No. 697,008. Patented Apr. 8, 1902.

H. F. PALMER.

REVOLVING SHOW STAND OR RACK.

(Application filed Mar. 28, 1901.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

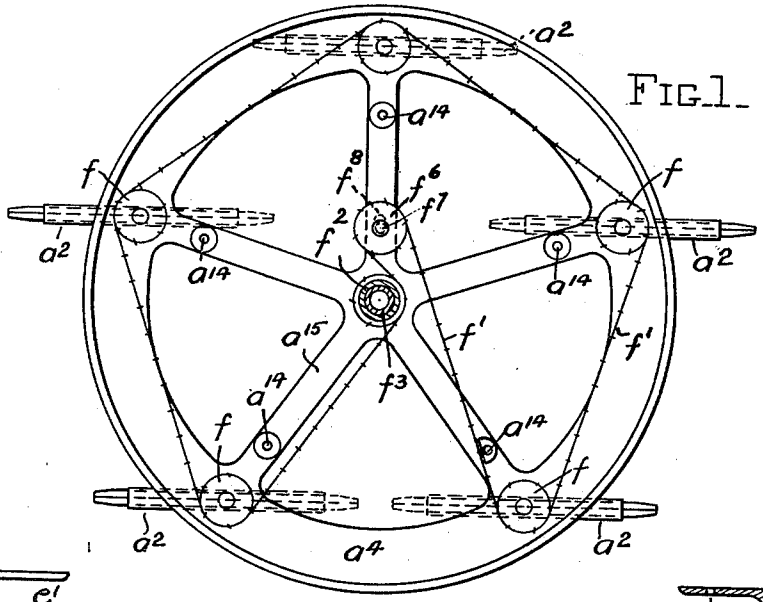
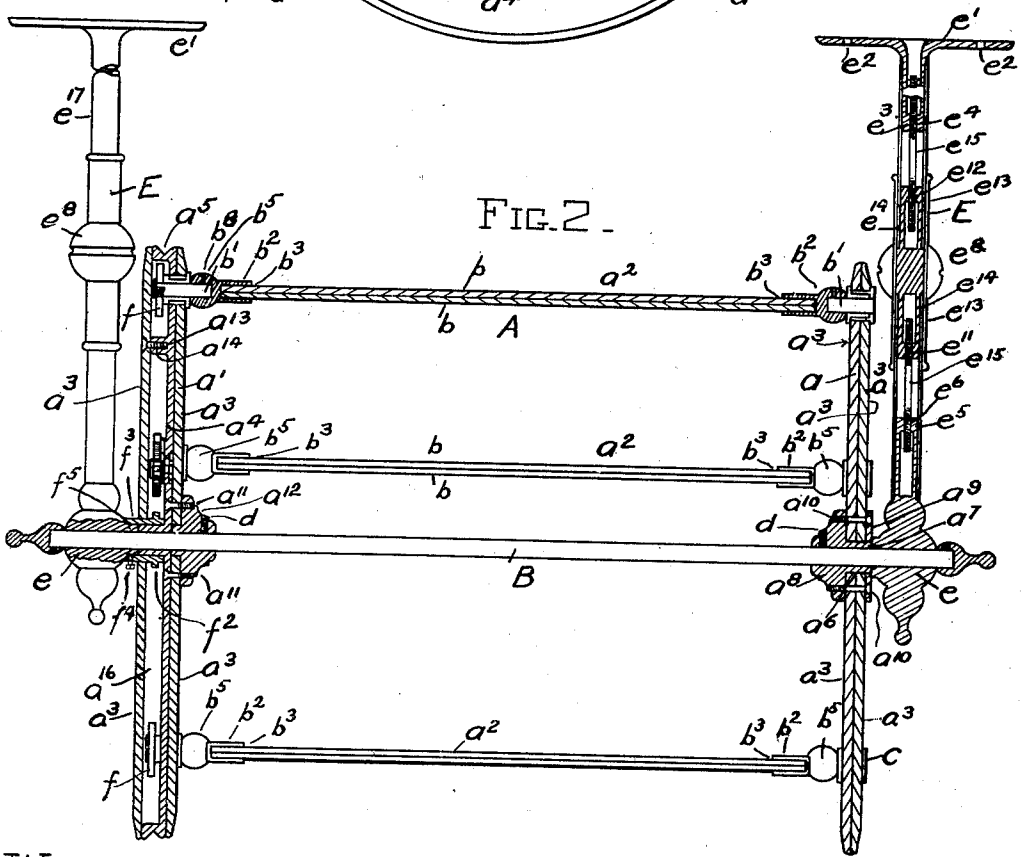


FIG. 2.



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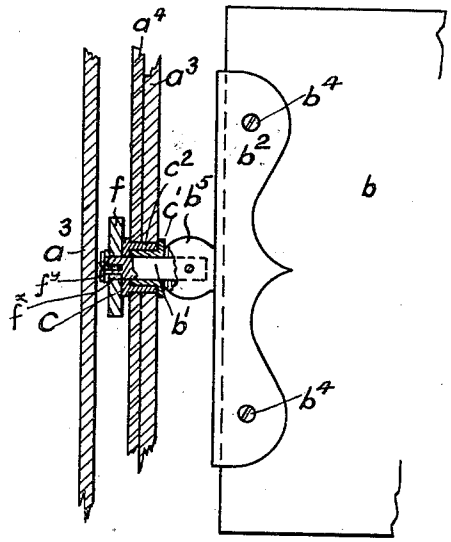


FIG. 3.

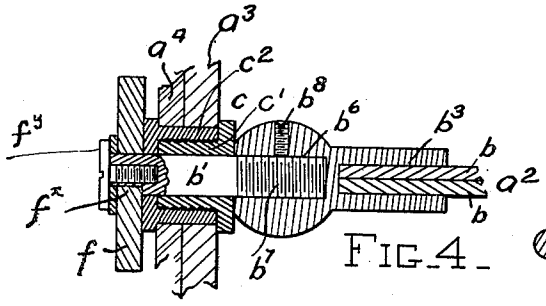


FIG. 4.

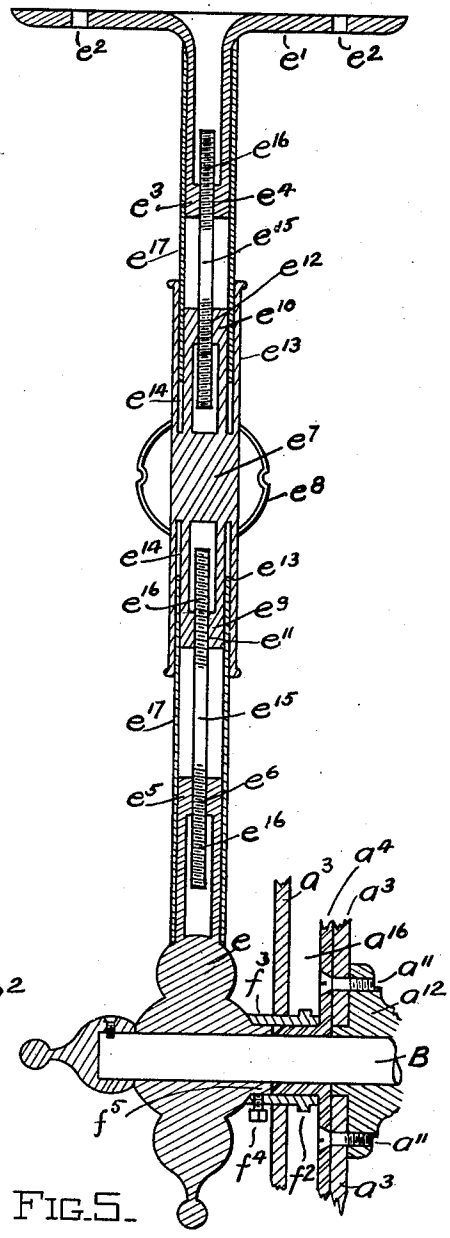


FIG. 5.

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UNITED STATES PATENT OFFICE.

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REVOLVING SHOW STAND OR RACK.

SPECIFICATION forming part of Letters Patent No. 697,008, dated April 8, 1902.

Application filed March 28, 1901. Serial No. 53,184. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. PALMER, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Revolving Show Stands or Racks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to show stands and racks, and more particularly to that type of show stands and racks which comprise a plurality of shelves supported upon a revolving carrier, which is turned by suitable mechanism to bring the successive shelves toward the front, and which are generally known as "revolving" stands.

The object of the present invention is to improve and simplify the construction of this class of devices, and more particularly the operating mechanism therefor.

To the above end the present invention consists of the devices and combinations of devices, which will be hereinafter described and claimed.

The present invention is illustrated in the accompanying drawings, in which—

Figure 1 shows in side elevation and partial sectional view a revolving stand or rack embodying the same. Fig. 2 shows a longitudinal sectional view taken through the main axis of the device with the sprocket-chain removed and also showing in vertical section one of the supports. Fig. 3 shows in a view somewhat enlarged relatively to Figs. 1 and 2 a plan of one end of one of the shelves and in partial sectional view one of its bearings. Fig. 4 shows a sectional view, further enlarged, of the end of a shelf and its bearing. Fig. 5 shows in sectional view details of one of the supports for the stand.

Similar reference characters will be employed throughout the specification and drawings to designate corresponding ports.

In the drawings, A represents the revolving stand or rack as an entirety, which comprises a carrier consisting of suitable ends a and a' and shaft B, carrying the shelves a^2, any suitable number of which may be provided, the illustrated embodiment of the invention being shown as comprising five such shelves. The ends a and a' are preferably circular in form, as shown clearly in Fig. 1, and the shelves a^2 are pivotally supported, as will be hereinafter described, at equal distances apart adjacent to the peripheries of the ends a and a'. The ends a and a' may be formed of any suitable material; but in the finer grades of the device for use in jewelers' windows and other places for displaying fine goods they are preferably formed of plate-glass mirrors a^3, the end a being formed of two mirrors placed closely together and preferably having their peripheral edges beveled, placed back to back, and with their reflecting-surfaces turned outward, while the end a' comprises two such mirrors placed upon opposite sides of a metallic skeleton wheel a^4, carrying around its periphery a groove a^5 to receive a belt or cord, which is driven from any suitable source of power to impart a rotary movement to the show stand or rack. The mirrors a^3, forming the end a, are provided with a central aperture a^6, through which passes the reduced portion a' of a bushing a^8. A washer a^9 upon the outer surface of the end a is fastened to the bushing a^8 by screws a^{10}, and thus acts to clamp the mirrors a^3, forming the end a, together. The inner mirror a^3 of the end a' is held to the inner face of the skeleton wheel a^4 by means of screws a^{11}, which pass into a bushing a^{12}, corresponding to the bushing a^8, and the outer mirror a^3 of the end a' is fastened by means of screws a^{13}, which pass into bosses a^{14}, projecting from the spokes a^{15} of the wheel a^4, thus providing a space or chamber a^{16} in the end a' for a purpose which will be hereinafter described.

The shelves a^2 in the illustrated embodiment of the present invention are formed of two mirrors b, having their reflecting-surfaces turned outwardly—that is, one reflecting upwardly and the other downwardly—and are supported by trunnions b' at opposite ends in the ends a and a' of the carrier. The trunnions b' extend from opposite ends in the plane of the shelf and in line with the longitudinal medial line of each shelf. The trunnions may be secured to the shelves in any suitable or desired manner; but when said shelves are made of glass, as shown in the

illustrated embodiment, they are provided at opposite ends with a holder of metal b^2, having a groove b^3 to receive the end of the shelf, which is secured by means of screws b^4 passing through the shelves. Each holder is provided with a projecting boss b^5, preferably somewhat spherical in form, in which is a threaded socket b^6, which receives the threaded end b^7 of the trunnion b', and which is preferably held from turning by means of a set-screw b^8 passing into an aperture in the boss b^5 and engaging the threaded end of the trunnion b'. The trunnions are mounted to turn in bearings c, fixed in the ends a and a', each bearing consisting of the headed cylinders c' and c^2, the cylinder c' being provided with an external screw-thread and arranged to fit into and engage an internal mating screw-thread on the cylinder c^2, as shown clearly in Fig. 4 of the drawings. The cylinders in the end a pass through the mirrors a^3 and engage each other, as clearly shown in Fig. 2, while the cylinders in the end a' pass through the inner mirror a^3 and the wheel a^4, as clearly shown in Fig. 2.

The revolving stand or rack is mounted to turn upon or with the main shaft B. As shown in the drawings, it is arranged to turn with the shaft B, and being secured thereto by means of set-screws d passing through the bushings a^8 and a^{12} and engaging the shaft B. The shaft B is mounted to turn in bearings formed in the heads e of the supports E, which may be arranged to stand upon the floor of the show window or case, but in the present invention are shown as hangers arranged to be suspended from the ceiling or top of the window or case.

It is designed that the stand or rack A be revolved and that the shelves a^2 maintain the predetermined position with relation to a horizontal plane to which they may have been adjusted, which may be at any desired angle, but usually horizontal, as shown in the drawings, it being understood that the trunnions b' are turned in their bearings as the stand or rack A is turned. The means for accomplishing this object will now be described.

Each of the trunnions b', which is supported in the end a', is provided with a sprocket-wheel f within the chamber a^{16}, which wheels are engaged by a sprocket-chain f', which is in turn engaged by a fixed sprocket-wheel f^2, formed on a sleeve f^3, adjustably held, by means of a set-screw f^4, to a boss f^5, projecting from the inner face of one of the heads e. The sprocket-wheels f are provided with tongues f^x, which engage corresponding grooves in the ends of the trunnions b', and screws f^y and washers serve to hold the sprocket-wheels on the trunnions b'. The sprocket-chain f' also passes around a sprocket-wheel f^6, which is adjustably mounted by means of a stud f^7 in a slot f^8, formed in one of the spokes of the wheel a^4, the arrangement being such that the sprocket-wheel f^6 may be adjusted in the slot f^8 toward and from the center of the wheel a^4 to take up the slack of the chain f'. The foregoing arrangement is such that the turning of the carrier will carry the sprocket-chain around with reference to the fixed or driving sprocket-wheel f^2, and by reason of the engagement of the chain f' with the driven sprocket-wheels f turn the trunnions b' in their bearings, and thus positively maintain the desired relative angular position of the shelves, all of which will be apparent from an inspection of Fig. 1 of the drawings.

The sleeve f^3, carrying the sprocket-wheel f^2, is adjustably held to the boss f^5 by means of the set-screw f^4, so that by loosening the screw f^4 the sprocket-wheel may be turned and through the chain f' turn the shelves a^2 and place them at any desired angle, after which the screw f^4 will be set up and the position of the shelves at the desired angle will be maintained during the rotation of the carrier.

It will be noted that the shelves a^2 are pivotally supported upon axes which are substantially in the plane of the shelves and that the means for turning the trunnions b' and maintaining the shelves in the desired relative angular positions are hidden within the plate-glass mirrors a^3, forming the end a', so that when the device is in operation inasmuch as the means for controlling the shelves will be hidden from view it will be an interesting problem to the observer to determine how the shelves, supported as described and weighted with the goods to be displayed, (which may be placed entirely along one edge of the shelf, if desired,) are enabled to maintain their position during their travel around the main axle, and thus the advertising feature incident to the use of a device of this nature is enhanced. It will be further observed that the use of mirrors in forming the ends a and a', reflecting in opposite directions, and the use of mirrors b for the shelves, reflecting up and down, produces a multiplication of reflections, which adds greatly to the beauty and novelty of my invention.

The supports E consist of bases e', which are preferably provided with apertures e^2 to receive screws or other fastening means for maintaining them in place. Projecting from the base e' is a cylindrical post e^3, having a threaded bearing e^4. The head e, carrying the bearing for the shaft B, has a post e^5, also provided with a threaded bearing e^6.

A central section or turnbuckle e^7, provided with a spherical or other shape ornamental portion e^8, is provided with corresponding posts e^9 and e^{10}, having threaded bearings e^{11} and e^{12}, and also provided with cylindrical portions e^{13}, extended beyond the posts e^9 and e^{10}, forming chambers e^{14}. The turnbuckle e^7 is connected to the post e^5 of the head e and the post e^3 of the base e' by means of rods e^{15}, which at opposite ends are provided with right and left hand screw-threaded sections e^{16}, engaging the threaded

bearings e^4, e^6, e^{11}, and e^{12}, respectively, the arrangement being such that a turning of the central portion or turnbuckle e^7 causes a lengthening or shortening of the support, all as will be apparent from an inspection of Fig. 5 of the drawings.

Inasmuch as the exposed metallic portions of my improved stand or rack are intended to be highly ornamental and plated with brass or gold and it is desired to hide from view the rods forming the adjustable connection between the sections of the standards, I have provided metallic tubes e^{17}, which surround the posts e^3 and e^5 and fit into the chambers e^{14}, they being slidingly fitted in said chambers to have a longitudinal movement therein as the supports are adjusted.

It is obvious that the supports e instead of being suspended from the top or ceiling of a show window or case may be supported on the base or floor thereof and adjusted to raise the revolving standard or rack to the desired position. It will be further noted that by reason of the arrangement of the shelves pivoted upon axes in the plane of the shelves the shelves do not drop below the peripheries of the ends of the carrier as they revolve about the main axle.

It is thought that the operation of my invention has been sufficiently described in connection with the foregoing description of its form and arrangement and that a further description of its operation will be deemed unnecessary.

I am aware that it is not broadly new to construct a revolving stand in which the shelves are positively turned to maintain a fixed predetermined position as they are carried about the axis of the supporting-carrier, but so far as I know the prior art this result was accomplished only by the use of intermediate gears. This prior construction is objectionable, however, for several reasons. The cost of these gears is considerable, owing to their number, a separate gear being employed for each shelf. Moreover, when it is desired to mount the axes of the shelves at any considerable distance from the axis of the carrier excessively large gears have to be employed either for the intermediate gears or for those upon the axes of the shelves. In either case it is impossible to locate the shelves close together, as these large gears interfere with each other. Adjustment of the gears to take up wear is practically impossible, so that frequent replacement of the fixed gear becomes necessary. In my improved device all these objectionable features are done away with. No intermediate gears are employed, a single sprocket-chain taking the place and performing the functions of the many intermediate gears necessary in the devices of the prior art. Moreover, the number of shelves with which the carrier can be equipped, as well as the distance of the axes of these shelves from the axis of the carrier, is practically unlimited. By means of the movable sprocket-wheel the chain may be adjusted to take up any slackness resulting from wear, and as no one sprocket-wheel is subjected to greater wear than another frequent replacement is unnecessary. Moreover, as the intermediate gears are dispensed with altogether the frictional resistance of the device as a whole is reduced, permitting the use of a smaller and lighter motor for operating the same.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. A revolving display-rack, having, in combination, a revolving carrier, a fixed support therefor, shelves rotatably mounted in the carrier, a driven sprocket-wheel rigidly connected to each shelf, a driving sprocket-wheel rigidly mounted upon the fixed support, the driving and the driven sprocket-wheels having the same number of teeth, and a single sprocket-chain connecting the driving sprocket-wheel with each driven sprocket-wheel and passing over the driving and the driven sprockets in the same direction, substantially as described.

2. A revolving display-rack, having, in combination, a revolving carrier, a fixed support therefor, shelves rotatably mounted in the carrier, a driven sprocket-wheel rigidly connected to each shelf, a driving sprocket-wheel rigidly mounted upon the fixed support, the driving and the driven sprocket-wheels having the same number of teeth, an idler sprocket-wheel, a single sprocket-chain leading from the driving sprocket-wheel to each of the driven sprocket-wheels in succession and thence to the idler and back to the driving sprocket-wheel and passing over the driving and the driven sprockets in the same direction, substantially as described.

3. A revolving display-rack, having, in combination, a revolving carrier, a fixed support therefor, shelves rotatably mounted in the carrier, a driven sprocket-wheel rigidly connected to each shelf, a driving sprocket-wheel mounted upon the fixed support and normally held from movement thereon, the driving and the driven sprocket-wheels having the same number of teeth, a single sprocket-chain leading from the driving sprocket-wheel to each driven sprocket-wheel in succession, and thence back to the driving sprocket-wheel passing over the driving and the driven sprockets in the same direction, and means for adjusting the driving sprocket-wheel upon the fixed support, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY F. PALMER.

Witnesses:
W. A. KEENEY,
T. HART ANDERSON.