the tens key numbered 1 for selecting either one of the two circuits controlled by the unit key which is actuated.

2. The combination with a key controlled mechanism including a number of unit keys numbered between 1 and 9, and tens keys numbered between 1 and 9, of means for audibly calling the correct number resulting from combining any unit key with any tens key, means controlling the first means and including at least two circuits controlled by each of the unit keys, said second means also including means responsive to the position of the tens key numbered 1 for selecting either one of the two circuits controlled by the unit key which is actuated, said second means further including a pair of switches actuated by each unit key, each switch controlling one of said two circuits, one of said two circuits for each unit key passing through a switch closed by the tens key numbered 1 when in normal position, the other circuit for each unit key passing through a switch actuated by said tens key numbered 1 when the same has been actuated, the first means including a pivotal arm cooperating with a sound record and controlled by the selected circuit.

3. In combination a key controlled mechanism, including a plurality of unit keys, a plurality of pivotal arms, a plurality of sound records, and each arm carrying a stylus adapted to cooperate with one of said records, at least one tens key numbered 1, three switches controlled by each of said keys, one of each set of three being closed when its key is in normal unactuated position, two of each set of three switches being closed when its key is actuated, each switch of each such pair controlling a circuit separate from the other switch of that pair, when the tens key numbered 1 is alone actuated one circuit is closed through each of the unit switches in series, when only one of the unit switches alone is actuated a circuit is closed through the switch closed by the tens key in normal position, when said tens key and a unit key are actuated approximately together a third circuit is closed through switches closed by both keys, each of said key controlled circuits effecting cooperation of one of said pivotal arms and its stylus with one of the sound records.

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