Dec. 26, 1961 V. D. WARE 3,014,478

VIBRATORY REDUCING MACHINE

Filed July 30, 1958 3 Sheets-Sheet 1

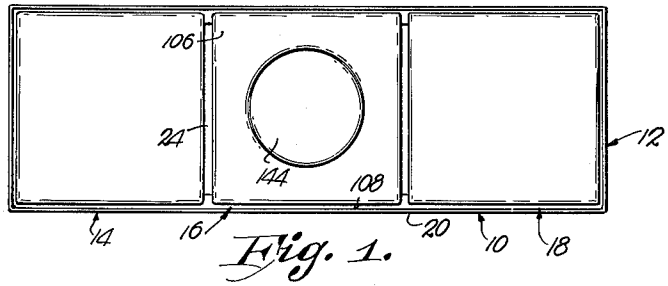

Fig. 1.

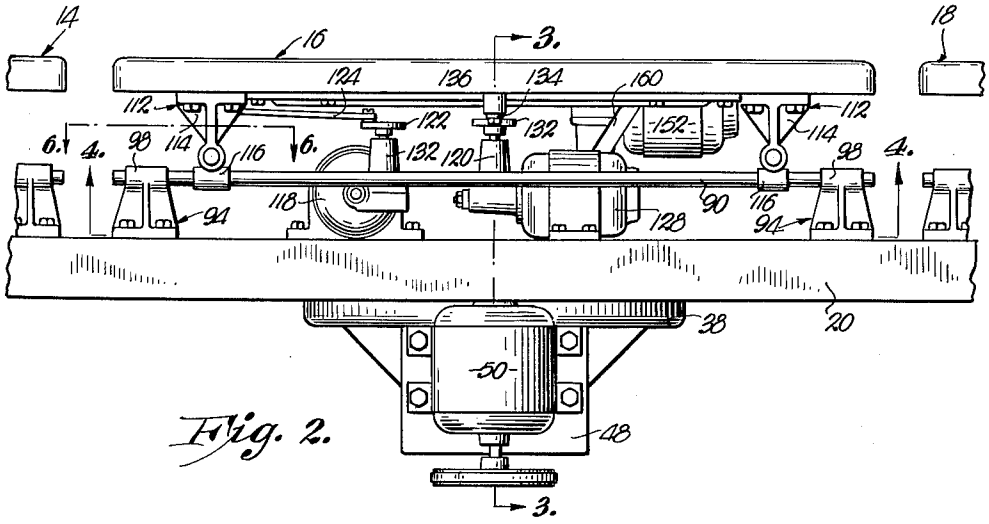

Fig. 2.

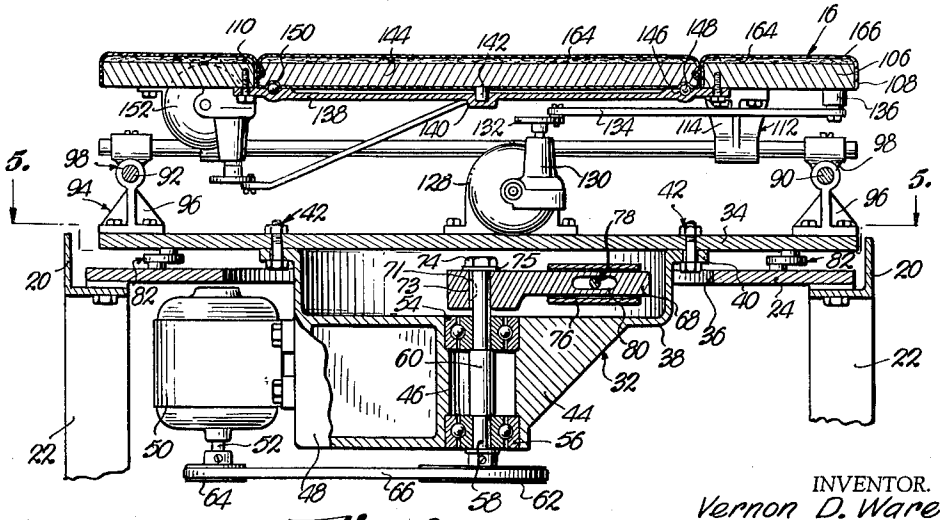

Fig. 3.

INVENTOR.
Vernon D. Ware
BY
ATTORNEY.

Dec. 26, 1961 V. D. WARE 3,014,478

VIBRATORY REDUCING MACHINE

Filed July 30, 1958 3 Sheets-Sheet 2

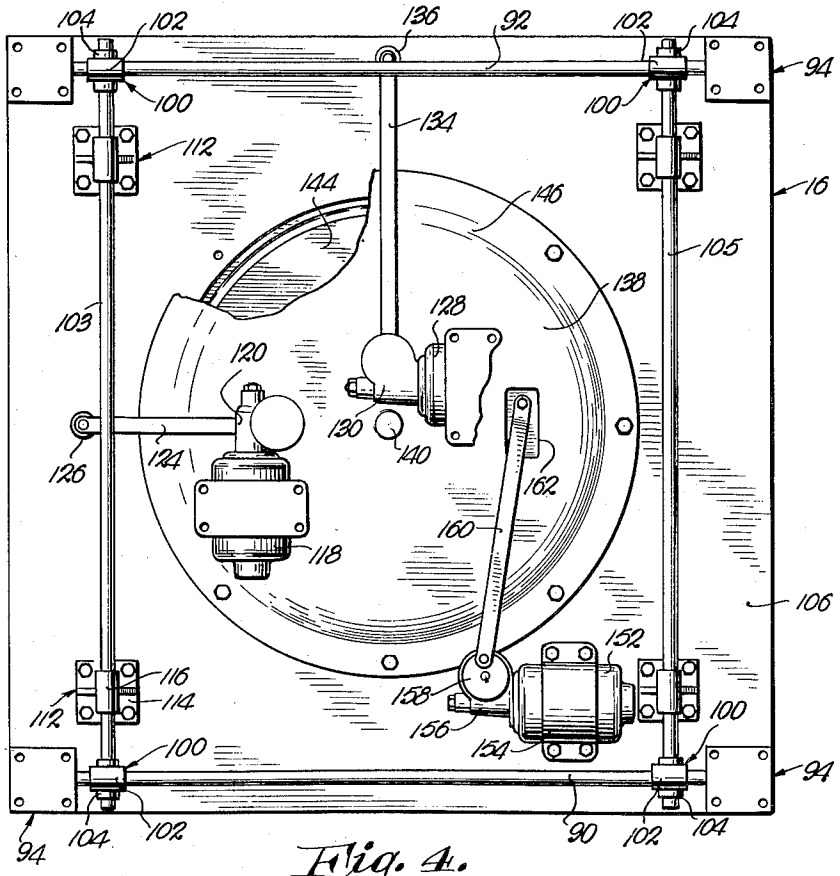

Fig. 4.

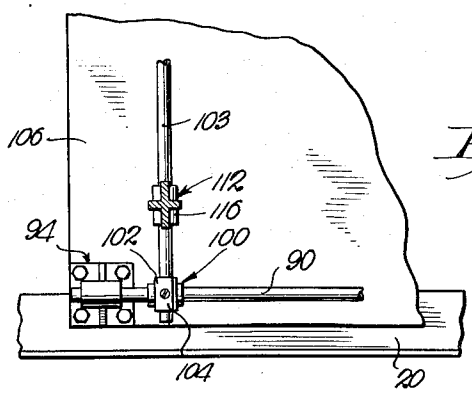

Fig. 6.

INVENTOR.
Vernon D. Ware
BY
ATTORNEY.

Dec. 26, 1961 V. D. WARE 3,014,478

VIBRATORY REDUCING MACHINE

Filed July 30, 1958 3 Sheets-Sheet 3

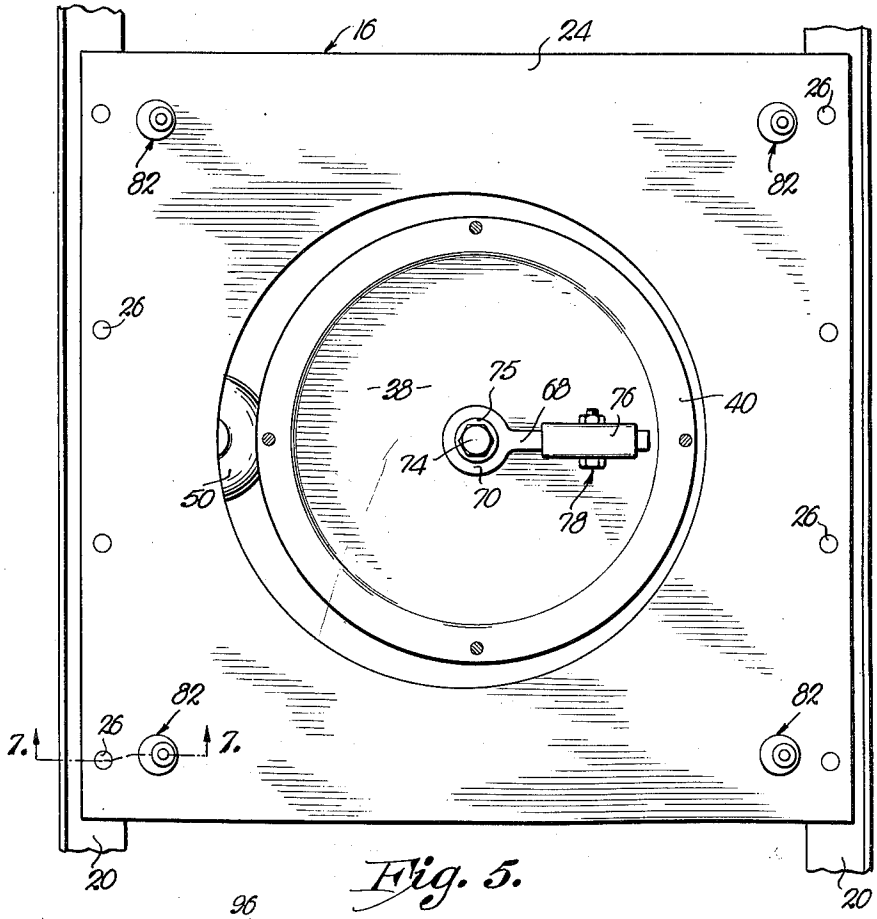

Fig. 5.

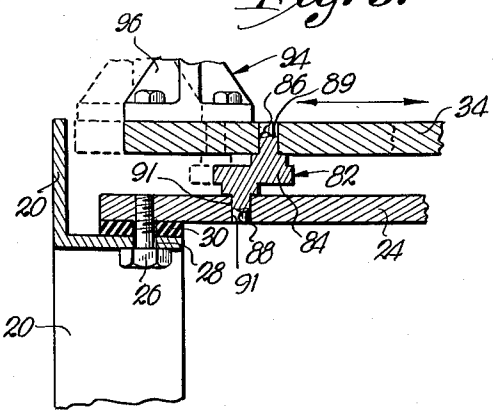

Fig. 7.

INVENTOR.
Vernon D. Ware
BY
ATTORNEY.

United States Patent Office 3,014,478 Patented Dec. 26, 1961

3,014,478

VIBRATORY REDUCING MACHINE

Vernon D. Ware, 73 S. 12th St., Kansas City 2, Kans.

Filed July 30, 1958, Ser. No. 751,937
3 Claims. (Cl. 128—33)

This invention relates to a machine adapted for aiding persons in removing excess weight by virtue of vibratory motions produced by the machine and imparted to certain areas of the user's body while such person is supported by the machine.

The primary object of the invention is to provide a vibratory reducing machine as described which is capable of performing a plurality of different vibratory motions to thereby materially increase the reducing functions of the apparatus and adapted for utilization in removing excess weight from all areas of the person's body, regardless of the relative position thereof.

It is a further important object of the invention to provide a vibratory reducing machine including structure adapted for supporting the person in a reclining position and having a number of separate, individually movable sections engaging the user's body, and each having mechanism for vibrating the same in a plurality of different weight-reducing motions completely independent of operation of the other sections, whereby the most advantageous vibratory motion for a particular area of the body may be used to relatively quickly and easily cause the excess body weight to be removed.

Also a significant object of the invention is to provide a vibratory reducing machine having separate, individually movable sections adapted to support the person in a reclining position and all of the sections being movable in weight-reducing motions in a single horizontal plane, whereby removal of the excess body weight is effected in the most comfortable position and without harmful and painful strains being placed on the user's body.

Other important objects relate to the provision of a vibratory reducing machine having horizontal structure adapted to support a person in a reclining position and including mechanism for selectively moving the supporting structure in any one of a predetermined number of different vibratory motions, whereby the most advantageous motion may be employed as desired and for any selected length of time; to a reducing machine as referred to above wherein the movable structure has mechanism connected thereto for moving the same either in a substantially rectilinear path of travel, an oscillatory, rotative path, or eccentrically about a central point to thereby provide all types of weight-reducing motions necessary to effect removal of excess body fat in the shortest period of time and regardless of the area from which it is desired to effect removal of such excess weight; to the provision of a vibratory reducing machine constructed of substantially standard, commercially available parts, thereby rendering the apparatus simple in construction, relatively inexpensive for machines of this character, and readily repairable as occasion arises; to the provision of a reducing machine having user appeal because of the large number of different vibratory motions inherent in the machine during operation of the same and further, which effectively removes excess body fat because of the plurality of directions in which the machine causes areas of the body subjected to the same to move when in engagement therewith; and to other important objects and salient features of the instant invention which will become obvious or be explained more fully as the following specification progresses.

In the drawing:

FIGURE 1 is a reduced plan view of a vibratory reducing machine embodying the concepts of the invention and

illustrating the three individually movable, body-supporting sections;

FIG. 2 is a fragmentary, side elevational view of a portion of the vibratory reducing machine shown in FIG. 1 and illustrating principally the central section of such machine;

FIG. 3 is a fragmentary, vertical, cross-sectional view taken substantially on the line 3—3 of FIG. 2 and looking in the direction of the arrows;

FIG. 4 is a cross-sectional view taken on the line 4—4 of FIG. 3 and looking upwardly;

FIG. 5 is a fragmentary, cross-sectional view taken on the irregular line 5—5 of FIG. 3 and looking downwardly;

FIG. 6 is a fragmentary, cross-sectional view taken on the line 6—6 of FIG. 2; and

FIG. 7 is a fragmentary, cross-sectional view taken on the line 7—7 of FIG. 5 and looking in the direction of the arrows.

Briefly, the present invention comprises a vibratory reducing machine having a number of horizontal, separately movable sections lying in a common plane and supported by a base unit. The structure presented by the three individually movable sections is adapted to support a person in a substantially reclining position, and mechanism is connected to each of the sections for imparting vibratory, weight-reducing motions to each of the same with each section being movable in a plurality of different motions to thereby enhance the excess weight removing function of the apparatus.

A vibratory reducing machine 10 is illustrated in the drawing in its preferred form and has as basic components, a base unit 12 serving to support structure in the nature of individual sections 14, 16 and 18. As indicated in FIG. 2, sections 14, 16 and 18 are disposed in a common, substantially horizontal plane and are adapted to support a person in a substantially reclining position to thereby aid in removing excess weight from those areas of the user's body subjected to the vibratory action of respective sections 14, 16 and 18.

Base unit 12 may be of any conventional construction and preferably includes a number of horizontal angle frames 20 extending longitudinally of base unit 12 and carried by a plurality of uprights 22. A horizontal mounting plate 24 cradled within and spanning the distance between opposed angle frames 20 serves as means for supporting respective sections 14, 16 and 18 in their normal horizontal positions. As illustrated in FIG. 7, plate 24 is secured to corresponding angle frames 20 by bolts 26 extending through respective openings 28 in frames 20 and suitably threaded into plate 24. An annular washer 30 of resilient material surrounding each bolt 26 between plate 24 and the proximal surface of respective angle frames 20 serve to dampen vibrations imparted to plate 24 during movement of sections 14, 16 and 18 and which would otherwise be transmitted directly to base unit 12.

It is to be understood that separate mechanism is connected to each of the sections 14, 16 and 18 for imparting predetermined vibratory, weight-reducing motions to such sections in the horizontal plane thereof, but in order to simplify the description hereof only the mechanism broadly designed 32 for section 16 has been illustrated in detail. However, it is pointed out that sections 14 and 18 may have similar mechanism connected thereto for causing such sections to vibrate in the same number of motions as will be described with respect to section 16. It is particularly contemplated, though, that section 16 have at least one additional motion not present in sections 14 and 18, inasmuch as those portions of the user's body normally requiring the greatest amount of removal of excess weight are generally disposed on section 16.

Mechanism 32 includes a rectangular, flat element 34 of dimensions substantially equal to those of section 16

and disposed in overlying relationship to mounting plate 24 directly beneath section 16. A relatively large opening 36 in mounting plate 24 below section 16 clears a hollow housing 38 secured to and depending from the underface of element 34. Housing 38 is substantially circular in transverse cross-section and has an outwardly projecting flange 40 engaging the lower surface of element 34 and secured thereto by bolt and nut means 42 passing through flange 40 at spaced intervals and received by element 34. Lower section 44 integral with cylindrical housing 38 has a normally vertically disposed, elongated bore 46 therethrough, section 44 including a hollow bracket portion 48 presenting means for mounting a prime mover in the nature of an electric motor 50, located with the shaft 52 thereof lying on a vertical line and extending downwardly from motor 50 as best shown in FIG. 3. A pair of spaced ball bearing units 54 and 56 are disposed within bore 46 at each end thereof and rotatably support an elongated, vertical shaft 58 having an enlarged central portion 60 between bearings 54 and 56 operating to prevent longitudinal movement of shaft 58 relative to housing 38 within bore 46 thereof. The lowermost end (not shown) of shaft 58 extending below lower section 44 of housing 38 has a pulley 62 thereon which is operably coupled with a pulley 64 on shaft 52 of motor 50 by a V-belt 66 trained over pulleys 62 and 64 respectively.

An elongated arm 68 is rigidly secured to the uppermost end of shaft 58 projecting above bearing 54 and extends radially from shaft 58 in one direction, as best shown in FIG. 5. Arm 68 has an enlarged head 70 provided with a central perforation 71 receiving the uppermost end of shaft 58, and a stud bolt 74 suitably threaded into the uppermost end of shaft 58 serves to secure arm 68 to shaft 58 through a washer 75 positioned between the head of bolt 74 and head 70 of arm 68. Key 73 carried by head 70 within opening 71 and extending into the upper end of shaft 58 prevents rotation of arm 68 relative to shaft 58. A tubular weight 76 slidably positioned on the outer end of arm 68 is releasably connected to the latter through provision of bolt and nut means 78 extending transversely through tubular weight 76 and received within an elongated slot 80 provided in arm 68.

Means for rotatably supporting element 34 and thereby section 16 on mounting plate 24 includes eccentric structure generally designated 82 disposed at each corner of element 34 between the latter and mounting plate 24. As shown in greatest detail in FIG. 7, each of the eccentric structures 82 comprises a central, circular, horizontal disk 84 having a pin 86 integral with and extending upwardly from the upper face of disk 84, and a pin 88 integral with and depending from the lower face of such disk. Pins 86 and 88 are positioned in horizontally offset relationship and are pivotally received within respective openings 89 and 91 in element 34 and mounting plate 24. From the foregoing, it can be seen that element 34 and thereby section 16 may rotate eccentrically with respect to mounting plate 24 and thereby base unit 12, with opening 36 clearing housing 38 during such rotational movement of element 34.

A pair of elongated, spaced, normally horizontal, parallel bars 90 and 92 are supported by element 34 above the same through provision of a bracket broadly designated 94 positioned at each corner of element 34. Brackets 94 supporting bars 90 and 92 respectively have a base 96 suitably connected to the uppermost surface of element 34 and tubular connectors 98 disposed to receive and securely hold opposed, corresponding ends of respective bars 90 and 92. A pair of fittings 100 are slidably mounted on each of the bars 90 and 92 and each fitting 100 includes a tubular member 102 slidably receiving a respective end of bars 90 and 92, as well as a tubular member 104, integral with a respective member 102, substantially at right angles to the latter, and receiving the outer extremity of a respective bar 103 and 105, the latter being at right angles with respect to bars 90 and 92 to present a rectangular frame as best shown in FIG. 4. Tubular members 104 are rigidly secured to respective ends of bars 103 and 105 to prevent relative movement of the same with respect to fittings 100.

Section 16 has an outer support member 106 having a rectangular peripheral edge 108 and provided with a central opening defined by an inner circular edge 110. A plurality of brackets 112 depending from the under side of support member 106 and having respective bases 114 thereof secured to the lower surface of support member 106 are provided with tubular connectors 116 at the lowermost portions of bases 114 and disposed to slidably receive respective bars 103 and 105, as illustrated in FIGS. 3 and 4. It can therefore be seen that section 16 may slide relative to bars 103 and 105.

Mechanism for reciprocating section 16 relative to bars 90 and 92 and thereby element 34, mounting plate 24 and frames 20 includes a prime mover in the nature of an electric motor 118 secured to the upper face of element 34 to one side of the vertical axis of section 16, as best shown in FIG. 4, and provided with a gear unit 120 operably connected to the power shaft of motor 118. Gear unit 120 has an externally disposed, horizontal cam disk 122 rotated about a vertical axis during operation of motor 118. An elongated link 124 is pivotally connected at one end thereof to a lug 126 depending from the underface of support member 106 remote from prime mover 118, the opposite end of link 124 being pivotally joined to cam disk 122 adjacent the outer periphery thereof away from the vertical axis of rotation of the same. It can therefore be seen that upon rotation of disk 122 through prime mover 118, link 124 is oscillated to reciprocate section 16.

Additional means is provided for reciprocating section 16 relative to bars 103 and 105 and includes another electric motor 128 carried by element 34 spaced from motor 118 and having a gear unit 130 similar to unit 120 in that the same has a horizontally disposed cam disk 132 rotatable about a vertical axis as the power shaft of motor 128 is caused to operate. A link 134 pivotally connected to lug 136 depending from the underface of support member 106 is also pivotally joined to the outer peripheral margin of cam disk 132 to cause link 134 to be oscillated during rotation of disk 132 to thereby reciprocate section 16 in parallelism with bars 103 and 105.

A circular plate 138 joined to the lower face of support member 106 in underlying covering relationship to opening 110 has a central, cylindrical depression 140 receiving a pin 142 joined to circular panel 144 disposed within opening 110 and substantially filling the area thereof. A circular ball race 146 in the normally uppermost face of plate 138 adjacent the outer peripheral margin thereof accommodates a number of spherical steel balls 148 rotatable in a ball race 150 directly overlying race 146.

Means for oscillating panel 144 relative to support member 106 comprises an electric motor 152 secured to the lower face of support member 106 by a substantially U-shaped bracket 154. Gear unit 156 operably coupled with the power shaft of motor 152 is structurally similar to gear units 120 and 130 and has a normally horizontal cam disk 158 rotatable about a vertical axis as the shaft of motor 152 is caused to rotate. One end of an elongated link 160 is pivotally connected to the lower surface of panel 144 through an elongated opening 162 in plate 138 and the opposite end thereof is pivotally joined to disk 158 proximal to the outer peripheral edge of such disk. Thus, as motor 152 is operated to rotate disk 158, link 160 is reciprocated to oscillate panel 144.

In order to render sections 14, 16 and 18 more comfortable during use of machine 10, cotton batting or similar material 164 is placed over the uppermost surfaces of respective sections 14, 16 and 18. Material 164

is shown in FIG. 3 disposed in overlying relationship to panel 144 and support member 106 and in order to protect the relatively soft padding, a suitable cover 166 of plastic composition or equivalent material is placed over cotton batting 164. The marginal edges of cover 166 are suitably joined to the peripheral extremities of panel 144 as well as suppport member 106 by suitable means such as adhesive or fasteners.

Although the necessary wiring and switch controls for motors 50, 118, 128 and 152 have not been illustrated, it is to be understood that these components are conventional in character and that the same are wired in a manner to permit selective operation of each of the prime movers as desired or, in the alternative, to cause such motors to be operated in predetermined sequence by commercially available timer mechanisms. It is to be further recognized that wiring and switch control means is provided for controlling operation of the mechanisms operably coupled with section 14 and 18 for imparting various types of vibratory motion to such sections.

The description of the operation of machine 10 will be limited to the vibratory movements of sections 16, but it can be perceived that sections 14 and 18 will likewise be vibrated in a similar manner and in the same horizontal plane. Thus, assuming that a person is lying on sections 14, 16 and 18 in a reclining position and switch means is closed to actuate prime mover 50, shaft 58 is rotated through pulleys 62 and 64 in conjunction with V-belt 66 trained thereover to in turn cause arm 68 to be rotated about the axis of shaft 58. Because of the weight 76 positioned on the outermost end of arm 68, such weight tends to rotate housing 38 in an eccentric path of travel relative to the central axis of opening 36 in mounting plate 24 and which thereby moves element 34 and section 16 mounted thereon eccentrically with respect to base unit 12. Such eccentric movement of section 16 is restricted to a predetermined path of travel by structures 82 rotatably positioned between element 34 and mounting plate 24. As pins 86 rotate about the axis of respective pins 88 received by mounting plate 24, section 16 rotates eccentrically with respect to the central axis of opening 36.

Weight 76 positioned on the outer end of arm 68 is adjustable longitudinally of the latter to permit the centrifugal force produced by weight 76 to be varied as desired to effect eccentric movement of housing 38 and thereby section 16 irrespective of the weight carried by the latter.

Upon deenergization of prime mover 50, section 16 may be caused to reciprocate on a predetermined path of travel in parallelism with bars 90 and 92 by energization of prime mover 118, which effects oscillation of link 124 as disk 122 is rotated to thereby move section 16 back and forth with respect to bars 90 and 92 at a predetermined rate.

By the same token, section 16 may be reciprocated in parallelism with bars 103 and 105 by operating motor 128 to effect oscillation of link 134 as disk 132 is rotated by motor 128 to move section 16 back and forth a predetermined distance relative to bars 103 and 105.

A different type of vibratory motion is effected by actuating motor 152 to cause link 160 to be oscillated by cam disk 158 which in turn oscillates panel 144 in a twisting motion relative to support member 106.

During rectilinear reciprocation of section 16 relative to bars 90 and 92, tubular members 102 of fittings 100 slide freely on corresponding bars 90 and 92, while during movement of section 16 relative to bars 103 and 105, tubular connectors 116 on brackets 112 slide freely on bars 103 and 105 to permit section 16 to move rectilinearly with respect to bars 103 and 105. Furthermore, as panel 144 is oscillated by prime mover 152, friction between panel 144 and plate 138 is virtually eliminated through provision of balls 148 rotatably received within aligned ball races 146 and 150.

It has been determined that the various vibratory motions imparted to section 16 by mechanism 32 are effective in removing excess body fat from persons reclining on sections 14, 16 and 18, regardless of the relative area in which it is desired to remove such weight. Furthermore, all of the components utilized in machine 10 are of substantially conventional construction and therefore, the apparatus may be constructed at a relatively low cost despite the fact that a number of different vibratory motions may be imparted to the structure adapted for supporting the person in a reclining position. Although the preferred embodiment has been described in detail, it is to be understood that equivalent mechanisms may be substituted for certain of the components shown and it is therefore desired to be limited in this respect only by the scope of the appended claims.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a reducing machine, a base unit; a pair of elongated first bars mounted on said base unit in spaced, parallel relationship and lying in a horizontal plane; a pair of fittings slidably positioned on each of the bars and in spaced relationship longitudinally of respective first bars; a second bar connected to and spanning the distance between each pair of opposed fittings at opposite ends of said first bar, said second bars being in parallel, spaced relationship, perpendicular to said first bars and lying in a horizontal plane; a pair of brackets slidably mounted on each of said second bars and disposed in spaced relationship longitudinally thereof; horizontal structure carried by said brackets and adapted for supporting a person in a horizontal, reclining position; a first prime mover mounted on said base unit; means interconnecting said first prime mover and the structure for reciprocating the latter during actuation of said first prime mover and in a planar direction parallel with said second bars as the brackets slide thereon; a second prime mover mounted on said base unit; and means interconnecting said second prime mover and the table for reciprocating the latter during actuation of said second prime mover and in a planar direction parallel with said first bars and as the fittings slide thereon.

2. A reducing machine as set forth in claim 1 wherein said structure is provided with a centrally disposed, upwardly facing opening therein; a panel rotatably carried by said structure within said opening therein; a third prime mover mounted on said base unit; and means interconnecting said third prime mover and the plate for oscillating the latter during actuation of said third prime mover and in the plane of said structure.

3. A reducing machine as set forth in claim 2 wherein is provided power operated mechanism mounted on said base unit and operably coupled to said structure for imparting planar, weight-reducing, rotative motions thereto eccentric about the axis of said plate.

References Cited in the file of this patent

UNITED STATES PATENTS

551,149	Warrington	Dec. 10, 1895
1,577,751	Paschall	Mar. 23, 1926
1,970,233	Hertzberg	Aug. 14, 1934
2,235,184	Wettlaufer	Mar. 18, 1941
2,633,580	Dooley	Apr. 7, 1953
2,637,319	Bruene	May 5, 1953
2,645,189	Hansalik	July 14, 1953
2,819,713	Buck	Jan. 14, 1958
2,856,917	Mack	Oct. 21, 1958
2,860,628	Stauffer	Nov. 18, 1958
2,869,539	Mosse	Jan. 20, 1959

FOREIGN PATENTS

531,088	Great Britain	Dec. 30, 1940