

Nov. 1, 1932.

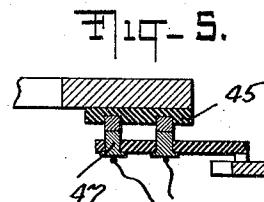
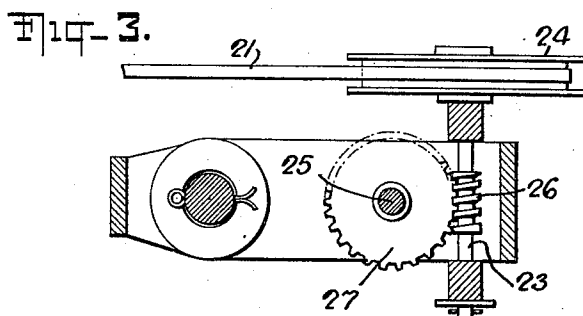
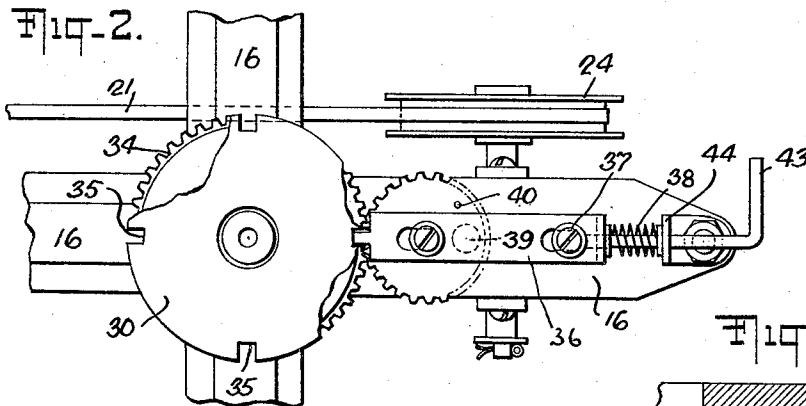
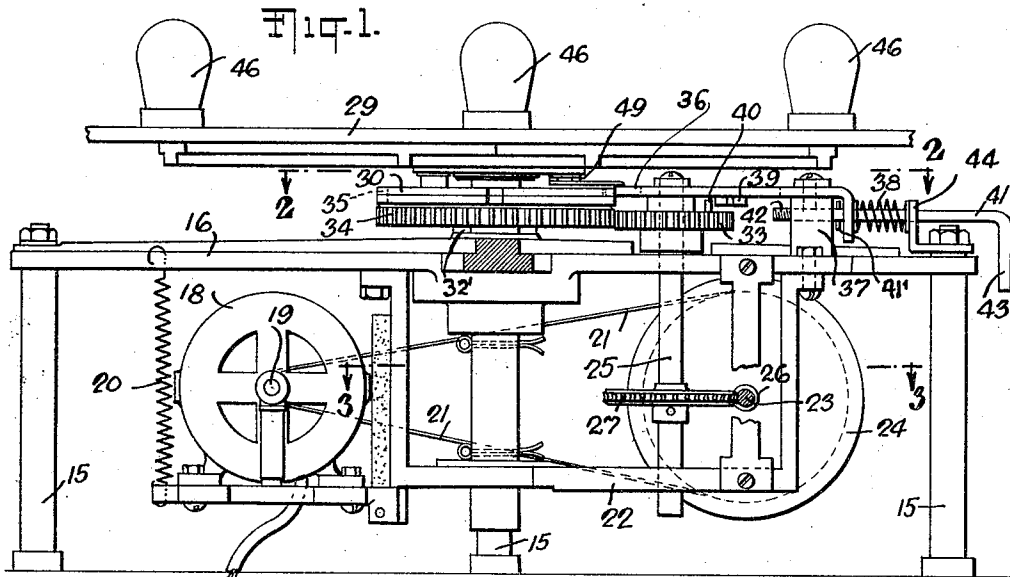
F. R. CHESTER

1,885,801

DISPLAY TABLE

Filed Jan. 20, 1927

3 Sheets-Sheet 1



INVENTOR.

INVENTOR.
Frank R. Chester

BY

BY
Mayer, Overfield + Watson
ATTORNEYS.

ATTORNEYS.

Nov. 1, 1932.

F. R. CHESTER

1,885,801

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3 Sheets-Sheet 2

Fig. 6.

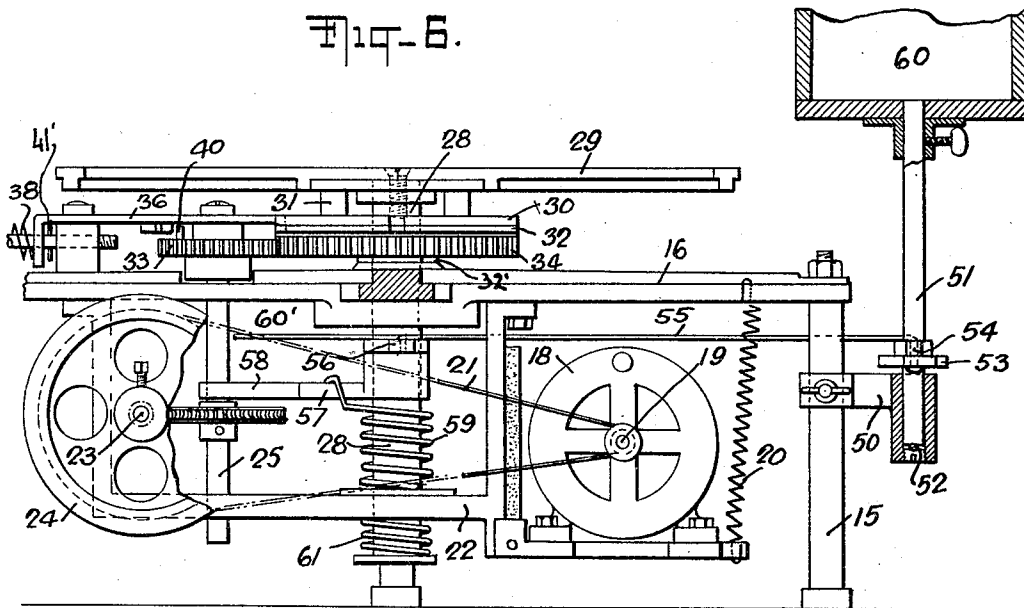


Fig. 7.

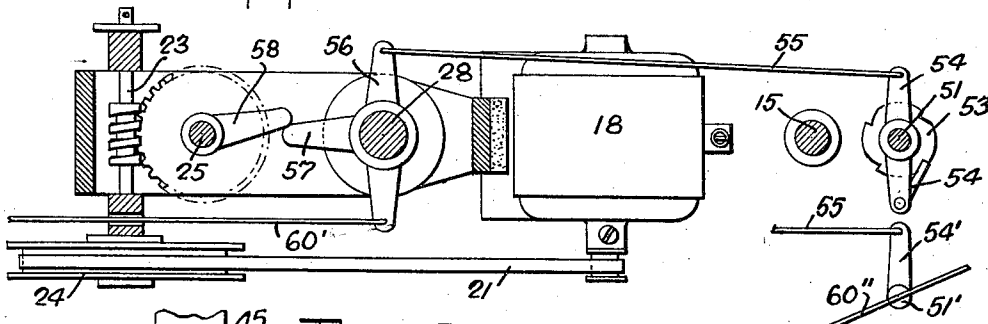


Fig. 4.

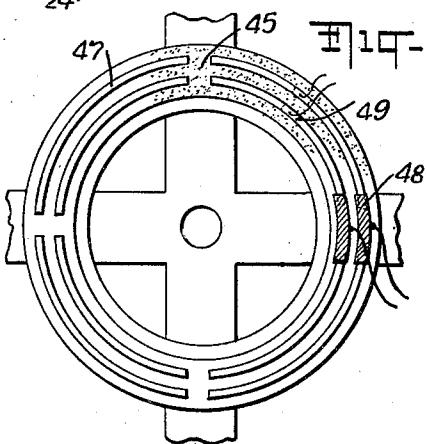
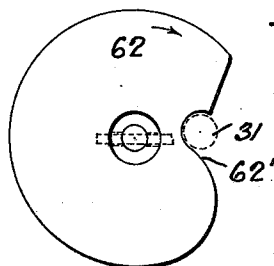


Fig. 8.



INVENTOR.

Frank R. Chester
BY
Mayer, Warfield & Watson
ATTORNEYS.

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3 Sheets-Sheet 3

Fig. 9.

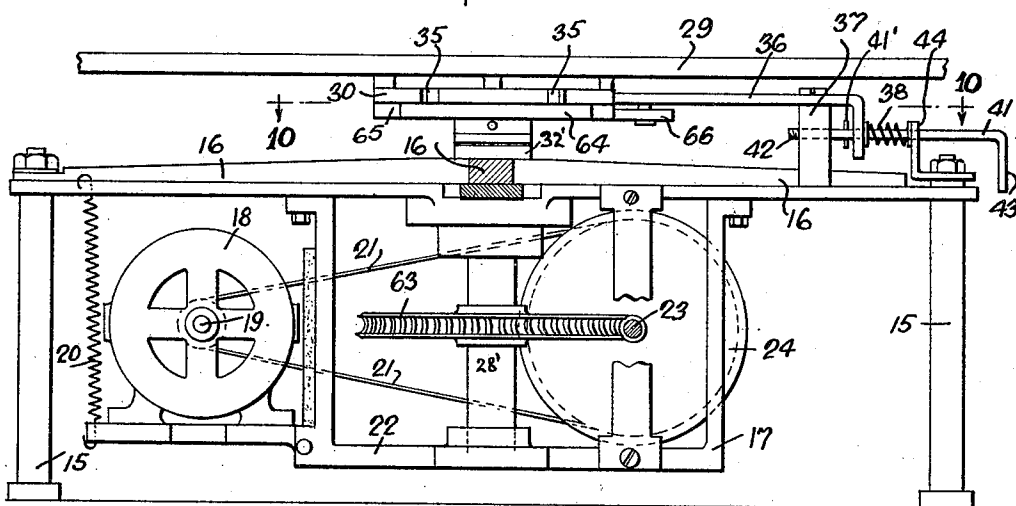
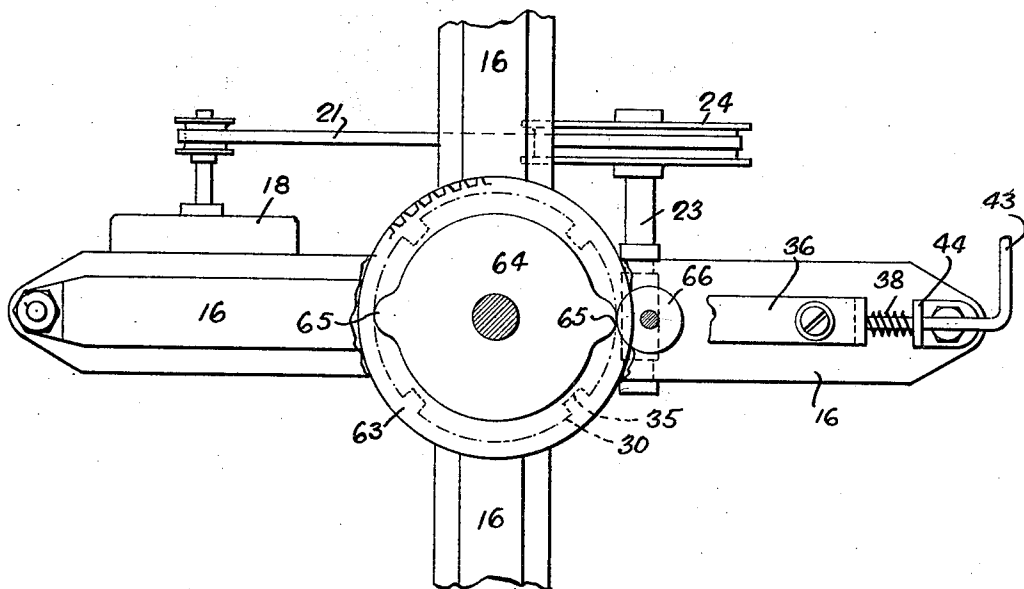


Fig. 10.



INVENTOR.

Frank R. Chester

BY

Mayer, Warfield & Watson
ATTORNEYS.

UNITED STATES PATENT OFFICE

FRANK R. CHESTER, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
CHESTERFIELD CONTROL COMPANY, OF DOVER, DELAWARE, A CORPORATION OF
DELAWARE

DISPLAY TABLE

Application filed January 20, 1927. Serial No. 162,334.

This invention relates to an improved display apparatus.

It is an object of the invention to provide a device of this character by means of which articles may be displayed attractively, and by means of which novel visual effects may be achieved.

A further object of the invention is that of providing a display device specifically of the turn-table type which may be used in store windows or in other desirable locations for exhibiting goods, and which apparatus may be actuated in a number of different manners to produce different effects for the attractive displaying of articles and merchandise.

A still further object is that of furnishing a display apparatus of this character the parts of which will be so constructed and arranged that the weight of the merchandise may be disposed off-center on the turn-table or deck without a detrimental result to the functioning or wearing of the mechanism, and in which, furthermore, the driving power transmitted to the turn-table or deck-portion of the apparatus will be in proportion to the amount of load thereon; and also in which, if an obstacle should be placed in the path of travel of the deck or table-portion or the merchandise supported thereby, resulting in a cessation of operation of this part of the mechanism despite the continued actuation of the driving mechanism, this will not result in the mechanism becoming injured.

Another object of the invention is that of providing a turn-table display apparatus which may be operated optionally either to turn continuously or intermittently.

Still another object is that of constructing a device of this character in which, when the supporting deck or table-portion thereof is turned intermittently, the period of such turning may be relatively short and the period of fixed display relatively long, and in which, furthermore, if desired, during such period of display the deck or table-portion of the apparatus and the merchandise supported thereon will be visible, while during the periods of turning or shifting such parts will not be exhibited.

An additional object is that of furnishing a

turn-table type of display apparatus in which a side display may be provided, which is varied or shifted conveniently during the operation of the apparatus.

A still further object is that of providing an apparatus the parts of which will be relatively few in number and individually rugged and simple in construction to produce an apparatus by means of which several or all of the foregoing objects may be achieved, and which will operate over long periods of time with freedom from mechanical difficulty.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is a side elevation of one form of display apparatus embodying the subject matter of the present invention;

Fig. 2 is a fragmentary plan view thereof taken along the lines 2—2 and in the direction of the arrows of Fig. 1, and showing certain of the parts broken away to disclose the underlying construction;

Fig. 3 is a partly sectional plan view taken along the lines 3—3 and in the direction of the arrows of Fig. 1;

Fig. 4 is a bottom plan view of the turn-table or deck of the apparatus and showing a construction which may be utilized in connection therewith;

Fig. 5 is an enlarged sectional view of the parts as shown in Fig. 4;

Fig. 6 is a view similar to Fig. 1, showing the apparatus from the opposite side, and also showing a movable side display apparatus in association therewith;

Fig. 7 is a plan view taken along the lines 7—7 of Fig. 6, and also showing an optional form of construction;

Fig. 8 illustrates a control cam which may be substituted for certain of the mechanism illustrated in the preceding views;

Fig. 9 is a view similar to Figs. 1 and 6,

but showing a slightly different form of apparatus; and

Fig. 10 is a fragmentary plan view taken along the lines 10—10 and in the direction of the arrows of Fig. 9.

A machine of this character has a base preferably including legs 15 supporting cross arms 16, the frame being provided with a bracket 17 supporting a suitable motor 18 (preferably electric) from which a drive shaft 19 extends; it being perceived that the bracket portion upon which the motor rests may be pivoted and suspended by a spring 20 in order to yieldingly support the motor; this structure also acting as a tightener for a belt 21 extending around the shaft. The bracket is extended as at 22 and is provided with bearings to rotatably support a shaft 23 which is connected with the motor in the embodiment illustrated by means of a pulley 24, around which the belt 21 passes.

As in Figs. 1, 2, 3 and 6, the portion 22 of the bracket mounts a vertically-extending countershaft 25, and the shaft 23 carries a worm 26 meshing with a worm wheel 27 secured to the shaft 25. As a consequence, when the motor is operated the countershaft 25 will be rotated; it being obvious that the intervening mechanism constitutes a reduction drive. The cross arms 16 at their point of juncture rotatably mount a shaft 28, to which a suitable turn-table or deck 29 is secured, the latter in turn being connected with the upper member 30 of a friction mechanism preferably by means of a series of posts 31 arranged equi-distant from each other and from the axis of the shaft 28. The friction disk 30 rests upon a friction disk 32 rotatably encircling the shaft 28 and the lower friction member being anti-frictionally supported upon the frame by means of suitable bearings 32'.

Now with a view to connecting the shaft 25 with the turn-table or deck 29 in order to transmit the rotation of the former to the latter a pinion 33 is secured to the upper end of the shaft 25 which extends through an opening in one of the cross arms and mounts such pinion at its upper end. The outer edge of the lower friction member or disk 32 is provided with teeth 34 corresponding to the teeth of the pinion 33 and meshing therewith, as a consequence of which, when the shaft 25 rotates, the lower friction member 32 will rotate to move correspondingly the upper friction member 30 of the turn-table supported thereby; it being appreciated that the intimacy of contact between the members of the friction-connecting element will be proportional to the load supported by the turn-table, and that, in any event, the turn-table may be restrained against movement despite the continued movement of the member 32 without any damage resulting to the parts.

In order periodically to interrupt the move-

ment of the turn-table it will be observed in the embodiment illustrated in Figs. 1 and 6 that the edge of the upper friction member 30 is provided with any desirable number of notches or recesses 35, and that a pawl member 36 is slidably mounted above the upper face of the cross arm which provides a bearing for the countershaft 25 by means of a stud 37 and the upper end of such latter shaft. The end of this pawl is urged into contact with the periphery of the disk 30 by means of a spring 38 bearing against its outer end, and it will thus be obvious that the pawl in its normal position (i. e., projected) will tend to extend within one of the notches 35 of the upper friction member and prevent a rotation of this member, and, consequently, a rotation of the turn-table. In order to effect a retraction of the pawl the latter carries a roller 39 upon its under face at a point adjacent the shaft 25, and the pinion 33 carries upon its upper face a pin 40, the path of travel of which is normally intersected by the roller. Consequently, the latter will act as a cam upon the pin coming into contact with its periphery in order to effect a retraction of the pawl, thus releasing the restraining influence exerted upon the upper friction member and permit the latter to turn with the lower friction member. After the pawl has been retracted and the pin 40 has cleared the roller-cam, the pawl, under the influence of the spring 38, will move forward until its forward edge engages the smooth periphery of the upper friction member 30, riding along this edge until the next consecutive notch or recess aligns with the pawl end, whereupon the latter will snap into this depression and restrain the upper friction member and turn-table against further movement until the pinion 33 has turned to a point at which the pin 40 again engages the roller 39, whereupon the entire operation will be repeated.

Under the foregoing conditions it will be obvious that a step-by-step rotation of the turn-table will be effected. Sometimes, however, it might be desired to have the latter rotate continuously. With this in mind, the spring 38 may encircle a rod 41, the inner end of which is screw-threaded as at 42 and engages a correspondingly-threaded recess or bore formed in the stud 37, and the rod engaging a pin 41' lying adjacent the rear downturned outer end of the pawl. The rear or outer end of the rod may be bent to provide a crank-portion 43, and this rod may pass through a bracket 44 against which the rear end of the spring 38 bears. At this time it will also be noted, as in Fig. 2, that the connection between the pawl 36 and the stud 37 is in the nature of a pin-and-slot connection, obviously to allow for the periodic retraction of the pawl. However, if the rod 41 is turned to retract with respect to the

stud 37 the pin supported by the frame will come into contact with the rear end of the pawl and draw the latter bodily rearwardly against the inward thrust of the spring 38 and to a position at which the inner end of the pawl will at all times clear the periphery of the upper portion 30 of the friction member. Thus there will be no interference on the part of the apparatus to the turning of this friction member, and, as a consequence, the turn-table will move continuously. If it is again desired to have an intermittent operation rather than continuous, this may be achieved readily simply by rotating the rod 41 to again disengage the pin 41' from the pawl to permit the latter again to engage the periphery of the upper member 30 of the friction drive and enter the notches or recesses formed in such periphery when the same are aligned with the pawl.

In certain instances it may be desirable to illuminate the turn-table or deck and the merchandise displayed thereon, and in order to achieve this result, as has been shown in Figs. 1, 4 and 5, there is affixed to the base of the turn-table a ring of insulating material 45 carrying contact strips connected with illuminating elements, such as electric bulbs 46 mounted by the turn-table or deck. These contact strips, in the embodiment illustrated, include arcuate segments concentrically disposed with respect to each other, as at 47, and the base of the machine mounts brush members 48 of a width sufficient to bridge the spaces extant between the adjacent ends of the segments. As has also been shown in these views, the pawl member 36 mounts a pair of brushes 49, which, in comparison with the brushes 48, are relatively narrow and of insufficient width to bridge the spaces above noted. The brushes mounted by the pawl member move as a unit therewith, and when the pawl is projected, they contact one with each of a pair of the arcuate segments. It is here to be understood that the wiring diagram involving the leads extending from a source of current supply to the pairs of brushes 48 or 49 has not been shown, nor has the wiring from the arcuate segments to the bulb members been shown, thus avoiding undue illustration of an elementary and readily understandable feature. Suffice it to say that the bulbs correspond in number, singly or in groups, to the number of pairs of contact segments or strips, and that the latter preferably, as shown, are not continuous to afford constant illumination. As a consequence, it will be understood that with the current flowing to the brushes 49, and with the pawl projected, the corresponding light or group of lights is energized. Instantly upon the pawl being retracted the circuit will be broken, and the turn-table will revolve in darkness; the

reestablishment of illumination occurring only after the pawl has been again projected. If under continued rotation of the turn-table it is desired to have constant illumination, and consecutively show portions thereof which are being displayed, this may be readily accomplished by throwing a switch (not shown) so as to de-energize the brushes 49 and cause current to flow through the brushes 48. The width of the latter being such that they bridge the spaces extant between the adjacent ends of the contact segments, one pair of contact strips will be at all times energized, and the illumination of the successive bulb or group of bulbs will follow prior to the interruption of the circuit governing the illumination of the preceding bulb or group of bulbs, so that substantially constant illumination will follow.

If, as in Figs. 6 and 7, it is desired to provide a movable background member, this may be accomplished, for example, by securing a bracket 50 to one of the supporting legs 15 of the frame, this bracket mounting a post 51 having notches in its lower end and which post is rotatable with respect thereto, and at the base of which a roller 52 may be arranged to bear against a fixed portion of the bracket so that, while the post may rotate with respect to the latter, it will normally maintain its position due to the deterring influence of the pin and notches. Secured to the post 51 is an annular ratchet member 53, and this post mounts a lever 54 carrying at its outer end a pawl member selectively engaging one of the teeth of the ratchet. A link 55 connects one of the ends of the lever 54 with a lever 56 supported rotatably around the shaft 28. This lever has a contact portion 57 engageable with a finger 58 secured to the countershaft 25. A spring 59 may encircle the shaft 28 and have one of its ends attached to the bracket-portion 22, its opposite end being connected with the contact-portion 57. As a consequence, the parts will normally tend to assume the position shown in Figs. 6 and 7, but upon the countershaft 25 rotating, the lever 56 will be rocked against the spring 59, resulting in the lever 54 being correspondingly moved and the pawl having lost motion with the ratchet and engaging a subsequent tooth of the annular ratchet 53, and the latter, together with the post 51, will be moved, thus shifting a scenic mounting member 60 secured to this post. At this time it will also be noted that the mechanism may be extended as at 60' and duplicated so that shifters are provided at opposite sides of the apparatus.

By means of a construction such as has been shown in this figure, an effect may be produced similar to the effect achieved by having the cessation of illumination as afore-described, and which, in fact, may be utilized

in conjunction therewith. Thus, by eliminating the pawl-and-ratchet mechanism shown in this figure, and connecting the link 55 with a lever 54' which is secured to a post 51', a periodic oscillation of the post will follow, which may be timed to occur during the period of shifting of the table; and by having a panel 60'' secured to this post, this panel temporarily may obscure the turn-table from view during such period of shifting; it being obvious that this structure—as has been indicated in Fig. 7—may be duplicated at both sides of the apparatus.

In certain instances it may occur that the turn-table is to be mounted in other than a horizontal plane, and, as a consequence, (gravity not acting) the benefit of the frictional contact between the members 30—32 will be largely, if not completely, lost. In order to overcome this difficulty a spring 61 may be disposed between the bracket and the lower end of the shaft 28, which latter, being connected with the turn-table, and thus to the upper friction member, will draw the latter into sufficiently intimate contact with the lower friction member to assure a rotation of the turn-table.

If for certain reasons it is desired not to utilize the pawl 36, a satisfactory substitute therefor may be provided by mounting upon the upper end of the shaft 25 a cam 62 of the nature shown in Fig. 8, which cam will lie in the plane of the posts 31. It is obvious that under conditions of operation which would then exist the turn-table is tending to turn, but is normally prevented incident to the sliding contact which will exist between the periphery of the cam and one of the posts. However, upon the reduced portion 62' of the cam reaching a point adjacent this post, the latter may slide into this notch, the movement of the parts being so timed that the next succeeding post will engage the periphery of the cam after the turn-table has turned to the extent desired, thus preventing a further movement of the latter until the notched or reduced portion of the cam again reaches a point adjacent such post; it being thus understood that a satisfactory intermittent motion of the turn-table will result, and that if it is desired to effect a continuous rotation, this may be achieved readily simply by dismounting the cam so that all restraining influence of the movement of the turn-table is removed.

If—as in Figs. 9 and 10—it is desired to simplify the mechanism further, this may be accomplished, for example, by having the worm-portion 26 of the pawl shaft 23 engage directly with a worm wheel 63 secured to a shaft 28', and also mounting upon this shaft a cam 64 having any desirable number of extensions 65. The pawl member 36 will in this instance mount a roller 66 adjacent its forward end, which roller will lie in the plane

of the cam 64 and be engageable with the outstanding portion 65 thereof; the inner end of the pawl—as in the case in Figs. 1, 2 and 6—being projectable into the recesses 35 of the upper friction member 30; it being understood that the cam member 64 provides a lower friction member corresponding in function to the lower friction member 32 of the apparatus shown in these preceding views. The functioning of the apparatus shown in Figs. 9 and 10 will be obvious in that, with the motor operating, the shaft 23 will be revolved to rotate correspondingly the post 28', which will positively move the lower friction member, i. e., the cam 64. This will result in a tendency of the upper friction member 30 and the turn-table supported thereby to rotate correspondingly. Such rotation will be periodically prevented incident to the engagement of the pawl 36 with one of the notches 35 of the upper friction member. A retraction of the pawl follows, for the reason that the projecting portions 65 of the cam will engage the roller 66 to achieve this result, and when so retracted the upper friction member and turn-table will move with the lower friction member, while the forward end of the pawl rides against the periphery of the upper friction member until the pawl again projects into the next succeeding notch. Also, in this form of apparatus, continuous rotation of the parts may be effected simply by rotating the rod 41, as has been described in the preceding forms, in order to effect a permanent retraction of the pawl member 36.

From the foregoing it will be understood that by means of the present invention a turn-table display apparatus is presented which may be continuously or intermittently operated, as desired, and in which, irrespective of its mode of operation, a safety factor will be presented, for the reason that the turn-table or the goods displayed thereon may engage with an object accidentally impeding their movement without resulting in injury to the apparatus. Furthermore, visual effects are achieved by means of this invention, which effects are highly desirable. It has been found also that by the use of a friction-member and by supporting the parts in the manner herein suggested, the apparatus possesses such inherent stability that the weight of the objects displayed may be positioned off-center without resulting in a stoppage of operation or injury to the mechanism. A minimum of power may be employed for driving the apparatus even under comparatively large loads; and by the arrangement of the parts it will be found that any tendency of the turn-table—while driven—to move in what might be termed a pulsating manner (usually caused by the "spring" effect of the driving mechanism) has been overcome.

Thus, among others, the objects of this invention have been accomplished, and since

certain changes may be made in the above construction, and different embodiments of the invention could be made, without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A display device, including a turn-table, driving means, a two-part friction connection having one of its elements associated with said driving means, the second element thereof being associated with said turn-table whereby the latter will move when said driving means is operated, and means acting to prevent movement of said turn-table during the continued operation of said driving means, the parts of said friction connection moving in contact and with respect to each other during such latter conditions of operation.

2. A display apparatus, including a turn-table, driving means, a two-part friction clutch, one of the parts of which is associated with said turn-table, the other being associated with said driving means, and means cooperating with the first-named part of said clutch to interrupt continued movements of said turn-table.

3. A display device, including a turn-table, driving means therefor, a plurality of illuminating means associated with said turn-table, means operating periodically to interrupt the movement of said turn-table, means for energizing said illuminating means, and means for rendering said illuminating means inoperative while said turn-table moves, successive portions of said illuminating means being rendered operative and inoperative between the steps of such movement.

4. A display apparatus, including a turn-table, a two-part friction connecting member having one of its elements associated with said turn-table, a frame supporting the other element thereof, driving means connected with said latter element whereby to move said turn-table, and means cooperating with the first-named element to periodically interrupt the movement thereof during the continued cooperation of the parts of said friction connecting member.

5. A display apparatus, including, in combination, a turn-table, means for intermittently moving the same, a panel, means movably mounting said panel, and means connecting said mounting means with said turn-

table-moving means to move said panel to turn-table-obscuring position during the movements of the latter.

6. A turn table including a rotatable platform, a friction element secured thereto, a second friction element engaging said first named element, means for positively driving said last named element with the face thereof in continuous contact with the face of said first named element, and means operated by said driving means and cooperating with said first named element to periodically interrupt the movements thereof.

7. A turn table including a rotatable platform, a friction element secured thereto, a second friction element engaging said first named element, means for positively driving said last named element with the face thereof in continuous contact with the face of said first named element, and means operated by said driving means and cooperating with said first named element to periodically interrupt the movements thereof, and means accessible to an operator during the operation of said platform to render said last named means inoperative whereby a continuous rotation of said first named element and platform will result.

8. A turn table including a platform, a friction disk mounting the same, a second friction disk having its face in contact with said first named disk, means for continuously driving of said last named disk, said first named disk being formed with a series of recesses, and means operated by said driving means and projectable into said recesses to periodically interrupt the movements of said first named disk.

9. A turn table including a platform, a friction disk mounting the same, a second friction disk having its face in contact with said first named disk, means for continuously driving of said last named disk, said first named disk being formed with a series of recesses, means operated by said driving means and projectable into said recesses to periodically interrupt the movements of said first named disk, and means co-acting with said interrupting means to render the same inoperative whereby said disk under the influence of said driving means will rotate continuously.

10. A turn table including a platform, a friction disk secured thereto and formed with notches in its periphery, a locking dog riding against the periphery of said disk and entering said notches to prevent a movement of said disk, a second disk in continuous contact with said first named disk, means for driving said second disk and means for periodically retracting said dog from said notches to permit said first named disk to move intermittently.

11. A turn table including a platform, a friction disk secured thereto and formed

with notches in its periphery, a locking dog riding against the periphery of said disk and entering said notches to prevent a movement of said disk, a second disk in continuous contact with said first named disk, means for driving said second disk, means for periodically retracting said dog from said notches to permit said first named disk to move intermittently, and a controlling member available to an operator during the continued movements of said first named disk and platform and connected to said locking dog to wholly retract and maintain the same at a point beyond that at which it operatively co-acts with the disk whereby said disk and the platform supported thereby will move continuously.

12. A turn table including a platform, a friction disk secured thereto and formed with a series of notches, a second friction disk in continuous contact with the face of said first named disk, a shaft, means for continuously rotating said shaft, means carried by said shaft to continuously drive said last named disk, a spring pressed locking dog for entering into said notches to periodically prevent rotation of said first named disk and platform, and means carried by said shaft and cooperating with said dog to periodically retract the same and permit continued rotation of said first named disk and platform.

13. A turn table including a platform, a friction disk secured thereto and formed with a series of notches, a second friction disk in continuous contact with the face of said first named disk, a shaft, means for continuously rotating said shaft, means carried by said shaft to continuously drive said last named disk, a spring pressed locking dog for entering into said notches to periodically prevent rotation of said first named disk and platform, means carried by said shaft and cooperating with said dog to periodically retract the same and permit continued rotation of said first named disk and platform, and an operating member coupled to said dog, said operating member being accessible during the continued operation of said turn table and acting to retract said dog to a position at which it will not operatively co-act with said disk.

In testimony whereof I affix my signature.

FRANK R. CHESTER.