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(54) Machine for playing a game.

(57) Machine for playing a game by introduction of a coin or the like and by manual operation of a lever (8) comprising a number of wheels (9, 10, 11) having images (90) mounted on their perimeters, set in motion by the lever (8) and comprising an electronic programmer (3) associated to a memory store into which different game playing programs are introduced, put into operation in accordance with the speed at which the lever (8) is moved. For each program the player receives a programmed number of coins for each of *n* playing turns programmed in the game. The wheels (9, 10, 11) are stopped in such a position that, through a window in the machine, the player can see the combination of images (90) pertaining to the playing turn and ascertain that the coins received correspond to the number stated on a chart placed outside the machine, against a combination of images (90) identical with that seen on the wheels standing still.

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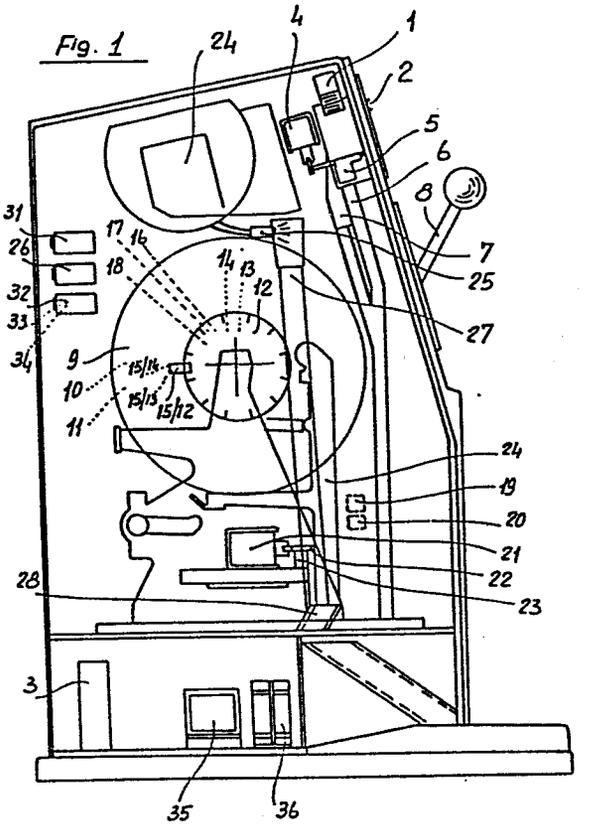
Fig. 1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Machine for playing a game.

This present invention concerns a machine for playing a game by introduction of a coin or the like and by manual movement of a lever.

In relation to the already known hand-lever operated machines reference may be made to slot machines in which, by putting in a coin or the like and then working the lever to play the game, a number of wheels are set in motion, each wheel having a number of images or, generally speaking, conventional symbols mounted on its perimeter; according to the position at which the wheels stop, the machine emits a certain number of coins for the player who has won his game and none if the player has lost. The combination of images visible from outside the machine when the wheels have stopped shows whether the player concerned has won or lost.

The drawbacks inherent in slot machines are due to two main causes: firstly the game played is a game of chance, generally banned in public places or allowed only in licenced gaming houses; secondly the result of each turn depends entirely on chance as the wheels stop due to friction created in the works, possibly assisted, for example, by an air-friction braking device . The fortuitous nature of the game prevents the person in charge of it from calculating his return unless relating it to a long period of time.

The machine conforming to the invention here described conventionally consists of a structure holding most of the parts, a slot in the outer casing through which a player puts in his coin

enabling him to play, a lever on the outside of the casing moved by the player to accomplish his turn, several wheels so assembled that they can turn simultaneously and separately one from another, a part that transmits the lever movement simultaneously to each of said wheels to set them turning, a number of conventional symbols (images) mounted on the perimeter of each wheel and a window in the casing for viewing one symbol on each wheel when that wheel is still, a container for used coins, a container for coins to be emitted as a prize and comprising in an original fashion an electronic programmer with microprocessor (hereinafter called a programmer) associated to a memory store into which a program has been put to control emission of coins for each one of n previously determined playing programs, the programmer comprising a part that records the order number of each turn played in one of n playing programs and transforms said recordings into information utilizable by the microprocessor for controlling emission of a programmed quantity of coins for each order number of turns played.

In particular the machine comprises a number of means of reference placed round the perimeter of a selector disc associated to each wheel, a starting means of reference being added to each set of said means of reference so that a position counter can count the passage of each means of reference in relation to the starting means of reference, each of said means of reference and the starting means of reference also corresponding to a conventional symbol mounted on the perimeter of the wheel; a part that transmits the position counter's signals to the programmer so that said programmer can operate the stopping or braking device of each wheel and stop said wheel in such a position that through the window in the casing can be seen the conventional symbol or combination of symbols (according to whether there is one wheel or more than one) in accordance with the coin emission program, the combination of conventional symbols, indicated for the player on a chart placed outside the machine and corresponding to the number of coins to be emitted, being observed at the same time.

Still more particularly, the machine conforming to the invention

comprises: a detector of valid and non-valid playing coins and a channel and container for each of the two types of coins; one or more coin counters, each one associated to one of the n programs for coin emission, that progressively count the number of playing turns effected by the machine in each single program; a detector of the speed at which the player moves the lever; a part that transforms the information received from said detector into information used by the microprocessor to execute that particular program of the n playing programs corresponding to the range of speeds within which lies the speed at which the player has moved the lever; a selector disc for each wheel having means of reference corresponding to each conventional symbol mounted on the wheel concerned and a detector of said means of reference that transmits to the programmer the position, in relation to a starting means of reference on the selector disc, of each conventional symbol mounted on the wheel associated to that selector disc, so that the programmer can stop the wheels at the positions set for them by the coin emission program put into the memory store and chosen according to the speed of lever movement causing emission of coins to coincide with the combinations of various conventional symbols mounted on the wheels according to the indications stated on a chart placed on the outside of the machine.

An example of how the invention can be realized will be given here below, solely as an example, referring to the attached drawings wherein:

Fig. 1 is a side view of the machine;
Fig. 2 is a partial view of the chart placed outside the machine and showing combinations of images which give rise to different coin emissions;
Fig. 3 is a view of the selector disc;
Fig. 4 is a diagrammatic layout of the programmer;
Fig. 5 is a diagram of the microprocessor;
Fig. 6 is a diagram of the input-output cross-section of Fig.4;

Fig. 1 shows: a magnetic detector 1 that indicates the degree of magnetization of a coin put in through slot 2 of a programmer

3 that in turn energises a coil 4 which opens a flap 5 to allow a coin to pass through if it possesses the degree of magnetization required for playing, as programmed (if it does not, the flap remains closed and the coin, passing along a channel 6, falls into a container placed to receive it but not shown); a channel 7 to carry coins with a high degree of magnetization and cause them to fall into a container placed to receive them; a conventional device which, stopping a coin arriving from channel 7, frees a lever 8 to permit a player to move it and, by means of a conventional mechanism not shown, to set three coaxial wheels 9, 10, 11, in motion each carrying on its perimeter a set of conventional symbols also partly visible in Fig. 2; a selector disc 12, 13, 14, for each of the wheels 9, 10, 11, in which a number of notches (means of reference) are cut, each corresponding to a conventional symbol mounted on the corresponding wheel, and a larger notch, it too corresponding to one of said conventional symbols, which acts as a reference for a photoelectric cell 15; three gear wheels 16, 17, 18, for each of wheels 9, 10, 11, fixed to and coaxial with them, not shown in the drawing, in which each space between two teeth corresponds to the position of a conventional symbol mounted on the corresponding wheel; a photoelectric cell 19 which is energized by the passage of lever 8 and which then informs the programmer 3 that the game has begun and makes the programmer start counting the movement speeds of the lever; a photoelectric cell 20 associated to lever 8 to inform the programmer 3 that said lever has reached the end of its stroke and consequently to stop counting its movement speeds since the programmer 3, in accordance with one of the three speeds at which the lever has been moved (slow, medium, fast) connects the corresponding coin emitting program and causes it to function. As a whole the various parts operate as follows: since at this point the wheels 9, 10, 11 are turning, each joined to the respective gear wheel 16, 17, 18 and to the respective selector disc 12, 13, 14, when the larger notch on the selector disc has passed, each photoelectric cell 15 associated to a selector disc, begins to count the positions of the other notches in order to tell the programmer3 the exact position of the various notches to each of which corresponds a con-

ventional symbol on the corresponding wheel 9, 10, 11. Programmer 3, in accordance with the emission program operating for the turn being played, program determined as explained above and consequently in accordance with the count taken by photoelectric cell 15, stops wheels 9, 10, 11 one after another in such a position that in the window of the machine may be seen the conventional symbol or combination of conventional symbols: either respecting the combination indicated on the machine corresponding to the number of coins to be emitted, which is the same as the number of coins established by the coin emission program, this only happening if more than one coin is emitted; or with the combination different from that indicated on the machine and which operates emission of a single coin, namely the smallest unit that the machine will pay out, in fulfilment of the program, except in the case of emission of a larger number of coins. According to the program of coin emission determined by the speed at which a player has lowered the lever, wheels 9, 10, 11 will stop in a previously set sequence; for example, in the program denominated program 1, the wheels stop in the order of 9, 10, 11; in program 2 they stop in the order of 10, 11, 9; in program 3 they stop in the order of 11, 10, 9. Wheels 9, 10, 11 are stopped by programmer 3 which energizes the corresponding coils 21, these in turn moving the corresponding levers 22, their fulcrum being 23, that push a lever 24 at whose upper end there is a tooth which enters a space in the corresponding gear wheel 16, 17, 18; at this point programmer 3 drives a motor 24 in the coin emitter comprising a coin container, to make it issue the number of coins relative to the turn played; photoelectric cell 25 sends pulses to programmer 3 to count the coins issued; programmer 3 consequently sends corresponding pulses to non-zero settable counter 26, with display, so that said counter shall count the coins. The emitter is stopped by programmer 3 following a comparison between pulses received from photoelectric cell 25 and the number of coins to be emitted according to the program, which coins reach the outside of the machine by means of channels 27 and 28; through programmer 3 the magnetic detector 1 also sends a pulse to a non-zero-settable counter 31 whenever it is crossed by a valid coin; one after another zero-settable counters

32, 33, 34, with displays, count the situations of each corresponding program. Should a power cut occur a floating battery 35 is automatically connected; only after exhaustion of the floating battery are counters 32, 33, 34 automatically zero-set just as happens automatically whenever the corresponding program ends; the floating battery 35 stores the program in the store associated to programmer 3 if the power failure lasts for a certain length of time, for 24 hours for instance; a power supplier 36 receives current at 220 volts, transforms it and passes it to programmer 3. When a program is completed the other programs are obliged to terminate as well until final completion of all of them after which use of the machine continues with the whole set of programs starting again from the beginning.

Fig. 2 shows six combinations of conventional symbols 90 that give rise to emission of the number of coins indicated at the right hand side of each combination; thus, when one of these combinations appears at the window of the machine through which the conventional symbols can be seen on the three wheels standing still after a turn has been played, a player knows the number of coins that will then be paid out to him. For example, if he can see three apples through the window he will receive eighteen coins, in conformity with the emission program in progress because this program has stopped the wheels in such a way that the three apples are visible through the window.

Fig. 3 shows a selector disc 12 associated to a wheel 9 that is not shown: disc 12 carries a number of means of reference 100 in the form of notches and a starting means of reference in the form of a wider notch. To each of these means of reference corresponds a conventional symbol mounted on the perimeter of wheel 9.

Fig. 4 shows: an interface 40 that receives pulses from the three photoelectric cells 15/12, 15/13, 15/14; an interface 41 that receives pulses from photoelectric cells 19 and 20 at the beginning and end of the stroke made by lever 8, the pulses sent out from the magnetic detector 1 when each valid coin passes and the pulses from photoelectric cell 25 whose task is to count the coins emitted; an optoinsulated circuit 42 that amplifies

the output signals for piloting various magnets, namely those identified by references 73a to 73g in Fig. 6; a relais 43 that controls the coin emitter's motor 24; an optoinsulated circuit 44 that amplifies the output signals for piloting various magnets namely those identified by references 73h, 73i in Fig. 6; a decoding circuit 45 for output signals from optoinsulated circuit 42; an I/O circuit 46 that receives signals from interface 40, from interface 41, from microprocessor 47 and transmits signals for piloting relais 43 to optoinsulated circuit 44, to decoding circuit 45, to microprocessor 47 and contains a RAM; the microprocessor 47 that processes input or output signals; an auxiliary service unit 48 for the microprocessor; an EPROM 49 for programmed operation of the machine; feed circuits 50 for operating the machine.

Fig. 5 shows the card of microprocessor 47 comprising parts 46, 47, 48, 49 of Fig.4. The following are included: an I/O integrated circuit 51 containing a type 6532 RAM; an integrated microprocessor 52 of type 6502 data processor; a type 2532 EPROM integrated circuit 53 containing the data bank for programmed operation of the machine; an initial reset circuit 54 composed of a type NE 555 integrated circuit and connected with discrete components such as will cause the microprocessor to delay starting its functions; a 4 M_z oscillatory circuit 55 composed of a quartz of suitable frequency connected to five discrete components and to two reversing gates able to generate oscillation in said quartz; a type 7474 TTL integrated circuit 56 dividing the frequency generated by circuit 55; a type 74L5155 TTL integrated circuit 57 decoding the input-output stage capable of possible extensions.

Fig. 6 shows: discrete components 60 whose function is that of feeding and providing a calibratable input of the pulses received from photoelectric cell 15/12; two reversing gates 61 and three discrete components whose function is that of determining the type of input pulse associated to discrete components 60; there are two or more types of input pulses; discrete components 62 whose function is to feed and provide calibratable input of the pulses received from photoelectric cell 15/13; two reversing gates 63 and three discrete components whose function is to de-

termine the type of input pulse associated to discrete components 62; there are two or more types of input pulses; discrete components 64 whose function is to feed and provide calibratable input of pulses received from photoelectric cell 15/14; two reversing gates 65 and three discrete components whose function is to determine the type of input pulse associated to discrete components 64; there are two or more types of input pulses; pairs of discrete components 66, 67, 68, 69 and a reversing gate for each of said pairs for reading one of the photoelectric cells indicated as inputs of interface 41 of Fig. 4; there are three photoelectric cells and there is only one magnetic detector their functions being as follows: a photoelectric cell for "start of the lever's stroke"and a photoelectric cell for "end of the lever's stroke" transmit pulses indicating the speed at which a player moves the lever; a "magnetic coin" detector determines the extent to which the coin is magnetized; a "coin" photoelectric cell indicates the passage of coins emitted; an I/O integrated circuit 70, containing the type 6532 RAM bank; a TTL 74LS155 integrated circuit 71 that decodes the states of output, namely a decoder of three inputs in seven possible outputs; a type TTL 74LS244 integrated circuit 72 used as an output buffer for piloting seven optoinsulators and a static relais; optoinsulator circuits 73 (a-b-c-d-e-f-g-h-i) comprising an optoinsulator integrated circuit, four discrete components and two transistors; the function of these optoinsulator circuits is that of controlling the external magnets, each one being associated to an external magnet and doing the following work: the magnets associated to 73a, 73b, 73c stop the three wheels bearing the conventional symbols, those associated to 73d and 73e serve for operating two counters with display indicating the position of two coin emitter programs, the magnet associated to 73f is used by the magnetic detector for rejecting a coin that is more or less magnetized compared with the choice concerning validity of a coin for a playing turn, the magnet associated to 73g serves for operating a counter with display indicating the total number of coins emitted up to that moment, and the magnet associated to 73h serves for operating a counter with display indicating the total number of coins emitted up to that moment

and the magnet associated to 73i is a spare magnet for possible future services; a static relais 74 for controlling the coin emission mechanism; an amplifier circuit 75 for piloting the states indicated by 73h and 73i, composed of two transistors and six resistors.

The machine described may undergo numerous modifications without departing from the field of invention; for example, it could be adapted for use of a single type of coin so that the coin valid for a playing turn will be determined by an additional program containing a certain number of valid coins and a certain number of non-valid coins.

Claims.

1. Machine for playing a game by introduction of a coin and by manual movement of a lever (8) comprising a casing containing most of che parts, a slot (2) in the casing through which a coin is put, a lever (8) for playing the game, a number of wheels (9,10,11) assembled to be able to rotate simoultaneously and independently one from another, a part that transmits the lever movement simoultaneosuly to each of said wheels to set them turning, a number of conventional symbols (90) mounted on the perimeter of each wheel and a window in the casing through which to see a conventional symbol (90) on each wheel when said wheel is standing still, a container for used coins, a container for coins to be emitted as a prize and is characterized in that it comprises an electronic programmer (3) with microprocessor (47) associated to a memory store into which a coin emission program is put for each of n previously established playing programs, the programmer (3) comprising a part that records the order number of each turn played in one of n playing programs and transforms said recordings into information utilizable by the microprocessor (47) for controlling emission of a programmed quantity of coins for each order number of turns played.

2. Machine according to claim 1 characterized in that it comprises: a number of means of reference (100) placed round a perimeter of a selector disc (12,13,14) associated to each wheel (9,10,11), a starting means of reference (101) being added to each set of means of reference (100), so that a position counter (15/12,15/13,15/14) can count the

passage of each means of reference (100) in relation to the starting means of reference (101), each means of reference and the starting means of reference also corresponding to a conventional symbol mounted on the perimeter of the wheel; a part that transmits to the programmer (3) the position counter's signals, so that the programmer can operate the stopping or braking parts of each wheel (9,10,11) to stop said wheel in such a position that in the window of the machine appears the conventional symbol (90) or combination of conventional symbols in accordance with the emission program, the combination of conventional symbols (90) indicated for the player on a chart placed outside the machine being also in accordance with said emission program and corresponding to the number of coins to be emitted.

3. Machine according to claims 1 and 2 characterized in that it comprises: a detector (1) of valid and non-valid playing coins and a channel (7,6) and container for each of the two types of coins; one or more counters (32,33,34) each associated to one of the n coin emission programs, that progressively count the number of playing turns effected by the machine in each single program; a detector (20) of the speed at which the lever (8) is moved by a player; a part that transforms the information received from said detector (20) into information used by the microprocessor to operate that particular one of the n playing programs which corresponds to the range of speeds within which lies that speed used by the player to move the lever (8); a selector disc (12,13,14) for each wheel (9,10,11) bearing means of reference corresponding to each conventional

symbol mounted on the wheel concerned and a part for recording said means of reference that transmits to the programmer (3) the position, related to a starting means of reference (101) on the selector disc, of each conventional symbol (90) mounted on the wheel associated to that selector disc enabling said programmer (3) to stop the wheels (9,10,11) in the positions according to the coin emission program put into the memory store and chosen in accordance with the speed given to the lever (8) causing coin emission to coincide with the combinations of the various conventional symbols (90) mounted on the wheels and respecting the indications given on a chart placed outside the machine.

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Fig. 1

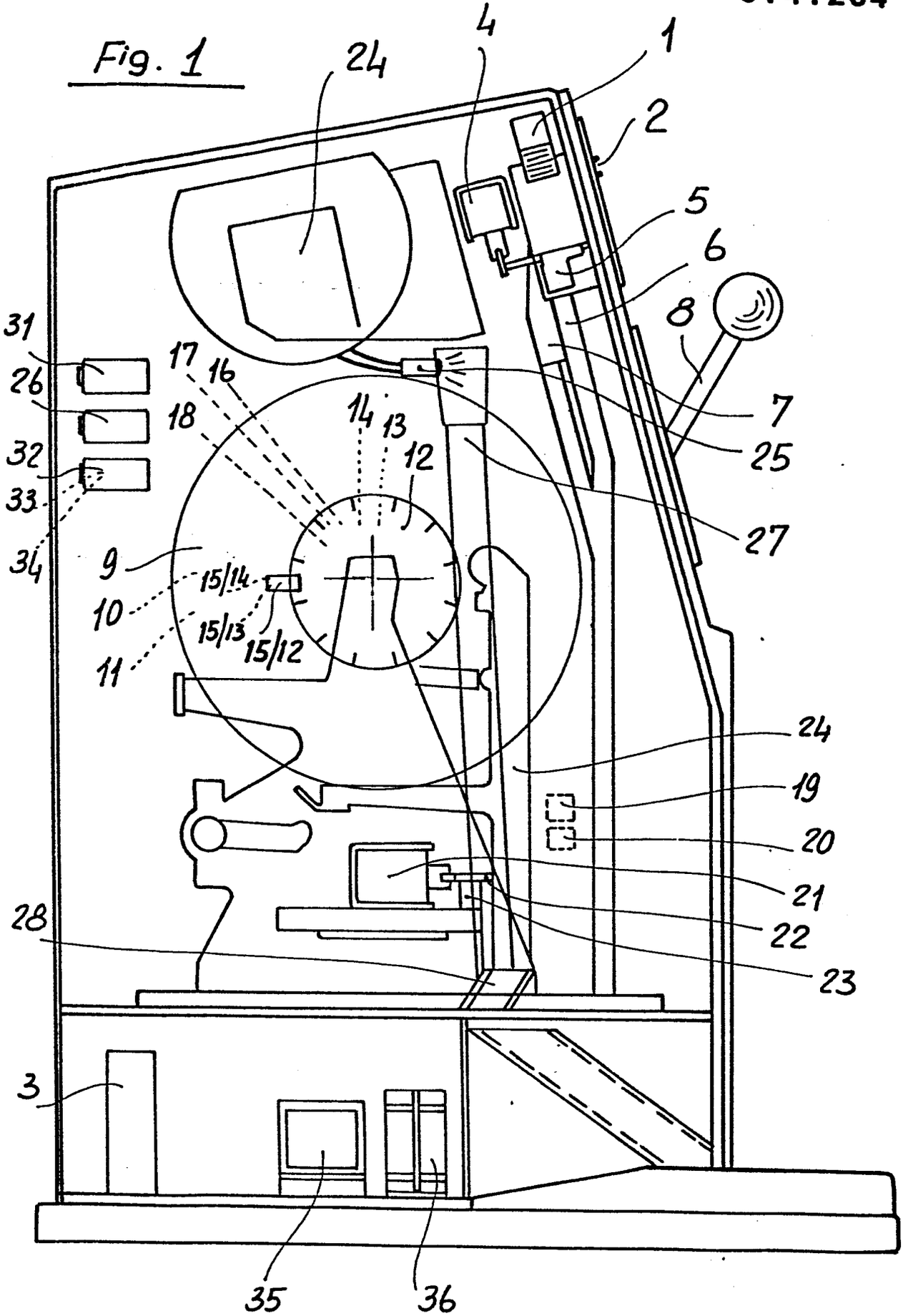
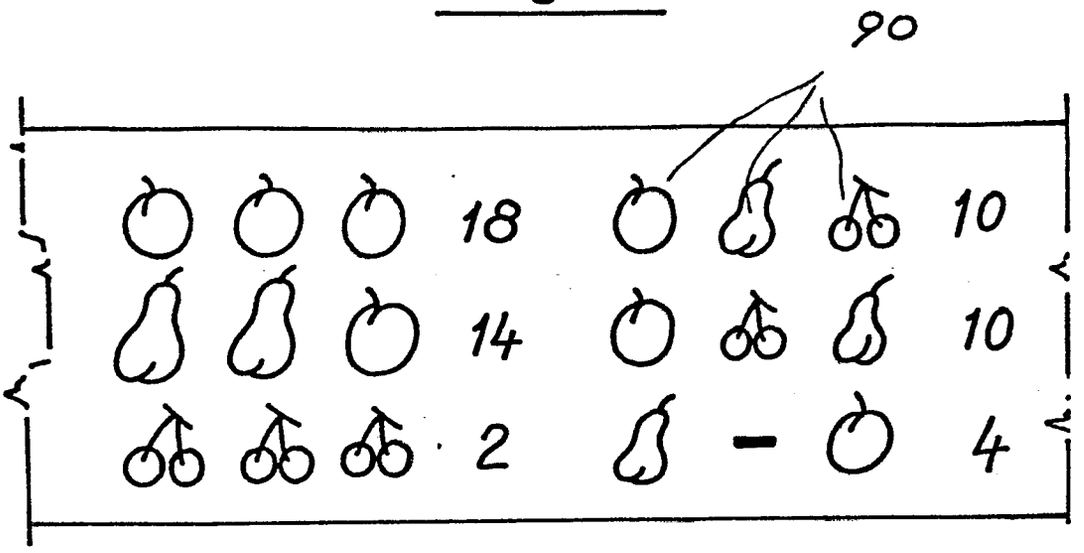


Fig. 2



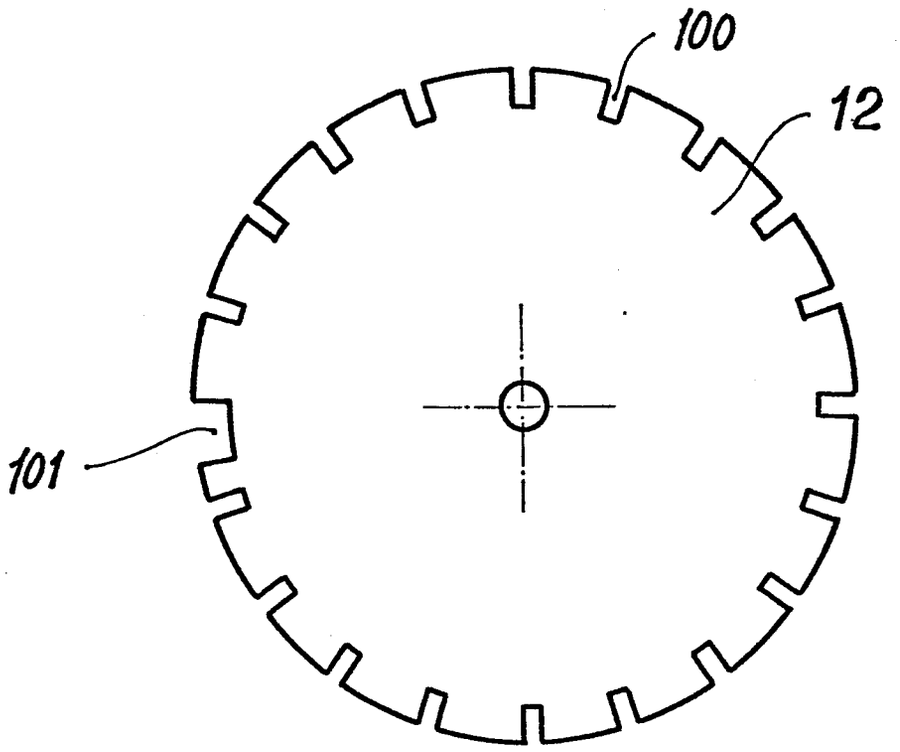


Fig. 3

Fig. 4

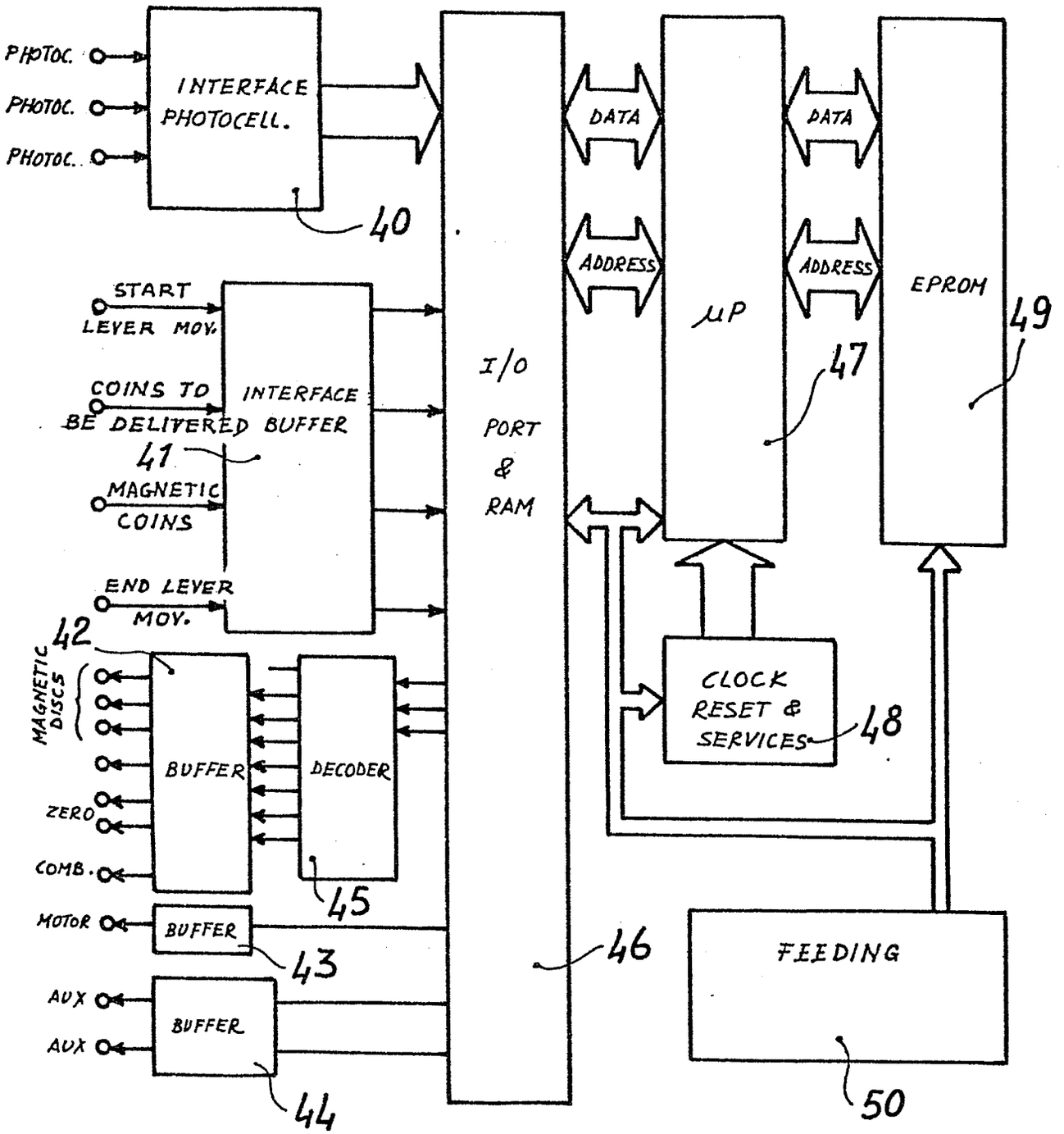

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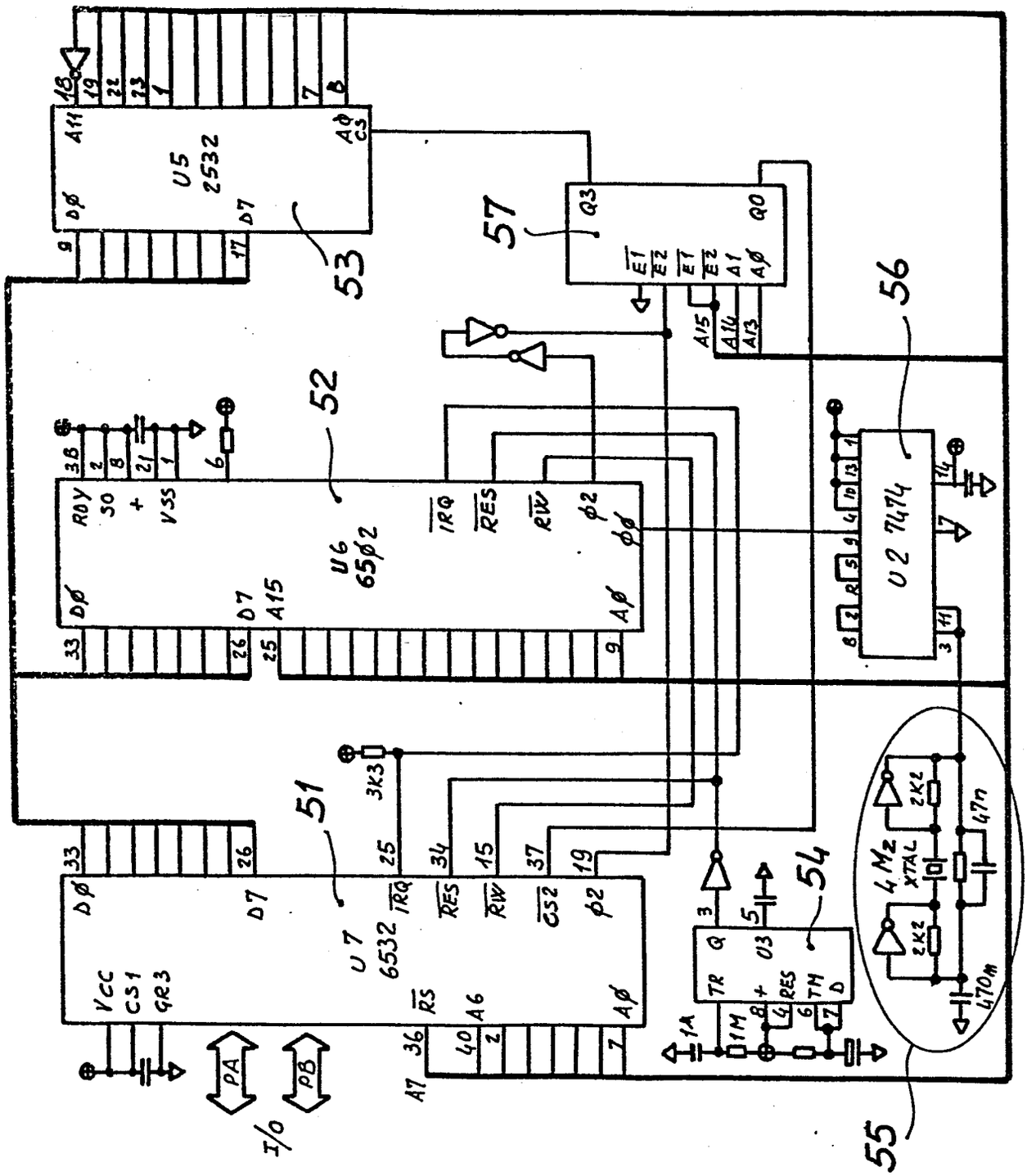
Fig. 5



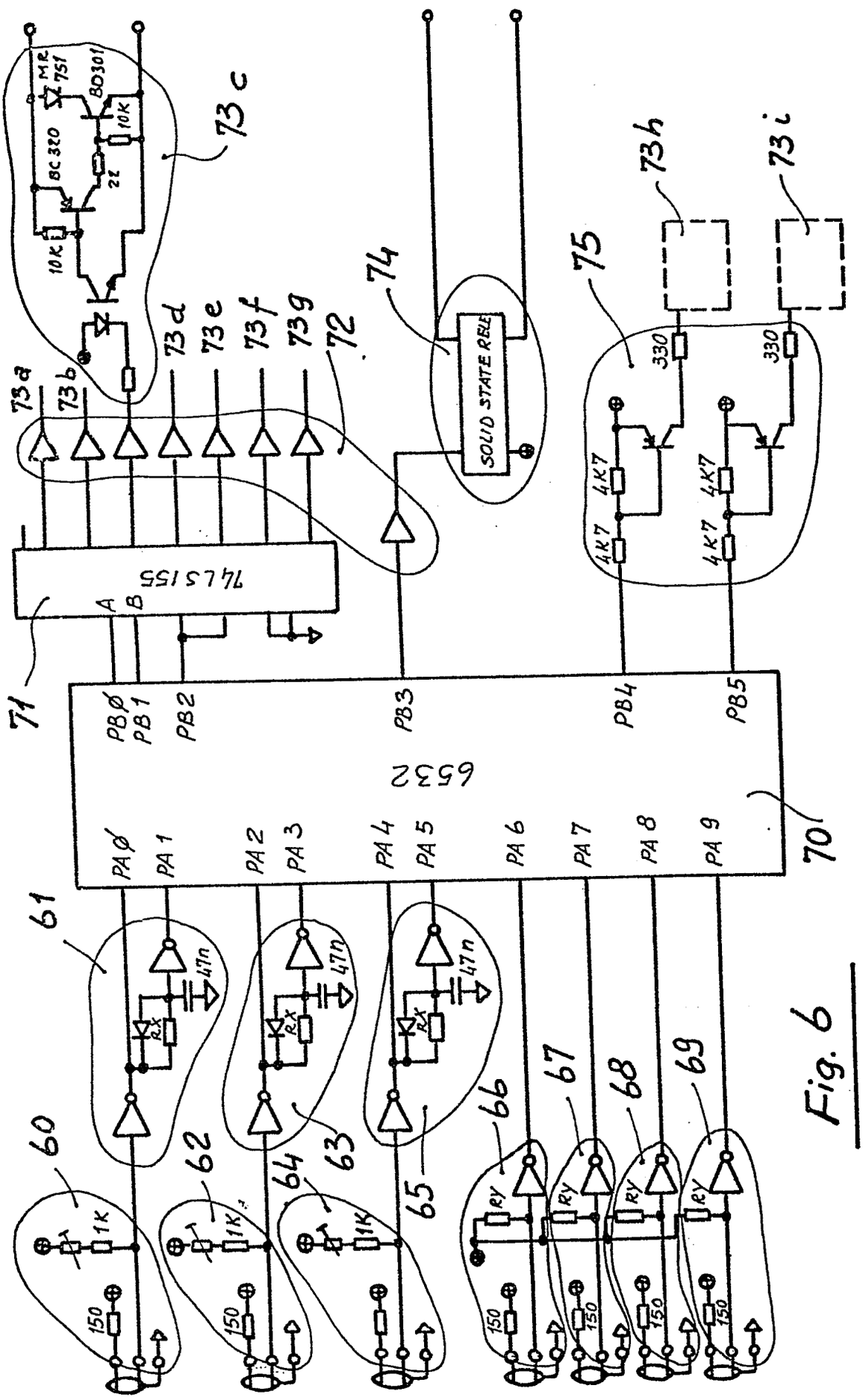

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Fig. 6