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Inventor : **Lorenzo Regidor, Angel Augé, 6 E-08830 Sant Boi de Llobregat, Barcelona (ES)**

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Representative : **Manresa Val, Manuel et al Gerona n. 34 E-08010 Barcelona (ES)**

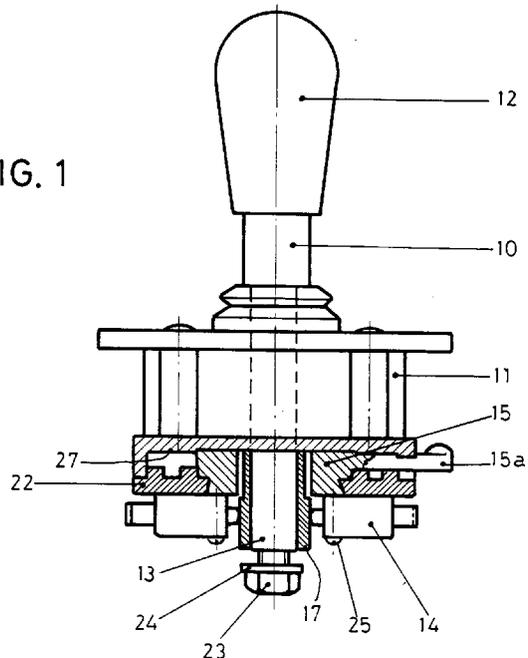
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Applicant : **INDUSTRIAS LORENZO, S.A. Avda. Prat de la Riba 84 E-08849 Sant Climent de Llobregat, Barcelona (ES)**

Accuracy selector for a switch drive stick.

Accuracy selector for a switch drive stick, comprising a control lever (10) pivotally mounted for back and forward movement in a frame (11), which acts by one end (13) on switches (14), including a switch driving organ consisting in a piece (17) coaxially arranged to the end, with a limited axial and rotary movement, with respect to said control lever, the piece having two differentiated polygonal portions coaxially linked, one of them of quadrangular section loosely housed in a quadrangular hole, of a selecting piece (15) rotatably mounted, with a driving appendage (15a) which admits two stable positions, angularly offset, and a second portion outside the hole, of octagonal and irregular section, with four faces of a larger surface alternating with four other smaller faces. At each of the two stable positions, of the selecting piece four equal faces remain directly opposite and close to push buttons of the switches.

FIG. 1



This invention relates to an accuracy selector for a switch drive stick, which can be used in a gaming or amusement machine, comprising a control lever pivotally mounted for back and forward movement, associated to a frame, with a knob grip at one of its ends, arranged through an opening of said frame and acting through its opposite end on switches, which surround in a circle formation said opening, attached to the bottom of said frame. Said control lever and frame have associated means for producing an automatic return to a neutral position of the former, when no external driving occurs, and the frame includes in addition a rotatably mounted selecting piece, with an outwardly protruding appendage for its driving, and having a discoidal portion with a quadrangular hole also crossed by said control lever, wherein said selecting piece can be located, by rotation, to two stable positions, angularly offset, and delimited by stops, and depending on the orientation of the quadrangular hole, with respect to the switch driving means, the possible run of the control lever is reduced or extended, so that said control lever will only be able to drive the switches one by one, or, in addition, and alternatively, two by two.

BACKGROUND OF THE INVENTION

The utility model ES 267.405 discloses means for the control lever return to a neutral position, using a high power magnet with a hole which is crossed by the control lever.

On the other hand, the utility model ES 284.093 and patent ES 8900400, both owned by the applicant of this patent application, disclose means of elastic nature associated to the frame and control lever for return this later to an inoperative position.

The utility model ES 9101550 application, of the same applicant, relates to a selector device for a switch drive stick having above general characteristics, i.e. with a control lever pivotally mounted for back and forward movement on the frame.

Other solutions providing selecting means in order the switches can be driven one by one, or two by two, in the cases including a double number of circuits to be actuated, are disclosed in the patents of invention ES 8702716 and ES 8802691, both owned by the applicant of this patent application.

Other embodiments applied to the same aim are disclosed in the utility models ES 8701466 and ES 9001499.

In all those cases, the solutions proposed include, in addition to more or less expensive adjustment operations, to modify the number of working available positions of the control lever, (except in the utility models ES 8701467 and ES 9101550); the circumstance of an inaccuracy in the switches operation, namely, after a certain time of use, bearing in mind that the selecting piece sustains important im-

pact and pressure stresses from the control lever which gives rise to a mismatching, a slight displacement or deflection thereof, which means an irregularity in the switches drive, either operated one by one or two by two depending on the cases.

In order to overcome these problems, it is proposed, through this invention, a driving organ of the switch push-buttons which associated to a selecting piece, rotatably adjustable such as the above referred, allow an accurate operation of said switches driven one by one, i.e. four working positions of the control lever, or individually or two by two, selectively, that means, eight working available positions of said control lever.

The switches used in this case can be simpler, not requiring, as it is necessary in general, tilting strips, extending over the driving push-buttons, to facilitate their drive by means of the control lever free end, which means a saving in the assembly manufactured.

BRIEF SUMMARY OF THE INVENTION

Essentially, the invention consists in a switch driving organ constituted by a piece of tubular development, arranged coaxial to the control lever end section at the distal end of its knob grip, with possibility of an axial, rotatory movement, of a limited range with respect to said control lever. The external surface of said driving organ, comprises two differentiated polygonal portions, coaxial, associated in continuity. A first portion is of quadrangular section and remains loosely housed within the likewise quadrangular hole of said selecting piece, and a second portion outside said quadrangular hole is, of octagonal and irregular section and includes four faces of a larger surface alternating with other four of smaller span, these later parallel and protruding with relation to the corresponding faces of the first quadrangular section. By means of these structure in each of the two stable positions of said selecting piece, four equal faces of the octagonal portion remain directly opposite and very close to some switch driving push-buttons, facing each other two by two, in one case those having the larger span and in other the smaller ones. The capacity for movement allowed by the first quadrangular portion clearance within the hole of the selecting control lever is such that in one of the angular positions of the said selecting piece the angular displacement of the octagonal portion only allows that one switch operates at one time opposite to one of its faces, while in the other position of the selecting piece two switches can be operated at same time, by means of equal alternate faces.

Other features of the invention and the advantages thereof will become apparent from the detailed description below.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in detail with reference to the accompanying drawings wherein:

Figure 1 is a partial cross-sectional view of the selector incorporated to a switch drive stick;

Fig. 2 is a perspective view of the switch driving proposed organ;

Figs. 3, 4 and 5 show in a bottom plan view the way of operation of said switch driving organ in a first case (figures 3 and 4) in a situation of the selecting piece which allows to drive the push-buttons two by two (figure 3) or individually (figure 4), i.e. enabling eight working positions of the control lever, differentiated, while Fig. 5 shows the other position of the selecting control lever, in whose case it is only possible to drive the switches individually, i.e. the control lever has only four working positions.

DETAILED DESCRIPTION

The selector object of this invention is incorporated, to a control lever -10- pivotally mounted for back and forward movement on a frame -11-, topped out at one of its ends by a knob grip -12- which is arranged through an opening of said frame -11- and acts with its other end -13- on switches -14- which surround in a circle formation (see Figs. 3 to 5) said opening, attached on a cover -22- of a bottom -27- of said frame -11- by screws -25-, said control lever -10- and frame -11- having associated means for a return to a neutral position of the former, when the external conventional drive stops. The frame -11- includes a selecting piece -15-, rotatably mounted and guided between a bottom -27- of said frame and a plate -22- which is attached to said bottom by means of screws -26-, whose piece -15- has an appendage -15a- outwardly protruding for its driving and includes a discoidal portion -15b- rotatably mounted, with a quadrangular hole -16- crossed by the section -13- of the control lever -10- distal to the knob grip -12-. Said selecting piece, such as it is disclosed in the above application of the Utility Model ES. 9101550, can be rotatably lead to two stable positions, delimited by a stop, and depending on the orientation of the quadrangular hole -16- with respect to the switch driving means, concretely with respect to push-buttons -14a-, the possible run of the control lever -10- portion -13- is reduced or extended.

The invention proposes a driving organ, generically indicated with numeral -17- and consisting in a piece of tubular development which is arranged coaxially to the section -13- ending the control lever -10- which passes through a hole -18- of said piece -17- with possibility of an axial displacement delimited by a nut -23- and washer -24- and in limited rotation with respect to said control lever -10-, the external surface

of said driving organ -17- including two differentiated polygonal, coaxial portions -19-, -20-, in continuity. A first portion -19- possesses a quadrangular section and remains arranged, loosely housed, within the likewise quadrangular hole -16- of the above selecting piece. The second portion -20- remains outside said hole -16- and is octagonal and irregular, comprising four rectangular faces -20a-, of a larger surface and other four -20b- of smaller span alternately distributed. The smaller faces -20b- are parallel and protruding with relation to the corresponding faces of the first quadrangular portion -19-, and the linking dihedral -21- is slightly chamfered.

As it is clearly represented in figs. 3 to 5, and in accordance with the description realized up to this point at each of the two stable positions of said selecting piece -15- four equal faces of the octagonal portion -20-, remain directly opposite and very close to the driving push-button -14a- of the switches -14- and depending on which is the orientation of the hole -16-, with respect to said switches -14- it will be possible to operate the switches two by two, as shown by Figs. 3 and 4, or only individually, as shown in Fig. 5.

Each of the faces of the octagonal portion -20- has been individually rectified in such a way that an accurate operation is thus guaranteed on the push-buttons as much in the case the control lever has eight working available positions as in the event the same is reduced to four working available positions. The accurateness of the drive is secured by the fact in each case the working faces on the push-buttons are different -20b-, for operating the push-buttons one by one or two by two, indifferently and -20a- in the event of an only individual operation of said switch push-buttons -14a-.

Claims

1. Accuracy selector for a switch drive stick, comprising a control lever (10) pivotally mounted for back and forward movement associated to a frame (11), topped out at one of its ends by a knob grip (12) arranged through an opening of said frame and operative by its other end (13) on switches (14) which surround in a circle formation said opening, attached to a bottom (27) of said frame, these control lever and frame having associated means for an automatic return of the former to a neutral position, when no external driving occurs, said frame including a selecting piece (15) rotatably journaled, with an appendage (15a) outwardly protruding for its driving and which includes a discoidal portion (15b) with a quadrangular hole (16) crossed by said control lever, said selecting piece allowing to be located at two stable positions, delimited by a stop, and depending on the orientation of its quadrangular hole with respect to the switch driving means, the possible run of the control lever is

reduced or extended, so that said control lever can drive the switches only one by one or in addition, and selectively, two by two,

characterized in that it includes a switch driving organ (17) formed by a piece of tubular development arranged coaxial to the control lever end section (13), at the distal end of its knob grip (12), with possibility of an axial and rotating displacement, limited, with respect to said control lever (10), the external surface of said driving organ including two differentiated polygonal coaxial portions (19),(20) in continuity, a first portion (19) of quadrangular section which remains loosely arranged within the likewise quadrangular hole (16) of the mentioned selecting piece (15) and a second portion (20), outside of this hole, octagonal and irregular which includes four faces (20a) of larger span in such a way that at each of the two stable positions of said selecting piece, four faces equal of the octagonal portion (20) remain directly opposite and very close to the driving push-buttons (14a), the capacity for movement allowed by the clearance of the first quadrangular portion (19) of the driving organ (17), within the hole (16) of the selecting piece (15) imposing that in a first position of said selecting piece (15) the angular movement of the octagonal portion (20) only makes possible the switches be operated one by one while in a second position of the selecting piece (15) two switches can be driven at same time, always by means of equal alternated faces.

2.- Selector according to the claim 1, characterized in that each of the faces (20a,20b) of the octagonal portion (20) of the switch driving organ (17) is individually rectified.

3.- Selector according to above claims, characterized in that the four smaller faces (20b) of the octagonal portion (20) of the switch driving organ (17) are parallel and protruding with relation to the corresponding faces of the first portion (19) of quadrangular section and the linking dihedron is slightly chamfered.

4.- Selector according to claim 1, characterized in that in a first stable position of the selecting piece (15), with the surfaces of the quadrangular hole (16) parallel to the faces closer to the switch frames (14), the smaller faces (20b) of the octagonal portion (20) remain directly opposite and very close to the switch driving push-buttons (14a) which can be operated one by one or two by two by means of said smaller faces, while in the second stable position of the selecting piece (15), with the push-buttons (14a) contained in the diagonals of the quadrangular hole (16) of said selecting piece (15), the larger faces (20a) of the octagonal portion (20) remain opposite to said push-buttons (14a) which only can be operated individually by any of said larger faces (20a).

5.- Selector according to the claim 1, characterized in that the bottom of the quadrangular portion

(19) of the driving organ (17) of the switches (14), has a chamfer curved-convex (22) of each of its regions nearby the vertexes.

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FIG. 1

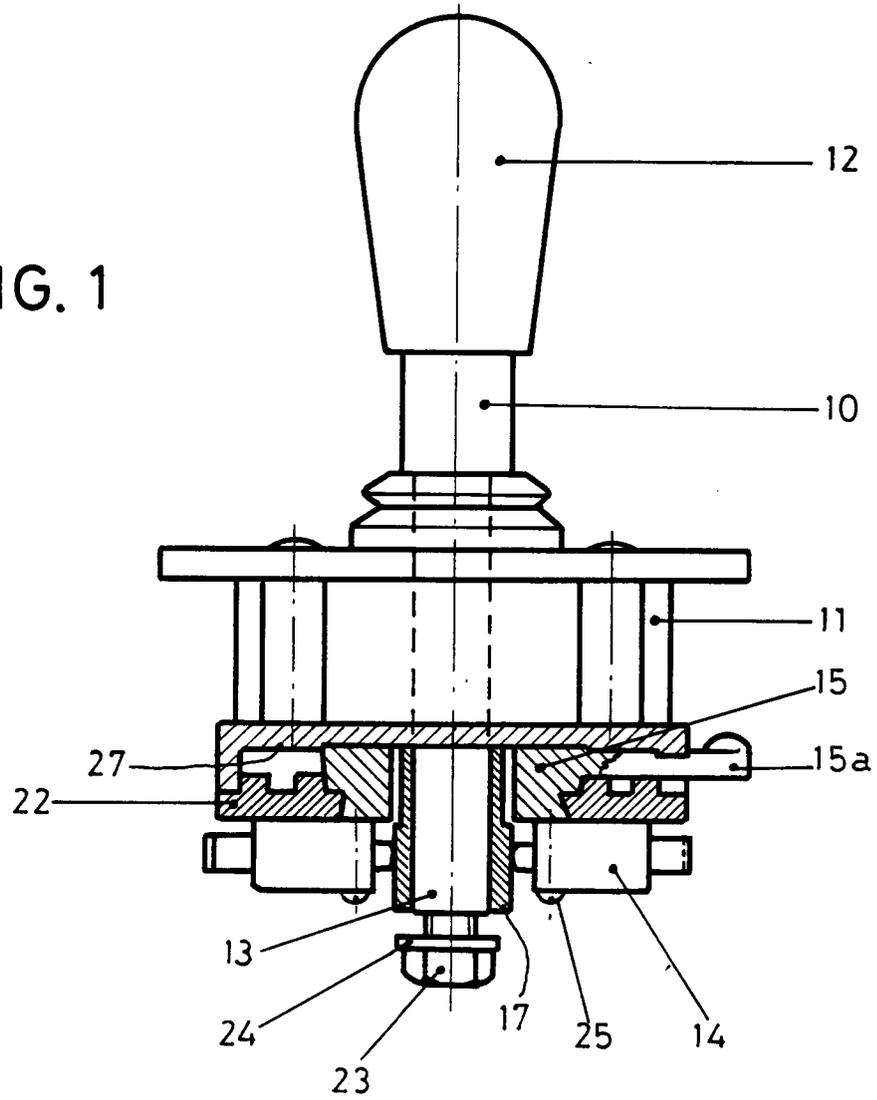


FIG. 2

