

March 10, 1970

H. BOLLER
MESSAGE DEVICE

3,499,439

Filed May 26, 1967

4 Sheets-Sheet 1

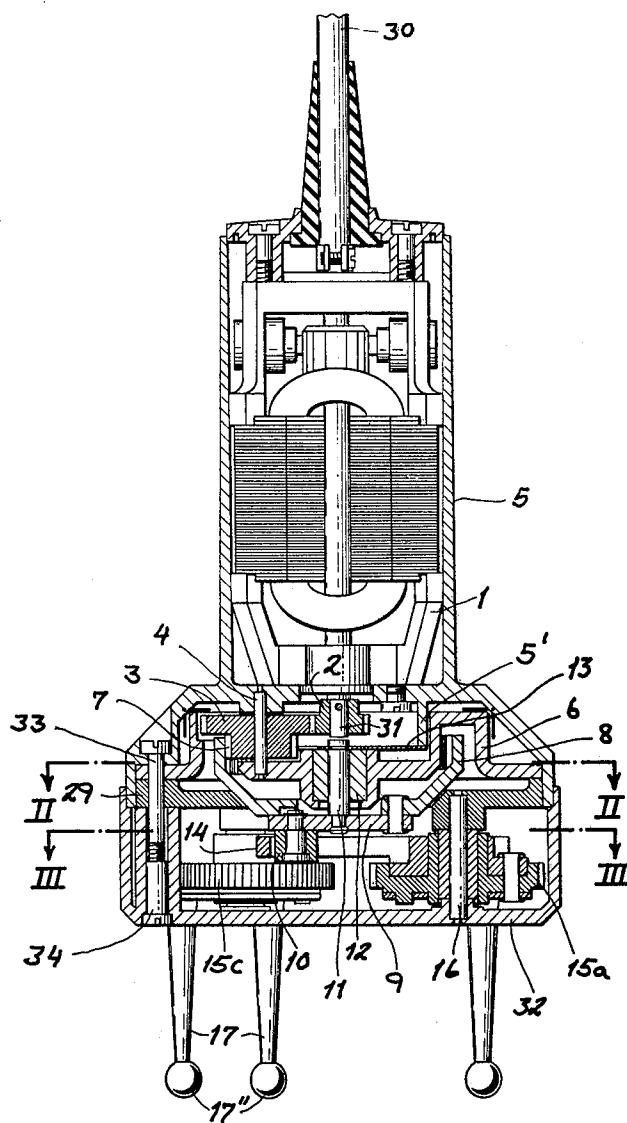


Fig. 1

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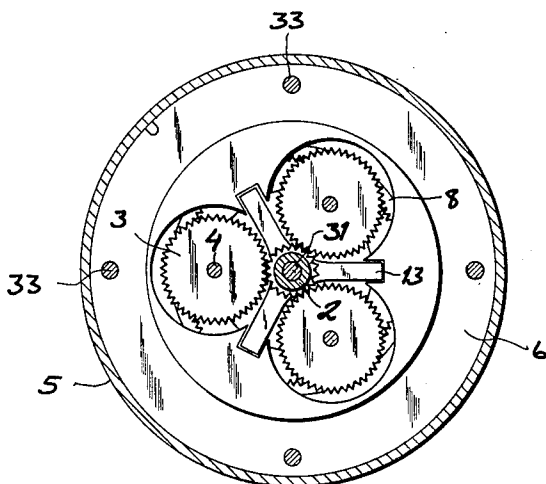


Fig. 2

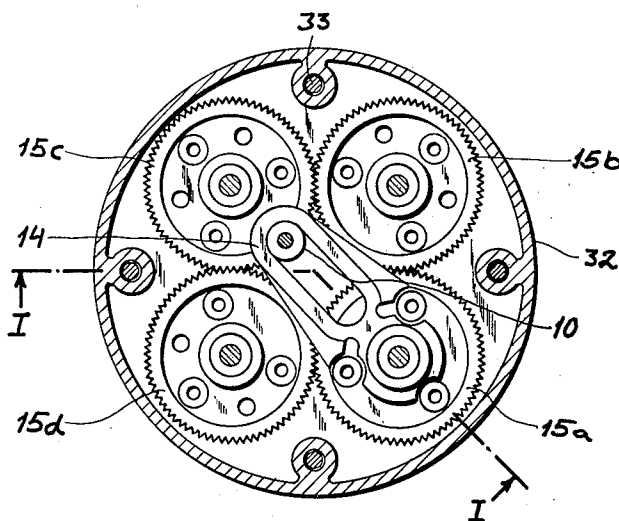


Fig. 3

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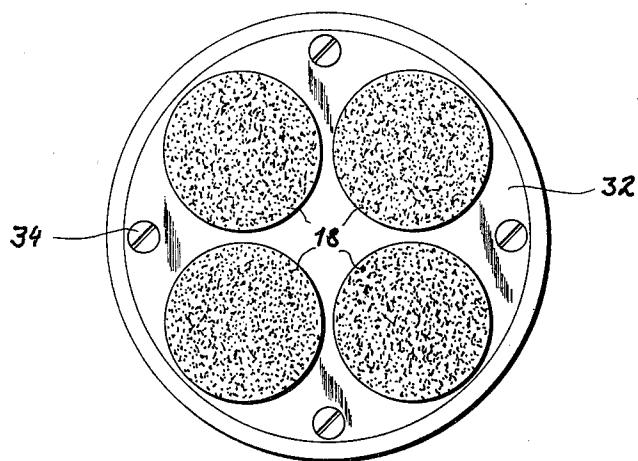
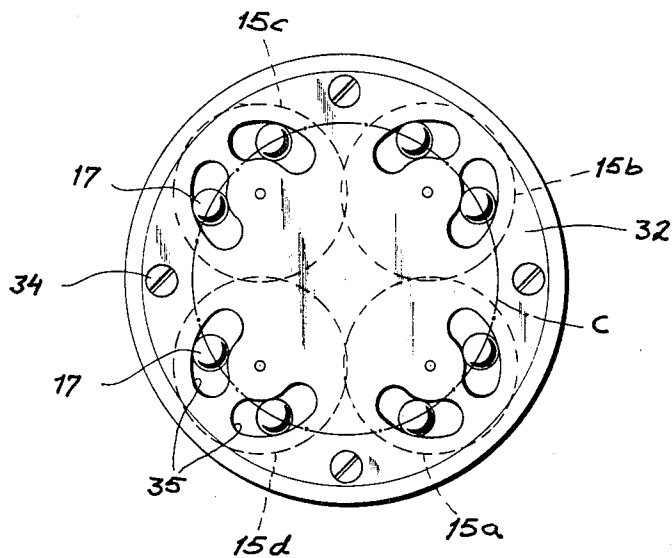
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MASSAGE DEVICE

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4 Sheets-Sheet 3



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MASSAGE DEVICE

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4 Sheets-Sheet 4

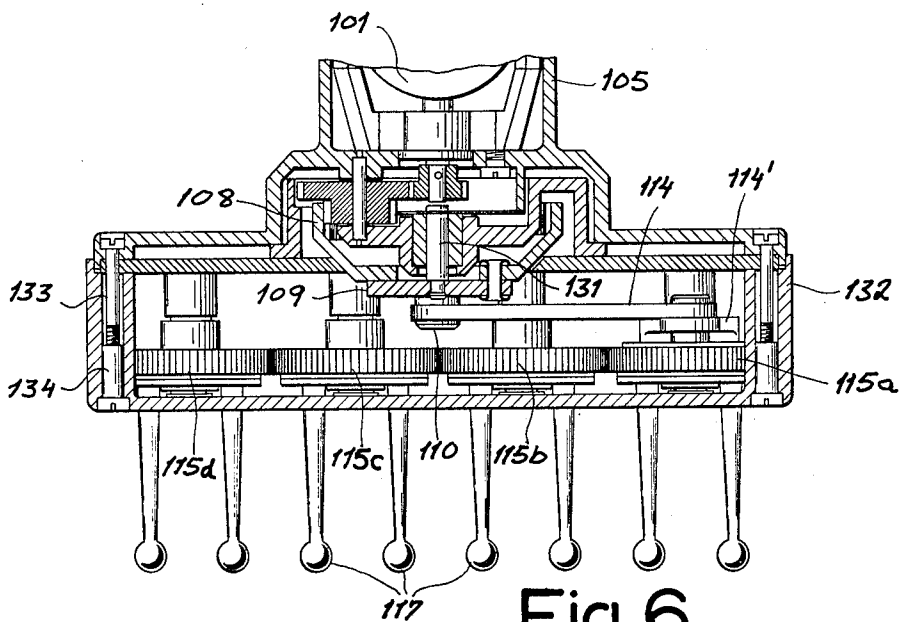


Fig. 6

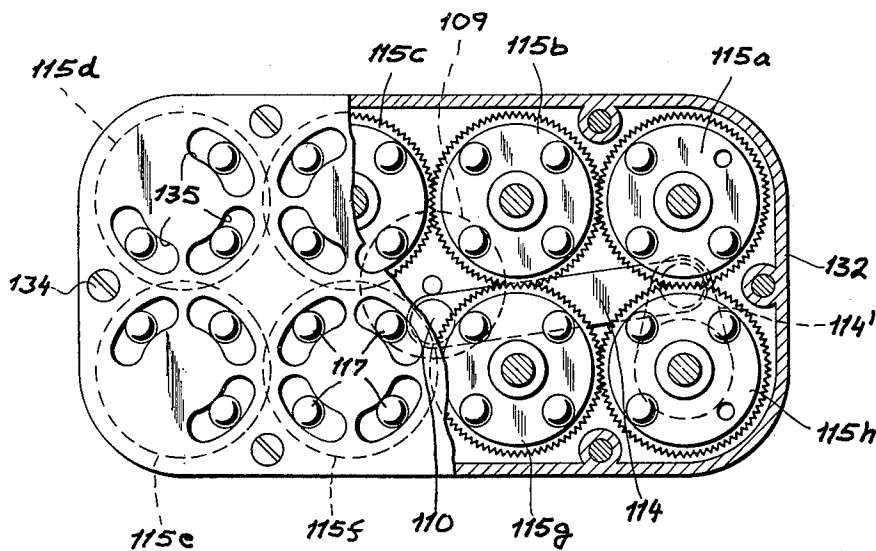


Fig. 7

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3,499,439

MASSAGE DEVICE

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U.S. Cl. 128—49

4 Claims

ABSTRACT OF THE DISCLOSURE

Massaging device with a motor mounted in a handle which terminates in an enlarged head accommodating a transmission with a plurality of intermeshing gears lying in a plane transverse to the motor shaft; a crank driven by that shaft; preferably via a speed reduced including a peripheral array of stepped gears, is centered on the shaft axis and plays in a fork or loop which is rigid with one of the intermeshing gears and thus swingable about the axis of the latter, thereby imparting a rocking motion to all these gears. Each gear carries one or more massaging implements, such as a pair of resilient fingers guided in arcuate slots of a cover plate.

My present invention relates to a massaging device of the type wherein a plurality of electrically driven massaging implements concurrently move in different directions to stimulate blood circulation in a region of the human body to which the device is applied.

A principal object of my invention is to provide a device of this character which is of compact construction and easily handled by the user.

A more particular object of my invention is to provide a simple drive for such massaging implements which can be readily accommodated in a housing of small size.

The aforesaid objects are realized, pursuant to this invention, by the provision of a set of intermeshing gears lying in a common plane, one of these gears being rigid with a rocker arm engaged by a crank which is continuously rotatable around an axis transverse to that plane. Each of the coplanar gears carries at least one massaging implement or preferably a plurality of such implements; the latter may be in the form of resilient fingers, passing outwardly from the casing through arcuate slots in an end plate thereof, though they may also be represented by tufts of bristles or the like.

The housing of the device is advantageously divided into an elongated handle, accommodating the motor, and an enlarged head receiving the coplanar gears and associated transmission means including the crank, the motor shaft being in line with the crank axis. A reduction gearing may be formed in this case by a peripheral array of stepped gears each having a large-diameter portion in mesh with a common drive pinion on the motor shaft and a small-diameter pinion in engagement with a common ring gear with which the crank is positively connected.

The invention will be described in greater detail with reference to the accompanying drawing in which:

FIG. 1 is a longitudinal sectional view of a massaging device according to my invention;

FIGS. 2 and 3 are cross-sectional views taken on lines II—II and III—III, respectively, of FIG. 1;

FIG. 4 is a bottom view of the device shown in FIG. 1;

FIG. 5 is a view similar to FIG. 4, illustrating a modification;

FIG. 6 is a fragmentary sectional view similar to the lower part of FIG. 1, showing another embodiment; and

FIG. 7 is a bottom view (parts broken away) of the device shown in FIG. 6.

In FIGS. 1—4 I have illustrated a massaging device comprising a housing formed from two separable parts

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5 and 32; member 5 defines an elongated cylindrical handle which terminates in an enlarged head constituted in part by the removable end member 32. The handle portion of the housing accommodates an electric motor 1 which is energized via a flexible cable 30 adapted to be plugged into a wall outlet; a suitable on-off switch, not shown, may control the operation of that motor.

The shaft 31 of motor 1 extends along the axis of housing 5, 32 and carries a pinion 2 which meshes with three peripherally arrayed double gears 3, 7. Gear portions 3, which are directly engaged by pinion 2, are of considerably larger diameter than gear portions 7 which are made in one piece with the respective gear portions 3 or are otherwise rigidly secured thereto. Gear portions 7, in their turn, mesh with a common ring gear 8 carrying a crank plate 9 with an eccentrically mounted roller 10. The shafts 4 of stepped gears 3, 7 are mounted in housing member 5 and in an insert 6 press-fitted into same, this insert being provided with a bearing 12 for the shaft 11 of ring gear 8. Bearing 12 is held in place by a spider 13 contacted by internal projections 5' of member 5. The parts 5, 6, 29 and 32 are held together by co-operating male and female screws 33, 34.

A mounting ring 29 rests on an internal shoulder of housing part 32 to form a chamber accommodating four intermeshing spur gears 15a, 15b, 15c and 15d with shafts 16 parallel to motor shaft 31. One of these gears, i.e. the gear 15a, is integral with a rocker arm 14 whose free end forms an elongated loop around the roller 10. Thus, as this roller revolves about the central axis of the structure, arm 14 oscillates about the axis of gear 15a through an arc determined by the eccentricity of roller 10, this oscillatory motion being communicated to all the other gears 15b, 15c, 15d coplanar with gear 15a.

In the specific embodiment illustrated in FIGS. 1 and 4, each of gears 15a, 15b, 15c and 15d carries two massaging fingers 17 (e.g. of rubber) extending outwardly through the bottom plate of housing member 32 which is formed with arcuate slots 35 traversed by the fingers 17. In a central position of rocker arm 14, illustrated in FIG. 3, the fingers 17 (whose upper extremities 17' are visible in FIG. 3) all lie on an imaginary circle C which bisects the arcuate slots 35. Moreover, the fingers 17 are substantially equispaced along the circle C to insure optimum distribution of the massaging effect over the area of the human body to which the device is applied. In order to intensify the treatment, fingers 17 terminate in enlarged spherical tips 17''.

As illustrated in FIG. 5, the fingers 17 may be replaced by tufts of bristles 18 distributed over the entire surface of each of the four intermeshing gears 15a, 15b, 15c, 15d. Naturally, the bottom plate of housing member 32 is provided in this case with sufficiently large perforations to give clearance to the inversely rotating tufts 18.

In FIGS. 6 and 7 I have shown a modified device whose parts have been identified by the same reference numerals as corresponding elements of FIGS. 1—4 with the addition of a "1" in the position of the hundreds digit. In this arrangement the roller 110 of crank plate 109 drives eight intermeshing coplanar gears 115a, 115b, 115c, 115d, 115e, 115f, 115g, 115h through the intermediary of pitman 114 and a rocker arm 114' rigid with gear 115a. The roller-engaging extremity of this rocker arm is here shown to be bifurcate rather than looped as in the preceding embodiment. The four corner gears 115a, 115d, 115e and 115b carry three massaging fingers 117 apiece; each of the intermediate gears 115b, 115c, 115f and 115g carries four such fingers. Each of the latter gears, incidentally, is in mesh with three neighboring gears for more efficient torque transmission among these gears.

It will be apparent that the number of coplanar gears and other details of construction may be varied without

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departing from the spirit and scope of my invention as defined in the appended claims.

I claim:

1. A massaging device comprising a housing; a motor in said housing having a shaft; a set of intermeshing gears lying in a common plane; drive means linking said shaft with said gears, said drive means including a rocker arm rigid with one of said gears and a crank engaging said arm, said crank being rotatable by said motor about an axis perpendicular to said plane; and at least one massaging implement on each of said gears projecting from said housing; said housing including a handle and an enlarged head at an end of said handle, said motor being disposed in said handle, said gears being received in said head, said shaft extending longitudinally of said handle and centrally of said head in line with said axis, said drive means comprising reduction gearing including a pinion on said shaft, a peripheral array of stepped gears with a large-diameter portion engaged by said pinion, and a ring gear engaging a small-diameter portion of each of said stepped gears, said crank being rigid with said ring gear.

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2. A device as defined in claim 1 wherein said head is provided with an end plate formed with arcuate slots centered on the respective axes of said intermeshing gears, said massaging implements comprising resilient fingers extending outwardly through said slots.

3. A device as defined in claim 2 wherein each of said fingers has an enlarged outer free end.

4. A device as defined in claim 2 wherein each of said intermeshing gears carries a respective pair of said fingers, being substantially equispaced along an imaginary circle bisecting said slots in a centered position of said rocker arm.

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L. W. TRAPP, Primary Examiner