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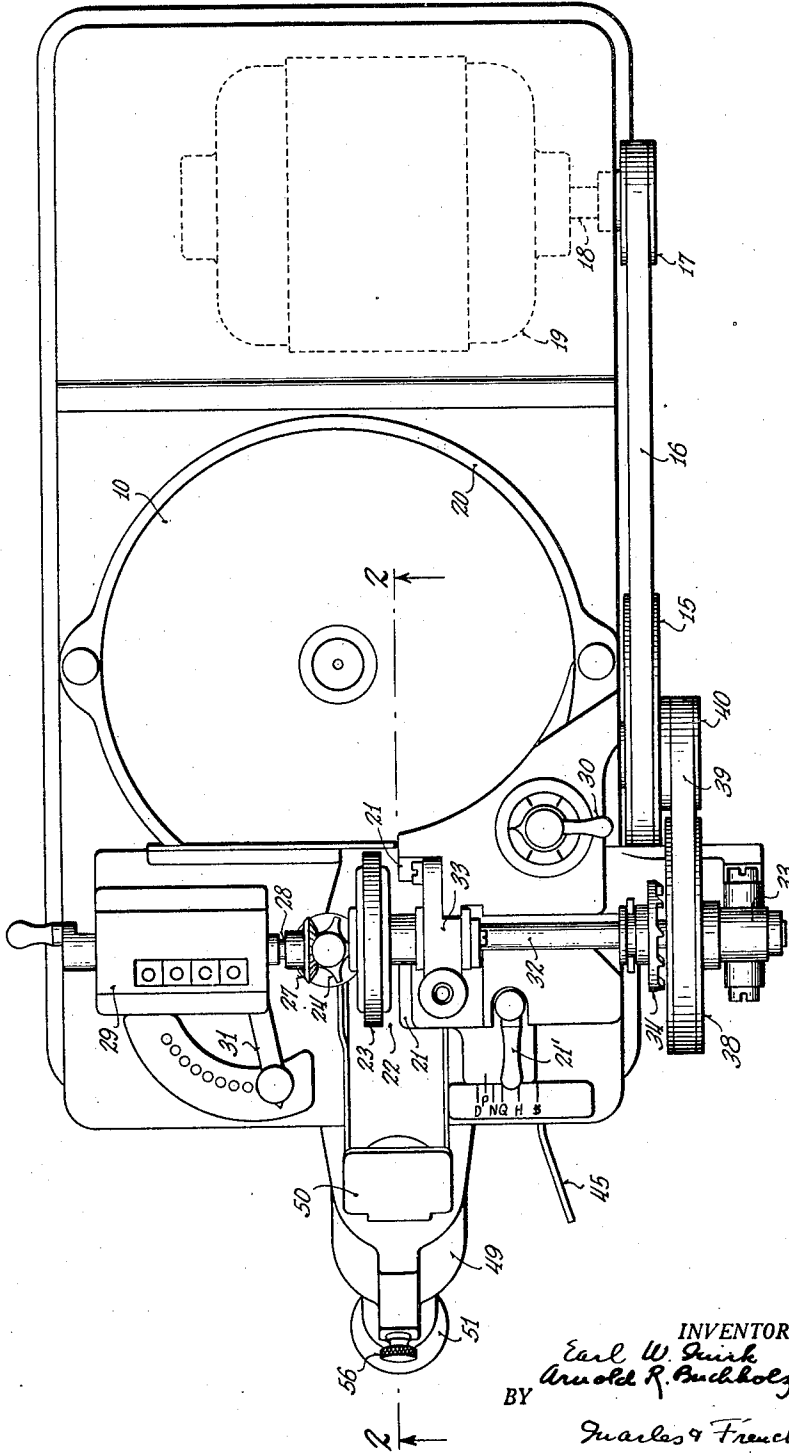
E. W. QUIRK ET AL

2,438,822

STARTING CONTROL FOR COIN COUNTING MACHINES

Filed July 28, 1945

3 Sheets-Sheet 1



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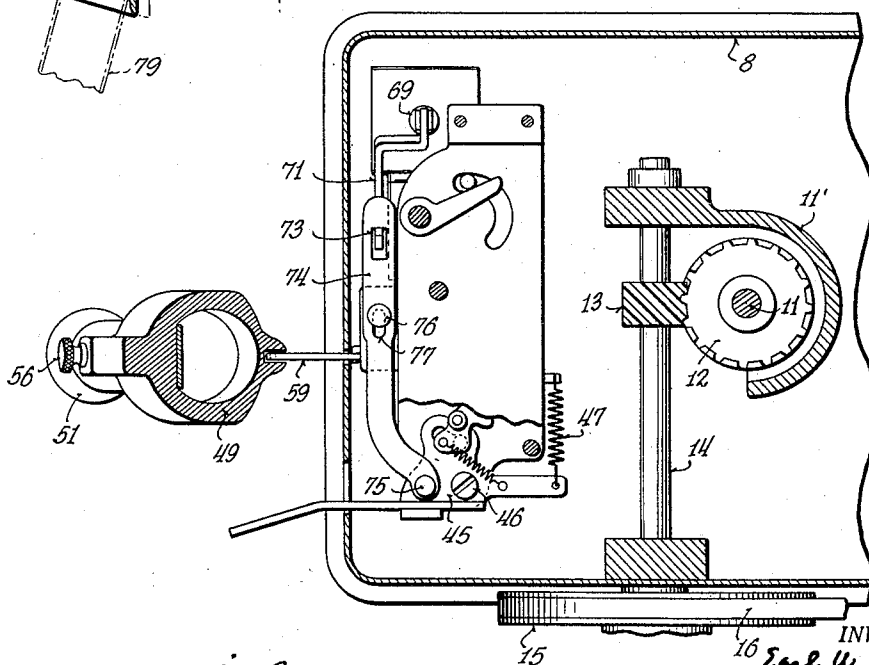
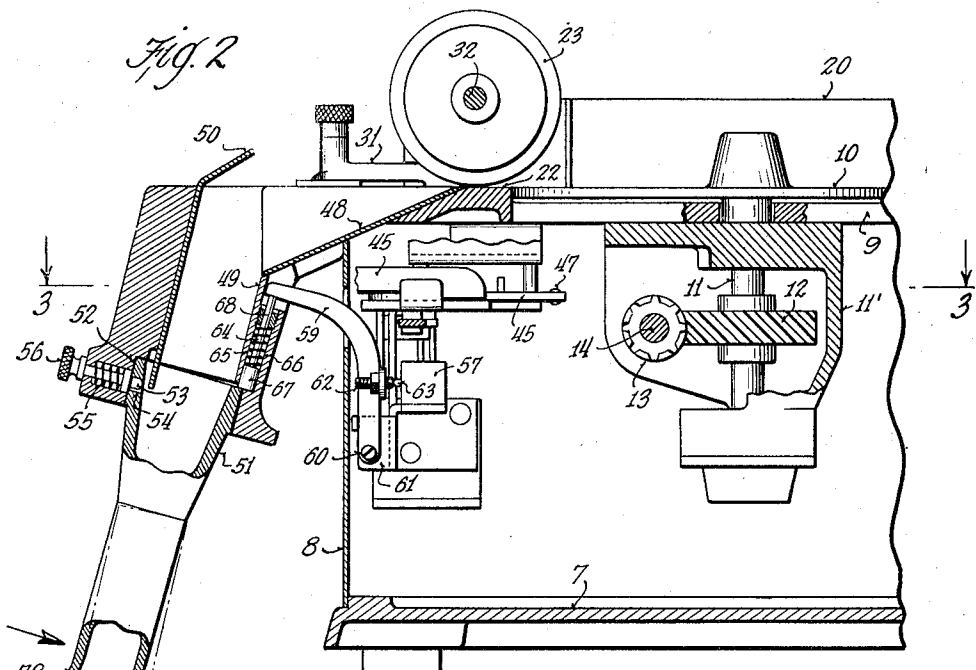
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3 Sheets-Sheet 2



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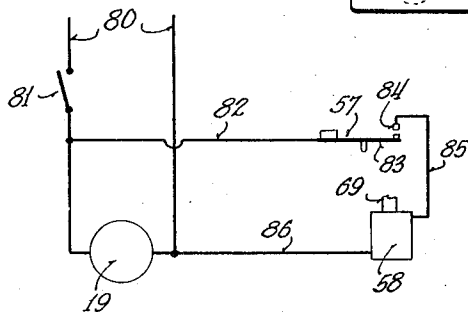
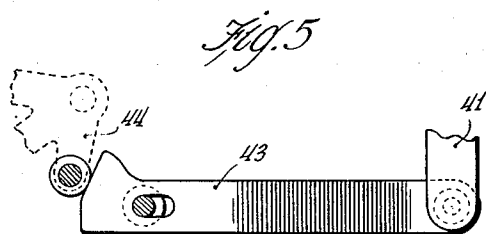
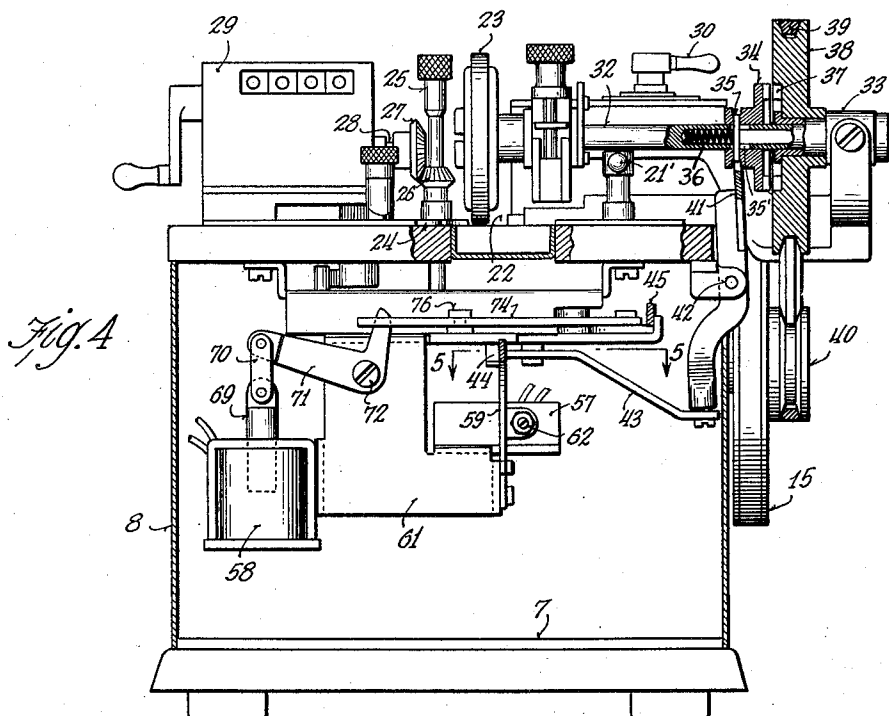
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,438,822

STARTING CONTROL FOR COIN COUNTING MACHINES

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4 Claims. (Cl. 133—8)

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The invention relates to coin counting machines.

Coin counting machines are usually driven by a continuously running electric motor and a releasable driving connection is interposed between the motor and the coin counting mechanism which is established by means controlled by the operator to start the operation of the machine and released when the desired count of coins have been discharged from the machine. These machines are used for filling tubular containers with the desired number of coins and include a coin discharge tube. The count starting lever has usually been a hand lever which is spaced from the discharge tube and has to be operated by a separate operation from that required to position or hold the coin receiving container into or in coin receiving position at the end of the coin discharge tube and thus necessitates the use of both hands of the operator. The object of the present invention is to provide an electromagnetically operated means for operating the starting lever through a slight movement of the coin discharge tube by the same hand of the operator that inserts the coin receiving container into position at the lower end of the discharge tube.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a plan view of a coin counting machine embodying the invention;

Fig. 2 is a detailed vertical sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a detailed horizontal sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a front elevation view of the machine, parts being broken away and parts being shown in section;

Fig. 5 is a detailed horizontal sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a wiring diagram of the electrical units.

The coin counting machine includes a casing having a base 7, sides 8, and a top 9. A coin carrier 10 is rotatably mounted on a vertically disposed shaft 11 suitably journaled in a bearing frame 11' secured to the top and side of the casing and carrying a skew gear 12 meshing with a similar gear 13 on an angularly disposed shaft 14 projecting through one side of the casing and carrying a pulley 15 connected by a belt 16 with the pulley 17 on the drive shaft 18 of an electric motor 19 disposed within the rear portion of the casing. Coins are charged into the hopper formed by the carrier 10 and a fence or wall 20 which at

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one point is open to permit the discharge of coins and at this opening includes an adjustable gate 21 which determines the diameter of the coin that may be released from the carrier 10 into a discharge passage 22. The gate is adjustably secured in position by a clamping lever 21'. The gate 21 also provides adjustable spaces at the periphery of the carrier adjacent the passage 22 into which the coins are thrown by the rapid rotation of the carrier and along which they move into the entrance of the passage 22. Associated with the passage 22 is a rubber faced feed wheel 23 which is mounted so that its periphery is spaced a slight distance from the bottom of the passage 22 so as to engage the coins as they are discharged and carry them past a counter drive wheel 24.

The counter drive wheel 24 is mounted on a vertically disposed shaft 25 carrying a bevel gear 26 meshing with a bevel gear 27 on a drive shaft 28 for a counter 29.

The counting mechanism includes means for setting it to count coins of different denominations, such as pennies, nickels, dimes, quarters, half dollars, and dollars, including a manually adjustable lever 30 to gauge the thickness of the coins and means for adjusting the counter 29 to stop the feed of the coins after a predetermined number of revolutions thereof and including a manually settable lever 31. For example, the lever 31 may be set so that the machine delivers 10, 15, 20, 25, 30, 35, 40, or 50 coins of any denomination before the drive of the coin feed and counter operating wheel 23 is stopped.

The feed wheel 23 is mounted on a horizontally disposed shaft 32 journaled in bearings 33, the front one of which is vertically adjustable to change the height of the wheel relative to the bottom of the passage 22, and has a toothed clutch disk 34 slidably keyed thereon by a pin 35 working in a slot 35' and normally urged by a spring 36 into engagement with the toothed clutch face 37 formed on a pulley 38 loose on the shaft 32 and connected by a belt 39 with a pulley 40 on the shaft 14. Thus the pulley 38 is continuously driven by the motor 19 and drives the shaft 32 when the clutch disk 34 is engaged with the clutch face 37. The counting mechanism is operatively connected to a clutch shifting lever 41 pivotally mounted at 42 on the frame of the machine by a link 43 and a lever member 44 which is operated by the counting mechanism at the end of the count to shift and hold the clutch disk 34 in a released position. The details of the counting mechanism and its connection with the member

44 and the other parts heretofore referred to have been previously shown and described in detail in the copending application for patent of Arnold R. Buchholz and Walter A. Bargang, for "Coin counting machine," Serial No. 376,392, filed Janary 28, 1941, now Patent No. 2,378,828, and as the disclosures in said application are now in use and form a part of the prior art, further detailed description thereof will not be given here. Also in said application a count starting lever 45 pivotally mounted at 46 is operatively connected with the clutch hold out lever member 44 so that said lever may be released by the swinging of the lever 45 against the pull of a spring 47 so as to permit the spring 36 to engage the clutch.

It will thus be noted that this application starts as its basis with the coin counting machine having a motor driven coin feeding wheel, which wheel is adapted to be connected to its source of power drive through a releaseable drive connection and that the counting mechanism acts through member 44, link 43, and lever 41 to release the clutch disk 34 against the action of the spring 36 after the counter 29 has been operated a predetermined number of times and that the clutch disk 34 is permitted to engage with its companion clutch member 37 under the action of the spring 36 on the operation of the count starting lever 45 which through mechanism shown in said application acts to release the lever member 44 from holding engagement with the link 43. The subject matter of the present invention is to provide a control supplemental to that of the count starting lever 45 and operable through the same to start the operation of the machine.

The discharge passage 22 beyond the wheel 23 is downwardly inclined as shown at 48 to discharge the counted coins into a tube section 49 which has a coin deflector member 50 projecting above the outlet end of the passage 22. A discharge tube 51 has its upper end removably secured in the counter bored end 52 of the section 49 by a detent 53 loosely engaging in an opening 54 in the tube 51 and held therein by a spring 55 but removable therefrom by the outward movement of said detent by the operator with the aid of a stop knob 56 on said detent. The loose connection permits a limited oscillatory movement of the tube 51 relative to its supporting tube section 49, and this movement is used to operate a switch 57 in an electrical circuit including a solenoid 58. Only a very slight angular movement of the tube 51 is needed to operate the switch 57 so that the control by the tube is very sensitive.

As herein shown the switch operating means includes a lever 59 pivotally mounted at 60 on a fixed frame part 61 of the machine and carrying an adjustable pin 62 engageable with the switch contact operating member 63. The outer end of the lever 59 is adapted to be engaged by a plunger 64 mounted in a bore 65 in the tube section 49 and normally urged to a release position by a spring 66 interposed between the head 67 of said plunger and a sleeve 68 in threaded engagement with the outer end of the bore 65. The bore 65 extends down to the upper end of the counterbore 52, so that the head of the plunger 64 may be engaged by the top of the tube 51 and moved thereby when said tube 51 is swung from its full line position to the dotted line position shown in Fig. 2, and this movement is sufficient to cause the plunger to move the lever 59 toward

the right as viewed in Fig. 2 so as to close the contacts of the switch 57 and energize the electro-magnet or solenoid 58 causing it to pull down on the plunger 69 associated with it.

The plunger 69 is connected by a link 70, with one arm of a bell crank lever 71 pivotally mounted at 72 on the frame part 61, the other arm of said lever projecting up through and engaging a wall of a slot 73 in a link 74 pivotally connected by a pin 75 to the count starting lever 45 and slidably guided by a headed pin 76 mounted in a slot 77 of said link. With this arrangement downward movement of the plunger 69 by the solenoid 58 swings the lever 71 counterclockwise to cause its movement of the link 74 toward the left as viewed in Fig. 1 and its consequent swinging of the lever 45 counterclockwise to release the member 44 from the link 43 as described in said application, so that the spring 36 may throw in the clutch for the counter drive and coin feed wheel 23, so that the counted coins may be delivered into the tube 51. It will be understood that tubes 51 with different internal bore diameters are provided for handling the different denominations of coins.

The tube 51 has its delivery end 78 flared to readily receive the open end of a coin receiving tube 79, and as the operator inserts the end of this last named tube into the tube 51 he may with the same hand easily exert pressure on the tube 51 to swing it into the dotted line position shown in Fig. 2 to start the machine.

The motor 17 is supplied with an electric current through a load circuit 80 including a control switch 81, and a conductor 82 leads one of the supply lines to one of the contacts 83 of the switch 57. The other contact 84 of the switch 57 is connected by a conductor 85 to one terminal of the winding for the solenoid 58, the terminal of said winding being connected by a conductor 86 to the other supply line.

We desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the claims.

What we claim as our invention is:

1. In a coin counting machine in which a driven coin feeding wheel is rendered inoperative by the counting mechanism at the termination of a predetermined count and rendered operative by the operation of a starting control member, said coin feeding wheel being associated with a coin discharge passage, the combination of a coin discharge tube forming a continuation of said discharge passage and supported for limited movement, electromagnetically operated means for operating said count starting control member, and control means for said electromagnetically operated means operable by the operator's movement of said discharge tube as when a coin receiving tube is positioned to receive the counted coins from said discharge tube.

2. In a coin counting machine in which a driven coin feeding wheel is rendered inoperative by the counting mechanism at the termination of a predetermined count and rendered operative by the operation of a starting control member, said coin feeding wheel being associated with a coin discharge passage, the combination of a coin discharge tube forming a continuation of said discharge passage, means for operating said count starting control member including an electromagnet, means for energizing said magnet including a switch, and means operatively connected to said discharge tube for operating

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said switch on the movement of said discharge tube as when the upper end of a coin receiving tube is positioned by the operator in the lower end of said discharge tube.

3. In a coin counting machine in which a driven coin feeding wheel is rendered inoperative by the counting mechanism at the termination of a predetermined count and rendered operative by the operation of a starting control member, said coin feeding wheel being associated with a coin discharge passage, the combination of a coin discharge tube forming a continuation of said discharge passage and mounted at the lower end thereof for limited oscillatory movement, means for operating said count starting control member including an electromagnet, means for energizing said magnet including a switch, and means for operating said switch including a member movably mounted at the lower end of said discharge passage and engageable with said discharge tube to be operated thereby when said tube is oscillated.

4. In a coin counting machine in which a driven coin feeding wheel is rendered inoperative by the counting mechanism at the termination of a predetermined count and rendered

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operative by the operation of a starting control member, said coin feeding wheel being associated with a coin discharge passage, the combination of a coin discharge tube forming a continuation of said discharge passage and mounted at the lower end thereof for limited oscillatory movement, means for operating said count starting control member including an electromagnet, means for energizing said magnet including a switch, and means for operating said switch including a lever and a spring returned plunger mounted in the lower end of said discharge passage and engaging the upper end of said discharge tube to be operated thereby.

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