

[54] **IMPROVED COIN SLIDE ASSEMBLY**

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[57] **ABSTRACT**

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A coin slide assembly in which an upper assembly and a lower assembly releasably connected together define a guide passage for the movement of a coin slide, and the movement of the coin slide, without the proper coin combination inserted, beyond a limit is prevented by a blocking means that inserts an obstruction into the guide passage. The blocking means is responsive to the presence of the proper coin combination inserted in the coin slide to remove the obstruction from the guide passage and thereby allow movement of the coin slide beyond such limit to a position for activating the coin-controlled device.

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[51] Int. Cl. **G07f 5/14**

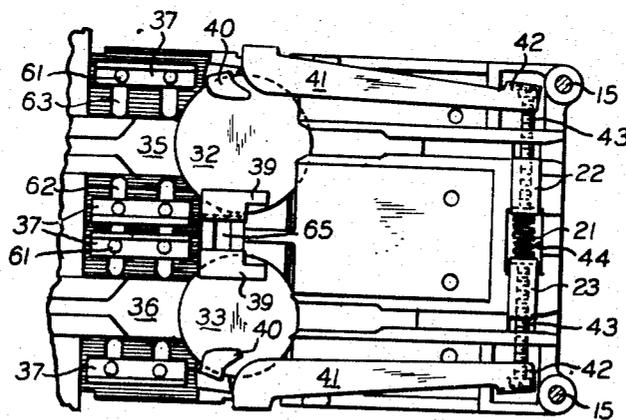
[58] Field of Search 194/92, 93

[56] **References Cited**

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9 Claims, 14 Drawing Figures



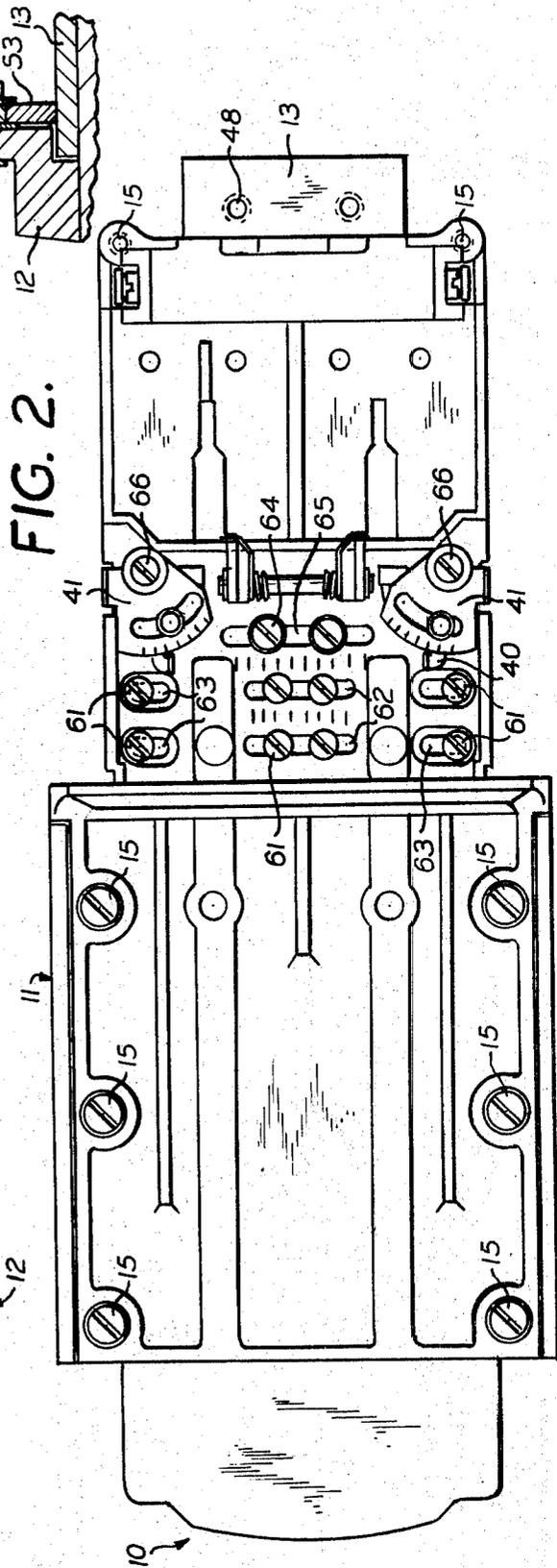
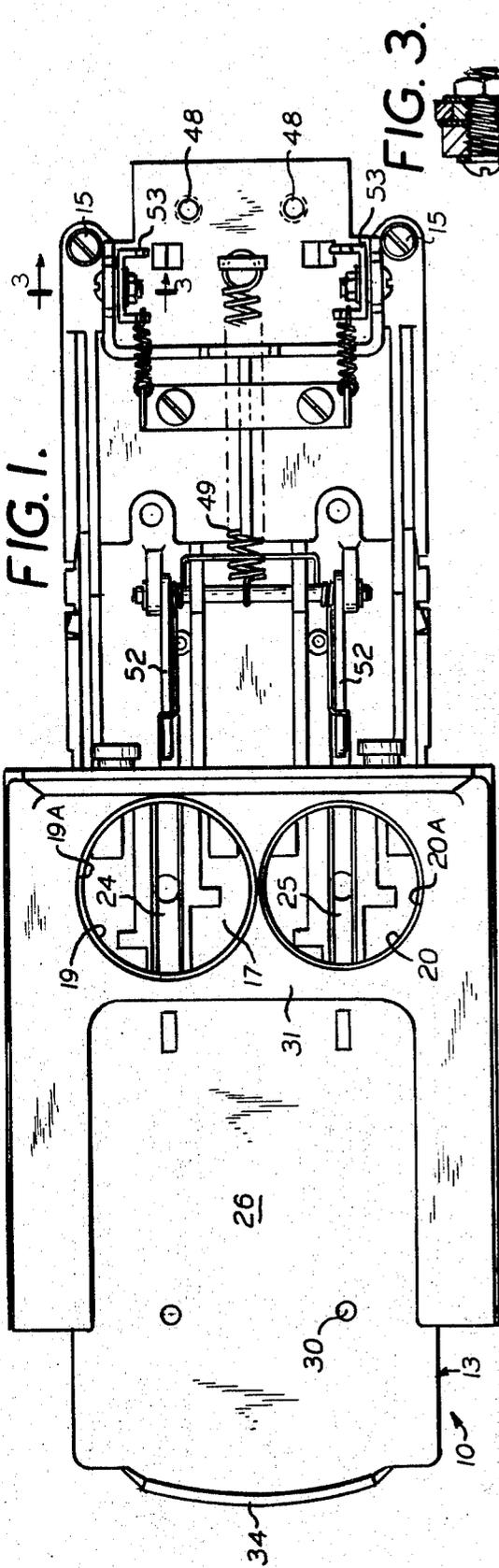
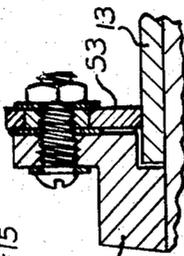
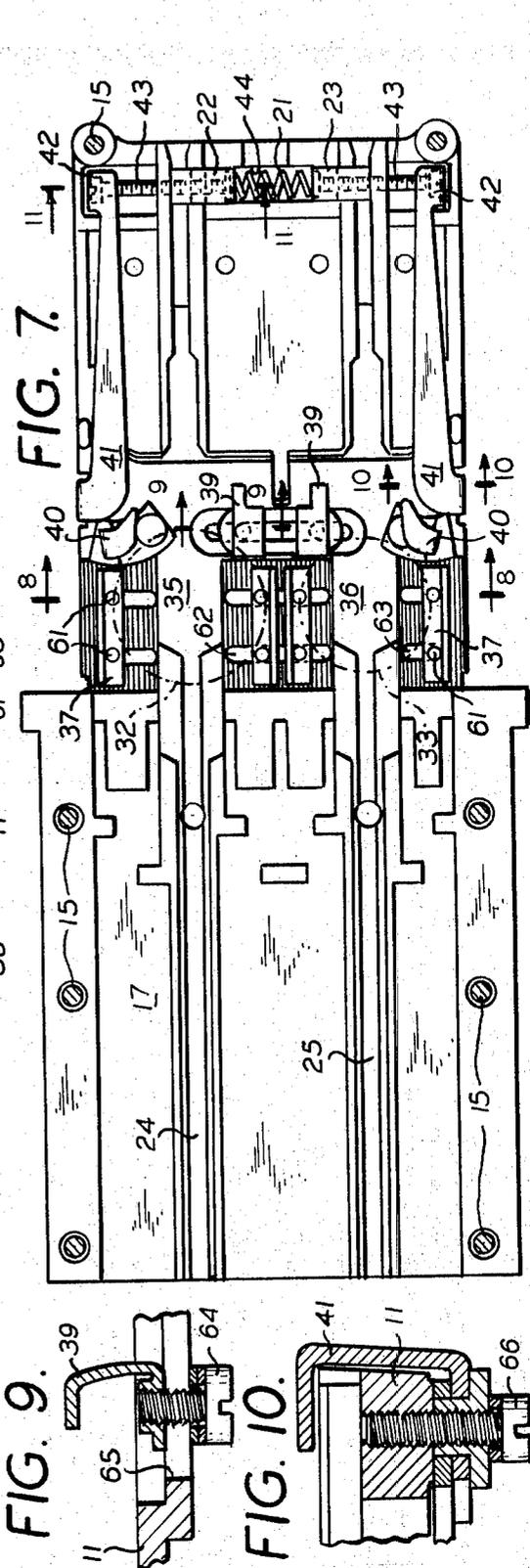
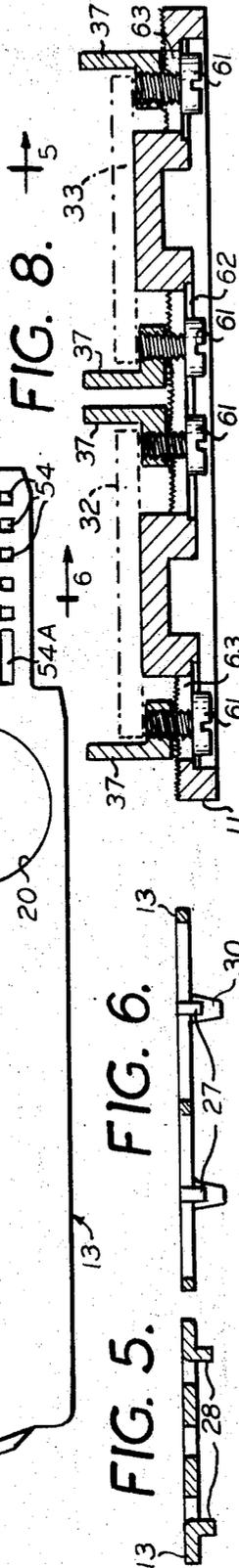
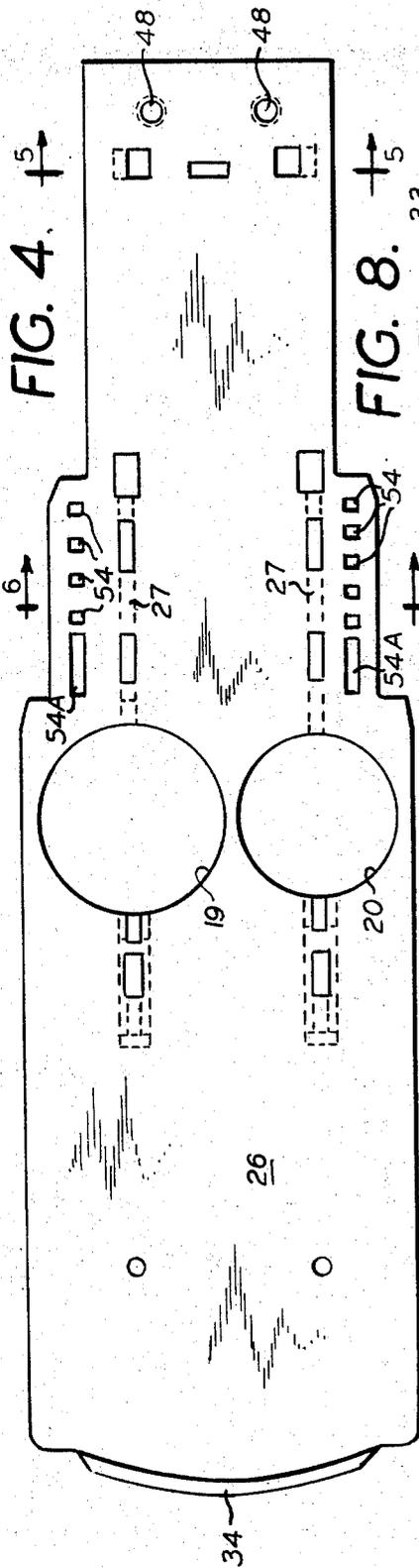


FIG. 3.





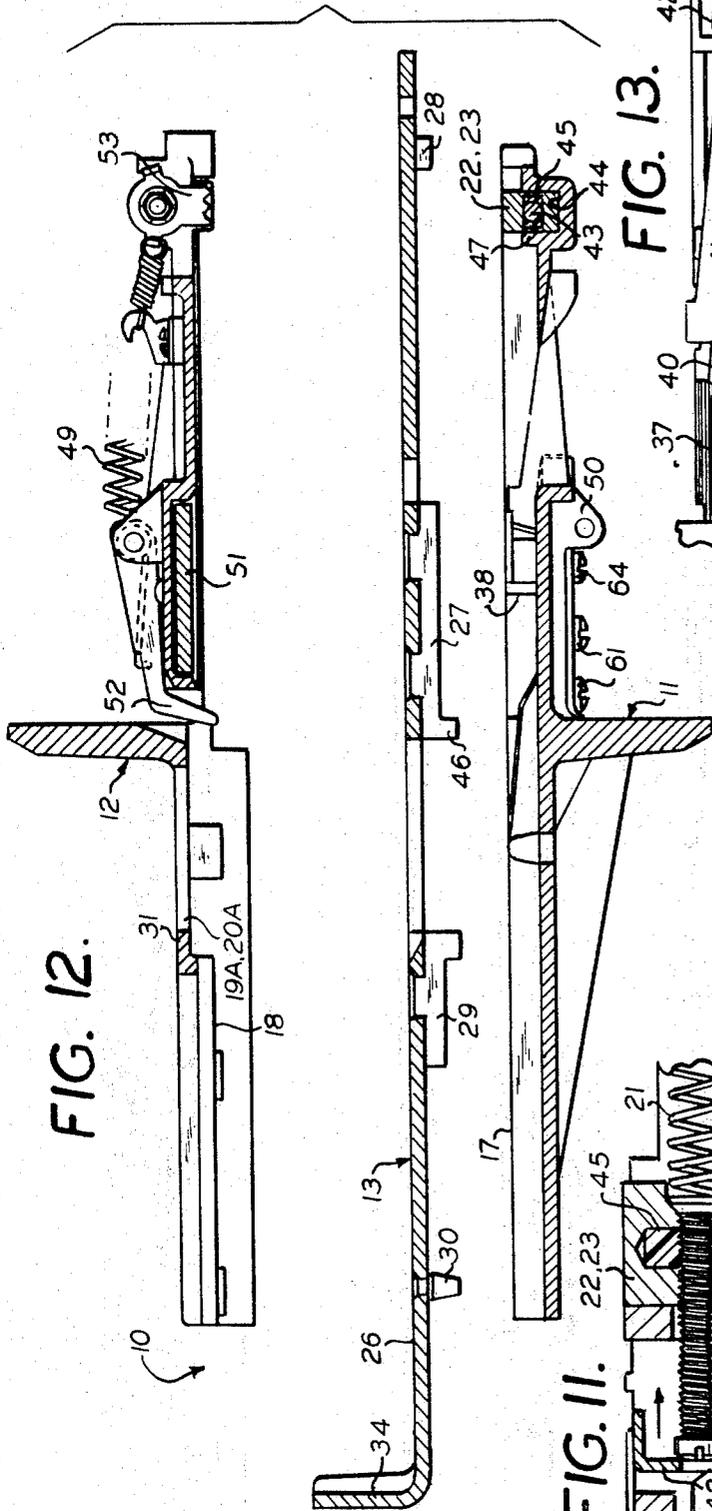


FIG. 12.

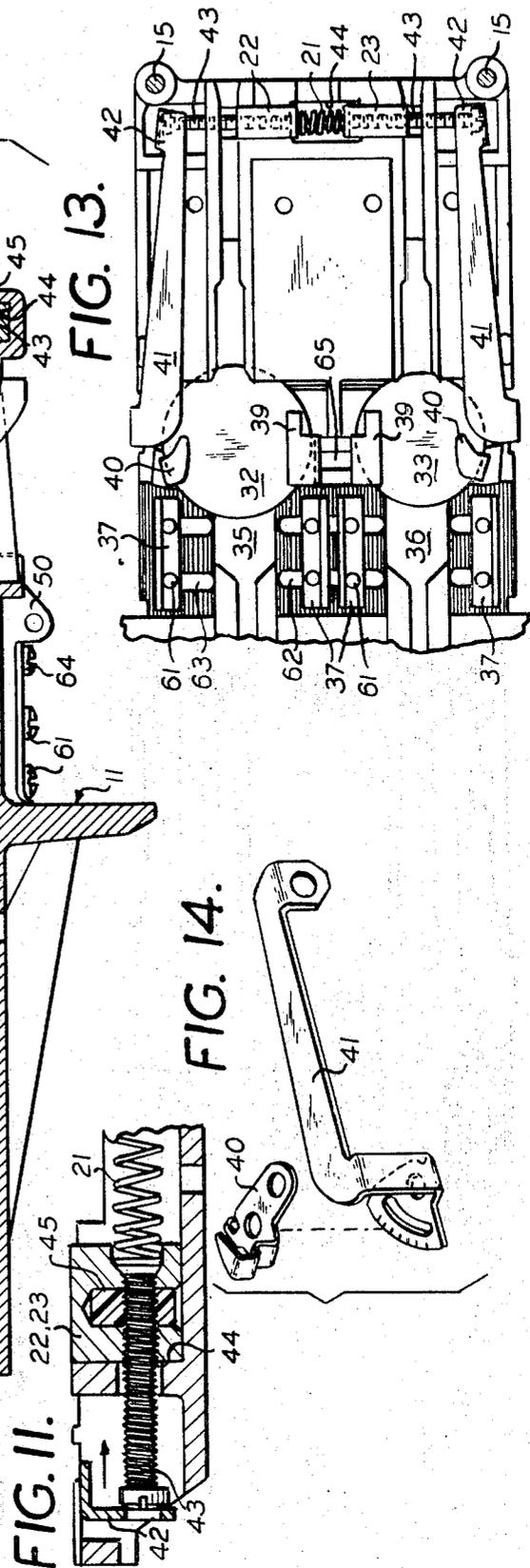


FIG. 13.

FIG. 14.

IMPROVED COIN SLIDE ASSEMBLY

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates in general to a coin slide assembly for use in connection with coin-controlled devices, such as machines which vend either goods or services.

In the prior art, there are numerous types of coin slide assemblies, such as exemplified by U.S. Pat. No. 3,489,259, which fulfilled their intended functions satisfactorily, but which because of complexity, were not easily adaptable by the vending machine user to accommodate changes in coin denominations, and had to be sent back to the manufacturer for coin slide replacement.

The present invention provides a coin slide assembly which is relatively simple in construction and which can be easily modified by replacement of the coin slide and by making a few adjustments to take different coin denominations and combinations thereof.

According to a preferred embodiment of the invention, there is provided a lower assembly and an upper assembly releasably connected to the lower assembly and defining therewith a longitudinal guide passage. The coin slide, which is interchangeable for different coins, is disposed for reciprocable movement in the guide passage. Operation of the coin-controlled device without inserting the proper coin or coins into the coin slide is prevented by a blocking means having parts which are supported preferably by the lower assembly, but can be supported by either one of the upper and lower assemblies, or by both of them. The blocking means is disposed to normally block the movement of the coin slide beyond a preset limit position by inserting an obstruction into the guide passage in the absence of the proper coin or combination of coins in the coin slide. The blocking means is responsive to the presence of the proper coin or combination of coins to remove the obstruction from the guide passage and thereby allow movement of the coin slide beyond the blocking limit to a position for activating the coin-controlled device.

The invention is applicable to coin slides which carry multiple coins of the same or different denominations, as well as to coin slides which carry only a single coin.

On the lower assembly are provided means for receiving each coin carried by the coin slide, and for guiding each coin through a deposit slot. The blocking means has for each coin receiver of the coin slide a lever which is engaged by the coin and pivotally displaced thereby. This lever is coupled to a spring biased obstructor element such that when the proper coin engages the lever, the pivotal displacement thereof will be sufficient to withdraw the obstructor element from the guide passage.

For a better understanding of the invention and its various applications and advantages, reference should be had to the following detailed description and accompanying drawings which together exemplify a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is a top plan view of a coin slide assembly according to a preferred embodiment of the invention, as

seen with the coin slide retracted ready to receive coins.

FIG. 2 is a bottom plan view of the coin slide assembly shown in FIG. 1.

FIG. 3 is a detail sectional view of the coin slide assembly shown in FIG. 1 as taken along line 3-3 therein.

FIG. 4 is a top plan view of the coin slide used in the assembly shown in FIG. 1.

FIG. 5 is a sectional view of the coin slide shown in FIG. 4 as taken along line 5-5 therein.

FIG. 6 is a sectional view of the coin slide shown in FIG. 4 as taken along line 6-6 therein.

FIG. 7 is a top plan view of the lower assembly portion of the coin slide assembly shown in FIG. 1 as seen with the upper assembly thereof removed.

FIG. 8 is a sectional view of the lower assembly shown in FIG. 7 as taken along line 8-8 therein.

FIG. 9 is a sectional view of the lower assembly shown in FIG. 7 as taken along line 9-9 therein.

FIG. 10 is a sectional view of the lower assembly shown in FIG. 7 as taken along line 10-10 therein.

FIG. 11 is a sectional view of the lower assembly shown in FIG. 7 as taken along line 11-11 therein.

FIG. 12 is an exploded side view, partly in section of the coin slide assembly shown in FIG. 1.

FIG. 13 is a partial plan view of the lower assembly, similar to that shown by FIG. 7, but illustrating the operation of the coin sensing levers of the blocking means.

FIG. 14 is an exploded perspective view of a typical coin sensing lever used in the coin slide assembly of the invention.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

In FIGS. 1, 2 and 12 there is shown a coin slide assembly 10 that can be regarded as having three easily separable major components, namely a lower assembly 11, an upper assembly 12 and an interchangeable coin slide 13 shown in more detail by FIGS. 4-6.

The upper and lower assemblies 11 and 12 are releasably connected together by a plurality of screws 15 and define between their inside faces 17 and 18 respectively, a longitudinal guide passage in which coin slide 13 is disposed for reciprocable movement.

In the particular embodiment of the invention illustrated for purposes of example, the coin slide 13 is a double coin type, having two coin receiving openings 19 and 20 disposed in side-by-side parallel relation. It is to be understood that a coin slide (not shown) having a single coin opening could be substituted for the double coin type shown, with the elimination of corresponding parts associated with handling one of the coins.

As is common to many coin slide assemblies, the invention provides blocking means to prevent movement of the coin slide 13 beyond a preset forward limit position without the proper combination of coins inserted into openings 19 and 20. In typical coin-controlled devices (not shown) the arrival of the coin slide at an extreme forward position, after it deposits the coin or coins carried, is in some way used to activate the device, as for example by closing a switch. Thus, blocking means are provided to limit the forward movement of the coin slide so that it cannot be pushed to activate the device without deposit of proper coins.

In the invention, the type of blocking means employed is one that has a spring 21 disposed to normally urge a pair of slidable obstructor blocks 22 and 23 into positions where they each obstruct a corresponding longitudinal groove 24, 25 in lower assembly 11, as can be seen from FIGS. 7 and 11.

The guide passage configuration defined by the upper and lower assemblies 11 and 12 has a flat portion extending widthwise commensurate with the width of the coin slide 13, and the longitudinal grooves 24, 25 that extend transversely to the flat portion of the guide passage are in effect other portions thereof. Coin slide 13 has a flat portion 26 disposed for insertion into the flat portion of the guide passage, and a pair of laterally spaced rails 27 extending from the underside of portion 26. Each rail 27 is disposed for insertion into a corresponding groove 24, 25 and to travel therealong. Located ahead of rails 27 and aligned therewith for travel in grooves 24, 25 are fingers 28. Behind rails 27 and aligned therewith are coin pushers 29 and guide pins 30 which also travel in grooves 24, 25 with the coin slide 13.

When the coin slide 13 is in its ready position, as shown in FIG. 1, the coin receiving openings 19 and 20 are aligned generally concentric with coin openings 19A, 20A respectively in the apron 31 of upper assembly 11, and fingers 28 engage against the outer endwise facing sides of blocks 22 and 23 to prevent further pull-out of coin slide 13.

Unless both required coins are inserted, coin slide 13 can be pushed forward to a preset limit position established by the engagement of either one or both blocks 22, 23 with the forward edge of rails 27. If only one coin is inserted, limiting of coin slide 13 forward movement is effected by the block 22, 23 associated with the blocking control for the other, missing coin, whereas if no coins are inserted, both blocks 22, 23 effect limiting of coin slide 13 forward movement.

The action of the required coins in effecting removal of obstructor blocks 22, 23 from grooves 24, 25 is best explained with reference to FIGS. 7, 8 and 13. When the coins 32, 33 (shown in phantom) are inserted into openings 19, 20 respectively and coin slide 13 is pushed forward, as by pressing on heel piece 34, the coins 32, 33 drop onto respective guide surfaces 35, 36 provided on lower assembly 11 and are carried forward by pushers 29, each coin 32, 33 passing between a first pair of lateral guides 37 which line the coin 32, 33 for passage through a corresponding deposit slot 38 in assembly 11. Ahead of guides 37 are another set of guides for each coin 32, 33, each set including a preset guide 39 and a guide 40 connected to a pivotable lever 41. The guides 39 and 40 have wrap-around ears which serve to prevent the coin 32, 33 from jumping up as it is pushed through the deposit slot 38. As the coin 32, 33 passes between guides 39 and 40, there is a camming action whereby guide 40 is displaced laterally outward and thereby pivots lever 41 such that the forward end 42 thereof is swung inwardly pressing against the head of a screw 43 received in a corresponding block 22, 23 and secured by a nylon insert 45. This causes the block 22, 23 to be pushed against spring 21 into the guide channel 44 and removes the obstruction normally presented by such block 22, 23 in the groove 24, 25.

When both blocks 22, 23 are withdrawn out of obstructing grooves 24, 25, coin slide 13 can be pushed forward to its extreme limit position that is established

by the engagement of projections 46 on rails 27 with barriers 47 extending across grooves 24, 25 at guide channel 44. These barriers 47 offer no interference to the portions of rails 27 forward of projections 46. At this extreme forward limit position, the coin slide 13 commonly effects closure of a switch (not shown) to activate the coin-controlled device, and threaded holes 48 are provided at the end of coin slide 13 to facilitate attachment thereto of some other part (not shown) as might be used for activation purposes.

Coin slide 13 is biased by a spring 49 to return to its starting position, and as the rails 27 pass backward beyond blocks 22, 23 said blocks are returned to their normal groove 24, 25 obstructing states by spring 21. On lower assembly 11, (see FIG. 2) there is provided a pair of spring-loaded pivot fingers 50 which serve to prevent return of coins that pass through deposit slots 38, as where the user attaches a piece of adhesive tape to the coins.

As can be better seen in FIG. 12, the upper assembly 12 is provided with a pair of magnetic inserts 51 that serve to trap ferrous metal slugs, and a pair of spring loaded pivot fingers 52 that further prevent cheating by taping coins. From FIGS. 1, 3, 4 and 12, it can be noted that on the upper assembly 12 are a pair of pivotable, spring-loaded pawls 53 having teeth which engage into a series of openings 54, 54A in corresponding aligned rows on coin slide 13. Pawls 53 serve to assure that once coin slide 13 has dropped coins 32, 33 onto guide surfaces 35, 36, it cannot be retracted to the ready position until it has advanced by an amount sufficient to push the coins 32, 33 through deposit slots 38 and complete a full forward advancement. Pawls 53 are self-reversing when they drop into the long slots 54A.

FIGS. 8, 9, 10, 11, and 14 illustrate the adjustable features of the invention which allow the user to set the coin slide assembly 10 to operate with different sizes, and hence denominations of coins.

From FIG. 8, taken together with FIG. 7, it can be noted that the lateral guide 37 can be shifted laterally as required for different coins simply by loosening their mounting screws 61 that extend through slots 62 and 63.

Similarly, as shown by FIG. 9, the guides 39 have mounting screws 64 that extend through a slot 65 to allow lateral adjustment of guides 39.

From FIGS. 10 and 14 it can be appreciated that the guide 40 is connected to lever 41 by a screw fastening 66 that extends through an arcuate slot in lever 41. This allows the amount of pivot movement imparted to lever 41 to be adjusted for various coin sizes, so that the displacement of block 22, 23 effected at end 42 of lever 41 will be sufficient to clear the groove 24, 25.

As shown better by FIG. 11, the end 42 of each lever 41 is provided with a hole 67 to permit insertion of a screwdriver (not shown) for turning screw 43 to adjust the amount the block 22 or 23 extends into groove 24 or 25 when lever 41 is not pivoted by passage of a coin. While the blocks 22, 23 are each shown in FIG. 7 as completely obstructing grooves 24, 25, it is to be understood that there might be some situations when, for a peculiar coin size, the amount of pivot displacement of lever 41 might be less than that needed to push each block 22, 23 completely across its groove, and the screw 43 would then be adjusted so that the block 22, 23 involved would clear its groove 24, 25 with the available lever 41 swing.

Thus, the duplicate blocking means comprising the combination of lever 41, guides 40, blocks 22, 23, screws 43 and spring 21 is responsive to the presence of the proper coin combination in coin slide 13 and can serve also to prevent cheating by use of wrong coins. The use of oversize coins is, of course, easily prevented by sizing the openings 19, 20 to prevent their insertion. However, in the case of using undersized wrong coins, insufficient lever 41 movement to effect complete withdrawal of blocks 22, 23 from grooves 24, 25 will prevent coin slide 13 movement to its device activation position, and hence the invention prevents this type of cheating.

The multiplicity of adjustments afforded at guides 37, 39, the guide 40 connection to lever 41, and the block setting screws 43 allow the user a considerable amount of leeway in getting positive, secure operation with any new coin slide 13. For example, the same basic coin slide assembly could be used with a coin slide 13 having one of its coin receiving holes 19 or 20 covered by means not shown, so as to permit operation with only one coin. In such case, the screw 43 for the block 22, 23 associated with the non-selected coin would be adjusted so that such block 22, 23 would be completely withdrawn from its groove 24, 25 at all times.

From the disclosure of a preferred embodiment of the invention given herein, it will become apparent to the artisan that the invention can be modified in many obvious ways as are suggested by the particular requirements of use.

What is claimed is:

1. In a coin slide assembly, the improvement which comprises in combination a lower assembly, an upper assembly releasably connected to said lower assembly and defining therewith a longitudinal guide passage, a coin slide disposed for reciprocable movement in said guide passage, and blocking means disposed to normally block the movement of said coin slide beyond a preset limit position by inserting an obstruction into said guide passage in the absence of a coin in the coin slide, said blocking means being responsive to the presence of a coin in the coin slide to remove said obstruction from the guide passage and allow movement of the coin slide beyond said limit position, said coin slide having an extending rail, said blocking means including a coin sensing lever disposed for engagement by the coin carried by the coin slide and an obstructor element disposed for movement along a path intersecting the movement path of the rail of the coin slide, said obstructor element being coupled to said lever for displacement thereby into a position withdrawn from the path of the coin slide rail when said lever engages a prescribed coin.

2. The improvement according to claim 1 including means disposed on said lower assembly defining a deposit slot for each coin carried by the coin slide, and guides positioned for receiving each coin carried by the

coin slide and guiding such coin through said deposit slot.

3. The improvement according to claim 1 wherein said coin slide is disposed to receive and carry a plurality of prescribed coins and said blocking means includes a plurality of coin sensing levers each disposed for engagement by a corresponding one of such coins, and a plurality of obstructor elements, each coupled to a corresponding one of said levers for displacement thereby into a position withdrawn from the guide passage when the lever engages a respective coin.

4. The improvement according to claim 1 wherein said upper and lower assemblies define a longitudinal guide passage having a flat portion extending widthwise and at least one longitudinal groove portion extending transversely from said flat portion, and said coin slide has a flat width portion disposed for insertion into said flat portion of the guide passage and a rail disposed for insertion into said groove portion of the guide passage, and wherein said blocking means inserts an obstructor element into the groove portion of the guide passage to engage the rail of the coin slide to block the movement thereof beyond said limit position.

5. The improvement according to claim 1 wherein said lever is adjustable to effect a predetermined displacement of the obstructor element for different coin sizes.

6. The improvement according to claim 1 including means for adjusting the displacement of said obstructor element effected by said lever.

7. The improvement according to claim 1 including means disposed on said lower assembly defining a deposit slot for each coin carried by the coin slide, and guides positioned for receiving each coin carried by the coin slide and guiding such coin through said deposit slot, said guides being adjustable to accommodate changes in the size of coins carried by the coin slide.

8. The improvement according to claim 1 wherein said coin slide is disposed to carry a plurality of specified coins, and said blocking means is disposed to normally block the movement of the coin slide beyond said limit position by inserting into the guide passage a plurality of obstructions equal to the number of such coins, and said blocking means is responsive to the presence of each of such coins to remove the corresponding obstruction from the guide passage and allow movement of the coin slide beyond said limit position only when all of said specified coins are carried by the coin slide.

9. The improvement according to claim 8 wherein said coin slide is disposed to carry two specified coins in side-by-side relation, and said blocking means includes a pair of blocks biased each for extension into a respective groove portion of the guide passage to engage respective rail parts on the coin slide to limit the movement thereof beyond said limit position.

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