June 7, 1960 C. R. ARNOLD 2,939,455

BARREL ROLLER MASSAGE MACHINE

Filed Dec. 19, 1957 2 Sheets-Sheet 1

Fig. 1.

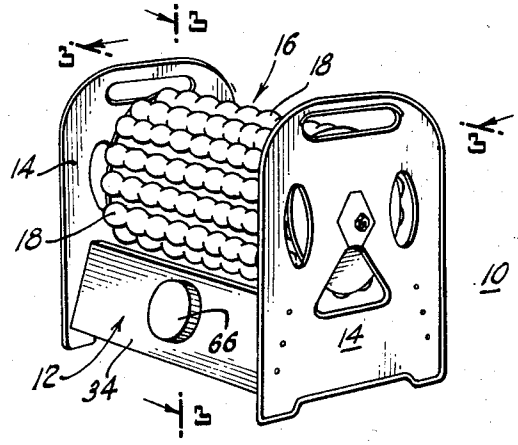
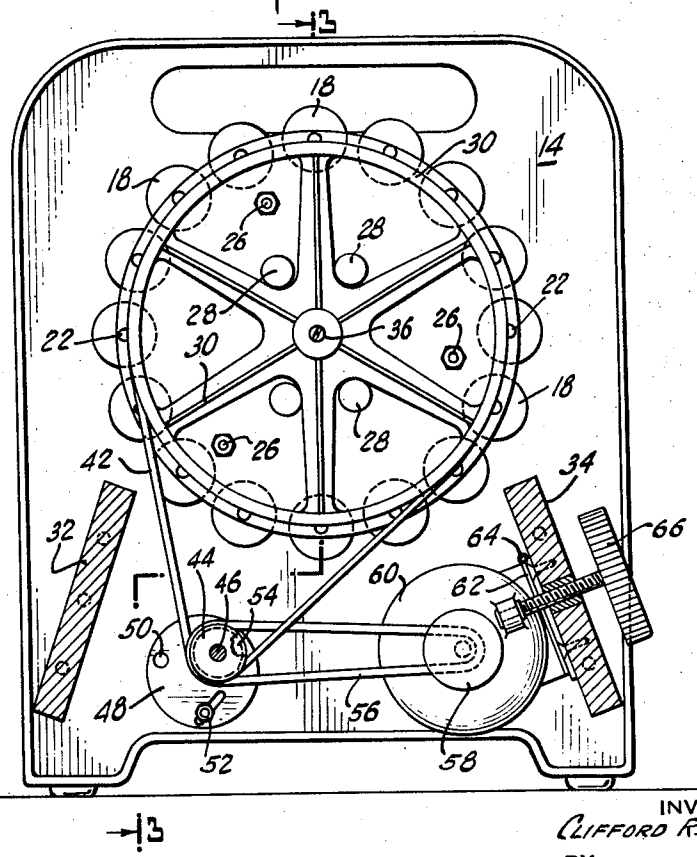


Fig. 2.



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Fig. 3.

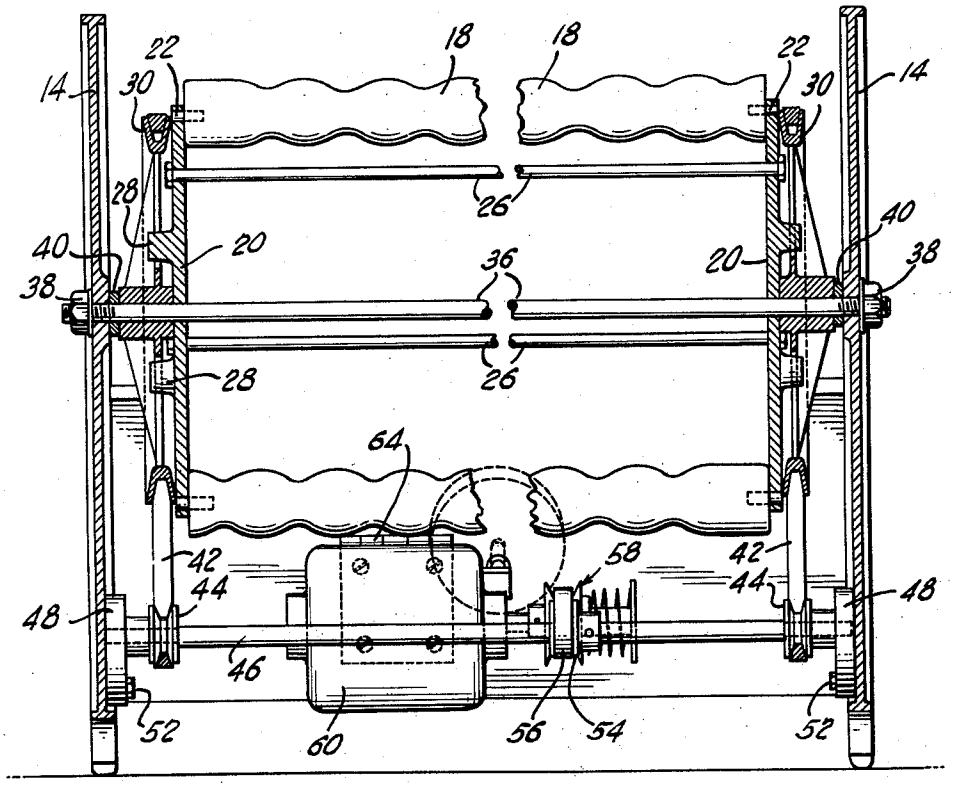


Fig. 4.

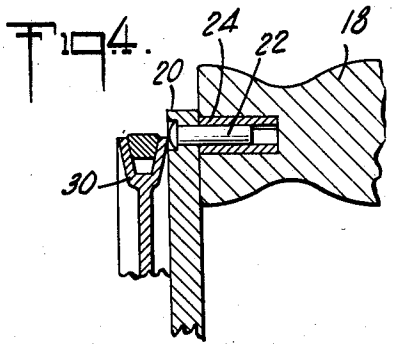
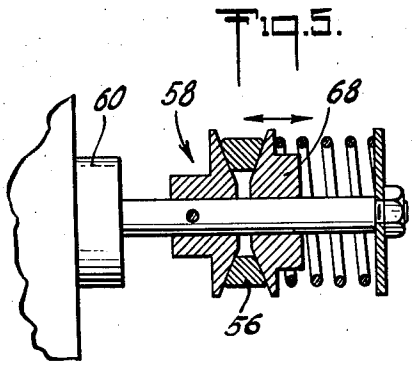


Fig. 5.



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BARREL ROLLER MASSAGE MACHINE

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8 Claims. (Cl. 128—57)

This invention relates to an improved barrel roller massage machine.

An object of the invention is to provide a barrel roller which is simple and inexpensive to manufacture and very easy to assemble.

Another object is to provide such a machine which is convenient to use and which can easily be adjusted as desired to obtain best efficiency and speed of operation.

These and other objects will in part be understood from and in part pointed out in the description given hereinafter.

A machine known in the trade as a barrel roller, which is used for body massage, has a horizontally mounted drum or barrel that carries around its periphery a multiplicity of long thin fluted rollers parallel to the axis of the drum and individually free to rotate. When the machine is in operation, the drum is rotated at a moderate speed while a person holds some portion of his body against the periphery of the drum, the ridges and grooves in the individual rollers as they revolve serving to massage the body.

In the past, barrel rollers were relatively expensive and they were difficult and tedious to assemble because of the great number of parts which had to be carefully fitted together. The structure of these parts was such that the barrel, with its associated rollers, had to be assembled first, and then the supporting frame in which it is mounted built up around it. After the unit was assembled, this in itself often requiring half a day, the frame could then be finally painted. However, since it is undesirable that the rollers and certain other moving parts be painted it was further necessary during painting to go to great lengths to mask these parts. As a consequence, not only was assembly difficult, but painting was perhaps more so.

The present invention overcomes these difficulties by providing a barrel roller in which barrel and frame can be assembled separately, painted, and then put together as a complete unit. The structure of the barrel and its individual rollers is considerably simplified by providing two thin flat rigid metal discs between which the individual rollers are supported. These discs in turn on their outer faces carry bosses or pins which engage with the spokes of belt-driven pulleys, the pulleys being of a kind commercially available at low cost. Pulleys and discs are then rotatably mounted on a uniform-diameter axle supported at its ends between two upright plates of a stationary frame. To assemble the barrel sub-unit in the frame, this axle is simply passed through the center holes in the discs and pulleys of the barrel and the end plates of the frame, and then secured in place by cap screws. The entire operation can be completed in a few minutes. Lateral play of the barrel within the frame is easily eliminated by tightening the cap screws on the axle, and this feature permits a user of the machine throughout its life to keep it in perfect adjustment.

The barrel is rotated within the frame by belts engaged over the drive pulleys carried on its two end discs, the

belts in turn being driven from an idler shaft which is belt-driven from a small motor. This motor is adjustably mounted on the stationary frame and has an expandable drive pulley so that by externally varying the position of the motor, the rotational speed of the barrel can be controlled. This constitutes a very simple and inexpensive arrangement.

A better understanding of the invention together with a fuller appreciation of its many advantages will best be gained from the following description given in connection with the accompanying drawings wherein:

Figure 1 is a perspective view of a barrel roller embodying features of the invention;

Figure 2 is an enlarged cross section view taken as indicated by lines 2—2 in Figure 1;

Figure 3 is a longitudinal section view taken as illustrated by lines 3—3 in Figure 2;

Figure 4 is a greatly enlarged view of one end of the barrel showing the manner of attachment of an individual roller; and

Figure 5 is a section view of the motor pulley.

The barrel roller **10** seen in Figure 1 includes a stationary frame **12** having two vertical end plates **14** between which is rotatably mounted the barrel **16**. The barrel is cylindrical and it carries around its rim a multiplicity of the individual rollers **18**, each roller being fluted along its length and rotatably mounted on the barrel. When the barrel rotates, these rollers can roll in contact with a person's body and massage it.

As seen in Figures 2 and 3, rollers **18** are mounted between the two thin end discs **20**, of a suitable material such as cast aluminum, the rollers being supported at their ends by the pins **22**. Each pin as seen in Figure 4 is firmly driven into an end bushing **24** in its respective roller and the pins and bushings rotate relative to the discs **20**. The pins have heads countersunk into the discs and they pass through oversize holes in the discs into bushings **24**, the bushing providing end bearings for the rollers. To prevent skewing of the rollers, discs **20** as seen in Figures 2 and 3 are tied together by three equally spaced rods or bolts **26** whose ends pass through the discs and are capped by nuts, which allow adjustment to be made on the barrel or drum section to compensate for wear.

Each disc **20** on its outer face has the four integral bosses or shoulders **28**, which, as seen best in Figure 2, nest against the spokes of respective ones of the pulleys or sheaves **30**. Bosses **28** radially position a pulley on its disc and provide rotation of the two in unison, they are an extremely simple yet effective means of attachment. It will be noted in Figure 4 that the outer rim of pulley **30** partly covers the heads of pins **22** and thus positively prevents any from falling out in the event that it works loose in its bushing **24**.

Frame **12** includes vertical end plates **14**, previously mentioned, which are held together by the horizontal side braces **32** and **34** bolted, screwed, or welded between these plates. To assemble barrel **16** within the frame, the barrel and sub-assembly including pulleys **30** is lowered into place as indicated in Figure 3 between plates **14** and then a straight or uniform diameter central axle **36** is passed through these members and secured in place by the end cap nuts **38**. If desired, a washer **40** can be inserted between each pulley **30** and plate **14** to reduce lateral friction. By tightening nut **38**, the compressive force against discs **20** can be increased to compensate for any looseness which may develop in rollers **18** this force acting equally on all the rollers and uniformly controlling their tightness.

Barrel **16** is rotated within frame **12** by the endless belts **42** engaged on respective ones of pulleys **30** and also passing around the idler pulleys **44** carried on a

shaft 46. This shaft as seen in Figures 2 and 3 is journaled in the end blocks 48, each of which is carried on a respective one of plates 14 and can be rotated about its eccentric mounting pin 50 to adjust the tension on belts 42. Blocks can be adjustably locked in angular position by the bolt and slot arrangement 52.

Also carried on shaft 46 is a third pulley 54 around which is looped a short belt 56, the other end of which passes around an adjustable pulley 58 carried on the shaft of the motor 60. This motor is mounted on a plate 62 hinged at 64 to brace 34 and is adjustable toward or away from the brace by means of the screw and knob member 66.

When the motor is moved all the way against brace 34, the tension on belt 56 will decrease the effective diameter of the motor pulley, shown also in Figure 5, by forcing its spring loaded half 68 to the right. This causes the roller to run at minimum speed. Conversely, by moving motor 60 to its maximum limit away from brace 34, the barrel will run at maximum speed.

Plates 14 can be identical to each other and are advantageously cast aluminum. Similarly, discs are identical, as are pulleys 30. Thus these parts can be obtained at less cost and can be assembled without regard to right or left. The barrel roller as shown in Figures 2 and 3 is drawn to scale; the diameter of pulleys 30 in a full size unit is 12 inches. Because these pulleys are very thin, the gaps between the ends or rollers 18 and the support plates 14 are of minimum size. The weight of a machine constructed according to the invention is substantially less than that of previous machines but yet the present machine is stronger and more rigid by virtue of the metal castings.

The above description of the invention is intended in illustration and not in limitation thereof. Various changes may occur to those skilled in the art and these may be made without departing from the spirit or scope of the invention as set forth.

I claim:

1. In an exercising machine of the character described, a multiplicity of long thin rollers symmetrically positioned along a cylindrical surface, a pair of thin rigid end discs spaced apart parallel to each other and rotatably supporting the respective ends of said rollers, a stationary frame having two vertical support plates between which said discs and rollers assembled as a unit are adapted to fit, a straight center axle passing horizontally through said plates and discs and rotatably supporting said discs relative to said frame, motor means to rotate said discs and rollers, and screw means to tension said axle thereby to squeeze said plates end-wise against said discs to control the lateral play of said discs and rollers.

2. The structure as in claim 1 wherein rollers are supported from said discs by short pins journalled through holes in said discs into the ends of said rollers, and wherein said motor means includes at least one large diameter, very thin pulley non-rotatably mounted on an outer face of one of said discs.

3. A barrel roller machine which is easy to assemble and is strong lightweight and rugged, said machine including two end discs of thin rigid material and which are spaced apart parallel to each other, a plurality of rollers rotatably mounted between said discs along a cylindrical surface, two large diameter thin sheaves secured on the outer faces of respective ones of said discs, a stationary frame having two spaced apart upstanding end plates joined together along their lower part by two spaced apart horizontal braces, a straight horizontal axle having end-nut means, said axle being passed through said plates, sheaves and discs and with said end-nut means holding them endwise under compression, an idler shaft carrying idler pulleys and journalled between said plates adjacent said braces, drive belts engaged around said pulleys and sheaves, a motor hinged on the inside of one of said braces and having a variable diameter pulley on its shaft, a motor belt engaged between said idler shaft and said variable pulley, and externally adjustable screw means for adjusting the position of said motor against said brace thereby to vary the diameter of said variable pulley and the speed of said sheaves.

4. The structure as in claim 3 wherein said axle has a uniform diameter along its length and is threaded at each end to receive cap screws, and wherein said discs are of rigid material each having a plurality of bosses on its outer face which engage a respective one of said sheaves and hold it against angular and radial movement, said sheaves being held against said discs by the pull of said axle against said plates.

5. The structure as in claim 4 wherein said rollers are rotatably supported from said discs by broad headed pins passing through said discs into the ends of said rollers, the diameter of said sheaves being large enough to cover the heads of said pins to positively prevent them from dropping out.

6. In an improved exercise machine of the character described, the combination of a barrel sub-assembly including two rigid end discs tied together by a plurality of angularly spaced longitudinal bolts, a plurality of rollers supported between said discs by pins journalled in their ends, two thin drive sheaves attached on to the outer faces of said discs, a stationary frame horizontally supporting said barrel and including two upstanding rigid end members connected together with at least one horizontal brace, a straight axle passed through said members, sheaves and discs and rotatably supporting said barrel relative to said frame, nut means on the ends of said axle pulling against said members to compress them firmly against said barrel, and motor means mounted on said frame and including endless belts to rotate said barrel.

7. The structure as in claim 6 wherein said motor means includes an idler shaft journalled between said members and adjustably positioned relative to said barrel, and also includes a variable pulley for said motor and an adjustable mount so that said motor can be physically moved to adjust the speed of said sheaves.

8. The structure as in claim 6 wherein said bolts are parallel to said axle, pass through said discs and are terminated by cap nuts bearing against said discs.

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