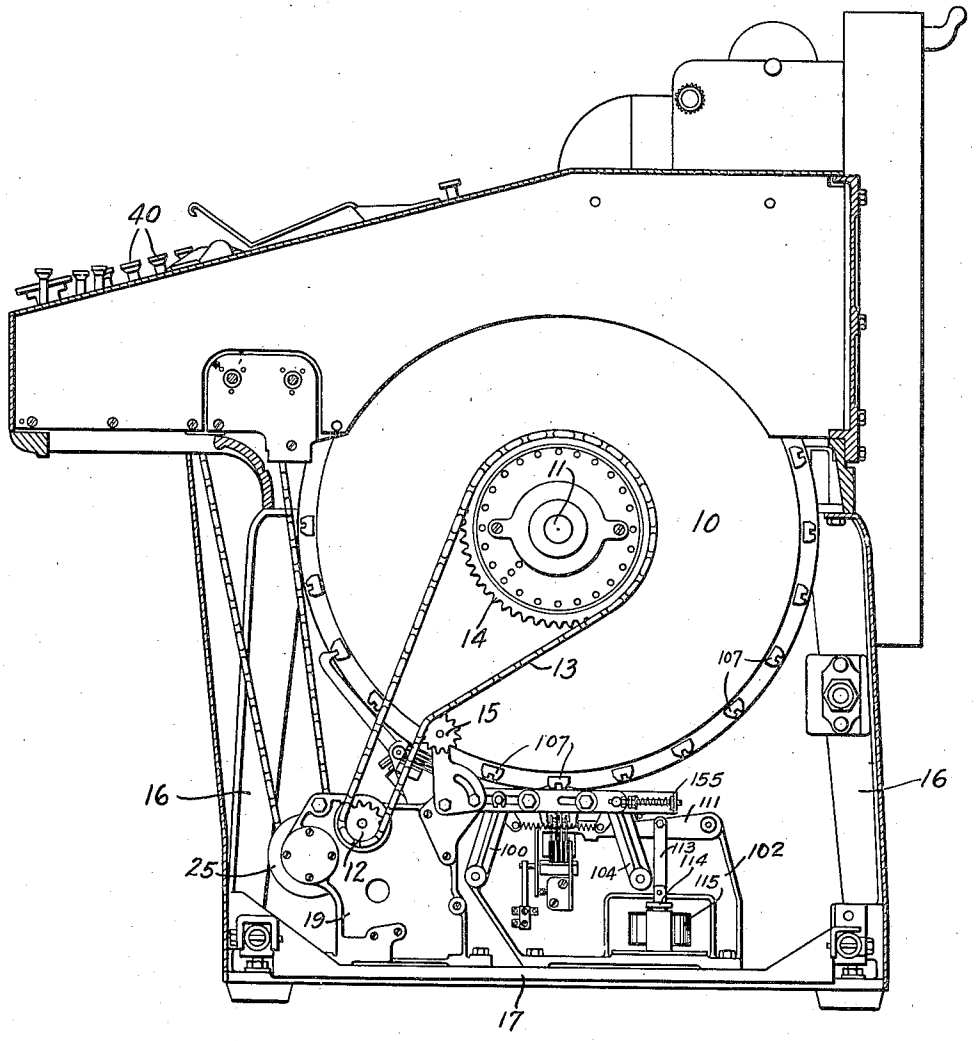
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March 14, 1939. F. L. FULLER ET AL 2,150,216

SORTING MACHINE

Filed Oct. 28, 1936 4 Sheets-Sheet. 1

FIG. 1



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SORTING MACHINE

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FIG. 2a.

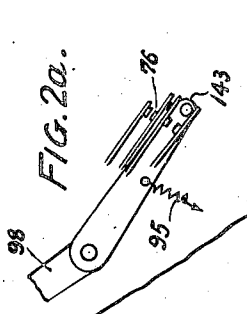
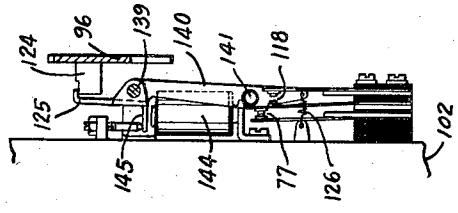


FIG. 2

FIG. 3



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SORTING MACHINE

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FIG. 4

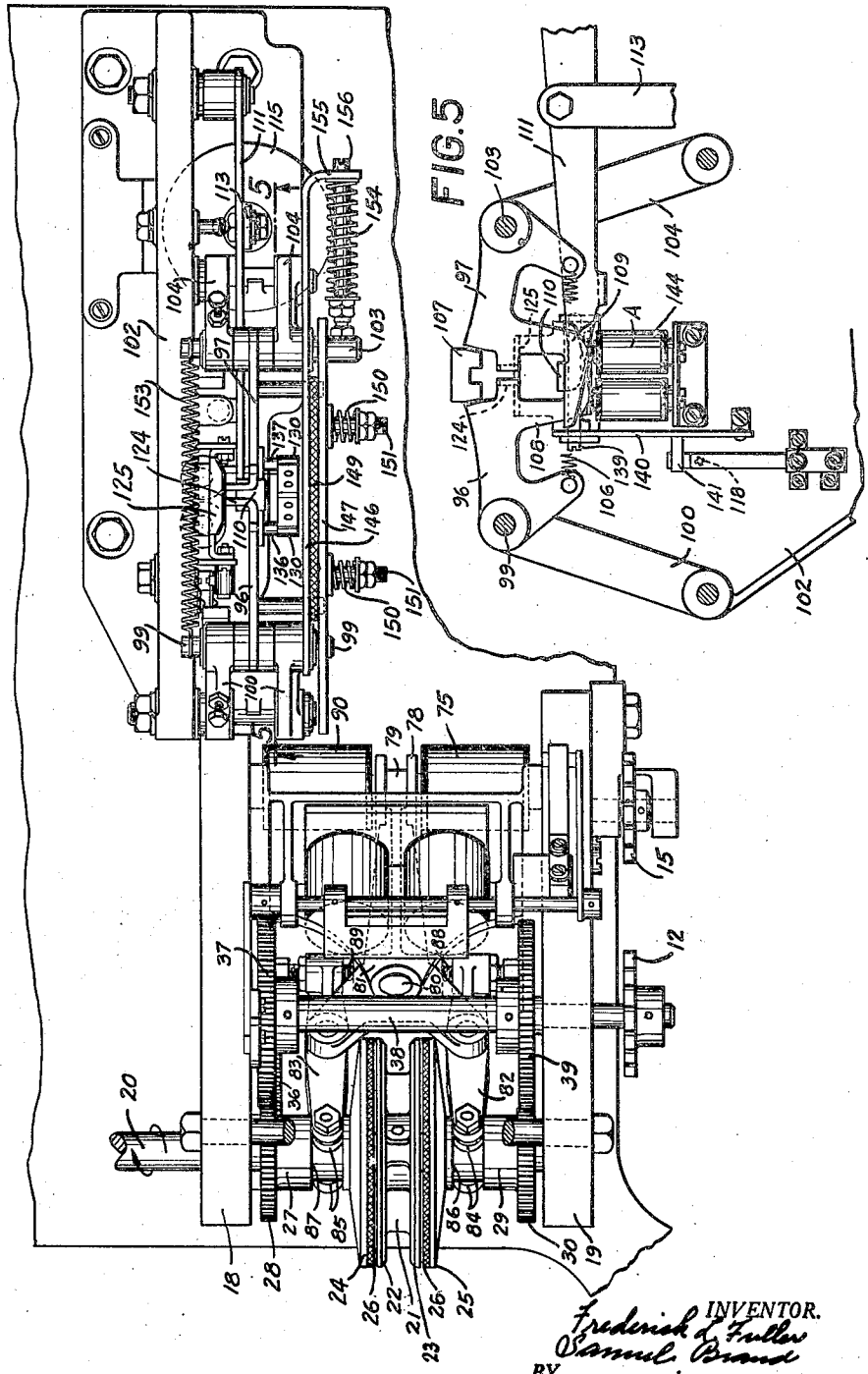


FIG. 5

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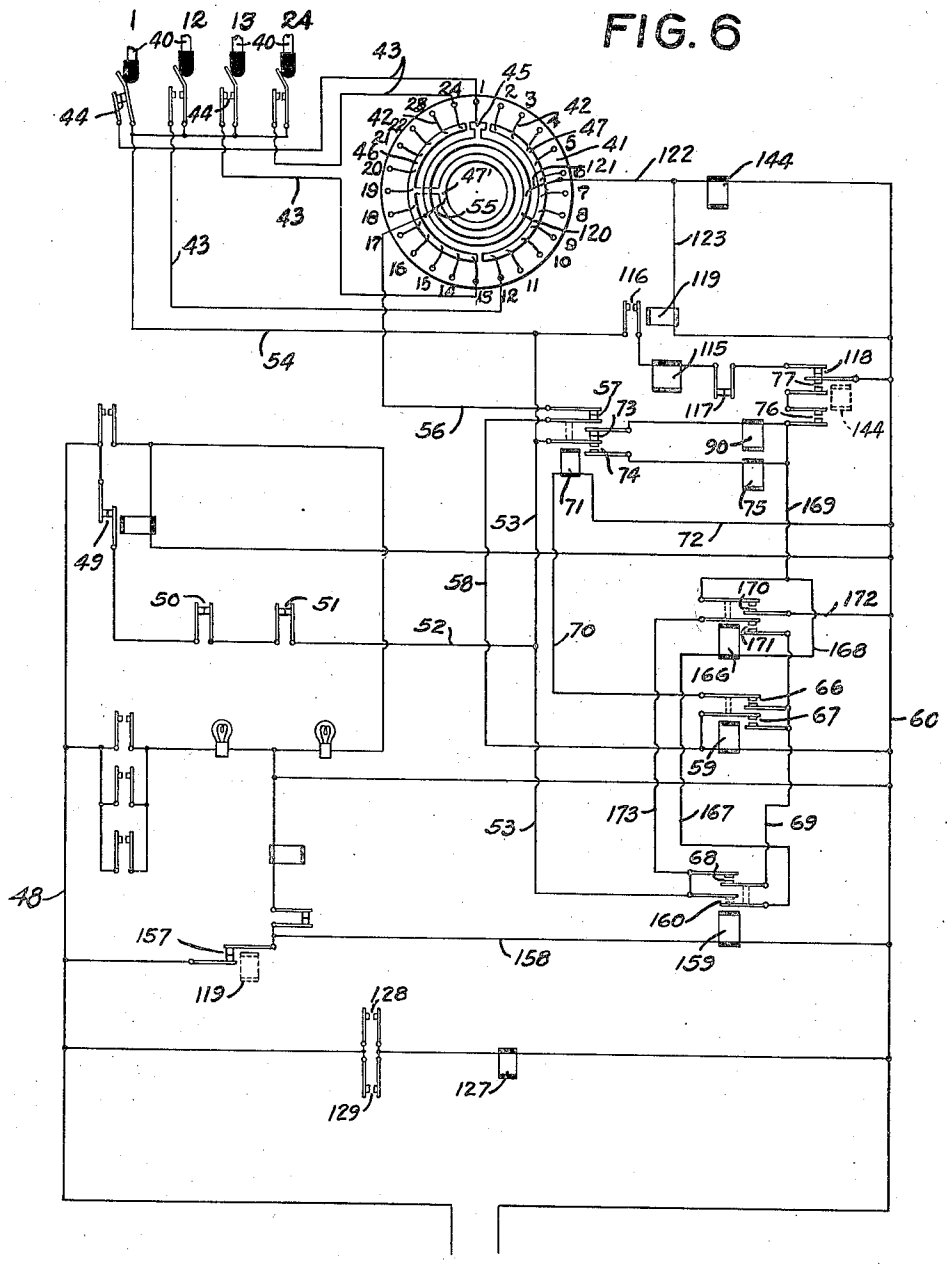
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SORTING MACHINE

Filed Oct. 28, 1936 4 Sheets-Sheet 4

FIG. 6



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2,150,216

UNITED STATES PATENT OFFICE

2,150,216

SORTING MACHINE

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Application October 28, 1936, Serial No. 107,966

10 Claims. (Cl. 209—122)

This invention relates to sorting machines and the like and more particularly relates to control devices for sorting drums.

It is an object of this invention to provide an improved arresting and alining device for a sorting drum.

Another object is to provide a novel means to arrest a drum or reel which is adapted to rotate in either direction.

A further object of this invention is to provide an arresting device which will stop the rotation of a drum quickly, accurately, and with a minimum of shock to the mechanism.

With these and incidental objects in view, the mechanism includes certain novel features of construction and combination of parts, the essential elements of which are set forth in the appended claims and a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form part of this specification.

In said drawings:

Fig. 1 is a general view illustrating the type of machine to which the invention is applied.

Fig. 2 is an enlarged view in elevation of the arresting mechanism.

Fig. 2*a* is a fragmentary view of a part of the drum locking device.

Fig. 3 is a sectional view on line 3—3 of Fig. 2, showing the stop arm latching device in latching position.

Fig. 4 is a top plan view of the mechanism shown in Fig. 2.

Fig. 5 is a sectional view on line 5—5 of Fig. 4.

Fig. 6 is a diagram showing the wiring connections for the electrical instrumentalities of the machine.

The arresting device forming the subject matter of the instant invention is adapted to be applied to machines of the type disclosed in the patent to Fuller, No. 1,989,976, issued February 5, 1935, and in application for Letters Patent of the United States, Serial No. 743,044, filed September 7, 1934 by F. L. Fuller and Samuel Brand. It is thought that a brief description of the machine to which the instant invention is adapted to be applied will aid in a complete understanding of the machine.

Such machines are designed simultaneously to list and sort groups of promiscuously arranged checks. The amounts of the checks are listed on a ten-key keyboard and the checks are then dropped into an aperture which communicates with a sorting drum provided with a plurality of compartments arranged annularly about the drum. The drum is rotated under the control of the keys of a second keyboard to bring the selected compartment into registration with the aperture. The sorting drum is controlled to rotate from its last position to the selected position in the direction of the shortest distance.

These machines are provided with a plurality of totalizers, there being a totalizer for each sorting compartment of the drum. The amount of each check sorted into a particular compartment is entered into the totalizer identified with the compartment. These totalizers are mounted in a reel and are rotated with the drum simultaneously to select the proper compartment and its associated totalizer. The compartment drum and totalizer reel have considerable weight. They must be quickly rotated to the selected position, brought to a smooth quick stop, and accurately alined with the selected compartment in registry with the aperture and the selected totalizer in position to co-operate with the adding mechanism. The instant invention has for its purpose such stopping and alining of the drum.

Referring to Fig. 1, the drum 10 is securely mounted on the shaft 11, suitably and rotatably supported in the main framework of the machine. The drum 10 is adapted to be driven by a continuously running motor (not shown) through a two-way clutch which drives a sprocket gear 12 (Figs. 1 and 2) in either direction. A chain 13 passes around the sprocket 12 and also around sprocket gear 14 secured to the shaft 11. An adjustable idler gear 15 insures the proper tension on the chain 13.

The machine is mounted in a framework indicated generally at 16, and is supported on a base 17. The two-way clutch mechanism is mounted between a pair of brackets 18 and 19 secured to the base 17. The motor (not shown) is mounted on the base 17 and drives the clutch mechanism through a shaft 20 mounted in the brackets 18 and 19 and directly connected to the armature shaft of the motor. Secured to shaft 20 midway between the brackets 18 and 19 is a driving clutch member 21, comprising a pair of clutch plates 22 and 23, which rotates continuously with the shaft 20 in the direction indicated by the arrow in Fig. 4. Rotatably mounted on the shaft 20 adjacent the driving clutch plates 22 and 23 are driven clutch plates 24 and 25, each provided with suitable clutch facing material indicated at 26.

The clutch plate 24 is mounted on a sleeve 27, which sleeve is also integral with a gear 28. The clutch plate 25 is similarly connected by a sleeve 29 to a gear 30 on the shaft 20.

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The gear 28 meshes with an intermediate gear 36 which meshes with a gear 37 fast on a shaft 38 mounted in the brackets 18 and 19 and on which is secured the sprocket gear 12. The gear 36 meshes with a gear 39 fast on shaft 38.

Obviously, if the clutch plate 24 is brought into operative contact with the driving plate 22, the plate 24 and the gear 28 will be driven in a clockwise direction, and, through the gears 36, will drive the gear 37, shaft 38 and sprocket gear 12 also in a clockwise direction to rotate the drum 10 in the same direction. However, if clutch plate 25 is brought into contact with the drum plate 23, the plate 25 and the gear 30 are rotated clockwise. The gear 30 meshing directly with the gear 39 drives shaft 38 and sprocket gear 12 in a counterclockwise direction to rotate the drum 10 counterclockwise.

The operation of clutch plates 24 and 25 is controlled by the position in which the drum stands and by the particular selector key 40 (Figs. 1 and 6) depressed. Fixed to the framework of the machine and surrounding the drum shaft 11 is a disk 41 of insulating material upon which is mounted a series of brushes 42 arranged annularly about the disk, there being a brush 42 for each selector key 40. Referring to Fig. 6, these brushes 42 are connected by wires 43 to one side of pairs of contacts 44 adapted to be closed upon depression of a selector key 40. A commutator, comprising conducting segments 45, 46, and 47, shown diagrammatically in Fig. 6, is mounted in insulating material and fixed to the drum shaft 11 adjacent the disk 41. The brushes 42 mounted on the disk 41 contact the segments 45, 46, and 47. When the drum 10 is at rest, the segment 45 is in contact with the brush 42 connected to the contacts 44 associated with the last depressed selection key 40. The segment 46 is electrically connected to a ring 47'.

Assuming that the main switch (not shown) is closed and the motor running with the sorting drum standing at the last selected position, for example the "1" position, with the "1" key 40 depressed we now depress the "13" compartment selector key 40. Depression of this key releases the "1" key which is immediately returned to undepressed position opening the corresponding contacts 44. Depression of the "13" key 40 closes its contacts 44, whereupon a circuit is set up from a line 48, normally closed contacts 49, contacts 50 and 51, wires 52, 53, and 54, contacts 44 for the "13" compartment key, wire 43 to the corresponding brush 42, segment 46, ring 47', a brush 55, wire 56, contacts 57, wire 58, relay 59 to the other side of the line 60. This energizes relay 59 which closes contacts 66 and 67, establishing a holding circuit for relay 59 extending as follows: from line 48, contacts 49, 50, and 51, wire 52, wire 53, contacts 68 closed at this time, wire 69, contacts 67, relay 59, to line 60. Closing contacts 66 establishes a circuit from line 48, contacts 49, 50, and 51, wires 52 and 53, contacts 68, wire 69, contacts 66, wire 70, relay 71, wire 72, to line 60.

The contacts 68 (Fig. 6) are held open by a magnet 159 so long as a key 40 is depressed and the drum 10 is in a position of rest. When a new key 40 is depressed a magnet 119 is deenergized (in a manner more fully described later) allowing contacts 157 to open. This deenergizes the magnet 159 permitting contacts 68 and 160 to close.

Energization of relay 71 opens contacts 57 and 73, and closes contacts 74 setting up a circuit from line 48, contacts 49, 50, and 51, wires 52 and 53, contacts 74, clutch magnet 75, contacts 76 and 77 (closed at this time), to line 60. This energizes clutch magnet 75.

Referring now to Fig. 4, when the magnet 75 is energized it attracts its armature 78 which is carried on the end of a lever 79 pivoted at 80 on a bracket 81 mounted between the brackets 18 and 19. This rocks the lever 79 clockwise (Fig. 4).

Pivotally carried by the lever 79, at the end opposite the armature 78, is a pair of yokes 82 and 83. These yokes carry rollers 84 and 85 projecting into annular grooves 86 and 87 in the sleeves 29 and 27 respectively. At their opposite ends the yokes 82 and 83 carry adjusting studs 88 and 89 bearing against the bracket 81.

When the lever 79 is rocked clockwise under the influence of clutch magnet 75, it rocks the yoke 82 also clockwise, bringing the clutch plate 25 into contact with the driving member 23, whereupon the gear 30 is driven clockwise (Fig. 2) rotating gear 39 and sprocket gear 12 counterclockwise to rotate the drum 10 in the same direction until the segment 45 contacts the brush 42 associated with the depressed key, in the instant example, the "13" key. The drum is stopped in this position by mechanism later to be described.

Assuming now that the "12" selector key 40 is depressed instead of the "13" key. When the drum 10 is standing in the "1" position the drum will rotate in the opposite or clockwise direction to bring the "12" compartment into registry with the check receiving aperture.

Referring to Fig. 6, it may be seen that the brush 42 connected to the "12" key contacts 44 is in contact with the segment 47. This segment having no connection to the electrical elements is ineffective to energize the relay 71, therefore, upon closure of contacts 76 and 77, a circuit is established from line 48, contacts 49, 50 and 51, wires 52 and 53, contacts 73, clutch magnet 90, contacts 76 and 77 (now closed) to line 60. As long as the drum 10 is in a position of rest with a key 40 depressed the contacts 77 are normally open under the control of a magnet 144. This magnet functions in connection with a latch mechanism (see Fig. 3) more fully described later. Depression of a new key 40 opens the circuit to the magnet 144 whereupon the contacts 77 are closed and remain closed until the drum 10 arrives at its newly selected position. At this time the magnet 144 again is energized and contacts 77 open.

The contacts 76 are controlled by a lock arm 98 (Fig. 2). As long as the drum 10 is in a posititon of rest and the lock arm 98 is in the position in which it is illustrated in Figure 2 the contacts 76 are open. When a new selector key 40 is depressed the arm 98 is disengaged closing contacts 76 until the drum 10 arrives at its newly selected position whereupon the arm 98 is reengaged to lock the drum opening contacts 76 as is more fully described.

Energization of magnet 90 rocks the arm 79 (Fig. 4) counterclockwise, engaging the clutch plate 24 with the driven plate 22, which, through the gears 28, 36 and 37 rotates the sprocket gear 12 and the drum 10 clockwise until the segment 45 contacts the brush 42 for the "12" key 40.

The drum 10 is held in position by a pair of stop arms 96 and 97 (Figs. 4 and 5) and is accurately alined in position by a lock arm 98 (Figs. 2 and 2a). A spring 95 urges the latch arm 98 clockwise (Figs. 2 and 2a) to effective position. The stop arm 96 is pivotally supported at 99 by a pair of arms 100 pivoted on a stud 101 projecting from a frame 102 secured to the base 17. The stop arm 97 is similarly supported at 103 by a pair of arms

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104 pivoted on a stud 105 in the frame 102. A spring 106 stretched between projections on the arms 96 and 97 normally holds these arms in their effective or raised positions.

The stop arms 96 and 97 co-operate with blocks 107 secured to the side of the drum 10, there being a block 107 for each compartment position on the drum. Before the drum can be rotated, it is necessary to withdraw the arms 96 and 97 clear of the particular block 107 then between said arms. To this end the stop arms 96 and 97 are provided with hooked projections 108 and 109 respectively. Extending immediately above these projections is an ear 110 bent over from the free end of a lever 111 pivoted on a stud 112 in the frame 102. A link 113 pivotally connected to the lever 111 has secured to its lower end the armature 114 of a solenoid 115.

Energization of the solenoid 115 attracts its armature 114, drawing the link 113 downwardly and rocking the lever 111 counterclockwise. This movement of the lever 111, through the ear 110, rocks the stop arm 96 clockwise and the stop arm 97 counterclockwise, thus moving said stop arms out of the path of the blocks 107.

The solenoid 115 is energized in the following described manner with reference to Fig. 6:

A circuit extends through the solenoid 115 from line 48, contacts 49, 50 and 51, wires 52, 53, and 54, contacts 116, solenoid 115, normally closed contacts 117, contacts 118 to line 60. This circuit is normally open at the contacts 116, held open by a magnet 119, which is energized as long as a key 40 is depressed and the drum stands at a position corresponding to the depressed key, the circuit extending as follows, assuming the "1" key to be depressed: line 48, contacts 49, 50 and 51, wires 52, 53 and 54, contacts 44 for the "1" key, wire 43 to the "1" brush 42, segment 45, ring 120, a brush 121, wires 122 and 123, magnet 119 to line 60.

When another key is depressed, the previously depressed key, in this example the "1" key, is immediately released and restored to its undepressed position permitting its contacts 44 to open. This opens the circuit through the magnet 119 which, becoming deenergized, permits contacts 116 to close establishing the above described circuit through the solenoid 115.

As the latch arms 96 and 97 approach the lower limit of their movement, ears 124, formed on the free ends thereof, come below the bent end of a latch arm 125 (see Fig. 3), which arm is immediately rocked clockwise (Fig. 3) by a spring 126 to latch the stop arms 96 and 97 down in their ineffective positions.

Before the drum 10 is free to rotate, the lock arm 98 must be removed to ineffective position. The nose of this arm normally rests in a notch formed in the blocks 107. The lock arm 98 is withdrawn by a magnet 127, (Figs. 2 and 6) which is energized, under control of the stop arms when they are withdrawn, to free the drum for rotation. Mounted near the stop arms 96 and 97 are pairs of contacts 128 and 129 having their inner blades bent outwardly at an angle. These angular ends of the inner blades carry blocks 130 of insulating material. Studs 136 and 137, projecting respectively from the stop arms 96 and 97, co-operate with the blocks 130 to hold the pairs of contacts 128 and 129 open when the stop arms are in their effective positions. When the stop arms 96 and 97 are pulled down to free the drum 10, the studs 136 and 137 are carried out of contact with the blocks 130, whereupon the contacts 128 and 129 are closed by the spring tension of the blades.

Closure of contacts 128 or 129 or both energizes magnet 127, which attracts its armature 138 and rocks the lock arm 98 clear of the block 107.

It was set forth above how, as the stop arms 96 and 97 approach the limit of their downward movement the latch 125 (Fig. 3), under the influence of its spring 126, rocks clockwise to latch arms 96 and 97 down. The arm 125 is pivoted at 139 and has a downwardly extending tail 140 to which the spring 126 is attached. The tail 140 carries an insulating roller 141, which co-operates with the center one of three contact blades. As viewed in Fig. 3 the right hand pair of contacts 118 (see also Fig. 6) is normally closed and the left hand pair of contacts 77 are normally open. As the latch arm 125 rocks clockwise to latch the stop arms 96 and 97 down, the tail 140 through the roller 141 opens contacts 118 and closes contacts 77. When the contacts 118 are opened, the solenoid 115 (Figs. 2 and 6) is deenergized, allowing a spring 142 (Fig. 2) to raise the arm 111, link 113 and armature 114 to their upper positions.

Closing of contacts 77 completes the circuit through the selected clutch magnet 75 or 90 upon closure of contacts 76. These latter contacts are closed by a tail 143 (Figs. 2 and 2a) secured to the lock arm 98 and rocked therewith. Contacts 76 are therefore closed when the lock arm 98 is rocked clear of the block 107. The drum 10 is then free to rotate and the proper one of the clutch magnets is energized to drive the drum to its newly selected position.

The drum continues to rotate until it arrives at the position wherein the compartment corresponding to the depressed key comes opposite the check aperture, whereupon the rotation of said drum is arrested and the drum accurately alined in position by mechanism now to be described.

It will be remembered that the commutator comprising the segments 45, 46, and 47 (Fig. 6) rotates with the drum 10, whereas the disk 41 together with the brushes 42 remain stationary. As soon as the segment 45 contacts the brush 42 corresponding to the depressed key, a circuit is established from line 48, contacts 49, 50, and 51, wires 52, 53, and 54, contacts 44 of the depressed key, corresponding wire 43, brush 42, segment 45, ring 120, brush 121, wire 122, a magnet 144 to line 60. Energization of magnet 144 (see Fig. 3) attracts its armature 145, which is secured to the latch arm 125, rocking the latter counterclockwise in Fig. 3 to free the stop arms 96 and 97. The spring 106 (Figs. 2 and 5) immediately throws the stop arms upwardly to effective position. If the drum 10 is rotating in a clockwise direction, the block 107 wipes over stop arm 97 and strikes arm 96. If rotating counterclockwise, the block 107 wipes over arm 96 and strikes stop arm 97.

A slide 146 (Fig. 4) is pivoted at its left hand end on the stud 99 on which the stop arm 96 is pivoted. The slide 146 is slotted to surround and slide over the stud 103. Similarly, a slide 147 has one of its ends pivoted on the stud 103 on which is pivoted the stop arm 97. The slide 147 is slotted at 148 (Fig. 2) to slide over the stud 99. Between the slides 146 and 147 is mounted a friction member 149 of suitable material. The slides 146 and 147 are pressed against member 149 by springs 150 surrounding studs 151 mounted in the slide 146 and projecting through the slot 148 and a slot 152 in slide 147.

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Between the studs 99 and 103 is stretched a spring 153 (Fig. 4). Another spring 154 is compressed between the stud 103 and the bent end 155 of the slide 146. The spring 154 surrounds a pivot stud 156 secured to the stud 103 and which passes through the end 155 of the slide 146.

Assuming that the drum 10 is rotating counterclockwise, the block 107 strikes the stop arm 97 (Fig. 2). The shock of the blow is absorbed by the friction element 149 and by the springs 153 and 154, which springs act to bring the block 107 and the drum to the position wherein the selected compartment is in registry with the check aperture (not shown). When the block 107 strikes the arm 97, it stretches spring 153 (Fig. 4) and compresses spring 154 (Figs. 2 and 4) and rebounds against arm 96. The same action, but to a lesser degree, occurs when block 107 rebounds from arm 96. This rebound or "chatter" would be quite extensive if the springs 153 and 154 alone were depended upon to bring the drum to rest. The friction member 149 is provided to dampen the rebound of the springs.

It is necessary that the lock arm 98 (Fig. 2) be maintained in its ineffective position until the drum 10 has come to a complete rest. This is effected by maintaining one or the other of the contacts 128 and 129 closed until the drum is completely stopped. This maintains the magnet 127 energized to hold the arm 98 in its disengaged position. When the block 107 strikes the stop arm 97, this arm, as stated above, is moved to the right (Figs. 2 and 4) carrying the stud 137 therewith away from the insulating block 130. This permits contacts 129 to remain closed. When the springs 153 and 154 rebound, carrying the drum 10 and block 107 back past center, said block 107 strikes the stop arm 96 moving it slightly leftward, at which time the stud 136 is carried away from the insulating block 139. This permits contacts 128 to close. Thus, if the block 107 is off center in either direction, one or the other of the contacts 128 and 129 is closed. As soon as the drum comes to a complete rest, both contacts 128 and 129 are opened, deenergizing the magnet 127, whereupon the lock arm 98 is rocked clockwise by a spring 95 (Fig. 2*a*) accurately to align the drum.

The instant the segment 45 (Fig. 6) comes into contact with the brush 42 corresponding to the depressed key, the magnet 144 (see also Fig. 3) is energized over the circuit previously traced in order to release the stop arms 96 and 97. Energization of magnet 144 rocks the arm 149 counterclockwise (Fig. 3) closing contacts 116 and opening contacts 77. This opens the circuit through the selected clutch magnet 75 or 90. A holding circuit is provided for the clutch magnet, since it is desired to drive the drum 10 until an instant before the block 107 strikes the stop arm 96 or 97 depending on the direction of rotation of the drum. This holding circuit is set up as follows:

The magnet 119 remains energized so long as the drum is stationary at a compartment position. In this condition contacts 157 (Fig. 6, near lower left hand corner) are held closed, maintaining a circuit from line 48, contacts 157, wire 158, a relay 159 to line 60. This holds the relay 159 energized holding contacts 160 and 66 open. Upon depression of another key, as set forth above, the circuit through magnet 119 is opened and this magnet deenergizes allowing contacts 157 to open. This deenergization of relay 159 permits contacts 160 and 66 to close. It was described above how contacts 68 provided a holding circuit over wire 69, contacts 67, relay 59 for the latter and also energized magnet 71. Closure of contacts 160 causes energization of a clutch holding relay 166 over a circuit as follows: line 48, contacts 49, 50, and 51, wires 52 and 53, contacts 160, wire 167, relay 166, wires 168 and 169, contacts 76 and 77 (now closed) to line 60. Relay 166 closes contacts 170 and 171, the contacts 170 establishing a holding circuit for the selected clutch magnet 75 or 90 over wire 169, contacts 170, a wire 172 to line 60. The contacts 171 establish a second holding circuit for the relay 59 extending from line 48, contacts 49, 50, and 51, wires 52 and 53, wire 173, contacts 171, wire 69, contacts 67, magnet 59 to line 60. This circuit also holds through contacts 66, wire 70, magnet 71, wire 72 to line 60, holding the magnet 71 energized.

When the segment 45 contacts the particular brush 42 corresponding to the depressed key, the block 107 (Fig. 2) is some distance from the point midway between stop arms 96 and 97. However, at this instant, the magnet 144 (Fig. 6) bceomes energized opening contacts 76, which would open the circuit for magnets 75 and 90 were it not for the holding circuit over wire 169, contacts 170, and wire 172.

At the same time that the magnet 144 is energized, the magnet 119 is energized closing contacts 157. This energizes relay 159, opening contacts 60 and 160. The contacts 68 open the circuit to relay 59 over wire 69, contacts 67, relay 59 to line 60. The relay 59 is maintained energized for a brief period over wire 173, contact 171, wire 69, contacts 67, relay 59 to line 60. This holds the contacts 66 closed and the clutch relay 71 energized.

Opening of contacts 160, however, opens the circuit to relay 166 which, becoming deenergized, allows contacts 170 and 171 to open; the contacts 170 opening the circuit through the clutch magnet 75 or 90, and the contacts 171 opening the circuit through magnets 59 and 71. The contacts 66 and 67 thereupon open and the contacts 74 open and contacts 73 close. After contacts 77 are opened by magnet 144, the delay due to energizing relays 119 and 159 and deenergizing relay 166 is sufficient to maintain the clutch magnet 75 or 90 energized until an instant before the block 107 strikes the stop arm 96 or 97.

It is to be understood that the relays 59 and 71 are energized only when the drum 10 rotates counterclockwise, that is, when a key in the group 13–24 is depressed. If a key 1–12 inclusive is depressed, no circuit is established over segment 46, wire 56, wire 58, relay 59. Thus, relay 59 is not energized, contacts 66 remain open and relay 71 is not energized. The contacts 73 remaining closed cause energization of clutch magnet 90. The functions of relays 159 and 166 are the same whether clutch magnet 75 or 90 is selected.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In a sorting machine of the class described, the combination of a rotatable sorting drum, means to rotate the drum in either direction,

manipulative means to control the direction of rotation, a pair of stop arms, frictional means cooperating with both of said stop arms to arrest the drum when rotating in either direction, and means controlled by the manipulative means to control both stop arms.

2. In a sorting machine of the class described, the combination of a rotatable sorting drum, means to rotate the drum in either direction, manipulative means to control the direction of rotation of the drum, a pair of stop arms to arrest the drum when rotating in either direction, means controlled by the manipulative means to control the stop arms, means to lock the drum, and means controlled by each of said stop arms to control the locking means.

3. In a sorting machine of the class described, the combination of a rotatable sorting drum, means to rotate the drum in either direction, manipulative means to control the direction of rotation of the drum, stop arms to arrest the drum when rotating in either direction, means controlled by the manipulative means to control the stop arms, means controlled by the stop arms to lock the drum.

4. In a sorting machine of the class described, the combination of a rotatable sorting drum, means to rotate the drum in either direction, means to arrest the drum when rotating in either direction, means to lock the drum, and means controlled by the arresting means to hold the locking means in ineffective position until the drum is stopped.

5. In a sorting machine of the class described, the combination of a rotatable sorting drum, means to rotate the drum in either direction, a pair of stop arms to arrest the drum when rotating in either direction, means to lock the drum in arrested position, means controlled by both of said stop arms to hold the locking means in ineffective position until the drum has stopped, and a spring to render the locking means effective.

6. In a sorting machine of the class described, the combination of a rotatable sorting drum, means to rotate the drum in either direction, manipulative means to control the direction of rotation of the drum, stop arms to arrest the drum when rotating in either direction, means controlled by the manipulative means to withdraw the stop arms to ineffective position, and means to latch the stop arms in ineffective position.

7. In a sorting machine of the class described, the combination of a rotatable sorting drum, means to rotate the drum in either direction, manipulative means to control the direction of rotation of the drum, stop arms to arrest the drum when rotating in either direction, means controlled by the manipulative means to withdraw the stop arms to ineffective position, means to latch the stop arms in ineffective position, and means controlled by the drum to release the stop arms.

8. In a sorting machine of the class described, the combination of a sorting drum, means to rotate the drum in either direction, manipulative means to control the direction of rotation, a pair of independently mounted stop arms, and a frictional brake member cooperating with both stop arms to arrest the drum when rotating in either direction.

9. In a sorting machine of the class described, the combination of a sorting drum, means to rotate the drum in either direction, a pair of stop arms one of said stop arms being effective when the drum is rotating in one direction and the other of said stop arms being effective when the drum is rotating in the opposite direction, and a frictional brake member cooperating with both stop arms to arrest the drum when said drum is rotating in either direction.

10. In a sorting machine of the class described, the combination of a rotatable sorting drum, drive means to rotate the drum in either direction, manipulative means including a commutator to control the direction of rotation and to select the position to which the drum is to be rotated, frictional brake means, and a pair of stop arms controlled by the commutator and by the frictional brake means to stop the drum at the selected position when rotating in either direction.

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