March 24, 1936. J. J. HICKE, JR 2,034,758

POWER DRIVEN ROTARY KNEADER AND MASSAGER

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Fig. 1.

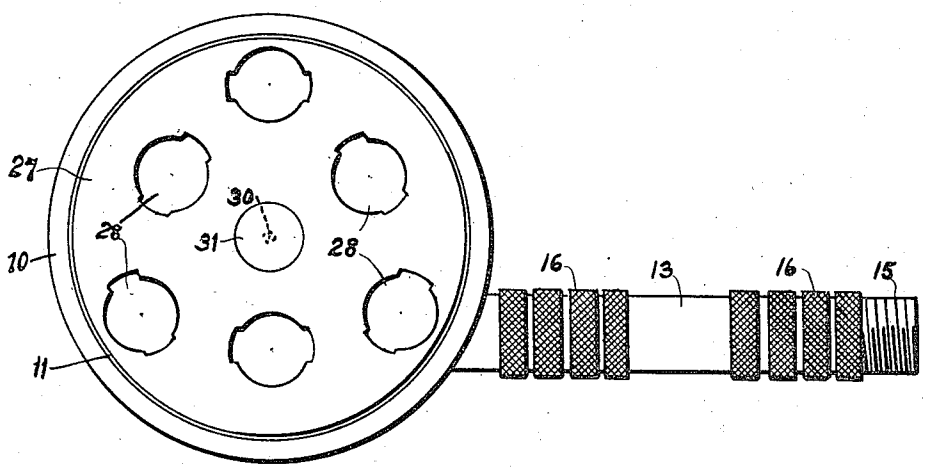
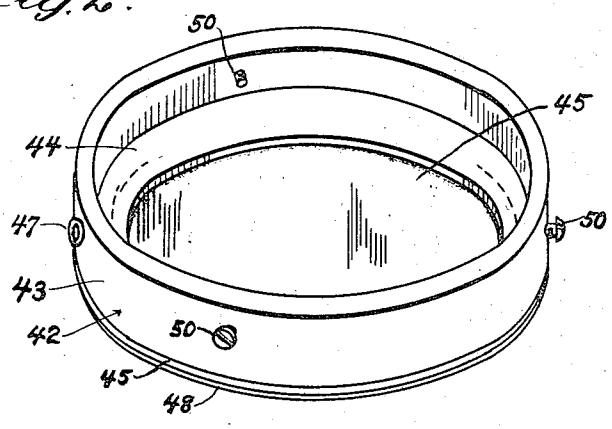


Fig. 2.



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Fig. 3.

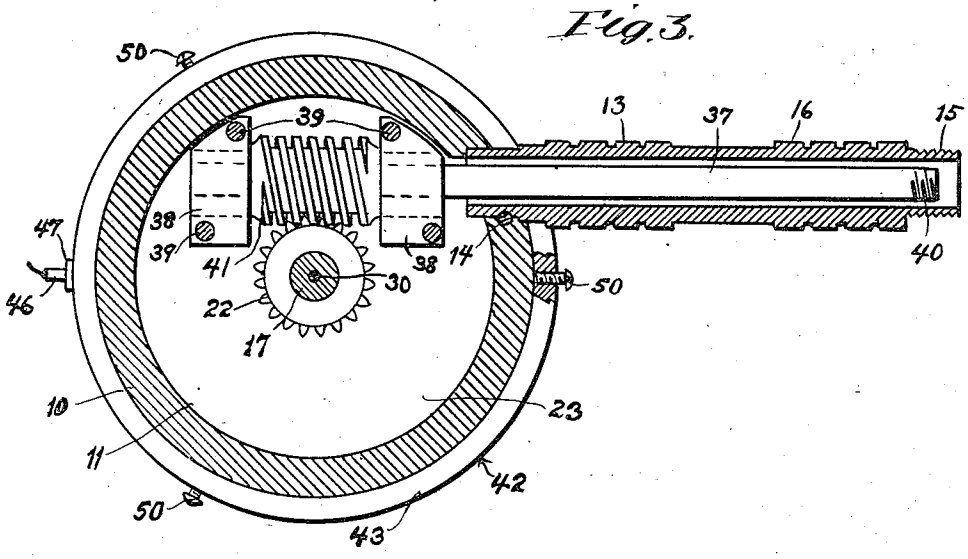
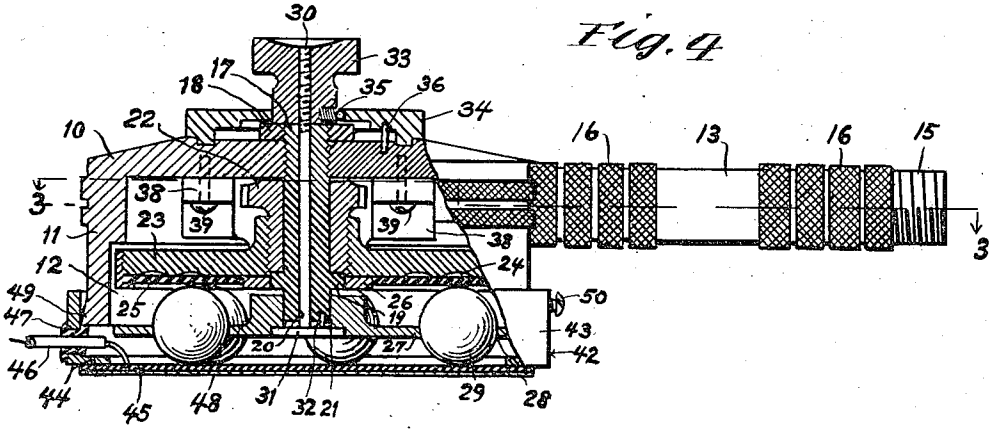


Fig. 4



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UNITED STATES PATENT OFFICE

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POWER DRIVEN ROTARY KNEADER AND MASSAGER

John J. Hicke, Jr., Philadelphia, Pa.

Application October 16, 1934, Serial No. 748,567

5 Claims. (Cl. 128—56)

My invention relates to new and useful improvements in a power driven rotary kneader and massager and has for its object to provide an exceedingly simple and effective instrument of this description which may be readily applied to the body and limbs of the person to be treated, and when so applied will give a rotary kneading effect.

A further object of the invention is to provide a circular casing in which is mounted a power driven rotating unit and a series of balls so seated as to be frictionally driven by the power driven unit in such manner that said balls will travel in given paths as well as rotate upon themselves.

A further object of the invention is to provide a detachable pad upon which said balls may be caused to travel.

A still further object of the invention is to statically electrify said pad for combining the electric and magnetic treatment with the massaging.

With these and other ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction in detail, referring by numerals to the accompanying drawings forming a part of this application, in which:—

Fig. 1 is a bottom plan view of the device, the ring carrying pad being removed.

Fig. 2 is a detail perspective of the ring carrying the pad.

Fig. 3 is a section on the line 3—3 of Fig. 4.

Fig. 4 is a view partly in side elevation and partly in section to illustrate details of construction.

In carrying out my invention as herein embodied 10 represents the circular casing open at the bottom and providing a chamber of two different diameters, the smaller one, represented by the numeral 11, is at the top, and the larger one, denoted by 12, is at the bottom. A tubular handle, 13, is inserted through the side of the casing and is held in place by a screw 14 or other fastening device. This handle has a thread 15 on its outer end and the intermediate portion is knurled at 16 or otherwise fashioned to provide a handy grip.

A stationary shaft 17 has its upper end threaded through a hole in the top wall of the casing with a jamb nut 18 screwed onto the projecting end. This shaft is provided with a collar 19 adjacent its lower end and has a bore 20 running completely through it and a hole 21 in its lower end.

A worm gear 22 is journalled on the shaft 17 between the collar 19 and the top of the casing and said worm gear has an externally threaded shank for coaction with the internally threaded hub of the revolving plate 23 having indentations 24 in its bottom face and said face is covered with a compressible washer 25 of rubber or other suitable material secured in place in any desirable manner. Said washer surrounds a projection 26 on the central part of the revolving plate 23.

On the lower end of the shaft 17, below the collar 19, is revolvably mounted a metal disc 27 having a hub through which runs a counterbored hole for registration with the shaft 17. In the body of the disc 27 are formed a number of apertures 28 to receive the balls 29 and said apertures provide seats for the balls through which said balls cannot pass and the ball engaging parts of the edges of the apertures are restricted by forming notches therein to reduce friction.

The revolving disc 27 is held in place by a screw 30 passing through the bore 20 in the shaft 17 and projecting above the upper end of said shaft and said screw includes a large head 31 registering with the counterbored hole in the disc 27 and carrying a pin 32 for insertion in the hole 21 in the shaft to prevent rotation of the screw. On the upper end of the screw 30 is threaded a thumb-nut 33, or its equivalent, which passes through a cap 34 on top of the casing and engages the upper end of the shaft 17.

The thumb nut 33 carries a spring latch 35 which co-acts with keeper notches in the inner edge of the cap 34, to prevent accidental retrograde movement of said thumb nut and said cap is held against rotation by a pin 36 projecting from the top of the casing and registering with a hole in said cap.

A drive shaft 37 is journalled in bearings 38 within the casing, shown as secured by screws 39 to the inner surface of the top wall of said casing, and a portion of said drive shaft is located within the handle 13 and the outer end is provided with means 40, such as screw threads, for the attachment of a flexible shaft (not shown) which in turn is connected with a prime mover, such as an electric motor. The sheath of the flexible shaft is suitably coupled to the handle 13 through the medium of the threads 15.

On the drive shaft 37, within the casing 10 is fixed a worm 41, meshing with the worm gear 22 whereby motion may be transmitted from the

drive shaft **37** to the revolving plate and component and cooperating parts.

When the thumb nut **33** is slightly released to prevent the screw **30**, or more particularly its head **31**, from binding on the disc **27**, the operation of the device will be as follows:—As the drive shaft **37** revolves, motion will be transmitted through the worm **41** to the worm gear **22** and as the revolving plate **23** is connected to the shank of said worm gear **22**, said plate **23** will be revolved. This will cause the balls **29** to revolve about their own centers because they are in contact with the compressible washer **25** when said balls are pressed against a person's body. A desired kneading action on the flesh of a patient is thus obtained.

When it is desired to obtain a massaging action, the thumb nut **33** is turned in the proper direction to draw the screw **30** upwardly so that the disc **27** will bind the balls against the under surface of the revolving plate **23**, or particularly against the compressible washer **25**, so that portions of said washer will be projected into the indentations **24**, thereby forming pockets for the balls. This will prevent the balls from revolving about their own centers, but they will be moved around the stationary shaft **17** of the device, producing a "drag" over the flesh of the patient so as to give the effect of vigorous massaging.

If desired, a detachable pad **42** may be used with the device for another type of treatment. Such pad **42** comprises a ring **43** having an inturned flange **44** to which is attached a thin metal plate **45**. A conductor **46** passes through a hole in the ring and is insulated therefrom by an insulator **47**. Said conductor leads from a source of supply to the plate **45** to which it is fixed. The outer face of said plate **45** is covered with a sheet **48** of rubber or fabric.

The detachable pad **42**, when it is to be used, is placed over the flare **49** of the casing and temporarily held in place by screws **50**.

Of course I do not wish to be limited to the exact details of construction herein shown and described, as these may be varied within the scope of the appended claims without departing from the spirit of my invention.

Having thus described my invention, what I claim as new and useful is:—

1. In a device of the kind described, a casing open at the bottom, a shaft fixed in said casing, an apertured disc journalled on the lower end of said shaft, balls seated in the apertures of said disc, a gear journalled on said shaft, means to drive said gear, and a plate carried by said gear and engaging the balls to revolve said balls about their own axes.

2. The structure in claim 1, in combination with mechanism to bind the balls against the plate whereby they will be held against revolution about their axes and only carried along with the apertured disc.

3. In a device of the kind described, a casing open at the bottom, a shaft fixed in said casing, an apertured disc journalled on the lower end of said shaft, balls seated in the apertures of said disc, a gear journalled on said shaft, means to drive said gear, a plate carried by said gear and having recesses in the face contiguous the balls, and cushion means carried by said plate and covering the recesses into which portions of said cushion means may be deflected by pressure applied to the balls, said cushion means engaging the balls for transmitting motion thereto.

4. The structure in claim 3, in combination with a ring detachably connected to the open end of the casing, an inturned flange around the outer rim of said ring, a thin metal plate attached to said flange, a conductor fixed to said thin metal plate and passing through the ring for connection to a source of electrical supply, and covering over the outer face of said thin metal plate.

5. In a device of the kind described, a circular casing open at the bottom and having a threaded hole in the top wall thereof in the axis of the casing, a shaft within the casing having threaded connection with the hole in the top of said casing, said shaft having a central bore and a hole in the inner end offset to one side of the bore, a worm gear journalled on said shaft between the collar and the top wall of the casing and provided with an externally threaded shank, a plate having threaded connection with said shank, said plate provided with indentations in its outer face, a compressible washer on said plate covering the indentations, an apertured disc journalled on the lower end of the shaft below the collar, a screw passing through the bore in the shaft and having a large head recessed in the disc, and thumb nut on the upper end of said screw for holding the latter in place and regulating the pressure on the disc, a pin carried by the screw head and projected into the hole in the lower end of the shaft to hold the screw against rotation, balls seated in the apertures of the disc and contacting the compressible washer on the plate, and means to revolve the worm gear.

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