The invention relates to a revolving display stand.

An object of the present invention is to improve the construction of revolving display stands equipped with a revolving platform adapted to support a mannequin for displaying gowns, coats, dresses, etc., and to provide a simple, practical and comparatively inexpensive revolving display stand of strong, durable and comparatively inexpensive construction adapted to afford reliable and satisfactory service without any likelihood of its breaking down or otherwise getting out of order even when subjected to a comparatively heavy load.

Many display windows of stores have a floor which is pitched and not level and in a number of instances there is a decided slope or pitch. The revolving display fixtures on the market do not allow or compensate for this slope or pitch of the window floor with the result that any tall display fixture does not revolve on a perpendicular axis and the display figure or model because of the tipping or listing, and particularly if the mannequin or display form is a heavy one, constantly subjects the mechanism of the revolving stand to a severe leverage strain. Also in the case of a heavy life size mannequin weighing about 160 pounds the effect is grotesque, unless the head and body revolves on a vertical axis without side sway or tipping.

In order to eliminate such leverage strains and prevent faulty and grotesque operation due to unlevel window floors, it is an object of the invention to equip the display stand with easily operable and quickly adjustable means for leveling the display stand and with conveniently located spirit levels positioned for accurately determining when the rotary platform is in a true horizontal position.

A further object of the invention is to enable the rotary platform to be driven by an electric motor having its motor shaft rotating in one direction only, and to provide mechanical means adapted to rotate the platform first in one direction and then in the opposite direction with a pause or stop of the desired duration at the end of each rotary movement and without interfering with the continuous uniform operation of the motor and without the employment of an electrical switch control of the driving mechanism, clutches, or other devices which interrupt and interfere with the smooth, continuous, uniform operation of the driving mechanism.

A further object of the invention is to provide means for enabling the frame of the machine to support the rotary platform and the weight carried by the same and thereby relieve the shaft which rotates the platform of such weight and the torque and strains incident to prior revolving display stands where such shaft is required not only to rotate the platform but also to support the same and the weight of a mannequin or other figure or form for displaying gowns, dresses and other garments and the like.

Another object of the invention is to provide a display stand capable of imitating the exact movements of a live model when displaying gowns, coats, dresses, etc. and adapted to make one or one and a half revolutions or more in a clockwise direction and then stop for any desired period of time which can be for one to thirty seconds, then reverse the direction of rotation of the platform and rotate the same in a counterclockwise direction for one-half a revolution or a multiple thereof and then stop for the desired period of time with the back of a gown, coat, dress or other article on display at the front of the revolving display stand. By means of these clockwise and counterclockwise rotary movements of the platform and the intermediate pauses between the rotary movements a person standing in front of a store window can examine a gown, coat, dress or any other article of merchandise displayed by the device of the present invention, from all angles and from both directions, that is from front to rear and from rear to front. The definite pauses provided afford prospective customers plenty of time to examine both the front and back of the merchandise on display and the effect is quite startling because of different impressions obtained of the merchandise depending upon the direction in which the same is turned.

It is also an object of the invention to provide a revolving display stand having a cycle of clockwise and counterclockwise rotations and intervening pauses whereby the front of the garment on display will be displayed twice to each display of the back of the garment.

With these and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereafter appended, it being understood that various changes in the form, proportion and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.
In the drawings: Figure 1 is a plan view of a display stand constructed in accordance with this invention, the rotary platform being removed and its position being illustrated by dot and dash line. Figure 2 is a side elevation of the same partly in section. Figure 3 is a longitudinal sectional view taken substantially on the line 3—3 of Figure 1. Figure 4 is a transverse sectional view taken substantially on the line 4—4 of Figure 1. Figure 5 is a similar view taken on the line 5—5 of Figure 1, the gearing being shown in elevation. Figure 6 is a diagrammatic view illustrating the cam groove.

Figure 7 is a plan view of the rotary platform illustrating the arrangement of the spirit levels. Figure 8 is a detail sectional view showing one of the legs and one of the spirit levels of the base of the frame. Figure 9 is a similar view showing another leg and the other spirit level of the base of the frame. Figure 10 is a detail sectional view on the line 10—10 of Figure 7. In the accompanying drawings in which is illustrated the preferred embodiment of the invention the display stand comprises in its construction a substantially rectangular base preferably consisting of a casting and provided at the corners with outwardly extending diagonally projecting integral supporting legs disposed at a slight inclination, as clearly illustrated in Figs. 4 and 5 of the drawings. The legs extend downwardly and outwardly and are provided at their outer ends with threaded openings for the reception of vertical leveling screws extending through the outer ends of the legs and provided at their lower ends with rubber pads adapted to rest upon a supporting surface such as the floor of a window or other surface where it is desired to use the display stand. The lower ends of the vertical leveling screws extend into the rubber pads which have sockets in their upper faces for the reception of the lower terminals of the screws.

The leveling screws are provided at their upper ends with knurled heads and have mounted upon them lock nuts which are adapted to engage the upper faces of the legs for locking the leveling screws in their adjustment. The legs are provided at their outer ends with flat upper surfaces which are engaged by the locking nuts. The leveling screws are adapted to level the display stand on window floors having a decided pitch and by adjusting the leveling screws so that the display stand is in a true perpendicular position, the strain and wear of the parts incident to the operation of such a display stand on an inclined surface are eliminated and at the same time there is no liability of the display stand presenting the grotesque appearance which often results from the rotation of a mannequin on an axis at an angle to the perpendicular.

The base is also provided adjacent to one of its corners with an integral horizontal supporting arm having a flat plate or portion preferably tapered outwardly as shown in Fig. 3 of the drawings. The arm which supports a horizontal platform is preferably located on the outer edge of the rotary platform and the annular horizontal ball bearing supports the rotating platform and the weight carried by the same relieves a central vertical shaft of torque and strain, as the shaft is not subjected to the direct weight of the rotary platform and the weight of a mannequin or other figure which, in practice, may be placed on the platform for displaying garments such as dresses, suits and the like. The rotary platform is provided at its periphery with a depending circumferential flange forming a rim and it is reinforced at its lower face by radial ribs extending from a central hub portion to the said rim.

The hub portion is tubular projects downwardly from the lower face of the platform and receives the upper portion of the vertical shaft and it is provided with opposite recesses for supporting arm suitable fastening devices and it is preferably rectangular as clearly shown in Fig. 1 of the drawings and is of greater size than the horizontal portion of the supporting arm.

The horizontal supporting arm is located adjacent one of the legs and is preferably integral with such leg and the adjacent portion of the base as clearly shown in Fig. 1 of the drawings.

The base is preferably hollow formed and is provided at the inner ends of the legs with vertical posts formed integral with the legs and preferably reinforced by webs 15 and 16. The posts are in number and the webs 15 of three of the posts are located with one another and the web 16 of the other post is formed integral with the horizontal supporting arm. The posts are hollow to provide openings for the passage of screws 18 for securing a bearing ring 19 upon the upper ends of the posts. The bearing ring is provided at the posts with depending lugs 23 arranged upon and conforming to the configuration of the posts and provided with threaded openings or sockets 21 extending upwardly from the lower faces of the lugs and arranged in alignment with the openings 17 of the posts and engaged by upper threaded ends of the screws 18. The screws which extend entirely through the vertical posts are provided at their lower ends with heads 23 which are located within counterbores of the lower ends of the openings 17. The vertical screws 18 detachably secure the bearing ring 19 to the upper ends of the posts but any other suitable means may of course be employed for detachably securing the bearing ring to the said posts.

The bearing ring 19 is provided in its upper face with a circular ball race 25 receiving an annular ball bearing 26 which are spaced apart and maintained in proper spaced relation by substantially cylindrical spacing elements 27 constructed of leather, Bakelite or other suitable material. The antifriction balls 26 and the intervening spacing members 27 may be of any desired number to provide a bearing ring of the desired diameter for supporting a rotary platform preferably consisting of a casting and provided at its lower face with a circular bearing surface 29 which rests upon the antifriction balls 26. The circular bearing surface is preferably located adjacent the outer edge of the rotary platform and the annular horizontal ball bearing supports the rotating platform and the weight carried by the same relieves a central vertical shaft of torque and strain, as the shaft is not subjected to the direct weight of the rotary platform and the weight of a mannequin or other figure which, in practice, may be placed on the platform for displaying garments such as dresses, suits and the like. The rotary platform is provided at its periphery with a depending circumferential flange forming a rim and it is reinforced at its lower face by radial ribs extending from a central hub portion to the said rim.

The hub portion is tubular projects downwardly from the lower face of the platform and receives the upper portion of the vertical shaft and it is provided with opposite recesses formed in the lower end of the hub and adapted to be detachably engaged by a key piercing the shaft and detachably interlocking the turntable with the shaft. The turntable is turned in any preferred manner. The platform is secured to the supporting arm by suitable fastening devices and it is preferably rectangular as clearly shown in Fig. 1 of the drawings and is of greater size than the horizontal portion of the supporting arm.

The radial thrust bearing may be of any desig.
sired construction and is provided with an annular series of antifriction balls 36 arranged in suitable recesses 37 of upper and lower annular members 38 and 39. The base is provided with a bottom section 40 of a casing 52 consisting of said bottom section 40, an intermediate housing section 41 and a horizontal top portion 42 secured together by bolts or other suitable fastening devices. The intermediate housing section 41 which is seated upon the bottom section 40 is substantially rectangular and has horizontal and vertical slots 43 and 44 provided with suitable bearings 46 for the reception of a horizontal cam shaft 47 upon which is mounted a rotary cam element 45.

The rotary cam element is preferably in the form of a horizontal drum which extends into the bottom section 40 of the base and it consists of a cylindrical body portion and heads or ends 48 preferably provided with spokes 50 and hub portions 51 mounted on the cam shaft and keyed or otherwise fixed to the same. The cylindrical body portion of the cam element, has a cam groove 52 having pitch portions 53, 54 and 55 and intervening circumferential connecting dwell portions 56, 57 and 58. The cam groove 52 is continuous and receives a pin 59 of a reciprocating rack bar arranged in a horizontal guideway 61 in the upper face of the housing section 42 of the supporting frame which is formed by the said housing sections 40, 41 and 42 and the base. The pin 59 which is suitably secured to the rack bar is provided with an antifriction sleeve 62 or other suitable antifriction device which operates in the cam groove 52, and when the cam element is rotated the rack bar will be intermittently actuated and reciprocated by the pitch portions of the cam groove and will pause or stop while the pin 59 is operating in the circumferential dwell portions 56, 57 and 58 which are arranged in parallelism with the sides of the rotary cam element.

The guideway 61 which extends longitudinally of the display stand has parallel side walls and spaced bottom portions 63 and 64. The rack body 60 is provided at one of its side edges with teeth 65 and it has smooth longitudinal portions 66 and 67 located at the ends of the toothed portion of the rack bar. The other side edge of the rack bar is straight and in parallelism with the smooth portions 66 and 67. The straight side edges of the end portions of the rack bar are parallel with the pitch line of the teeth 65 and the said teeth 65 mesh with a pinion 68 keyed or otherwise fixed to the central vertical shaft at the lower portion thereof. The lower portion 68 of the central vertical shaft is preferably reduced to form a shoulder 70 against which abuts the pinion 68. The pinion 68 is arranged between the oilless bushing 63 which is located above the pinion and the radial thrust bearing 66 which is arranged below the pinion.

The cam groove may be varied to provide clockwise rotation of the rotary platform 28 of the desired duration and counterclockwise rotations of the desired lengths separated by a pause of the desired duration. The number of turns of the rotary platform may be varied by varying the formation of the cam groove and the diameter of the cam element and the pinion 68 of the central vertical shaft 30.

Other equivalent mechanical means may of course be provided for imparting to the rotary platform clockwise and counterclockwise rotary movements with intervening pauses or stops of the desired duration. The rack bar is retained in the guideway by a removable cover plate 72 detachably secured to the housing section by suitable fastening devices located at opposite sides of the guideway.

The rotary cam element 48 is driven by an electric motor 73 detachably secured to the platform 13 by suitable fastening devices and provided on its motor shaft 73 with a worm 74 which meshes with a worm wheel 75 keyed or otherwise secured to a horizontal transverse shaft 76 journaled in suitable bearings 77 and 78 of the housing section. The worm wheel 75 is located adjacent one end of the transverse shaft 76 which is provided adjacent its other end with a worm 78 which meshes with a relatively large worm wheel 99 mounted on the cam shaft 47 exteriorly of the housing section. The housing section is preferably bored at 81 to provide a housing for the worm 74 of the motor shaft and the worm wheel 75 of the transverse shaft 76. The recess or housing 81 for the worm gearing opens outwardly at one end of the housing section.

All the mechanism for operating the rotary platform with the exception of the electric motor 25 will be housed within the casing 82 adapted to protect the parts from dust and dirt and at the same time form an oil sump for enabling the gearing and other moving parts to run in an oil well providing cooling and protection of the bath. Also the casing 82 besides protecting the operating mechanism from dust and dirt and permitting the same to run in oil enables the base of the display stand to present a neat and attractive appearance.

The rotary platform 28 is adapted to support a mannequin or other figure or form for displaying garments and it is provided at its upper face with spirit levels 83 arranged radially of the platform at right angles to each other adjacent the central portion of the platform. The spirit levels 83 are preferably mounted in recesses 84 formed by housings or enlargements 85 of the rotary platform 28. The housings or enlargements 85 are located at the lower face of the rotary platform and are preferably integral with the same and are provided with said recesses 84 which extend downwardly from the upper face of the platform 28 so that the spirit levels 83 may be arranged in a slightly depressed position with relation to the upper face of the rotary platform.

The spirit levels 83 enable the rotary platform of a display device to be accurately adjusted so that the central vertical shaft 30 will rotate in a true perpendicular position even when the display device is placed upon an inclined surface such as a window floor having a pitch. Also to assist in leveling the display device two adjacent legs 2 are provided with spirit levels 87 arranged at right angles to each other and in parallelism with the diagonals of the base of the machine. The spirit levels 87 are arranged in recesses 83 of casings 89 preferably cast integral with the legs 2 on which the spirit levels are mounted but any other desired construction of spirit level casing may be employed. The recesses 83 are open at the top of the casings 89 so that the spirit levels 87. Either or both sets of spirit levels 83 and 87 may be employed and with the leveling screws 4 they provide for an easy, rapid and accurate leveling of the display stand.

The revolving rotary display stand illustrated in the accompanying drawings is constructed to display the front of the gown or other garment or other item of merchandise twice at the front of the display stand to each display of the back of
the garment or other item of merchandise at the front of the revolving display stand. This is due to the fact that the long pitch portion 53 of the cam groove is arranged to produce one rotation of the pinion of the central vertical shaft while the short pitch portions of the cam groove are of a length to cause one-half of a revolution of the pinion of the central vertical shaft. It will thus be seen that if the front of the garment is on display at the front of the revolving display stand, the long pitch portion of the cam groove producing a complete rotation of the pinion will turn the garment completely around, exposing all portions of the garment and returning the front of the garment to the front of the display stand prior to the pin of the rack bar entering the first dwell portion 56 of the cam groove. The next pitch portion 54 of the cam groove will then rotate the pinion one-half of a revolution, causing the back of the garment to be displayed at the front of the revolving display stand. The garment will remain in such position until the pin of the rack bar enters the next short pitch portion 55 of the cam groove when the pinion will be rotated another half of a revolution, thus returning the front of the garment to the front of the revolving display stand. Any other desired cycle of operation of the revolving platform may, of course, be obtained by varying the length of the pitch portions of the cam groove.

What is claimed is:

1. A display stand including a frame comprising a base provided with a bottom housing section, an intermediate housing section secured to the base, a top housing section mounted upon the intermediate housing section, said housing sections forming a closed housing and providing an oil sump, posts rising from the base beyond the housing sections and an open bearing ring detachably supported by the posts and located above and spaced from the housing, a rotary platform mounted upon the bearing ring for supporting merchandise to be displayed, a rotary cam drum mounted within the housing, a motor for rotating the cam drum, and mechanism mounted within the top housing section for actuating the cam drum for rotating the platform.

2. A display stand including a frame comprising a base provided with a bottom housing section and having a horizontally projecting arm provided with a stationary platform, an intermediate housing section mounted upon the bottom housing section, a top housing section capping the intermediate housing section, said sections forming a closed housing, posts rising from the base beyond the housing and extending above the same and a bearing ring supported over the housing by the posts, a motor supported upon the intermediate housing section and connected to the motor by a flexible shaft, a rotary cam drum mounted within the housing, a rotary platform mounted upon the bearing ring for supporting a movable platform platform mounted upon the bearing ring and actuated by the cam drum for rotating the platform.

3. A display stand including a frame comprising a base provided with a bottom housing section, an intermediate housing section mounted upon the bottom housing section, a top housing section capping the intermediate housing section and provided with a guideway and having a bearing located above the guideway, said sections forming a closed housing, posts rising from the base beyond the housing and extending above the housing by the posts, a rotary platform mounted upon the bearing ring, a vertical shaft mounted in the said bearing and extending through the bearing ring and connected with the rotary platform, a slideable member mounted for reciprocating movement in the guideway of said top section and substantially housed within the latter, means also housed within the top housing section for transmitting motion from the slideable member to the vertical shaft for rotating the rotary platform, a cam drum mounted within the housing and operatively connected with the slideable member for reciprocating the same, a motor, and gearing for connecting the motor with the rotary drum.

4. A display stand including a frame provided with a housing and having a bearing ring located above and spaced from the housing, a rotary platform supported by the bearing ring for supporting merchandise to be displayed, a cam drum mounted within the housing, mechanism housed substantially within the top wall of the housing for operatively connecting the cam drum with the rotary platform for rotating the same, a motor carried by the base at one side of the housing exteriorly of the latter, a horizontal transverse shaft arranged at said side of the housing, worm gearing for connecting one end of the horizontal shaft with the motor, separate worm gearing for connecting the other end of the horizontal shaft with the cam drum, said housing being provided in one of its side walls with a recess receiving the worm gearing, and a cover plate closing said recess.

5. A display stand including a frame, a rotary platform mounted on the frame for supporting merchandise to be displayed, a motor, and mechanism carried by the frame and connected with the motor and with the rotary platform for actuating the latter and provided with means for rotating the platform in a clockwise and counterclockwise direction with pauses of a definite period of time between each of the rotary movements of the platform for displaying the front of the merchandise stationarily and then stationarily displaying the back of the merchandise after an intervening period of rotation.

6. A display stand including a frame, a rotary platform mounted on the frame for supporting merchandise to be displayed, a motor, mechanism carried by the frame and connected with the motor and with the rotary platform for actuating the latter and provided with means for rotating the platform in a clockwise and counterclockwise direction with pauses of a definite period of time between each of the rotary movements of the platform for displaying the front of the merchandise stationarily and then stationarily displaying the back of the merchandise after an intervening period of rotation, said mechanism including a drum provided in its periphery with a cam groove having pitch portions spaced around the drum from one another and connecting intervening circumferential dwell portions extending circumferentially of the drum and actuated by the cam groove for imparting said movements to the platform.

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