Oct. 3, 1933. A. GOHARA 1,929,141

TALKING APPARATUS TO BE CONNECTED WITH A CASH REGISTER

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FIG. 1.

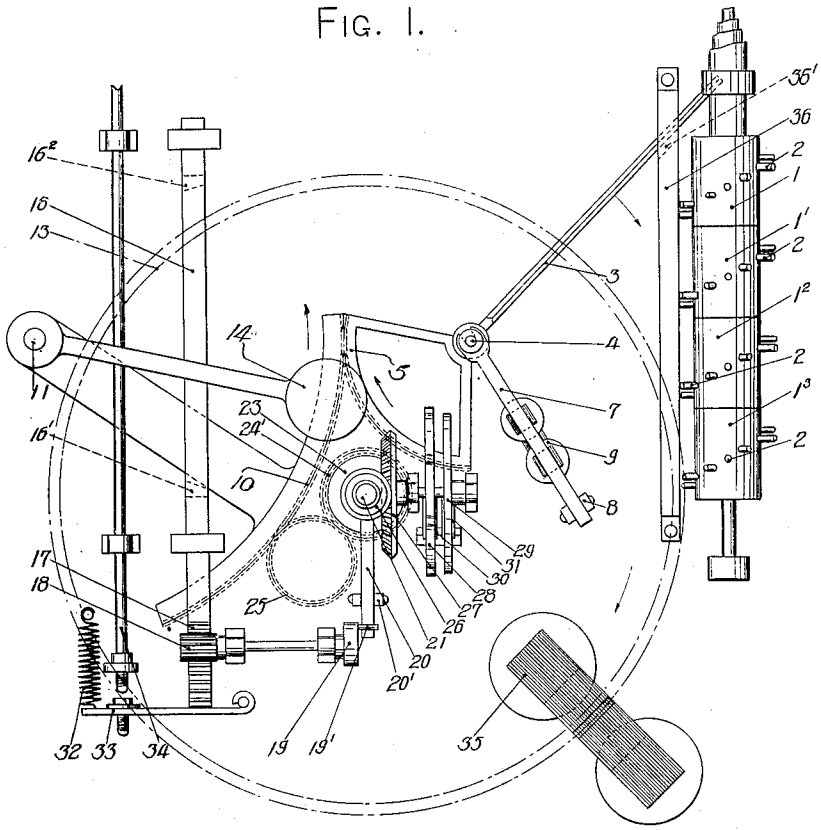
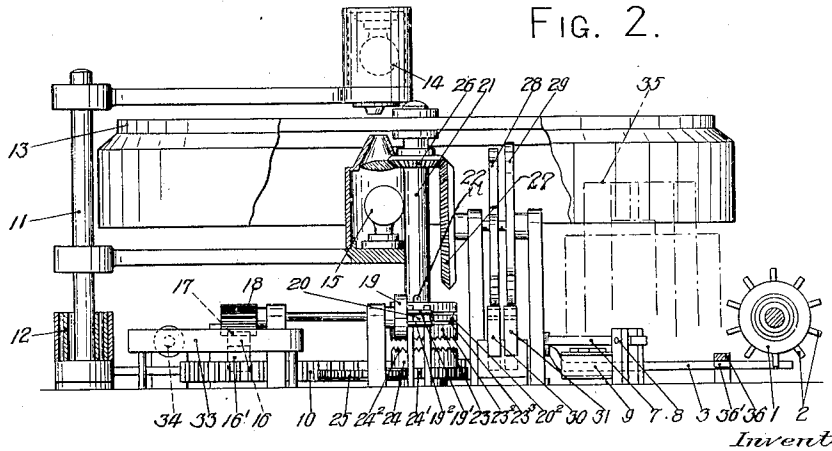


FIG. 2.



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FIG. 3.

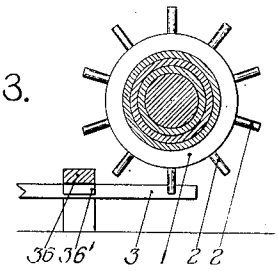


FIG. 4.

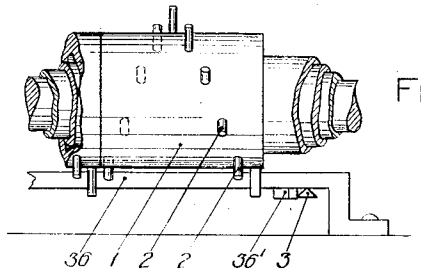


FIG. 7.

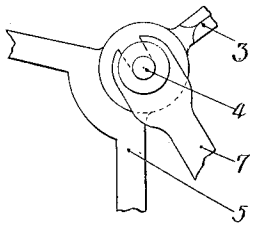


FIG. 5.

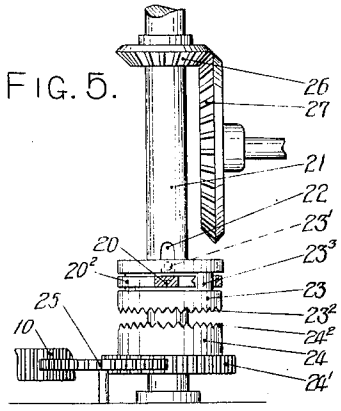


FIG. 8.

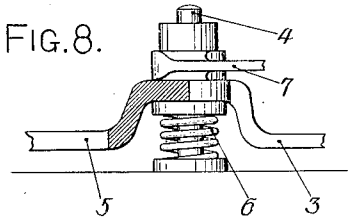


FIG. 6.

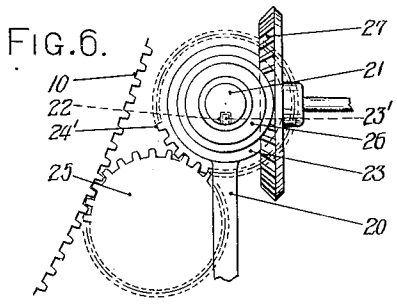


FIG. 9.

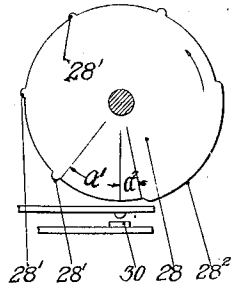


FIG. 10.

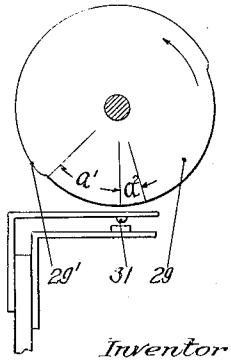
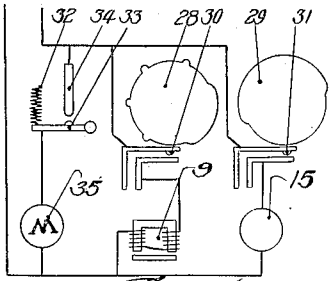


FIG. 11.



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UNITED STATES PATENT OFFICE

1,929,141

TALKING APPARATUS TO BE CONNECTED WITH A CASH REGISTER

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Application January 4, 1932, Serial No. 584,754, and in Japan October 14, 1931

4 Claims. (Cl. 235—23)

The object of the invention is to provide an announcing device for use in connection with machines of any kind to announce in distinguishable sounds, the operations of the machine, as, for instance, the money amounts indicated by depression of the keys of a cash register; to provide an attachment of the character indicated which is entirely automatic when attached; and generally to provide a sound indicating device which is of simple form and susceptible of cheap manufacture.

With this object in view, the invention consists in a construction and combination of parts of which a preferred embodiment is illustrated in the accompanying drawings, in which:

Figure 1 is a top plan view of an apparatus constituting the invention.

Figure 2 is an elevational view, partly broken away, of the structure of Figure 1.

Figure 3 is a cross-sectional view through the tooth carrying drums, showing the attendant stop arms.

Figure 4 is a side elevational view of a part of the series of tooth or pin carrying drums.

Figure 5 is a detail elevational view of the table shaft and attendant gearing.

Figure 6 is a top plan view of the structure of Figure 5.

Figure 7 is a top plan view of a portion of the stop arm and attendant sector in the region of the pivotal mounting of the arm.

Figure 8 is an elevational view, partly in section, of the structure of Figure 7.

Figure 9 is an elevational view of the stop arm releasing cam and attendant circuit closer.

Figure 10 is a side elevational view of the light source circuit closing cam and associated circuit closer.

Figure 11 is a diagrammatic view of the wiring connections for the table driving motor, stop arm release, etc.

The invention comprises a transparent sound record disk 13 on which an appropriate sound record is photographically recorded, the disk being carried on an appropriate rotary table driven by an electric motor 35 cperatively connected with the table at its periphery. The table is mounted on an upright shaft 21 and rotates the latter when it is driven. Just below the table, the shaft is provided with a bevel pinion 26, in mesh with a bevel gear 27, the latter being mounted on a common shaft with the cams 28 and 29, said shaft being mounted for rotary movement in appropriate bearing supports. The cam 28 functions to control the movement of a stop arm 3, while the cam 29 functions to control the source of light represented by the electric bulb 15, the latter being carried at the extremity of an arm mounted on an upright rock shaft 11 which also carries a horizontally disposed arm provided with a housing at its free extremity enclosing a photo-electric cell, or light sensitive device. The light source 15 and photo-electric cell are axially aligned and disposed respectively below and above the sound record 13.

Movement in one direction is communicated to the shaft 11 by a spiral spring 12 terminally anchored to the shaft and to a fixed point on which the apparatus as a whole is mounted.

The shaft 11, in addition to carrying the light sensitive cell arm and the light source arm, also carries a sector 10, laterally extending in opposite direction from the arm on which it is mounted, this arm constituting the means connecting the sector with the shaft.

The stop arm 3 has a pivotal mounting on a stud 4 and is integrally connected with a sector 5 in mesh with the sector 10. Thus when the sector 10 moves, the stop arm 3 will also be moved. A hub constitutes the medium for joining the sector 10 with the stop arm and this hub is axially movable on the stud 4, this hub being impelled upwardly by a compression spring 6 surrounding the stud but being depressed, under certain conditions, by the movement of a lever 7, whose free end overhangs the hub and has an angularly movable connection with the latter. The lever 7 is pivoted at the upper end of a support 8 and there is disposed below the lever a magnet 9 which, when energized, rocks the lever downwardly and thus depresses the stop arm against the pressure of the spring 6.

The stop arm 3 is straddled by a yoke bar 36 secured to the supporting surface, this bar providing for the full angular movement of the stop arm but being provided on the under face with a stop 36′, behind which, under certain conditions, the stop arm is engaged and thus prevented from movement.

Arranged in parallelism with the yoke bar is a series of drums, 1, 1′, 1^2 and 1^3. Each drum is peripherally provided with a circumferential series of pins 2 radially projecting but encircling the drum in spiral formation. Each drum is mounted on its separate shaft, so that it might be turned independently of the other and the drum shafts are telescopically related, so that the drums may be selectively turned.

On the table shaft 21, there is mounted a clutch member 23, toothed, as at 23^2, this clutch mem-

ber having a keyed connection with the shaft in the form of a slot 22 in the latter engaged by a pin 23' carried by the former. The clutch member is thue axially but not angularly movable of the shaft. The clutch member 23 is designed for engagement with the clutch member 24 which is formed with the teeth 24^2 designed to be engaged by the teeth 23^2. The clutch member 24, however, rotates free of the shaft 21, except when the two clutch members are engaged. Mounted in common with the clutch member 24 is a spur gear 24' in mesh with an idler gear 25 which is in turn in mesh with the sector 10.

Engagement of the clutch members 23 and 24 is effected through the instrumentality of a lever 20, pivotally mounted at 20' and having a fork portion 20^2 engaging a peripheral slot in the clutch member 23. The remote end of the lever 20 is disposed between the parallel pins 19' and 19^2 carried on the circular rocker head 19 which is mounted on a shaft in common with a pinion 18, the latter engaging the rack teeth 17 formed on one face and at the end of a reciprocable bar 16 mounted in appropriate slide bearings and formed with the spaced stops 16' and 16^2. The stops 16' and 16^2 are arranged in the path of the arm of the sector 10, so that they may be engaged by the latter.

Paralleling the bar 16 is a push bar 34, this being likewise mounted for axial movement and arranged to have one extremity engage a contact carried by a pivotally mounted bar 33 whose free end is yieldingly impelled in the direction of the push bar 34 by a contractile spring 32. The pivotally mounted bar 33 is in the plane of the reciprocable bar 16, so that it may engage that end of the latter where the rack is formed.

The cam 28 is provided with uniformly spaced peripheral projections 28' and with the rise 28^2. The cam 29 is provided with the rise 29' of an angular extent of substantially 180°. In the operation of the invention, the push bar or rod 34 and the shafts of the drums 1, 1', 1^2 and 1^3 are operatively connected to the apparatus with which the invention is to be used, as, for example, the keys of a cash register, so that when the keys are pushed, the drums are rotated to dispose a certain pin on each downwardly in vertical position, as indicated in Figure 2 of the drawings. The push rod 34 is connected to the drawer release. Thus after the keys have been pushed, the drawer releasing operation is attended with movement of the rod 32 and its terminal engagement with the contact 33, this operation closing the circuit on the driving motor 35 as indicated in the diagrammatic view of Figure 11. The table is thereupon set in motion and with it the cams 28 and 29, by reason of the geared connection of their shaft with the shaft 21. The first projection 28' of the shaft 20 then effects engagement of the contact members 30, closing the circuit on the magnet 9, as indicated in the diagrammatic view of Figure 11. This operation results in depression of the lever 7 and with it the stop arm and its attendant sector. The spring 12 is then free to act, swinging the sector 10 in the direction of the arrow indicated in Figure 1, the stop arm 3 moving in the direction indicated by its arrow. A specified angular movement of these arms takes place because of the limited time the contacts 30 are kept in engagement by reason of the projection 28' passing and permitting them to separate. The separation of the contacts 30 results in deenergizing the magnet 9, leaving the spring 6 free to act, so that it raises the stop arm into the path of the pin 2 on the first drum 1^3. But with movement of the sector 10, there is attended the shifting of the light source 15 and the photo-electric cell 14 to a definite radial distance from the axis of rotation of the table. At this time, the rise 29' on the cam 29 effects engagement of the contacts 31, thus closing the circuit on the light source 15, as indicated in Figure 11, when the announcing circuit designed to be controlled by the photo-electric cell is put into operation. Thus the first announcement is made. Then the second projection 28' on the cam effects reengagement of the contacts 30, when the further shifting of the stop arm 3 takes place until it engages the pin 2 on the next drum 1^2, this resulting in carrying the photo-electric cell and light source further from the center of the disk, where a further announcement is made on the closing of the announcing circuit. This same cycle of operations is repeated in connection with the drums 1' and 1, when the third and fourth projections 28' successively effect engagement of the contacts 30. Then the rise 28^2 of the cam 28 is in a position to effect engagement of the contacts 30 and when it does so, there is a relatively long time engagement of these contacts, so that the stop arm is held depressed and the spring 12 can carry the sector 10 out to the point where its arm engages the stop 16^2 of the rod 16, thus imparting axial movement to the latter, rotating the gear 18, effecting rotation of the shifter head 19, rocking the lever 20 and engaging the clutch element 23 with the clutch element 24, when the sector 10 becomes operatively connected with the table to be driven by the latter and is moved in against the torsion of the spring 12, thus rocking the arm 3 out toward the stop 36'. But during this operation, the stop arm is below the plane of the stop 36' by reason of the action of the magnet 9. The inward movement of the arm of the sector 10 finally brings it into engagement with the stop 16', thus imparting axial movement to the rod 16 in a reverse direction than formerly, so that clutch releasing operation is imparted to the lever 20, disengaging the clutch element 23 from the clutch element 24 and at the same time opening the circuit on the motor by reason of the bar 16 abutting the arm 33 and separating its contact from the push rod 34. The rise 28' has at this time passed the contact springs 30, so that they are separated and the magnet 9 is deenergized, permitting the spring 6 to elevate the stop arm to its inactive position behind the stop 36'.

I claim:

1. Apparatus for the purpose indicated comprising a rotary table, an optical sound record thereon, a light source below the table, a light sensitive cell above the table, so that it may be responsive to variations in the light source due to variations in the translucency of the sound record, the cell and the light source being relatively stationary but movable with respect to the sound record, automatic means to effect a step by step movement of said source and cell radially of the record, the successive movements of the source and cell being severally selectively variable, and automatic means to effect return of the same toward the center of the record.

2. Apparatus for the purpose indicated comprising a rotary table, an optical sound record thereon, a light source below the table, a light sensitive cell above the table, so that it may be responsive to variations in the light source due to

variations in the translucency of the sound record, the cell and the light source being relatively stationary but movable with respect to the sound record, automatic means to effect a step by step movement of said source and cell radially of the record, the successive movements of the source and cell being severally selectively variable and automatic means to effect return of the same toward the center of the record, the first said means comprising a stop arm having operative connection with the light source and cell moving means, and a series of drums provided with radial pins with which said stop arm may successively engage.

3. Apparatus for the purpose indicated comprising a rotary table, an optical sound record thereon, a light source below the table, a light sensitive cell above the table, so that it may be responsive to variations in the light source due to variations in the translucency of the sound record, the cell and the light source being relatively stationary but movable with respect to the sound record, automatic means to effect a step by step movement of said source and cell radially of the record, the successive movements of the source and cell being severally selectively variable and automatic means to effect return of the same toward the center of the record, the last said means comprising a clutch controlled connection between the light source and cell carrying means, and a clutch shifter actuated by said carrying means at the extremity of its outward radial movement.

4. Apparatus for the purpose indicated comprising a rotary table, an optical sound record thereon, a light source below the table, a light sensitive cell above the table, so that it may be responsive to variations in the light source due to variations in the translucency of the sound record, the cell and the light source being relatively stationary but movable with respect to the sound record, automatic means to effect a step by step movement of said source and cell radially of the record, the successive movements of the source and cell being severally selectively variable, and automatic means to effect return of the same toward the center of the record, the first said means comprising a stop arm having operative connection with the light source and cell moving means, and a series of drums provided with radial pins with which said stop arm may successively engage, the last said means comprising a clutch controlled connection between the light source and cell carrying means, and a clutch shifter actuated by said carrying means at the extremity of its outward radial movement.

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