Oct. 9, 1951 I. KORNBERG ET AL 2,570,821

COIN CONTROLLED TELEVISION

Filed Feb. 24, 1948 2 Sheets-Sheet 1

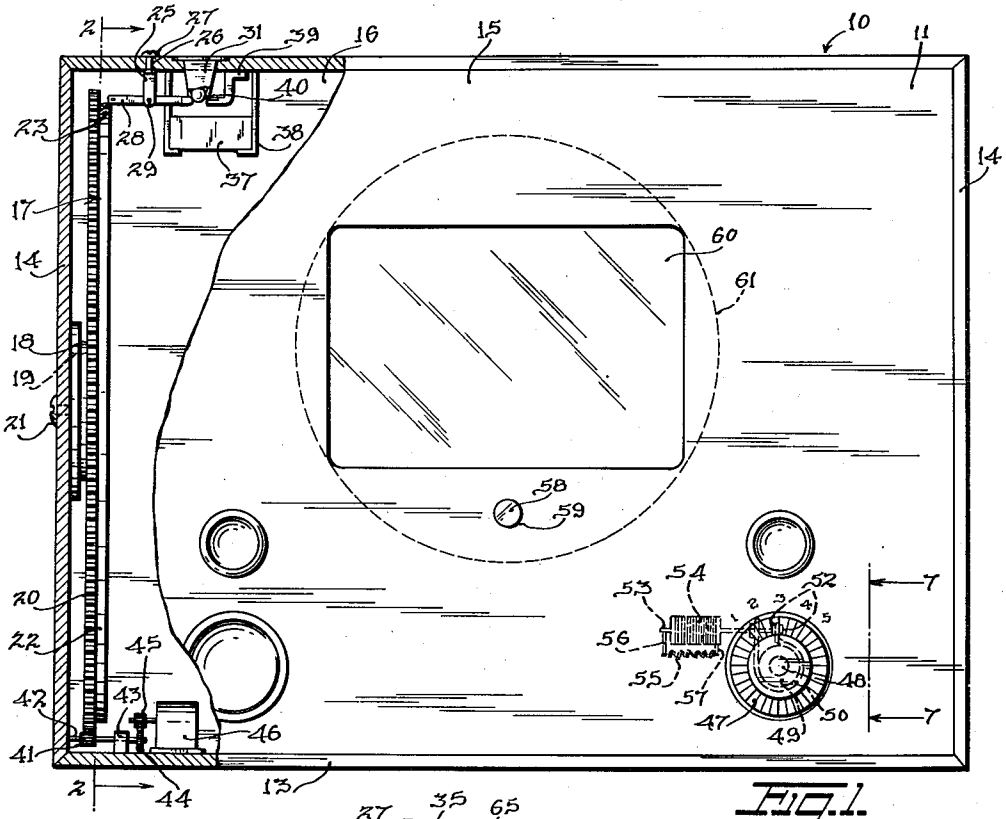


FIG. 1.

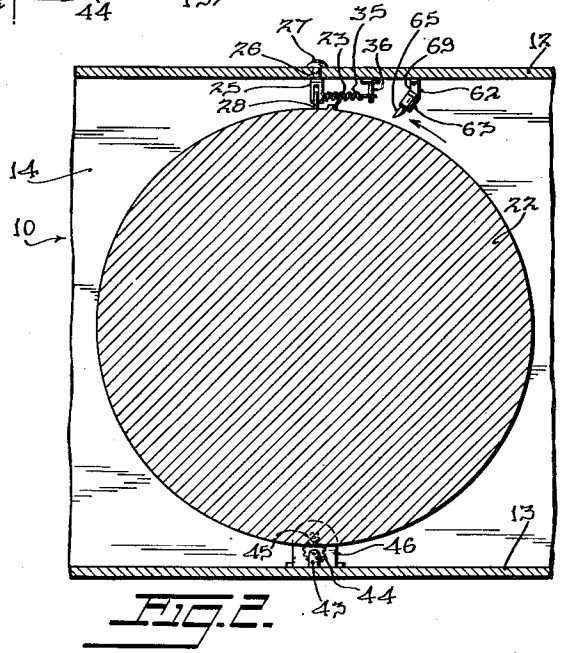


FIG. 2.

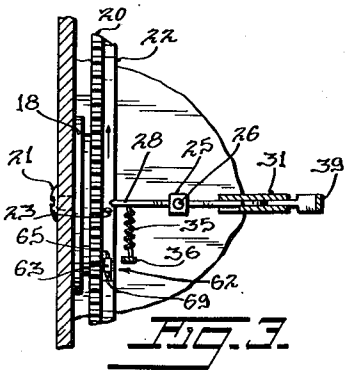


FIG. 3.

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COIN CONTROLLED TELEVISION

Filed Feb. 24, 1948 2 Sheets-Sheet 2

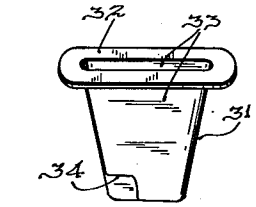


FIG. 4.

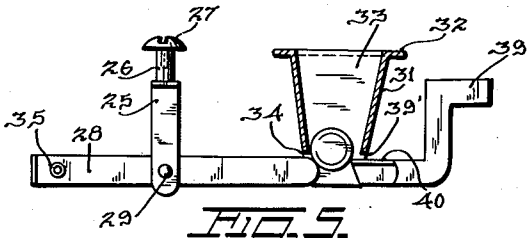


FIG. 5.

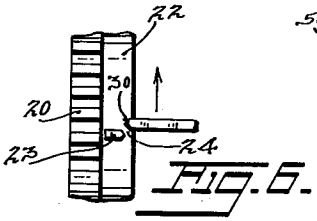


FIG. 6.

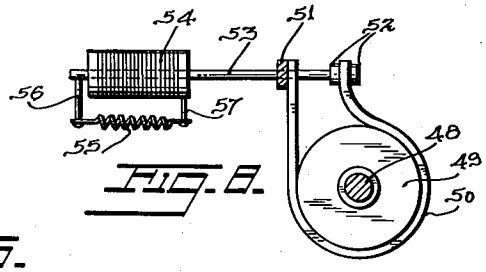


FIG. 8.

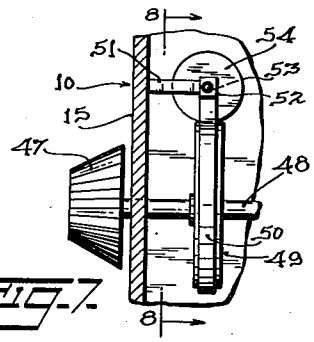


FIG. 7.

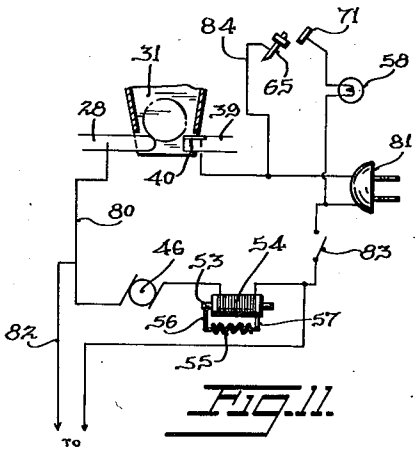


FIG. 11.

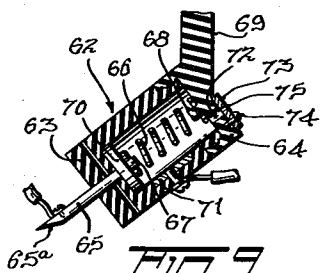


FIG. 9.

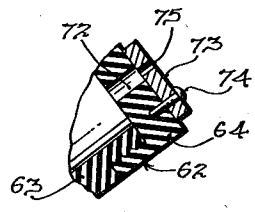


FIG. 10.

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UNITED STATES PATENT OFFICE

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COIN-CONTROLLED TELEVISION

Irving Kornberg and Arthur Bloom,
Brooklyn, N. Y.

Application February 24, 1948, Serial No. 10,434

8 Claims. (Cl. 194—6)

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This invention relates to a television set, and more particularly to a coin-operated television set which is adapted to operate for a specified length of time only after deposit of a coin.

An object of the present invention is to provide a television set and means for controlling the operation thereof to the end that the television set can be used commercially to provide a certain active period for a certain sum of money.

Another object is to provide a coin control mechanism for a television set which will permit use of the set for a certain period of time, in response to the deposit of a certain amount of money, which mechanism avoids the use of complicated delayed action devices and permits one cycle to run from start to finish while controlling the passage of the coin from the slot to a storage drawer.

A further object is to provide a mechanism as aforesaid in which a rotary cam actuates a laterally swingable lever to permit dropping of the coin from the coin slot into a drawer, the dropping of the coin breaking the electric circuit and cutting off the set.

Still another object of this invention is the provision of an electrically controlled means for locking the station selector against movement during the time the television set is in operation and for holding the selector against movement until the inserted coin is released.

It is a further object of this invention to arrange the station selector so that it is free to be moved in a manner to permit an individual to select a desired television station prior to the insertion of the coin.

Another object of the invention proposes a signal lamp mounted on the front of the television cabinet in close proximity to the screen and operated by the control mechanism in a manner to visually indicate that the time allotted for the inserted coin is about to come to an end.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a front view of a television set, partly broken away to show the coin-control mechanism thereof.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a plan view, partly in section, of a portion of the coin-control mechanism.

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Fig. 4 is a perspective of the coin funnel.

Fig. 5 is an enlarged view of the switch elements in the funnel.

Fig. 6 is an enlarged fragmentary view of the cam control.

Fig. 7 is a partial vertical sectional view taken on the line 7—7 of Fig. 1.

Fig. 8 is a vertical sectional view taken on the line 8—8 of Fig. 7.

Fig. 9 is a longitudinal sectional view of the switch controlling the signal lamp.

Fig. 10 is an enlarged detailed view of a portion of Fig. 9.

Fig. 11 is a wiring diagram of the television set constructed in accordance with this invention.

The television set 10, according to the present invention, includes a cabinet 11 having a top wall 12, a bottom wall 13, side walls 14, a front wall 15 and a rear wall 16. The cabinet 11 of a conventional television set may be adapted to the features of the present invention if there is sufficient room at the left side thereof. If not, the cabinet need only be extended a short distance at the left side to make room for the coin-control mechanism, indicated by the numeral 17. In other words, it is a feature of the present invention that a conventional television set can receive the coin-control mechanism, or a slightly larger cabinet can be provided so that it can receive the coin-control mechanism. It is another feature of the invention that the coin-control mechanism is entirely at one side of the set.

A plate 18 is secured to wall 14 in any desired manner. This plate is annular and receives a bearing journal 19 of a large gear 20. A large headed screw 21 threaded in the journal 19 retains the journal in the annular plate. The journal may be retained in its bearing (the annular plate) in other ways, if desired. At the inner side of the gear 20 is a cam wheel 22 of a smaller diameter than the gear. This cam wheel is cylindrical and concentric with the gear and has, as its only cam surface, a knife-like tooth 23 which has a lateral beveled side wall providing the knife-edge 24.

The top or uppermost point of the gear 20 is in the center line of the top wall 12. Also in this center line, and spaced inwardly from the gear 20, is a pivotal depending clevis 25, the clevis having a stem 26 rotatably mounted in a bore in the top wall 12 and retained therein by a screw 27 similar to but smaller than the screw 21.

A lever 28 is rigidly secured to the clevis by a rivet 29 so that it cannot pivot vertically in the clevis. This lever 28 has a bevelled end

overlapping the wheel 22, see Fig. 6, and this bevelled end provides a knife edge 30 adapted to be engaged laterally by the knife edge 24 as will later be described.

A coin funnel 31 is disposed in the same center line. This funnel has a peripheral top flange 32 which is countersunk in the top wall 12. The two side walls 33 of the funnel are parallel and close, spaced just the width of a coin, such as a nickel, so that they will permit the coin to pass but will not permit it to tilt. One side wall, at its bottom, has a cut-out 34 through which the lever 28 passes when it swings laterally about the stem 26. The other side wall acts to stop the lever with its end in the cut-out, so that the lever obstructs the passage of a coin through the funnel. The lever is made of metal, but the clevis is made of insulating material. The funnel is also made of insulating material, such as plastic. A spring 35, tensioned between the end of the lever having the knife edge 30, and a rigid abutment 36 depending from the top wall 12, urges the lever so that its end is in the cut-out 34.

Below the lever and funnel is disposed a coin drawer 37 slidable in guides 38 depending from the wall 12. The drawer may open through the back wall 13 and be locked in any desired manner. A Z-shaped bracket 39 depends from the wall 12 on the above mentioned center line at the opposite side of the funnel from the lever 28, and the funnel, at this side, is slitted, providing a slot 39' through which the adjacent end of the bracket 39 extends. A contact plate 40 is secured on this end of the bracket.

Gear 20 meshes with a tiny gear 41 on a shaft 42 journalled in one side wall 14 and in an upright bearing post 43. Shaft 42 carries a large gear 44 meshing with a tiny gear 45 driven by an electric motor 46. The gearing between the motor 46 and the gear 20 greatly reduces the driving speed so that gear 20 turns at a very slow rate.

In Figs 1, 7 and 8, details of the mechanism for locking the video station selector against movement, while the television set is in operation, are illustrated. The station selector comprises the usual knob 47 located externally of the front wall 15 of the television set 10 and which is connected with an operating rod 48 which extends to the interior of the cabinet and is connected with the usual station selecting mechanism, not shown on the drawings.

A brake drum 49 is mounted on the operating rod 48 adjacent the inside face of the front wall 15 and has a brake band 50 engaged loosely about itself leaving the rod 48 and knob 47 free to be rotated. One end of brake band 50 is attached to a bracket 51 mounted on the inside face of the front wall 15. The other end of the brake band 50 is positioned between a pair of collars 52 fixedly mounted on the movable core 53 of a solenoid 54. The solenoid is adapted to be supported upon the inside face of the front wall 15 by any suitable means.

A contraction spring 55 operates between a pin 56 mounted on the movable core 53 and a pin 57 mounted on the solenoid 54 for urging the movable core 53 into a position in which the brake band 50 is loose about the drum 49 as shown in Fig. 8. The solenoid 54 is mounted in a circuit, hereinafter to be described, to be energized by the insertion of a coin in the funnel 31, to draw on the movable core 53 against the action of the spring 55 to tightly engage the brake band 50 about the drum 49 and hold the operating rod 48 against being rotated while the television set is in operation.

The television set is further provided with a red signal lamp 58 visible through an opening 59 in the front wall 15 just below the screen 60 in front of the picture tube 61 of the television set. This signal lamp 58 is mounted in a circuit, to be hereinafter described, operated by a switch 62 controlled by the tooth 23 on the cam wheel 22 for igniting the lamp just prior to the time the tooth 23 engages the lever 28 so as to indicate that the allotted time for the coin inserted is about to end.

Details of the switch 62 are given in Figs. 9 and 10. The switch 62 comprises a casing 63 of insulation material having an open end closed by a cover 64 threadedly engaged in position on the open end of the casing. Extending from the other end of the casing is a plunger 65, constructed of conductive material, and having a beveled end 65a adapted to be engaged by the tooth 23 for urging the plunger 65 into the casing 63 against the action of an expansion spring 66. The expansion spring 66 operates between a stud 67 on the inner end of the plunger 65 and a stud 68 on the inside face of the cover 64. A bracket 69 extends from the cover 64 for attaching switch 62 to the top wall 12 of the television cabinet in position so that the beveled end 65a of the plunger 65 extends into the path traversed by the tooth 23 on the cam wheel 22.

An enlarged head 70 formed on the plunger 65, on inward movement of the plunger 65, is adapted to contact a conductor plate 71 mounted at the side of the interior of the casing 63. The plunger 65 and the conductor plate 71 are mounted in a circuit, to be hereinafter described, for illuminating the small red bulb 58 when the head 70 of the plunger 65 contacts the conductor plate 71.

A dash-pot arrangement is provided on the switch 62 for retarding the return movement of the plunger 65 so as to hold the circuit, including the small red bulb 58, closed for a given length of time. The dash-pot comprises a hole 72 formed in the cover 64 and having one end of a flexible strip 73 extended thereover. The strip 73 is attached to the cover 64 by means of a pin 74 at a point adjacent the hole 72. The free end of the strip is formed with a smaller hole 75 in concentric alignment with the larger hole 72. When the plunger 65 is pressed inwards the spring 66 will be compressed and the air within the casing 63 will be discharged through the larger hole 72. On this movement the free end of the flexible strip 73 will move away from facial contact with the cover 64 and permit the air to freely discharge through the hole 72 and not retard inward movement of the plunger 65. However, when the plunger 65 is clear of the tooth 23, the outward movement of the plunger 65 under the force of the expansion spring 66 will be retarded retaining the head 70 of the plunger 65 in electrical contact with the conductor strip 71 for a longer period of time. This return movement will be retarded, because air wishing to enter the casing 63 to fill the partial vacuum created by the outward movement of the plunger 65, will draw the end of the flexible strip 73 in facial contact with the cover 64 and over the larger hole 72, so that the air must first pass through the smaller hole 75 before entering the casing 63 through the larger hole 72. Because of the smaller capacity of the smaller hole 75, which allows less air to enter the casing 63 than

through the larger hole 72, the return movement of the plunger will be retarded.

The circuits of the present invention are shown in Fig. 11. The circuits are characterized by one circuit 80 which connects in series the contact plate 40 on the bracket 39, the lever 28, the motor 46 and the solenoid 54 and a source of power. The source of power is the normal commercial 110 volt outlet receptacle into which the plug 81 is adapted to be inserted. When the circuit 80 is completed by a coin resting on the contact plate 40 and the lever 28, the motor 46 and the solenoid 45 will be energized. A second circuit 82 connects in series the contact plate 40, the lever 28, the normal circuits of the television set and the source of power to also cause the television set to be set in operation. The circuits 80 and 82 include a common master switch 83 by which the entire set may be shut off when desired. A third circuit 84 includes in series the plunger 65, the conductor plate 71, the small red bulb 58 and the source of power to light the bulb when the plunger 65 is urged inwardly to make contact with the conductor plate 71 and complete the circuit 84.

The operation of the television set is as follows:

A person wishing to use the television set to view a definite television program, first rotates the knob 47 of the video station selector to set the device for the desired station. A coin of the required denomination is dropped into the top of the funnel 31 to drop downward and rest on and bridge the contact plate 40 and the lever 28. This completes the circuit 82 to the conventional television circuit setting the set in operation and, also, completes the circuit 80 energizing the motor 46 and the solenoid 54.

Immediately upon energization of the solenoid 54, the brake band 50 is drawn tightly about the brake drum 49 locking the video station selector against being rotated until the circuit 80 is again broken. Energization of the motor 46 will rotate the cam wheel 20 to measure the period of time that the set will operate for the coin inserted. As the cam wheel 20 continues to rotate, its tooth will first engage and press in on the plunger 65 to contact the conductor plate 71 and complete the circuit 84 and illuminate the small red bulb 58 to visually indicate that the allotted time for the coin inserted is about to end. Return movement of the plunger 65 will be retarded by the dash-pot arrangement previously described to retain the bulb 58 lit for a short period of time. The rotation of the cam wheel 22 will continue until the tooth 23 strikes and pivots the lever 29 to drop the inserted coin opening the circuits 80 and 82 shutting the device off. In view of the knife edges 24 and 30 on the tooth 23 and the lever 28, respectively, the tooth 23 will instantly drop the end of the lever 28 allowing the spring 35 to return the same to its normal position to coact with the contact plate 40 in retaining another inserted coin.

The machine can be designed to be in operation for a certain specific length of time for an inserted coin of a given denomination. For example, the set may be one which will operate five minutes upon insertion of a five-cent piece, ten minutes upon insertion of a ten-cent piece, or for another desired combination. The same cam wheel 22 can be used for all combinations, it merely being necessary to change the gearing between the cam wheel 22 and the motor 46 so as to take the required time to move the cam wheel 22 through one complete revolution.

From the foregoing, it will be seen that applicants have provided a simple type of coin-control mechanism for a television set, which effects a complete cycle upon the deposit of a coin without complicated clock and delayed action mechanisms.

While we have illustrated and described the preferred embodiments of our invention, it is to be understood that we do not limit ourselves to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described our invention, what we claim as new and desire to secure by United States Letters Patent is:

1. A coin-operated television set comprising a cabinet of rectangular configuration, a large vertical gear journalled in one side wall of said cabinet, an electric motor supported on the bottom wall of said cabinet and carrying a small gear, an idler shaft mounted on said cabinet and having a large gear in mesh with said small gear and a small gear in mesh with said large gear for effecting slow rotation of said large vertical gear by said motor, a cam wheel carried by said vertical gear concentrically therewith, said cam wheel having a single thin cam having a lateral cam edge, a vertical clevis rotatably mounted in and depending from the top wall of said cabinet in line with the vertical center of said vertical gear, a lever rigid with said clevis for rotation therewith, one end of said lever having a vertical edge for coaction with said cam edge, said edges slightly overlapping, a coin funnel depending from said top wall in line with said clevis, said funnel having one side wall cut-out to receive the other end of said lever by said rotation thereof, a spring normally urging said lever other end into said cut-out, a contact opposite said lever other end adjacent said funnel and spaced therefrom a distance less than the diameter of a coin whereby a coin dropped in said funnel will bridge said lever other end and said contact, and a circuit connecting said lever, contact, motor, and a source of power, whereby said coin, on bridging said lever and contact, will close the circuit to energize said motor to rotate said cam wheel until said cam wheel rotates 360 degrees bringing said edges into contact whereupon said lever will be swung laterally out of said cut-out to permit dropping of said coin.

2. A coin-operated television set comprising a cabinet of rectangular configuration, a large vertical gear journalled in one side wall of said cabinet, an electric motor supported on the bottom wall of said cabinet and carrying a small gear, an idler shaft mounted on said cabinet and having a large gear in mesh with said small gear and a small gear in mesh with said large gear for effecting slow rotation of said large vertical gear by said motor, a cam wheel carried by said vertical gear concentrically therewith, said cam wheel having a single thin cam having a lateral knife edge, a vertical clevis rotatably mounted in and depending from the top wall of said cabinet at a point adjacent the top of said vertical gear, a lever rigid with said clevis for rotation therewith, one end of said lever having a vertical knife edge for coaction with a said cam knife edge, said knife edges slightly overlapping, a coin funnel depending from said top wall in line with said clevis, said funnel having one side wall

cut-out to receive the other end of said lever by said rotation thereof, a spring normally urging said lever other end into said cut-out, a contact opposite said lever other end adjacent said funnel and spaced therefrom a distance less than the diameter of a coin whereby a coin dropped in said funnel will bridge said lever other end and said contact, and a circuit connecting said lever, contact, motor and a source of power in series whereby said coin, on bridging said lever and contact, will close the circuit to energize said motor to rotate said cam wheel until said cam wheel rotates 360 degrees bringing said knife-edges into contact whereupon said lever will be swung laterally out of said cut-out to permit dropping of said coin.

3. A coin-operated television set comprising a cabinet of rectangular configuration, a large vertical gear journalled in one side wall of said cabinet, an electric motor supported on the bottom wall of said cabinet and carrying a small gear, an idler shaft mounted on said cabinet and having a large gear in mesh with said small gear and a small gear in mesh with said large gear for effecting slow rotation of said large vertical gear by said motor, a cam wheel carried by said vertical gear concentrically therewith, said cam wheel having a single thin cam having a lateral knife edge, a vertical clevis rotatably mounted in and depending from the top wall of said cabinet adjacent the periphery of said vertical gear, a lever rigid with said clevis for rotation therewith, one end of said lever having a vertical knife edge for coaction with said cam knife edge, said knife edges slightly overlapping, a coin funnel depending from said top wall adjacent said clevis, said funnel having one side wall cut-out to receive the other end of said lever by said rotation thereof, a spring normally urging said lever other end into said cut-out, a contact opposite said lever other end adjacent said funnel and spaced therefrom a distance less than the diameter of a coin whereby a coin dropped in said funnel will bridge said lever other end and said contact, until said cam wheel rotates 360 degrees to bring said knife-edges in contact whereupon said lever will be swung laterally out of said cut-out to permit dropping of said coin.

4. A coin-operated television set comprising a cabinet of rectangular configuration, a large vertical gear journalled in one side wall of said cabinet, an electric motor supported on the bottom wall of said cabinet and carrying a small gear, an idler shaft mounted on said cabinet and having a large gear in mesh with said small gear and a small gear in mesh with said large gear for effecting slow rotation of said large vertical gear by said motor, a cam wheel carried by said vertical gear concentrically therewith, said cam wheel having a single thin cam having a lateral knife edge at the peak of beveled cam faces, a vertical clevis rotatably mounted in and depending from the top wall of said cabinet in line with the vertical center of said vertical gear, a lever rigid with said clevis for rotation therewith, one end of said lever having a vertical knife edge at the peak of beveled cam faces for coaction with said cam knife edge, said knife edges slightly overlapping, a coin funnel depending from said top wall in line with said clevis, said funnel having one side wall cut-out to receive the other end of said lever by said rotation thereof, a spring normally urging said lever other end into said cut-out, a contact opposite said lever other end adjacent said funnel and spaced therefrom a distance less than the diameter of a coin whereby a coin dropped in said funnel will bridge said lever other end and said contact, and a circuit connecting said lever, contact, motor, and a source of power whereby said coin, on bridging said lever and contact, will close the circuit to energize said motor to rotate said cam wheel until said cam wheel rotates 360 degrees bringing said knife-edges into contact whereupon said lever will be swung laterally out of said cut-out to permit dropping of said coin.

5. In a coin-operated television set including a television circuit, a cabinet, a large cam wheel journalled in one side wall of said cabinet, an electric motor supported on the bottom wall of said cabinet, reduction gearing between said motor and cam wheel for effecting slow rotation of said cam wheel, said cam wheel having a single thin cam having a lateral cam edge, a lever pivotally mounted in the top wall of said cabinet, one end of said lever having a vertical edge for coaction with said cam edge, said cam edges slightly overlapping, a coin funnel depending from said top wall in line with said lever, said funnel having one side wall cut-out to receive the other end of said lever, means normally urging said lever other end into said cut-out, a contact opposite said lever other end adjacent said funnel and spaced from said lever a distance less than the diameter of a coin whereby a coin dropped in said funnel will bridge said lever other end and said contact, and a circuit connecting together the television circuit, said lever, contact, motor, and a source of power, whereby said coin, on bridging said lever and contact, will close the circuit to energize the television circuit and said motor to rotate said cam wheel until said cam wheel rotates 360 degrees bringing said cam edges into contact whereupon said lever will be swung laterally out of said cut-out to permit dropping of said coin to open the circuit, a video station selector in the television circuit, and an electrically operated means connected in said circuit to be energized for locking said selector against rotation when a coin is inserted.

6. In a coin-operated television set including a television circuit, a cabinet, a large cam wheel journalled in one side wall of said cabinet, an electric motor supported on the bottom wall of said cabinet, reduction gearing between said motor and cam wheel for effecting slow rotation of said cam wheel, said cam wheel having a single thin cam having a lateral cam edge, a lever pivotally mounted in the top wall of said cabinet, one end of said lever having a vertical edge for coaction with said cam edge, said cam edges slightly overlapping, a coin funnel depending from said top wall in line with said lever, said funnel having one side wall cut-out to receive the other end of said lever, means normally urging said lever other end into said cut-out, a contact opposite said lever other end adjacent said funnel and spaced from said lever a distance less than the diameter of a coin whereby a coin dropped in said funnel will bridge said lever other end and said contact, and a circuit connecting together the television circuit, said lever, contact, motor, and a source of power, whereby said coin, on bridging said lever and contact, will close the circuit to energize the television circuit and said motor to rotate said cam wheel until said cam wheel rotates 360 degrees bringing said cam edges into contact whereupon said lever will be swung laterally out of said cut-out to permit dropping of said coin to open the

circuit, a video station selector in the television circuit, and an electrically operated means connected in said circuit to be energized for locking said selector against rotation when a coin is inserted, said locking means, comprising a brake drum on said selector, and an electrically operated brake band engaged about said drum to be drawn tight when the coin is inserted.

7. In a coin-operated television set including a television circuit, a cabinet, a large cam wheel journalled in one side wall of said cabinet, an electric motor supported on the bottom wall of said cabinet, reduction gearing between said motor and cam wheel for effecting slow rotation of said cam wheel, said cam wheel having a single thin cam having a lateral cam edge, a lever pivotally mounted in the top wall of said cabinet, one end of said lever having a vertical edge for coaction with said cam edge, said cam edges slightly overlapping, a coin funnel depending from said top wall in line with said lever, said funnel having one side wall cut-out to receive the other end of said lever, means normally urging said lever other end into said cut-out, a contact opposite said lever other end adjacent said funnel and spaced from said lever a distance less than the diameter of a coin whereby a coin dropped in said funnel will bridge said lever other end and said contact, and a circuit connecting together the television circuit, said lever, contact, motor, and a source of power, whereby said coin, on bridging said lever and contact, will close the circuit to energize the television circuit and said motor to rotate said cam wheel until said cam wheel rotates 360 degrees bringing said cam edges into contact whereupon said lever will be swung laterally out of said cut-out to permit dropping of said coin to open the circuit, a video station selector in the television circuit, and an electrically operated means connected in said circuit to be energized for locking said selector against rotation when a coin is inserted, said locking means, comprising a brake drum on said selector, an electrically operated brake band engaged about said drum to be drawn tight when the coin is inserted, and a solenoid connected in said circuit to be energized by insertion of said coin to effect the electrical operation of said brake band.

8. A coin-operated television set comprising a cabinet, a large cam wheel journalled in one side wall of said cabinet, an electric motor supported on the bottom wall of said cabinet, reduction gearing between said motor and cam wheel for effecting slow rotation of said cam wheel, said cam wheel having a single thin cam having a lateral cam edge, a lever pivotally mounted in the top wall of said cabinet, one end of said lever having a vertical edge for coaction with said cam edge, said cam edges slightly overlapping, a coin funnel depending from said top wall in line with said lever, said funnel having one side wall cut-out to receive the other end of said lever, means normally urging said lever other end into said cut-out, a contact opposite said lever other end adjacent said funnel and spaced from said lever a distance less than the diameter of a coin whereby a coin dropped in said funnel will bridge said lever other end and said contact, and a circuit connecting said lever, contact, motor, and a source of power, whereby said coin, on bridging said lever and contact, will close the circuit to energize said motor to rotate said cam wheel until said cam wheel rotates 360 degrees bringing said cam edges into contact whereupon said lever will be swung laterally out of said cut-out to permit dropping of said coin, and a visual means for indicating when the allotted period for the inserted coin is about to be up, said visual means, comprising a switch operated by the cam of said cam wheel, a small red bulb, a source of power, and a circuit connecting said switch, bulb and source of power in series to illuminate said bulb when said switch is closed, and a dash pot for delaying the breaking of said last-mentioned circuit.

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FOREIGN PATENTS

Number	Country	Date
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