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## ARRANGEMENT AT COINBOX SETS

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2 Claims

## ABSTRACT OF THE DISCLOSURE

A selective coin-collecting mechanism for coin operated telephone system permits the insertion of one coin at a time only. The inserted coin is tested as to its diameter by a coin gauge and if found to be of the correct diameter it is delivered to a coin holding station from which it is released for passage into a collecting chute by signals initiated by the telephone circuits. The collecting mechanism also has means for passing coins which do not have the required diameter directly into a return chute and also for passing coins into said chute which are inserted into the device while a coin is present in the coin holding station.

The present invention refers to such coinbox sets of pay telephones intended for coins of different sizes and values. Such coinbox sets are necessary for telephone calls, which are charged on the basis of the conversation time and of the distance. The sets have each its line to a telephone exchange and are used for local calls which are paid for with a coin for each call independent of the conversation time, as well as for trunk calls, which are charged with respect to time and distance. With such coinbox sets a number of coins are usually paid before the call and are deposited in the set. The coin which is to be collected is kept in a coin chute by a coin stop in the opening of the chute, which stop is operated by a collecting magnet. A coin contact for each kind of coins is arranged in the coin chute. During the call one coin is collected at a time. If the call is longer than intended further coins can be paid during the call. Such coinbox sets will be expensive and complicated. The apparatus has to sort the different kind of coins and collect one coin at a time and signal when all pre-paid coins are used up. There is also the inconvenience that when pre-paid the different kinds of coins must be taken in a certain order. Usually the small coins are taken first as local calls are most frequent. When making a long distance call, the calling subscriber often wants a specific person and does not want to continue the call if this person is not available. During the call the calling subscriber will decide if a large or a small coin shall be used in order to prolong the call.

The invention refers to such a coinbox set, where only one coin at a time is deposited in the coinbox set whereby an important simplification is achieved. In order to completely achieve this simplification, it is necessary that only one coin at a time can be deposited and that not more than one coin at a time is collected. Each coin shall, when collected, give a signal to the telephone exchange which signal corresponds to the value of the coin, and if two or more coins are collected at the same time, the signal will not correspond to the value of the paid amount.

According to the invention this is achieved by aid of a coin chute for repayment of coins put in and a coin gauge with a coin slot for each kind of coins and with such a block arrangement that when a coin passes through a coin slot, all other coin slots are closed, and by aid of a coin position common for all kinds of coins and to which coins from all coin slots are led and which has space only

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for one coin at a time so that when a coin has been deposited in the coin position, other coins which pass said coin gauge, will roll on the top of the deposited coin to the coin chute for repayment.

The invention will be further described with reference to the attached drawings FIGS. 1-3.

FIG. 1 shows the travel path of a coin from the coin slots to the coin chute for collection or the coin chute for repayment and the necessary arrangements in the coinbox for control of the coins and for signal transmitting between the coinbox set and the telephone exchange.

FIG. 2 shows the coin position for a deposited coin seen from above taken on line B—B of FIG. 1.

FIG. 3 shows the block arrangement at the coin slots taken on line A—A of FIG. 1.

In FIG. 1 a coinbox for receiving three different coins is shown. The figure shows a coin gauge consisting of a block with three obliquely cut grooves 1a, 1b, 1c, one for each kind of coins, and a plate 2 of metal, suitably of steel with three coin slots 2a, 2b, 2c one for each of the three grooves. The bottom of said grooves lead to a slide path being part of a coin separator 3 with guides 3a, 3b, 3c for three differently sized coins. The slide path leads to a partition 5 and two coin chutes 7 and 8. The coin chute 7 is intended for repayment and the coin chute 8 is intended for collecting. Coin chute 8 includes a bar 11 which in a not shown but known way is controlled by the cradle of the telephone set, and a collecting magnet 9 with an armature 9a, which is controlled in a known way from the telephone exchange by current impulses. The armature is kept in an inactive position by a spring device 9d and provided with an upper coin bar 9b in the coin chute 8 and a lower coin bar 9c. Bar 9c constitutes a movable wall of a second coin gauge 10, which cooperates with three coin contacts 10a, 10b, 10c, one for each kind of coin. When the coins are collected, they fall down in a coinbox through an extension 8b of the collection chute 8. With the letter M is an upper position for the coin in the coin bar 9b indicated, and also a lower coin position in the gauge 10. The coin chute 8 has at the bottom a wall 8a, to which the coin gauge 10 and the extension 8b are fastened.

The arrangement functions in the following way. Through the coin slots 2a-2c coins of different size may be inserted. However, only one coin at a time can be inserted. This is achieved by aid of two balls 2d, 2e below the coin gauge as shown in FIG. 3. The balls are displaced laterally so as to open a passage for one coin only at a time. A passed coin rolls down the respective groove 1a, 1b or 1c in the block 1 and into the coin separator 3.

The three coin slots 2a, 2b, 2c are each dimensioned for a specific kind of coins and the coin gauge 2 checks that the coin is not too large. The coin separator 3 checks that the coin is not too small, which is effected in a known way thereby that the coin rolls diagonally and at the top abuts against one of the guides 3a, 3b or 3c. If the coin is too small it falls out of guide way 4, passes on the front side of partition 5 and falls then down into the repayment chute 7. If the coin has the right dimension, it follows the guides 3a, 3b and 3c respectively, is led behind the partition 5 and finally falls down into the collecting chute 8, the entry of which constitutes a coin deposit position, where a coin M rests upon upper bar 9b, which prevents it from being collected, and against a side bar 11, which prevents it from falling down in the repayment chute.

The bar 11 is controlled by the yoke of the coinbox set and is closed when the hand set is lifted, but is fully opened or at least partly, when the hand set is put down, so that a coin in the upper coin position falls down in the repayment chute. The bar 11 has the form of a cone and

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therefore thin coins which do not fill the coin position in the chute 8 place themselves diagonally as shown in FIG. 2, where the coin M abuts against the bar 11.

When the hand set has been lifted and a coin has been deposited a telephone communication is established in the usual way by aid of the dialing disc of the pay telephone system. When answer is obtained the collecting magnet 9 is energized via a now closed circuit of the telephone line. The armature 9a is now so displaced that the bar 9b is opened and the bar 9c is closed. The coin M falls down against the bar 9c and slides along this bar and the back wall 8a of the coin chute until it pushes against the coin gauge 10 and closes a coin contact, for instance contact 10b. The coin contact closes a circuit through the line to the telephone exchange, which thus obtains a signal indicating the value of the coin. When this signal is received in the telephone exchange, the telephone communication is established and the circuit for the collecting magnet 9 is broken. The armature 9a releases. The bar 9b closes and the bar 9c opens and the coin M falls down through the lower part 8b of the coin chute 8 into the coinbox of the coinbox set.

A permanent magnet 6 associated with coin chute 3 sorts out magnetic coins. This magnet operates, provided that magnetic coins are coins which do not entitle to a call. When such coins come out from the coin separator 3 and enter into the field of the magnet, they do not fall down in the coin chute 8 but are lifted over the bar 11 and fall down in the repayment chute 7.

The coin gauges 2 and 10 are exchangeable and are from case to case adapted to the coins which are to be used. The position of the coin gauge 10 in relation to the bar 9c is such that the coins will be in their positions without being jammed. It is also so formed that small coins which demand a force of movement in order to be able to influence a contact spring group, for instance, 10a, are not stopped by blows against projecting walls of the device.

It is known for coinbox sets with repeated payment to arrange a further bar 12 at the entry of the collecting coin chute 8, which bar closes the entry above the deposit position before the bar 9b for collection is opened. This bar which is only indicated in FIG. 1 causes a coin, which is put in by mistake at the same time as the collecting magnet 9 attracts its armature 9a, to roll further to the repayment chute 7.

I claim:

1. A selective coin collecting mechanism of a coin operated telephone system, said mechanism comprising in combination:

- a coin collecting chute and a coin-return chute;
- a first coin gauge including coin-receiving slots dimensioned for accepting coins having different diameters;
- locking means included in said gauge, said locking means, upon insertion of a coin into anyone of said slots blocking all other slots until passage of the inserted coin;

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a second coin gauge for eliminating coins below a minimum diameter, said second gauge coacting with the first gauge for receiving coins discharged therefrom and including tracks and spaced apart guides for guiding coins discharged from the first gauge and above said minimum diameter along the tracks but causing coins below that diameter to fall off the tracks for passage into the return chute;

a coin-holding station capable of accommodating a single coin of any diameter after being passed by the gauges, said holding station having exits leading into the collecting chute and the return chute;

a coin-collecting solenoid having a first core portion blocking the exit from said holding station into the collecting chute when the solenoid is in one state of energization and freeing said exit when the solenoid is in another state of energization, and a second core portion opening a passage for coins through said collecting chute in said one state of energization of the solenoid and blocking said passage in said other state of energization;

switch contact means disposed in said collecting chute posterior of said second core portion as seen in the direction of movement of coins through said chute, said switch contact means being operated by engagement with a coin; and

a movable blocking means blocking in one position the exit for passage of a coin from the holding station into the return chute and in another position freeing said exit, said blocking means when in the blocking position retaining a coin in the holding station in a slanted position in which a passageway is open leading from said tracks into the return chute for the passage of further coins inserted into the first coin gauge past the slanted coin.

2. The mechanism according to claim 1 wherein said blocking means comprise a blocking member having a slanted surface, engagement with said surface holding a coin having a thickness less than the corresponding dimension of the holding station in said slanted position thereby permitting the passage of further coins past said slanted coin.

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