Sept. 21, 1937. J. F. MACOUREK 2,093,813

COIN OPERATED MACHINE

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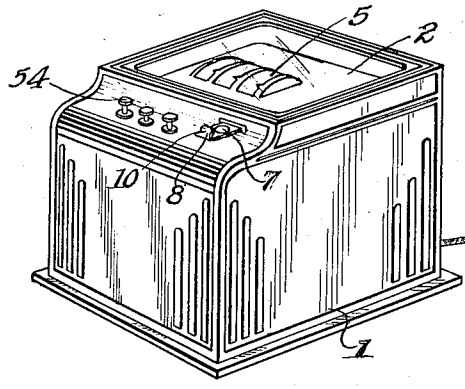


Fig. 1.

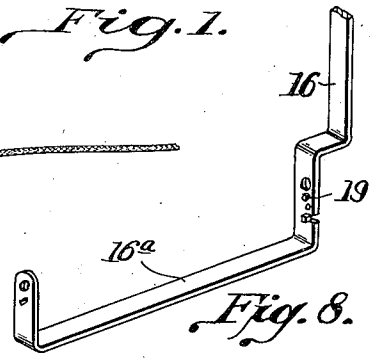
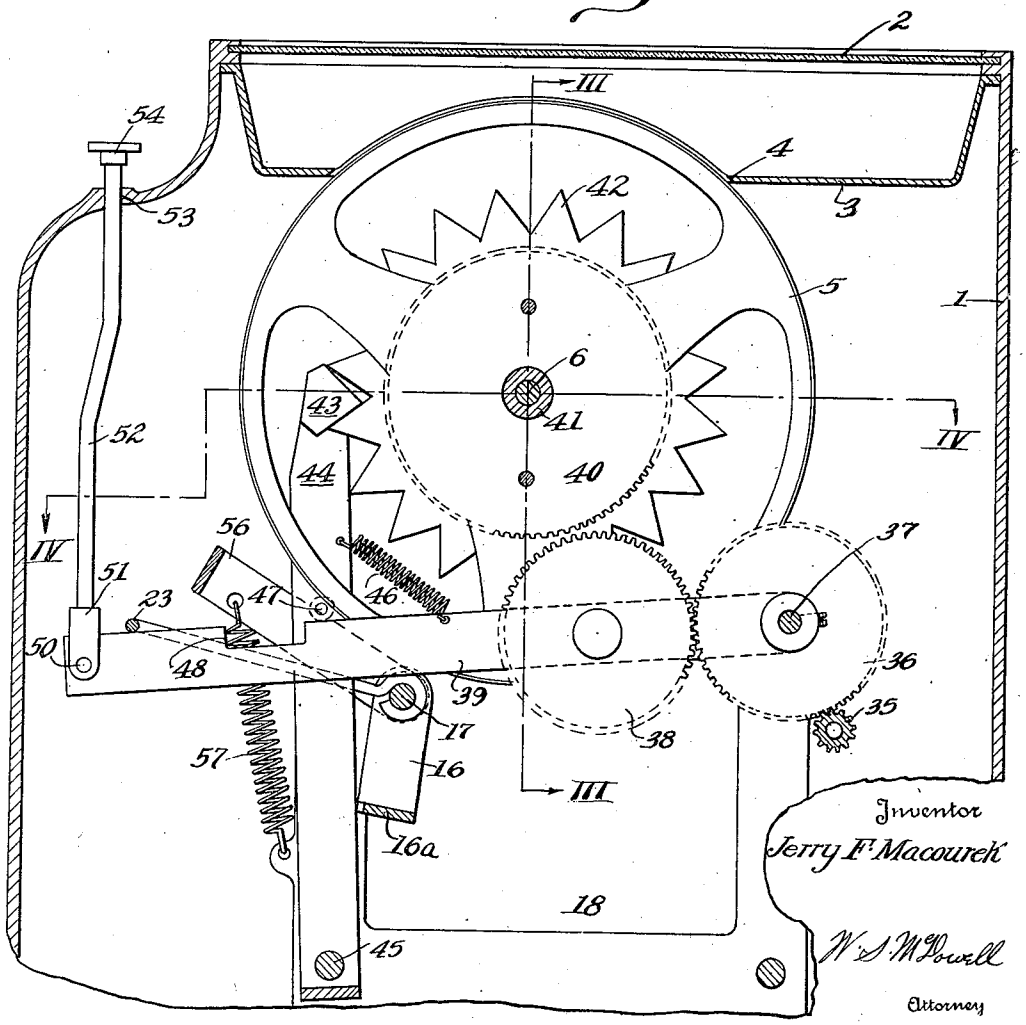


Fig. 8.

Fig. 2.



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Fig. 3.

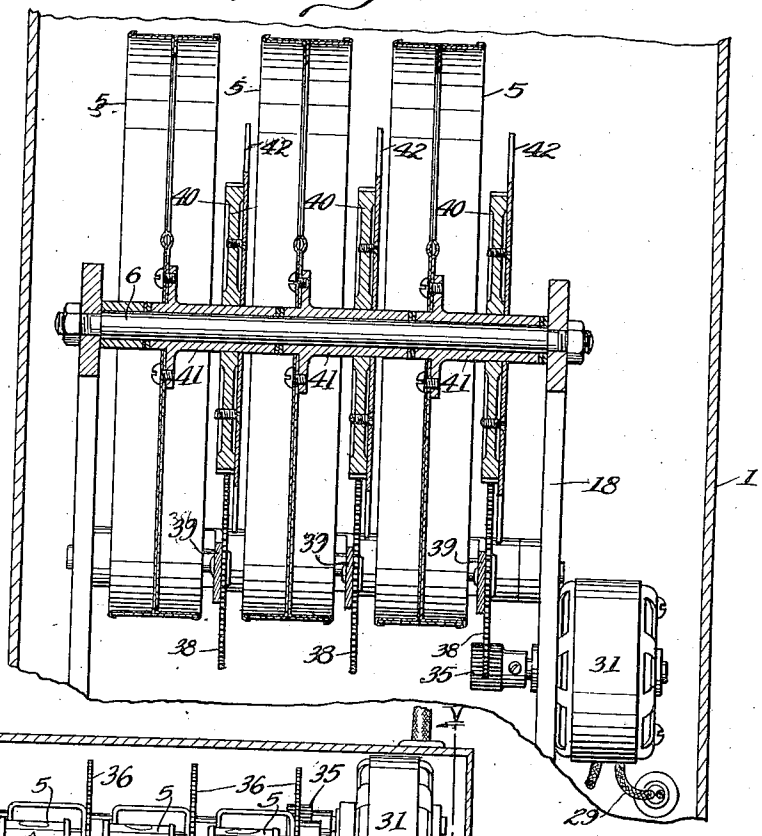
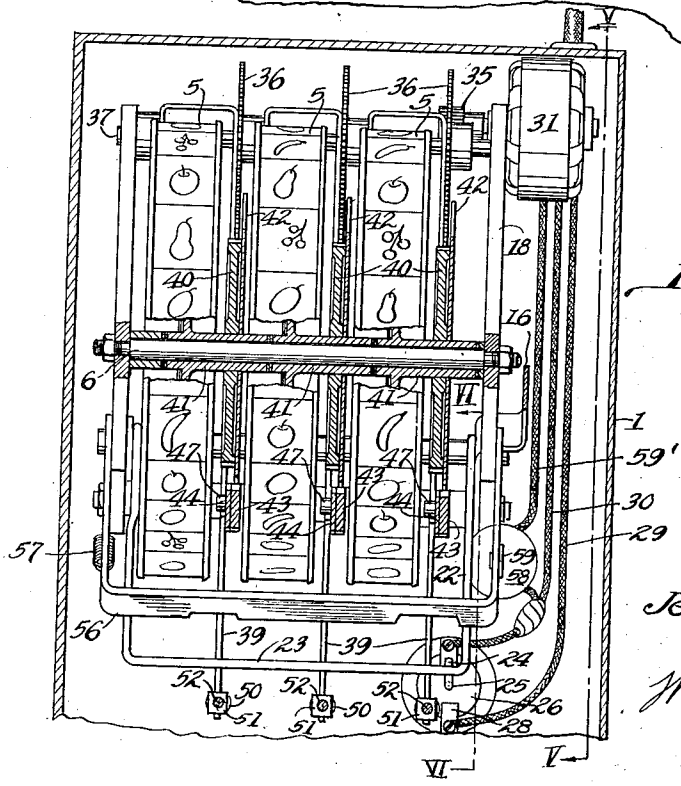


Fig. 4.



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Fig. 5.

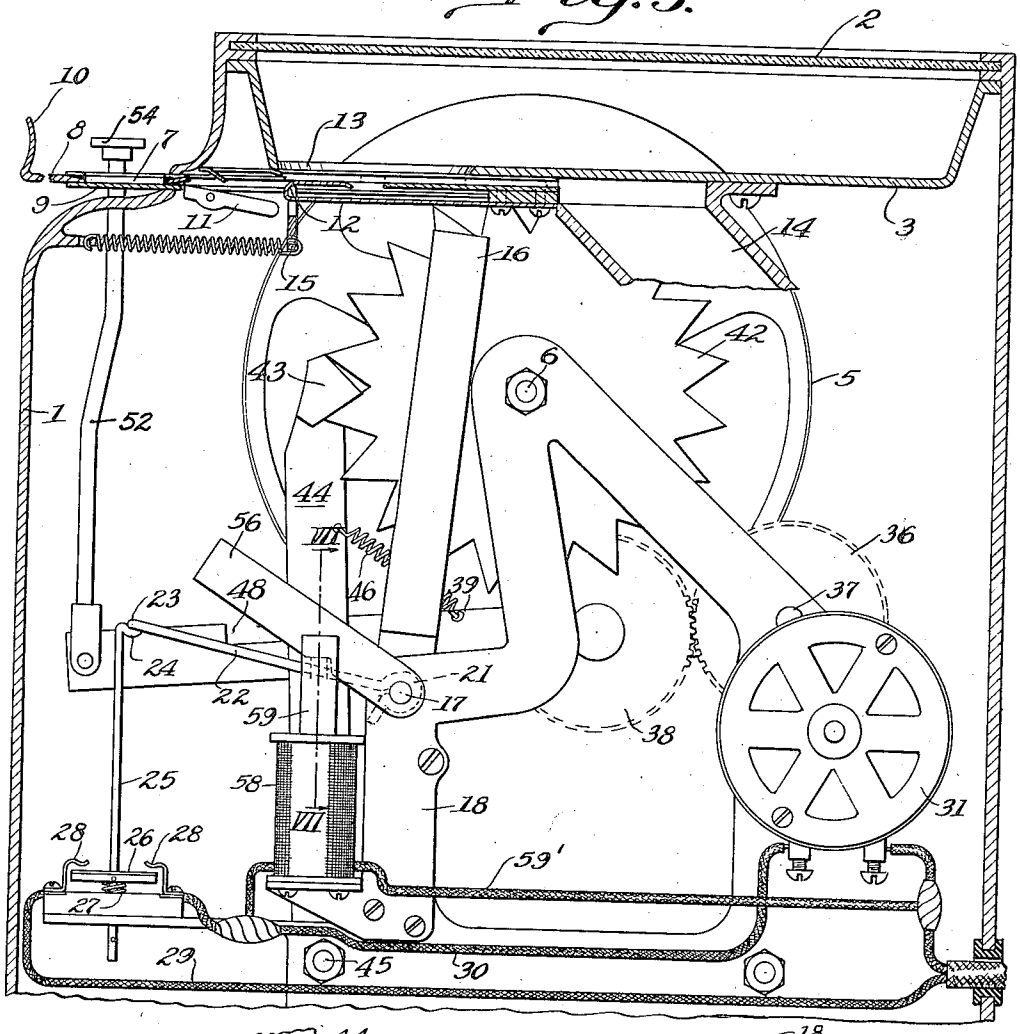


Fig. 6.

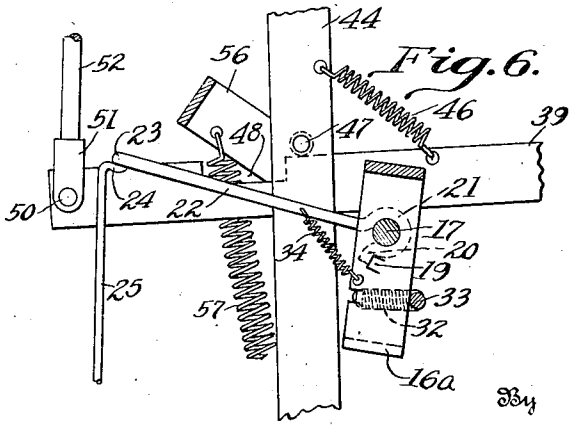
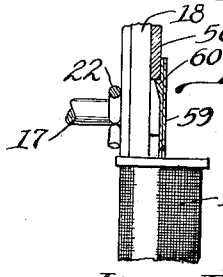


Fig. 7.



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Patented Sept. 21, 1937 2,093,813

UNITED STATES PATENT OFFICE

2,093,813

COIN OPERATED MACHINE

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Application October 21, 1935, Serial No. 45,874

13 Claims. (Cl. 273—143)

This invention relates to improvements in coin operated amusement furnishing machines, and has particular reference to machines of the character specified involving rotatable symbol-bearing reels, mounted for spinning rotation about a common axis, in combination with means for arresting the rotation of such reels and presenting their symbols in varying sequences to the sight aperture of the machine casing.

Heretofore, machines of this character have been operated principally through the use of manually actuated coin-released levers which through associated spring means impart movement to the symbol reels. These manually operated machines are quite complicated in their construction and design and involve numerous inter-related mechanical parts which are costly to manufacture and assemble and to maintain in proper operative order.

It is, therefore, one of the outstanding objects of the present invention to provide a reel machine of the general character set forth but one wherein the operation of rotating the reels is effected through the provision of an electric motor and associated gearing, to the end of improving the construction of such machines, by enabling successive playing operations thereof to be carried out with greater ease and rapidity and by the provision of game mechanism characterized by structural simplicity and low manufacturing costs.

Another object of the invention resides in the provision of manually operated means for arresting the rotation of said reels by the acts of the machine player, in order to introduce an element of skill into the operation of the mechanism so that its operation becomes more interesting to the players.

A further object of the invention resides in the provision of automatic means for stopping the rotation of said reels following a predetermined period of spinning in the event the manually operated controls are not actuated.

With these and other objects in view, which will appear as the description proceeds, the invention consists in the novel features of construction, combination of elements and arrangement of parts hereinafter fully described and pointed out in the appended claims.

In the accompanying drawings:

Fig. 1 is a perspective view of the amusement furnishing machine comprising the present invention;

Fig. 2 is a vertical transverse sectional view taken through the same;

Fig. 3 is a vertical longitudinal sectional view on the plane indicated by the line III—III of Fig. 2;

Fig. 4 is a horizontal sectional view taken on the line IV—IV of Fig. 2;

Fig. 5 is a vertical transverse sectional view on the line V—V of Fig. 4;

Fig. 6 is a detail view of the switch controlling means for the electric motor, the plane of the figure being indicated by the line VI—VI of Fig. 4;

Fig. 7 is a detail sectional view on the line VII—VII of Fig. 5;

Fig. 8 is a perspective view of the lower portion of a lever used in operating the machine.

In the single illustrated embodiment of the invention disclosed in the accompanying drawings, the numeral 1 indicates the casing or cabinet of my improved amusement furnishing machine, which casing generally is of cubical or rectangular design so formed that it may be readily supported on any suitable horizontal base. The flat top of the casing is formed with an opening covered by a transparent panel 2, below which is arranged a pan-like partition 3, the latter being provided with parallel slots 4 through which project the upper peripheral portions of a plurality of symbol-bearing reels 5, which are mounted for rotation about a common horizontal axis 6, arranged within the confines of the casing or cabinet 1.

The machine is operated by the insertion therein of a coin of predetermined value or by means of circular metallic checks or tokens. The coin or token, employed to effect a given operation of the machine, is placed in a circular pocket 7 provided within a slide member 8, which is mounted for longitudial reciprocation in a horizontal plane by means of a stationary guide 9. The outer end of the slide member terminates in an up-turned manipulating extremity 10 which, after the placing of a coin or token in the pocket 7, is grasped by the player in order to force the slide member and the token or coin carried thereby inwardly of the casing. In the event the slide member is operated without a proper coin or token being deposited in the pocket 7, the guide 9, within the casing, carries a pivotally movable detent 11, which will operate by gravity to engage with a shouldered surface of the slide member to limit inward or idle sliding movement thereof. When a proper coin or token is received within the pocket, however, the said coin or token operates to maintain the detent 11

in a depressed state so that full inward sliding movement of the member 8 may take place.

During the inward movement of the slide member, a coin or token, received within the pocket 7, contacts with a stationary inclined surface 12 which elevates the coin or token to a higher plane so that it will rest on the top of the guide 9, where two or more of such tokens or coins may be observed by the players of the game through a slot 13 formed in the partition 3. The coins or tokens thus elevated engage one another so that successive operations of the slide member causes advance of the coins along the top of the guide 9, from whence they are finally delivered to an inclined coin chute 14 and removed from the operating mechanism of the apparatus.

The inner end of the slide member 8 terminates in a downwardly directed vertical extension 15, which is so disposed that when the slide member assumes substantially its extreme position of inward movement, or immediately prior to such position, the extension 15 will engage with the upper end of an operating lever 16. The lower end of this lever is pivotally carried by a shaft 17 supported in connection with the internal frame 18 of the operating mechanism. Formed with the sides of the lower end 16a of the lever 16 are shoulders 19 which are arranged to engage with the out-turned ends 20 of the eyes 21 formed with the inner ends of a wire bail 22, the eyes 21 being rotatably received by the shaft 17.

The outer end of the bail 22 is horizontally extended as at 23 and loosely received within a curved lip 24 provided upon the upper end of a vertical switch stem 25. The lower end of the stem 25 is connected with a transverse switch arm 26, normally pressed in an upwardly direction by a light spring 27 toward a pair of spaced stationary contacts 28, the latter being connected by leads 29 and 30 with a source of current supply, such as a commercial house circuit, and with an electric motor 31 which is used to operate the mechanism comprising the present invention.

Normally, the lever 16 occupies the position disclosed in Fig. 5, and is maintained in that position by a coil spring 32, shown in Fig. 6, which is connected with the lower end of the lever below the shaft 17, the spring 32 being also connected with a stationary stop 33 and functions to hold said lever in engagement with said stop. A light spring 34 may be employed to connect the bail 22 with the lower end of the lever 16. The spring 34 possesses greater strength than the spring 27 so that when the parts of the machine are inactively positioned, as depicted in Fig. 5, the cross arm 26 of the switch mechanism will be maintained out of engagement with the spaced contacts 28. However, upon oscillation of the lever 16 by the engagement of the slide extension 15 with the upper end thereof, the shoulder 19 on the lower end of said lever contacts with the out-turned end 20 of the eye 21 formed on the inner end of the bail 22 and swings the latter upwardly, permitting the spring 27 to operate and force the stem 25 of the switch mechanism upwardly, thereby engaging the contacts 28 with the arm 26 and completing the motor circuit.

The armature shaft of the motor 31, as shown in Fig. 2, carries a pinion 35 which meshes with one of a plurality of spaced gears 36 fixed to a shaft 37, which is rotatably supported in connection with the frame structure 18. Each of the gears 36 meshes with complemental gears 38 which are supported by means of arms 39 freely and pivotally carried by the shaft 37 for swinging movement about the longitudinal axis of the latter. The gears 38, as shown in Fig. 2, are normally disposed so that the teeth thereof do not mesh with those of registering gears 40 which are formed with the sleeve-like hubs 41 of the reels 5. However, upon release of the arms 39 as hereinafter explained, the latter are permitted to swing upwardly so that the gears 38 thereon are brought into driving engagement with the teeth of the gears 40. This may occur after the motor 31 has been put into operation.

Fixed to each of the gears 40 is a star-tooth wheel 42 and normally disposed in motion-arresting engagement with the teeth of these wheels are inclined-surfaced lugs 43 formed with the upper ends of vertically disposed arms 44, the latter being pivotally mounted at their lower ends as at 45 in connection with a rod carried by the frame structure 18. Each of the arms 44 is connected with its adjoining complemental arm 39 by means of a coil spring 46, the tendency of the latter being to maintain the lug 43 formed on each arm 44 in contact with the teeth of the adjoining star wheel 42 in order to prevent the rotation of the reel 5 connected with said star wheel. Upward movement of the arms 39 is prevented by providing the sides of the arms 44 with studs 47, disposed for engagement with the upper edges of the arms 39. The latter are formed with longitudinally extending recesses 48 in which the studs 47 are received, following the oscillation of the lever 16 from its normal position by reason of the inward movement of the coin-controlled slide member.

Before the lower horizontal portion 16a of the lever 16 engages with the vertical edges of the arms 44, sufficient play is preferably provided to permit of the actuation of the switch mechanism so that by the time the lever 16 will have been oscillated to the extreme position of its movement under the influence of the slide member 8 and to an extent sufficient to withdraw the lugs 43 from the star wheels 42, the motor 31 will be in operation imparting power to the gears 35, 36 and 38. When the lugs 43 are released from engagement with the teeth of the wheel 42, the studs 47 will register with the recesses 48, providing for upward movement of the arms 39 by the springs 46 so that the rotating gears 38 will be brought into meshing engagement with the reel gears 40, thereby causing the rotation of said reels by the operation of the motor 31.

In order to stop the rotation of the reels under the manual control of the player of the mechanism, the outer ends of the arms 39 are pivotally connected as at 50 with yokes 51 carried by the lower ends of vertically depressible plunger keys 52. These keys extend upwardly through the guide openings 53 provided in the casing and are equipped with exterior actuating extremities 54. After rotation of the reels has been initiated and the player desires to stop the same, each of the key plungers 52 is depressed. This results in the lowering of the arms 39 and the consequent release of the pivoted arms 44 from the slots or recesses 48, the arms 44 moving inwardly under the influence of the springs 46 so that the shouldered upper ends 43 will be brought into contact with the star-wheels 42, thereby arresting the rotation of the reels. The depressing of the rods 52 lowers the arms 39 so that the driving engagement between the gears 38 and 40 is immediately interrupted. When the keys 52 have all been depressed, the bail 23 by virtue of its weight or by reason of the spring

34 oscillates about the axis 17 and causes the lowering of the rod 25 so that the circuit passing through the contact members 26 and 28 of the switch mechanism is broken. In this manner, the motor 31 is deenergized and its operation stopped.

In the event the player of the machine does not depress the keys 54, I have provided automatic means for arresting the operation of the machine after a predetermined spinning period of the reels 5. This is accomplished by the provision of a yoke shaped member 56 which is carried by the shaft 17 and is connected with the upper end of a spring 57, the lower end of said spring being connected with the frame 18. Mounted on the frame 18 is an electrical coil 58, which is arranged in a shunt circuit 59' connected with the circuit of the motor 31 so that the coil 58 will be heated whenever the motor 31 is in operation.

Influenced by the heat of the coil 58 is what is known as a warping bar 59, which comprises a bimetallic member deformable under the influence of heat. The bar 59, as shown in Fig. 7, carries a shoulder 60 which is arranged to engage beneath the yoke member 56 in order to normally maintain the latter in the elevated position disclosed in Fig. 5. In the event the plunger keys are not depressed, the continued heating of the bar 59 by the coil 58 causes the deformation of said bar so that the shoulder 60 is removed from contact with the under side of the yoke member 56, thus enabling the latter to respond to the influence of the spring 57 and by contacting with the bars 39, will cause the simultaneous depression of the latter as would occur if said bars were depressed by the plunger keys 52.

In view of the foregoing, it will be seen that the present invention provides a motor driven amusement furnishing machine which may be readily operated merely by the insertion of a coin or token therein avoiding the necessity now present in machines of this character, of rocking a manually operated lever with some considerable difficulty and in a time-consuming manner.

In the present invention, a coin may be placed in the slide 8, and by slight finger pressure, forced inwardly which operation automatically starts the motor 31 and sets the machine into operation. As soon as the reels begin their spinning movement, the player or players of the game may exercise his skill in attempting to control the stopping positions of the reels by manually depressing the keys 54 and their associated plungers 52. Whenever a key is depressed, the reel associated therewith is brought to a stop with its symbol appearing through the transparent top of the machine cabinet. As a safety measure, the present invention provides the thermostatically released stopping mechanism to insure arresting rotation of the reels and the stopping of the motor after a given period of operation.

While I have described what I consider to be the preferred form of the present invention, nevertheless it will be understood that the same is susceptible to considerable modification without departing from the underlying features of the present invention as defined in the following claims.

What is claimed is:

1. In a coin operated machine, a plurality of symbol-bearing reels mounted for independent rotation about a common axis, an electric motor and its operating circuit, a plurality of pivotally movable arms, gears driven by said motor and carried by said arms, complemental gears carried by said reels and disposed in registration each with a respective one of the gears carried by said arms, a coin receiving mechanism including a movable member, a control switch for said motor circuit, and means actuated by the movable member of said coin receiving mechanism to effect the closure of said switch and the motor circuit governed thereby and to move said arms whereby to bring the motor driven gears carried thereby into meshing engagement with the respective reel carried gears.

2. In a coin operated machine, a plurality of rotatably mounted symbol-bearing reels, an electric motor and its operating circuit, pivotally movable gear supports, gears carried by said supports and driven by said motor, gears fixed to rotate with said reels and disposed in registration with the gears of said supports respectively, a coin receiving mechanism including a movable member, means controlled by said member for moving said supports to bring the gears thereof into meshing engagement with the reel gears, a control switch for said motor circuit, and means operative prior to the meshing engagement of said gears to effect the closure of said switch and the motor circuit controlled thereby.

3. In a coin controlled machine, a plurality of rotatably mounted symbol-bearing reels, an electric motor and its operating circuit, a plurality of parallel pivotally mounted arms, gears driven by said motor and carried by said arms respectively, complemental gears fixed to rotate with said reels respectively, each being disposed in registration with a corresponding arm-carried gear, a coin receiving mechanism including a movable member, a control switch for said motor circuit, and a pivoted lever actuated by said movable member for effecting the closing of said switch and its motor circuit and for permitting a spring actuated oscillating of said arms to bring the gears carried thereby into meshing engagement with the gears carried by said reels.

4. In a coin operated machine, a plurality of rotatably mounted reels, an electric motor, a plurality of pivotally mounted arms, gears driven by said motor and rotatably carried by said arms respectively, a gear fixed to rotate with each of said reels and disposed in registration with corresponding gears carried by said arms, star wheels fixed to each of said reels, pivoted brake members cooperative with said star wheels, studs carried by said brake members, coin released means for moving said brake members to positions free from engagement with said star wheels, and means operative when said brake members occupy said released positions to oscillate said arms whereby to mesh the teeth of the gears carried thereby with the teeth of the corresponding reel gears and substantially simultaneously to close said motor circuit, said arms being provided with longitudinal recesses for the reception of said studs when said brake members occupy positions disengaged from said star wheels.

5. In a coin operated machine, a plurality of rotatably mounted reels, an electric motor, a plurality of pivotally mounted arms, gears driven by said motor and rotatably carried by said arms respectively, a gear fixed to rotate with each of said reels and disposed in registration with corresponding gears carried by said arms, star wheels

fixed to each of said reels, pivoted brake members cooperative with said star wheels, studs carried by said brake members, coin released means for moving said brake members to positions free from engagement with said star wheels, means operative when said brake members occupy said released positions to oscillate said arms whereby to mesh the teeth of the gears carried thereby with the teeth of the corresponding reel gears and substantially simultaneously to close said motor circuit, said arms being provided with longitudinal recesses for the reception of said studs when said brake members occupy positions disengaged from said star wheels, and manually operated means connected with each of said arms and operable at will to release each stud from its recess and thus to restore said brake members to their normal positions of engagement with said star wheels.

6. In a coin operated machine having a plurality of rotatably mounted symbol bearing reels, an electric motor for driving said reels and a coin-receiving mechanism comprising a movable member, a gear carried by each of said reels, motion transmitting gearing driven by said motor and normally disconnected from said reel gears, means controlled by the movable member of said coin-receiving mechanism for connecting said motion transmitting gearing with said reel gears, and manually operated means for selectively disconnecting said motion transmitting gearing from the gears on said reels.

7. In a coin operated machine having a plurality of rotatably mounted symbol bearing reels, an electric motor for driving said reels, a switch for controlling said motor and a coin-receiving mechanism with a movable member, a gear carried by each of said reels, motion transmitting gears driven by said motor and normally disconnected from said reel gears, means actuated by the movable member of said coin-receiving mechanism for closing said motor switch and connecting said motion transmitting gears with said reel gears, and manually operated means for selectively disconnecting said motion transmitting gears from said reel gears and opening said motor switch, said switch being moved to an open position simultaneously with the disconnection of the motion-transmitting gears from the last reel gear.

8. In an amusement machine having a plurality of rotatably mounted reels, an electric motor for driving said reels and a coin-receiving mechanism with a movable member, a gear carried by each of said reels, a plurality of intermediate gears driven by said motor, a plurality of levers corresponding in number to said reels and pivoted about the axis of rotation of said intermediate gears, an idler gear carried by each of said levers in meshing engagement with said intermediate gears, means actuated by the movable member of said coin-receiving mechanism for moving said levers to cause the engagement of said idler gears with said reel gears, and manually operated means for moving said levers to disengage said idler gears from said reel gears.

9. In an amusement machine having a rotatable reel and a motor for driving said reel, a gear carried by said reel, an intermediate gear driven by said motor, a lever pivoted about the axis of rotation of said intermediate gear, an idler gear carried by said lever in mesh with said intermediate gear, means for moving said lever to cause the idler gear to mesh with the reel gear, and means for moving said lever to disengage said idler from said reel gear.

10. In an amusement machine having a plurality of rotatably mounted reels, a motor for driving said reels and a coin-receiving mechanism with a movable member, a star-tooth wheel carried by each of said reels, spring pressed stop means engaging said star-tooth wheels, a gear carried by each of said reels, intermediate gears driven by said motor, spring pressed levers pivoted about the axis of rotation of said intermediate gears, an idler gear carried by each of said levers in mesh with said intermediate gears, means controlled by the movable member of said coin-receiving mechanism for disengaging the stop means from said star wheels and meshing said idler gears with said reel gears, and means for moving said levers to disengage said idler from said reel gears and cause the stop means to engage said star-tooth wheels.

11. In an amusement machine having a rotatable reel and a motor for driving said reel, a gear carried by said reel, an intermediate gear driven by said motor, a lever pivoted about the axis of rotation of said intermediate gear, an idler gear carried by said lever in mesh with said intermediate gear, means for moving said lever to cause the idler gear to mesh with the reel gear, and electrically controlled means for moving said lever to disengage said idler from said reel gear.

12. In an amusement machine having a frame, a reel on said frame and a motor for driving said reel, a gear carried by said reel, a lever pivoted on said frame, and an idler gear driven by said motor and carried by said lever and brought into and out of meshing engagement with the reel gear upon movement of said lever.

13. In a coin-operated machine, a plurality of rotatably mounted symbol-bearing reels, an electric motor and its operating circuit, a control switch for said circuit, means for operating said switch, a coin receiving mechanism including a movable member, means operated by said movable member when the latter attains a predetermined actuating position to render operative said switch operating means to cause the switch to assume its position of circuit closure, motion transmitting devices driven by said motor for rotating said reels, and a plurality of manually actuated devices for arresting the rotation of respective reels, operation of the last device effecting the opening of said switch and its associated motor circuit.

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