H. V. LOUGH.

DISPLAY RACK.

APPLICATION FILED SEPT. 18, 1915.

1,294,130.

Patented Feb. 11, 1919.

3 SHEETS—SHEET 1.

Fig. 1.

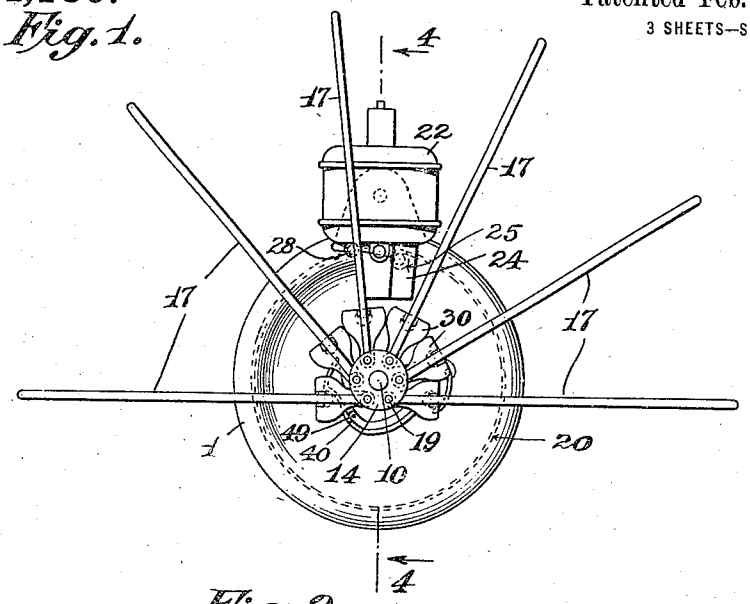
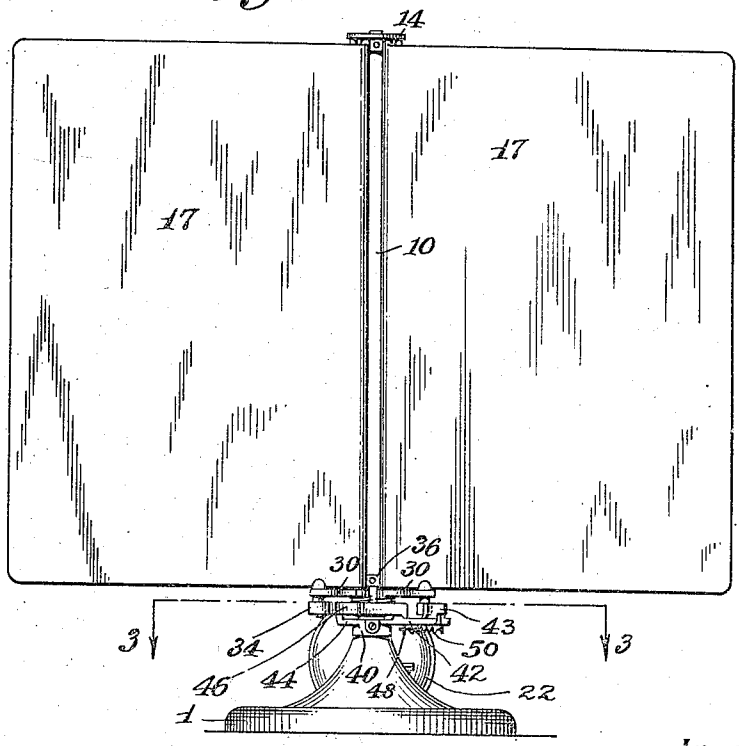


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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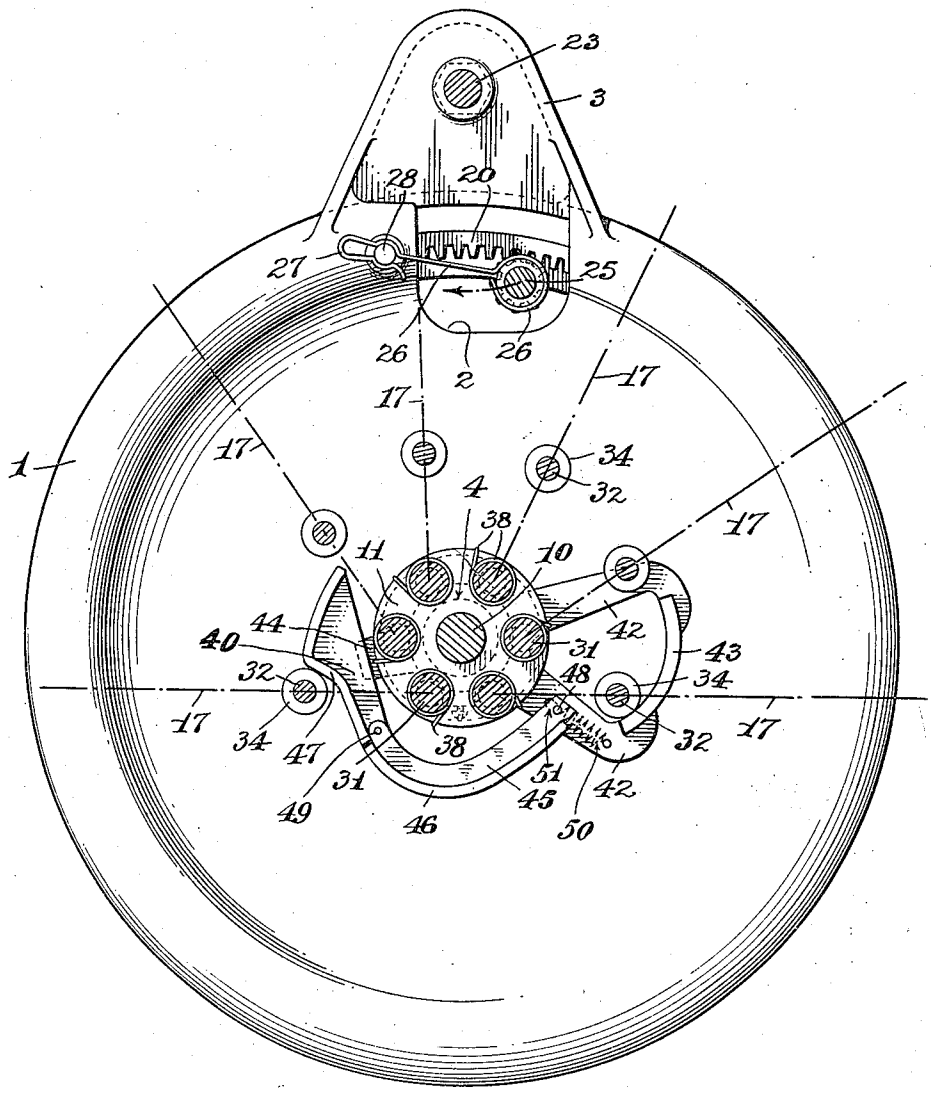
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3 SHEETS—SHEET 2.

Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 5.

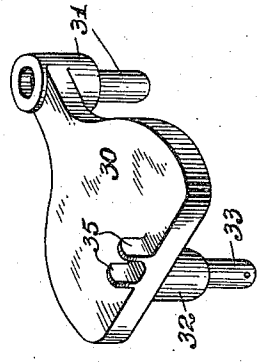


Fig. 4.

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UNITED STATES PATENT OFFICE.

HECTOR V. LOUGH, OF NORTH PLAINFIELD, NEW JERSEY, ASSIGNOR TO GOLDBERG DISPLAY FIXTURES, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

DISPLAY-RACK.

1,294,130. Specification of Letters Patent. Patented Feb. 11, 1919.

Application filed September 18, 1915. Serial No. 51,310.

To all whom it may concern:

Be it known that I, HECTOR V. LOUGH, a subject of the King of England, and a resident of North Plainfield, in the county of Somerset, State of New Jersey, have invented certain new and useful Improvements in Display-Racks, of which the following is a specification.

The improvements relate to devices for displaying merchandise and other articles, and particularly to display fixtures consisting of a series of leaves or wings carrying articles to be displayed, and arranged and operated in such a manner as to be successively presented to view and permitted to remain stationary in that position for a definite period.

The requirements of a device of this character are peculiar, and unless they are met the device cannot be considered practicable or useful. Among these requirements are the following:

The fixture must be strong, durable, dependable, and capable of sustaining considerable weight, and also relatively simple and inexpensive in construction. It must be so constructed and operated as to be smooth and certain in its movements, and free from hitches or jars tending to injure the most fragile articles which must be safely supported and carried thereon to and from the display position. The wings or leaves and the articles supported thereon must be insured against contact with one another in all positions. The leaves must be so arranged that they may be moved by hand when desired, without affecting the driving mechanism or any other parts. When the fixture is designed to be used for the display of articles continuously it must be provided with means for guarding against injury or breaking down of the mechanism in case the wings or any other part are interfered with or subjected to undue strain, while the fixture is not attended by any one, as, for instance, when it is left in an illuminated store window at night after the store is closed. It is also desirable to have the fixture of "knock-down" construction so that it may be shipped or stored in compact form and to have the wings easily removed and replaced by wings of the same or other form and size.

It is to meet the requirements above enumerated and to secure the advantages resulting therefrom, among others, that the present improvements are designed. They are described and claimed herein and illustrated in the accompanying drawings.

In the said drawings, Figure 1 is a plan of a motor-operated display rack embodying the improvements. Fig. 2 is an elevation thereof taken from the display point of view. Fig. 3 is a horizontal cross-section taken on the line 3—3 of Fig. 2, and looking in the direction indicated by the arrows in that figure. Fig. 4 is a modified vertical cross-section substantially on the line 4—4 of Fig. 1, looking in the direction indicated by the arrows in that figure. Fig. 5 is a perspective of one of the wing supporting and spacing members enlarged. Figs. 3 and 4 are also on an enlarged scale, and in Fig. 4 the leaves or wings are shown in a position which does not correspond exactly with their position in Fig. 1, but is best adapted for illustration.

The base 1 is conical in form and has a sufficient spread to provide a strong and stable support for the other parts of the apparatus. It has an opening 2 for the driving gear 25 and is provided with an extension 3 on which the motor 22 is supported. Its apex is formed into a neck 4 which receives the collar of a cam 40, which is secured thereto by means of a set screw 41, and a hollow inverted cone 5 receives the shaft 10 and supports the same in an upright position with the assistance of the neck 4, through which the shaft passes.

To the lower end of the shaft 10 the collar 21 of the internal gear 20 is keyed, and in mesh with this gear is the driving gear 25 of the motor 22 which is provided with suitable reducing gears in the housing 24 communicating between the motor and the said driving gear. The motor is pivotally mounted on the base extension 3 by means of the bolt 23, so that it is capable of limited oscillatory movement in a horizontal plane, and around the shaft of the driving gear the end of the strap 26 is turned. The opposite end of the strap is provided with a crook 27 which passes around the post 28 fixed to the base, so that when the motor oscillates its movement of this character will be permitted by the said strap. The principal object of this provision is to permit the gear 25 to be thrown out of mesh with the internal gear 20 in case the opera-

tion of the display rack is interfered with or is subjected to undue strain which might tend to make the load on the motor too great. The apparatus may therefore be left in operation without attendance for an indefinite period, and in case anything should happen to interfere with its operation the motor with be at once disconnected. To the lower part of the shaft immediately above the neck 4 a disk 11 is keyed by means of the set screw 13, and a series of socket holes 12 in this disk receive the downwardly extending pivot pins 31 of the heart-shaped carriers and spacers 30, on which the leaves or wings 17 are supported at their lower and inner corners by having the lugs 18 passed into the recesses immediately above 31. The upper ends of the wings 17 are held in the disk 14 secured to the upper end of the shaft 10 by means of the set screw 15 by having the lugs 19 passed through openings 16 in said disk, and as there is a space between the upper edge of each leaf or wing and the disk 14 greater than the length of the lug 18 it may be disengaged—and replaced by another if desired—by raising it, then moving it laterally and then lowering it again. In this manner the wings may be quickly and easily removed, and, by reversal of the removal operation, replaced. By lowering the disk 14 the fixture may also be adjusted to receive wings of various heights, so that the same fixture may be used for the display of articles of various sizes having relatively large or small area without employing wings of inappropriate size.

The outer portion of each heart-shaped spacer and wing carrier 30 is provided with small parallel upwardly extending flanges 35 between which the wing is held, and on the under side immediately below these flanges is the depending post 32 with its contracted lower end 33, on which the roller 34 is mounted, a small hole in the lower end of 33 being adapted to receive a cotter pin or other means for holding the roller in position. The laterally extending portions of the spacers 30 are adapted to come in contact with each other to hold the wings carried thereon apart. They also permit longitudinal movement when the rollers are passing over the cams hereinafter described.

A cam 43 is secured to the cam 40 through its collar and the arms 42, these parts and the connecting part 44 being connected, and has its inner face in the path of the rollers 34, so that when the said rollers pass thereover they will be detained thereby, and the wings caused to remain in a position substantially at right angles to the line of vision of the observer for a definite period of time. Meanwhile the pivot of each detained wing will continue to move with the disks 11 and 14 and the wing caused to have a slight longitudinal movement to compensate for its detention. The roller of each wing then passes off the forward end of the cam and is caused to move through an arc of substantially 180 degrees over the spring portion 45 of the cam 40, which is hinged to the fixed part of the cam at 49, until it reaches the enlargement 47 of said cam where it will be again detained for a definite period while the opposite face of the wing is exposed to view. This movement of the wing is caused by the spiral spring 38 secured at one end to the disk 11, and at its other end to the member 30 and held under compression at all times, so that when the wing is released by the cam 43 expansive action of the spring will cause it to swing over to the opposite side. Sufficient resistance to retard the movement of the wing while it is swinging from one side to the other is provided by the face 46 of spring cam member 45, the latter being held normally in its outward position by the spring 50 connected with its pin 48 and at the opposite end with the outer arm 42, and normally under tension, the movement of the said member 45 in both directions being limited by the slot 51 in which the lower projecting ends of the pin 48 is confined. After the roller has been detained for the desired period by the enlargement 47 it passes over the same and resumes its travel around to the opposite side, the escape of the rollers from the cam 43 and the part 47 being substantially simultaneous so that as the wing on the right swings over to the left the wing on the left moves back and permits it to take its place.

In operation the wings travel from their extreme position on the left around to the extreme position on the right where each is detained by the cam 43 with its face substantially at right angles to the line of vision while the wing on the opposite side has its opposite face similarly exposed, the two wings being disposed substantially in line. Each wing is then released in turn from the cam 43 and caused to swing over to the opposite side where its opposite surface is exposed to view in connection with the face of another wing on the right hand side. This operation is repeated under the moving impulse of the motor, as heretofore described, as often as desired. In case it is desired to expose sides of two of the wings longer than the normal period it is only necessary to detain one of the wings in any desired manner, thus causing the motor to be disconnected and the apparatus to remain stationary during that period.

It will be seen that the apparatus may be dismembered for storage and shipping by removing the wings as hereinbefore described, and the shaft 10, and packing them in a relatively small space. In disconnect-

ing the shaft the disks 11 and 14 may be allowed to remain on the shaft 10, and the removal of the collar 36, secured to said shaft by means of the screw 37 which holds the parts between it and the neck 4 in position, will permit the removal of these parts if desired. The parts, however, may be packed and shipped in their operative position with the wings removed, and the work of assembling thus simplified. The construction therefore provides for the storage or shipment of the apparatus in compact form ready to be assembled and placed in operation by a few simple adjustments, and without necessitating the assemblage of the more complex parts. It will also be understood that shafts of various lengths and wings of various sizes may be furnished and used with the other parts of the apparatus if desired.

What I claim is:

1. In a device of the character described, the combination of a fixed support, a series of wings or leaves rotatably mounted thereon and adapted to carry articles to be displayed, means for automatically moving said wings successively to and from a display position, and means for detaining them in said position without affecting the rotating means, comprising members rotatably mounted adjacent to the axis of revolution of said wings and a detent in the path of said members which are mounted adjacent to the axis of revolution, a second detent in the path of said members positioned at an angle greater than ninety degrees to the first detent, and a member also in the path of said first named members and intermediate the detents, said last named member constructed to yieldingly engage the said first member as it passes from one detent to the other.

2. In a device of the character described, the combination of a fixed support, a series of wings or leaves rotatably mounted thereon and adapted to carry articles to be displayed, means for automatically moving said wings successively to and from a display position, and means for detaining them in said position without affecting the rotating means, comprising members rotatably mounted adjacent to the axis of revolution of said wings and a detent in the path of said members which are mounted adjacent to the axis of revolution, a second detent in the path of said members positioned at an angle greater than ninety degrees to the first detent, and a member also in the path of said first named members and intermediate the detents, said last named member constructed to yieldingly engage with increasing resistance the said first member as it passes from one detent to the other.

3. The combination of means for transmitting power, a shaft operatively connected therewith, wings mounted on said shaft to rotate therewith and extending normally on substantially radial lines from the axis of said shaft, spacers carried by said wings, projecting members thereon, said spacers preventing the said wings from coming in contact in all positions, fixed members in the path of said projecting members adapted to retard the rotary movement of said spacers and of the wings connected therewith at predetermined points, and a flexible connection between each wing and the shaft which connection permits the shaft to rotate while the wing is retarded.

4. The combination of means for transmitting power, a shaft operatively connected therewith, wings mounted on said shaft to rotate therewith and extending normally on substantially radial lines from the axis of said shaft, spacers carried by said wings, said spacers preventing the said wings from coming in contact in all positions, fixed members for detaining the rotation of the wings successively in the path of a portion of each wing arranged on opposite sides of said shaft, the said wing portion riding over said members, and being thereby given lateral movement, means for swinging each wing quickly from one detaining member over to the other, and means intermediate the said detaining members for controlling the momentum of the wing during said movement.

5. The combination of means for transmitting power, a shaft operatively connected therewith, wings mounted on said shaft to rotate therewith and extending normally on substantially radial lines from the axis of said shaft, spacers carried by said wings, said spacers preventing the said wings from coming in contact in all positions, fixed members for detaining the rotation of the wings successively in the path of a portion of each wing arranged on opposite sides of said shaft, the said wing portion riding over said members, and being thereby given lateral movement, means for swinging each wing quickly from one detaining member over to the other, and means intermediate the said detaining members for controlling the momentum of the wing during said movement, said means comprising a track or guide having a cam surface in the line of travel of a wing portion, with which the said wing portion comes in contact, said momentum controlling member being movable at an angle to the path of the said wing portion, and a spring normally holding it in the said path.

6. The combination of a standard, wings rotatably mounted thereon near one edge and extending radially therefrom, means for rotating said wings and means for detachably supporting them on the standard, comprising members rotatably connected

with the standard having portions removably engaging portions of said wings, one set of said supporting members having lateral projections arranged to come in contact with other supporting members of the same set whereby wings of various sizes supported thereon may be spaced.

7. The combination of a standard, wings rotatably mounted thereon near one edge and extending radially therefrom, means for rotating said wings and means for detachably supporting them on the standard, comprising members rotatably connected with the standard having portions removably engaging portions of said wings, one set of said supporting members having lateral projections arranged to come in contact with other supporting members of the same set whereby wings of various sizes supported thereon may be spaced, and a plurality of detaining members in the path of said supporting members arranged to engage them and detain them and the wings supported thereby in two positions.

Witness my hand this 4 day of September, 1915, at the city of New York, in the county and State of New York.

HECTOR V. LOUGH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."