June 1, 1937. G. A. ANDERSON 2,082,236

MECHANICAL RACK

Filed March 9, 1936

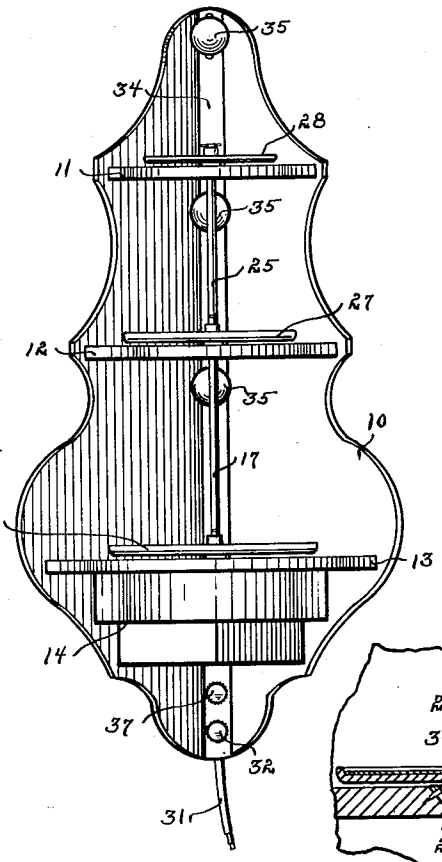


fig. 1

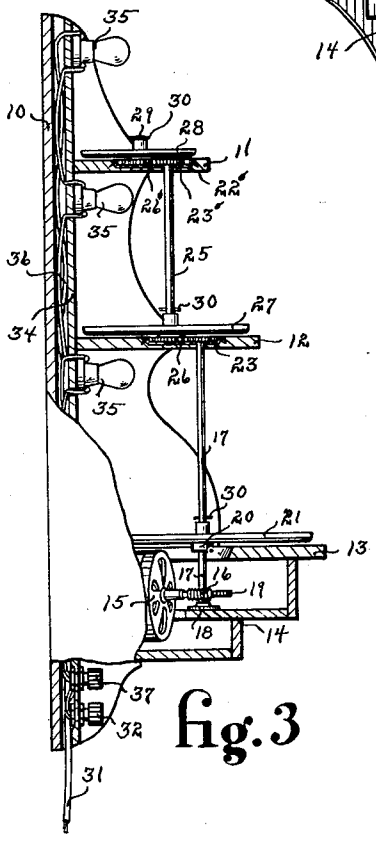


fig. 3

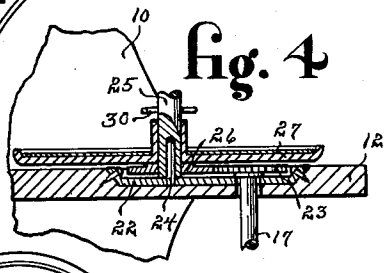


fig. 4

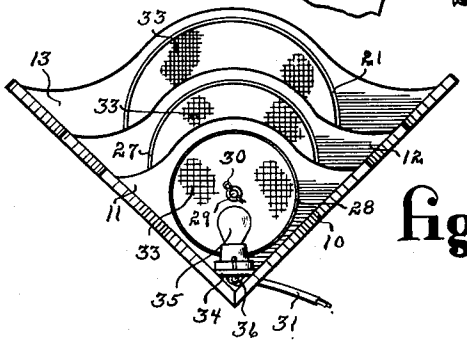


fig. 2

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MECHANICAL RACK

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3 Claims. (Cl. 211—139)

The principal object of my invention is to provide a mechanical rack that can more successfully show and display items placed upon it.

More specifically, the object of this invention is to provide a mechanical rack having motor driven rotatably mounted tray shelf portions.

A still further object of my invention is to provide a mechanical rack that is economical in manufacture, quiet in operation, and durable in use.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawing, in which:

Fig. 1 is a front view of my mechanical rack ready for use.

Fig. 2 is a top plan view of the mechanical rack.

Fig. 3 is a side-sectional view of my mechanical rack and more fully illustrates its construction.

Fig. 4 is an enlarged side-sectional view of one of the shelf portions.

Racks of this nature are usually hung or stood in the corner of a room. They are used to display a great variety of items and are usually so crowded with such items that it is difficult for the observer to successfully see all of the items without removing them from the shelves. I have overcome these objections as will hereinafter be appreciated.

Referring to the drawing, I have used the numeral 10 to designate an ordinary corner rack having shelves 11, 12, and 13. It is such a rack that I transform into a mechanical one. The numeral 14 designates a motor housing just below the bottom shelf 13. In this housing I mount a prime mover 15 such as a small low speed electric motor. The numeral 16 designates a small worm gear on the drive shaft of the motor 15. The numeral 17 designates a vertical shaft extending upwardly from inside the motor housing through the shelf 13 and the shelf 12, as shown in Fig. 3. This shaft 17 is rotatably mounted and has its lower end rotatably extending into the bearing member 18 inside the motor housing. The numeral 19 designates a comparatively large disc worm gear rigidly fixed on the shaft 17, inside the housing 14 and in engagement with the worm gear 16. By this arrangement when the motor is turning the shaft 17 will be rotated very slowly. Obviously, any means of reducing the speed of rotation of the shaft 17 relative to the speed of rotation of the motor may be used. The numeral 20 designates a bearing collar on the shaft 17.

The numeral 21 designates a tray plate element having its marginal edge bent upwardly and its center portion loosely embracing the shaft 17 and resting on the bearing collar 20. This tray 21 is positioned just above the shelf 13. The numeral 22 designates a bar embedded in the upper surface of the shelf 12. This shaft 17 extends through this bar. The numeral 23 designates a gear wheel rigidly secured to the top of the shaft 17 and resting just above the bar 22. The numeral 24 designates a vertical post on the bar 22. The numeral 25 designates a vertical shaft having its lower end loosely embracing the post 24 and its upper end extending through the shelf 11. The numeral 26 designates a gear wheel rigidly secured on the lower end of the shaft 25 and in engagement with the gear wheel 23. The bar 22 is so embedded in the shelf 12 that the top surfaces of the gear wheels 23 and 26 are substantially flush with the top plane of the shelf 12. The numeral 27 designates a tray plate having its marginal edge bent upwardly and its center portion loosely embracing the shaft 25 and resting on the gear wheel 26. Obviously, my device may be continued upwardly to take care of any number of shelves of a rack of this nature. In the drawing, however, I show only a three-shelf mechanical rack. The shelf 11, the same as the shelf 12, has an embedded bar which I have designated as 22'. Also, on the upper end of the shaft 25 is a gear wheel 23', the same as is on the top of the shaft 17. This bar 22' and adjacent parts are the same as that of the construction shown in Fig. 4. There is a post, a shaft 29 rotatably mounted on it, and a gear wheel 26' on the shaft and in engagement with the gear wheel 22'. As the shelf 11 is the uppermost shelf, the shaft 29 is only a stub shaft for the tray plate 28 positioned just above the shelf 11, the same as the tray plate 27 is just above the shelf 12.

The numeral 30 designates a detachable cotter key above each tray plate extending through the shaft around which each tray plate extends. These cotter keys prevent the upward sliding movement of the tray plates on their shafts. Racks of this nature usually have their shelves decreasing in area as they progress upwardly. When this is the situation the post 24 of each shelf is set rearwardly on the shelf relative to the upper gear wheel on the next lower shaft.

This properly positions the tray plates on each of the shelves. These tray plates obviously decrease in diameter relative to each other as they progress upwardly. The vertical shafts are prevented from upward sliding movement by their upper ends operatively engaging the under side of the tray plate above them. Their downward sliding movement is limited by the bar and post.

The numeral 31 designates an electric lead line leading to the motor 15 with the switch 32 imposed in the line. This switch 32 is located on the mechanical rack just below the housing 14. The numeral 33 designates a resilient padding of cloth, leather, or like covering the inside bottoms of each of the tray plates.

To operate the device it is merely necessary to have the line 31 in communication with a suitable source of electric current and turn the switch 32 "on". With the motor running the tray plates 21, 27, and 28 will slowly rotate, thereby properly and successfully displaying and showing items set on the tray plates. To stop the rotation of the plates it is merely necessary to turn the switch 32 "off".

The items on the tray plates will be held against undesirable sliding movement by the covering 33.

In many instances it is desirable to light the shelves and especially when the mechanical rack is in a dark corner. In my mechanical rack I have a bar board 34 enclosing its inner corner the entire length of the mechanical rack. This bar board supports the light sockets and the light bulbs 35 and provides, with the mechanical rack corner, a passageway for the electric lead line 36 which is electrically connected to the bulbs and the line 31 below the switch 32.

The numeral 37 designates a switch in the line 36. To turn the lights "on" or "off" it is merely necessary to actuate the switch 37. A light bulb 35 may be positioned above each shelf.

Some changes may be made in the construction and arrangement of my improved mechanical rack without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. In a device of the class described, two horizontal shelves one above the other, a bar on each of said shelves, a vertical post on each of said bars, two vertical shafts having their lower ends journaled on said two posts, respectively, a gear wheel on the lower end of each of said shafts, a gear wheel on the upper end of one of said shafts in engagement with the gear wheel on the lower end of the shaft above it, a tray member on each of said shafts, and a prime mover operatively connected to the gear wheel on the lower end of the lower shaft.

2. In a device of the class described, two horizontal shelves one above the other, a bar on each of said shelves, a vertical post on each of said bars, two vertical shafts having their lower ends journaled on said two posts, respectively, a gear wheel on the lower end of each of said shafts, a gear wheel on the upper end of one of said shafts in engagement with the gear wheel on the lower end of the shaft above it, a tray member on each of said shafts, and a prime mover operatively connected to the gear wheel on the lower end of the lower shaft; said bars and gear wheels being substantially within the plane of the shelf they are adjacent.

3. In a device of the class described, two horizontal shelves one above the other and with the top one having an area substantially less than the lower one, a bar on each of said shelves, a vertical post on each of said bars with the upper post positioned back of the vertical plane of the lower post, two vertical shafts having their lower ends journaled on said two posts, respectively, a gear wheel on the lower end of each of said shafts, a gear wheel on the upper end of one of said shafts in engagement with the gear wheel on the lower end of the shaft above it, a tray member on each of said shafts, and a prime mover operatively connected to the gear wheel on the lower end of the lower shaft.

GUST A. ANDERSON.