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J. RUB
PROGRAMME SELECTION CIRCUITS WITH COIN SLOT MACHINES
FOR SELF-SERVICE LAUNDERETTES
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3,223,216

Fig. 1

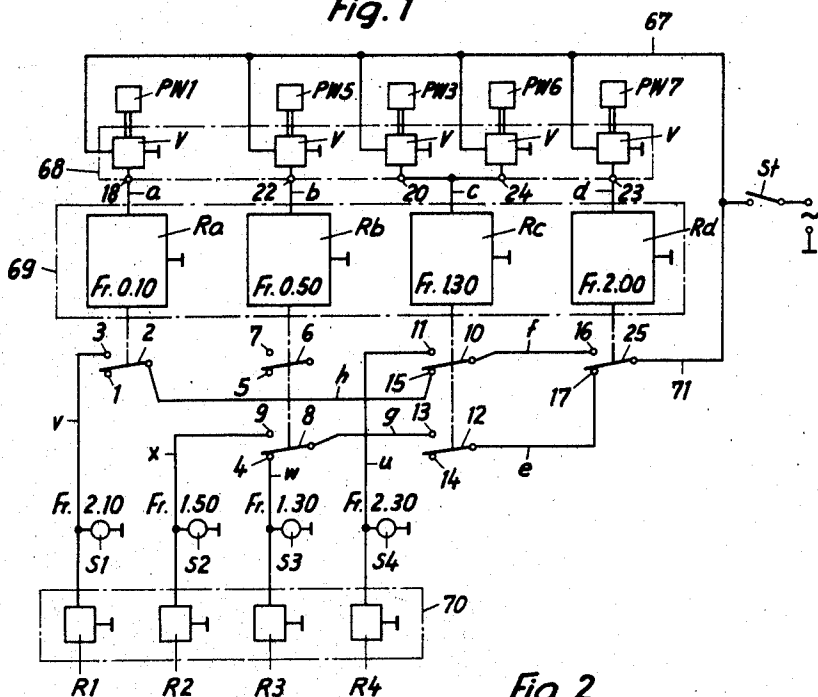
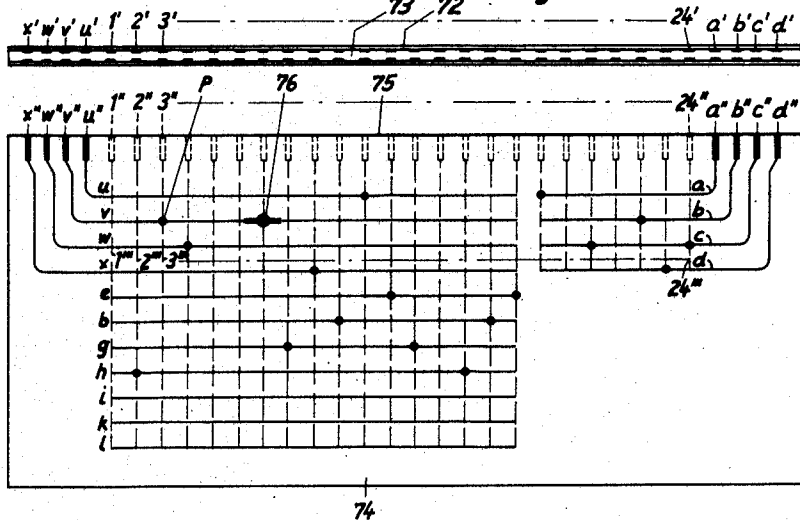


Fig. 2



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2

3,223,216

PROGRAMME SELECTION CIRCUITS WITH COIN SLOT MACHINES FOR SELF-SERVICE LAUNDERETTES

Jakob Rub, Zurich, Switzerland, assignor to Maschinenfabrik Ad. Schulthess & Co. AG., Zurich, Switzerland

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5 Claims. (Cl. 194—1)

The invention relates to a programme selection circuit with coin slot machine for self-service launderettes, with different washing programmes at different charges. Such programme selection circuits have already been described, for example in Swiss Patent application No. 12,781/61. Hitherto, if in circuits of this kind the charges associated with the individual washing programmes had to be altered, this entails much complicated work, with the possibility of errors which are very difficult to remove.

The present invention has the object of removing this drawback.

According to the invention, this object is realized in that each programme is associated with a relay, serving to control the washing plant, and capable of being energized or being automatically energized, if coins corresponding to the charge of the programme are inserted into the coin slot machine; in that each programming relay is connected in series with a price changing device having a terminal bar and an insulating plate fixable thereon, equipped on its front and rear sides with at least two crossing families of printed conductors, said conductors being conductively connected through the plate at certain points, corresponding to a price combination associated with the plate, wherein these plates may be exchanged for plates of a similar kind, differing from the first plates only by the position of the connecting points and thus by the associated price combinations.

The invention will be further described, by way of example, with reference to the accompanying drawings in which:

FIG. 1 shows the basic circuit diagram of a programme selection circuit; and

FIG. 2 shows the diagram of a price changing device, used for realizing the connections shown in FIG. 1.

FIG. 1 agrees with FIG. 1 of co-pending U.S. application No. 363,788, filed April 30, 1964 and reference is made thereto, regarding the details and operation of the programme selection circuit. The circuit comprises substantially five photoresistors PW1, PW3, PW5, PW6 and PW7 which form part of a coin slot machine, explained in detail in the pre-cited application. Connected to the said five photoresistors are five amplifiers V, supplied through a conductor 67, and the five output terminals of which, 18, 22, 24 and 23 are connected by leads, *a*, *b*, *c*, and *d* with four "coin" relays Ra, Rb, Rc and Rd, which are associated with amounts of money, of, say, 6d, or 2s6d or 3s6d or 4s0d. The contacts 1 to 17 of the relays Ra to Rd are interconnected by leads *e*, *f*, *g*, *h*, and by leads *u*, *v*, *w*, *x* with four programming relays R4, R1, R3 and R2. A further terminal 25 of the relay Rd is connected to the supply lead 71. Four signalling lamps with different colours, shown at S1 to S4, are connected in parallel to the programming relays R1 to R4. The amplifiers V form one structural unit 68, the relays Ra to Rd a unit 69, and the relays R1 to R4 a unit 70.

The programming relays R1 to R4 are associated with prices of, say, 4s6d, 3s6d, 3s0d and 5s6d, as indicated (in Swiss currency) at the leads *v*, *x*, *w*, *u*. If the corresponding amounts are inserted into the coin slot machine

in sixpenny pieces and two-shilling pieces, actuation of a starting switch ST causes the corresponding programme relay R1 to R4 to be energized and this is indicated by the lighting up of the associated warning lamps S1 to S4. Energizing of the selected programming relay starts the washing machine, and the connections made by this relay ensure the execution of the programme.

In order to change the prices associated with the different programmes, it is necessary to alter the connections between the amplifiers V and the relays Ra to Rd and the connections between the contacts of these relays and with the programming relays R1 to R4. In order to carry out this alteration in the conventional manner, that is to say, to unsolder the leads *a* to *h* and *u* to *x* from the terminals 1 to 24 and to connect them in another sequence, the work of highly qualified staff will be required. By means of the arrangement of FIG. 3, this alteration in the price may be effected very quickly, without incurring the risk of faulty connections. The price changing device has a terminal bar 72 with thirty-two elastic contact clips, shown at *u'*, *v'*, *w'*, *x'*, 1', 2' . . . 24', and *a'*, *b'*, *c'*, and *d'*, and arranged in an oblong slot 73 of the bar 72. Only two opposite portions, not marked in details, are shown of each contact clip, formed for example by the legs of a U-shaped spring contact member.

A rectangular plate 74 of insulating material has on its front side a series of printed conductors *u*, *v*, *w*, *x*, *e*, *f*, *g*, *h*, *i*, *k*, *l*, parallel to its long sides, of which the conductors *u*, *v*, *w*, *x* lead over angled extensions to wider contact sections *u''*, *v''*, *w''*, *x''* on its long edge 75. The front side of the plate has also a series of printed conductors *a*, *b*, *c*, *d*, parallel to its long sides and leading via angled extensions to wider contact sections *a''*, *b''*, *c''* and *d''*. The rear side of the plate has twenty-four printed conductors, parallel to the short edges of the plate 74, having wider contact sections 1'' to 24'' at the long edge 75 and shown at 1''' to 24'''.

At certain points, the conductors *a* to *h* and *w* to *x* are connected through the plate 74 with the conductors 1''' to 24''', namely at the crossing points; these connections are shown at *p*^{1/2}. Thus, e.g., the conductor *v* is connected with the conductor 3''', and it may be seen that, if the edge 75 of the plate 74 is inserted into the slot 73 of the terminal bar 72, the programming relay R1 is so connected through the conductors *v'*, *v''*, *v*, 3''', 3'', *r'* with the terminal 3 of the relay Ra, as shown in FIG. 1. Similarly, the device of FIG. 3 realizes also all other connections of FIG. 1 which may have to be altered when the prices are changed.

In order to change the charges, it is sufficient to exchange one price plate 74 against another price plate of the same kind, but with other connecting points *p*. The connections at the points *p* are very easy to make and require simply the drilling of a hole and filling the same with solder which covers the corresponding conductors on either side of the plate 74. Conveniently, the printed conductors are somewhat wider at the possible junctions both on the front and rear sides of the plate, and form, for example, a small circle 76, the centre being marked by omitting the conductor material so as to facilitate the correct positioning of the drill.

The conductors *i*, *k*, *l* which have no junctions *p* in the circuit of FIG. 2 and are therefore superfluous in the FIG. 1 circuit, may be required for other price changes, in order to make the necessary connections.

I claim:

1. A programme selection circuit with coin slot machine for self-service launderettes with several washing programmes, each with a different price, characterized in that each programme is associated with a relay serving to control the washing machine and capable of being en-

energized or being automatically energized if coins corresponding to the charge are inserted into the coin slot machine; and in that a price and circuit changing device is connected in series with the programming relay, said circuit changing device including a terminal bar having a series of contact members, an insulating plate adapted to be removably attached to said terminal bar, said plate being provided on its front and rear sides with a series of printed conductors, the conductors on one side of said plate being arranged to extend in one direction while the conductors on the other side of the plate are arranged to extend in a direction to cross said first conductors at laterally separated crossing points, said conductors being conductively connected at certain crossing points through the plate corresponding to certain price combinations, wherein said plate can be removed from said terminal bar and exchanged for other plates of the same kind differing from the first plate only in the position of the connecting points and thus by the associated price combinations.

2. A programme selection circuit as claimed in claim 1, characterized in that the insulating plate is rectangular and the said conductors have on one long edge of the plate wider contact sections which make contact with resilient contact clips in the contact bar, when the plate is inserted into the same and which are firmly connected in part with the programming relays and in part with the terminals or leads of the coin slot machine.

3. A programme selection circuit as claimed in claim 1, characterized in that the printed circuits are widened at the crossing points of the series of conductors, the centres being marked at which a hole can be drilled at a later date for making the connection between the conductors on the front and rear sides of the plate, these holes being filled with solder.

4. A program selection circuit changing device for self-service automatic laundry machines having coin relays and programming relays for operation at predetermined coin values, each of said programming relays being adapted to control the cycle of washing operations and also being capable of energizing the machine upon the deposit of coins in said machine of a value equal to the value required for a predetermined program, comprising a terminal bar having a longitudinal slot, contact

members mounted in said slot, certain of said contact members being electrically connected to said coin relays and other contact members being electrically connected to said programming relays, an insulating plate one of the edges of which is adapted to be removably mounted in the slot in said terminal bar, printed circuit conductors on the front and rear of said plate with the conductors on one side of the plate crossing the conductors on the other side of the plate, and forming spaced crossing points. Contact members on opposite sides of said plate along said one edge spaced to correspond to the spacing of said contact members whereby insertion of said plate in said terminal bar will establish electrical connections with the printed conductors on opposite sides of said plate and connectors extending through said plate at certain of said crossing points to electrically connect certain of the printed conductors on one side of the plate with certain of the conductors on the other side of the plate.

5. An electrical connector for a plurality of control circuits, comprising a terminal bar having a longitudinal slot, a series of connectors mounted on said terminal bar in spaced apart relation, an insulating plate having a series of contact elements along one edge thereof, electrical conductors on one side of said plate having their terminal ends connected to certain of said contact elements, another series of conductors printed on the other side of said plate having terminal ends connected to certain other of said contact elements whereby insertion of said plate into said slot will move the terminal ends of said conductors into electrical contact engagement with said contact elements, and connectors extending transversely through said plate at preselected points for electrically connecting the conductors printed on one side of said plate with the conductors printed on the other side of said plate.

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LOUIS J. DEMBO, *Primary Examiner*.

SAMUEL F. COLEMAN, *Examiner*.