March 15, 1932. L. S. CHADWICK 1,849,706

VIBRATING MECHANISM

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Fig. 2.

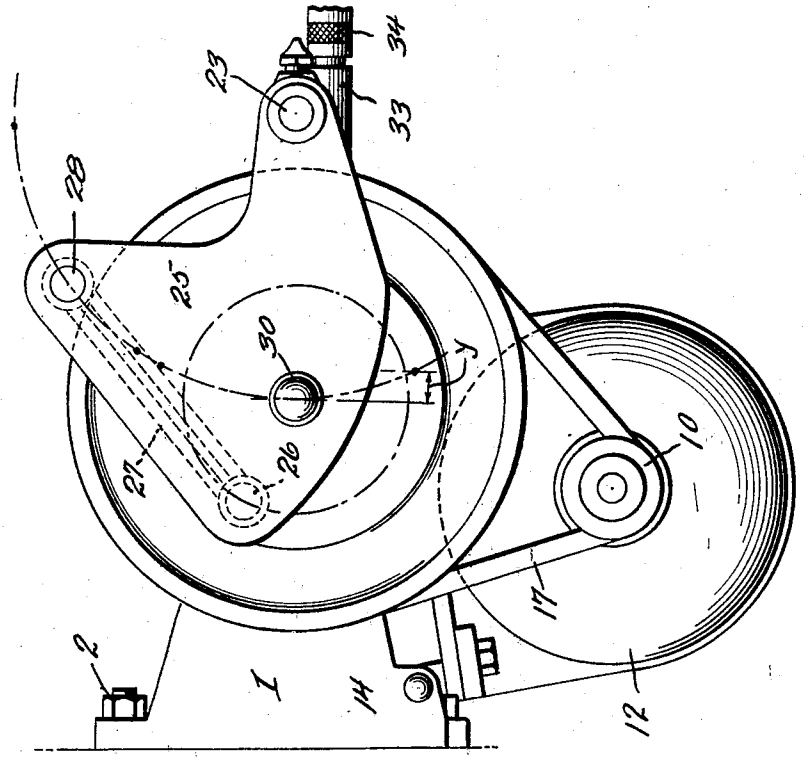
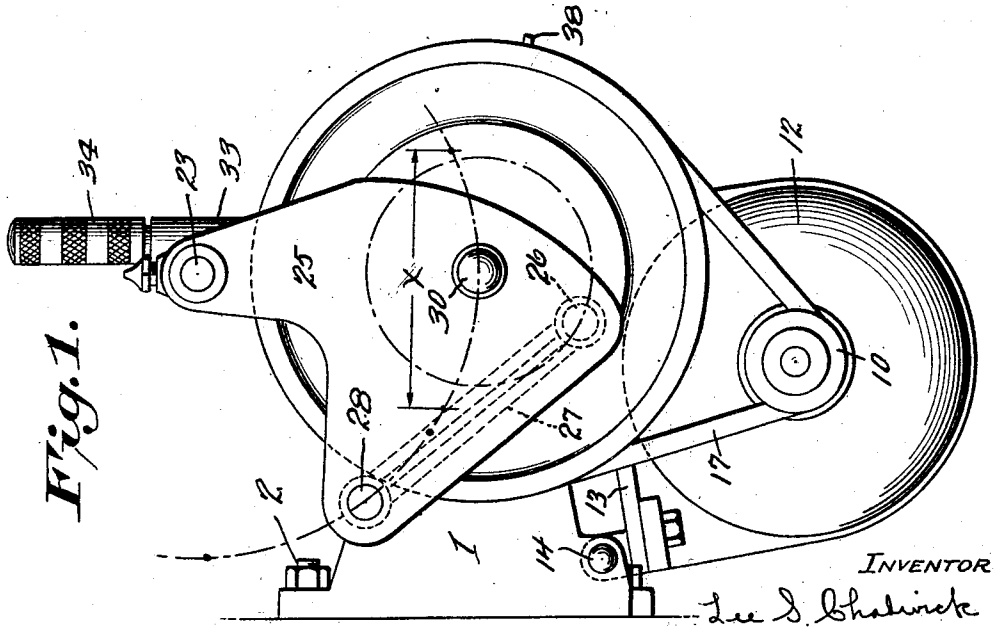


Fig. 1.



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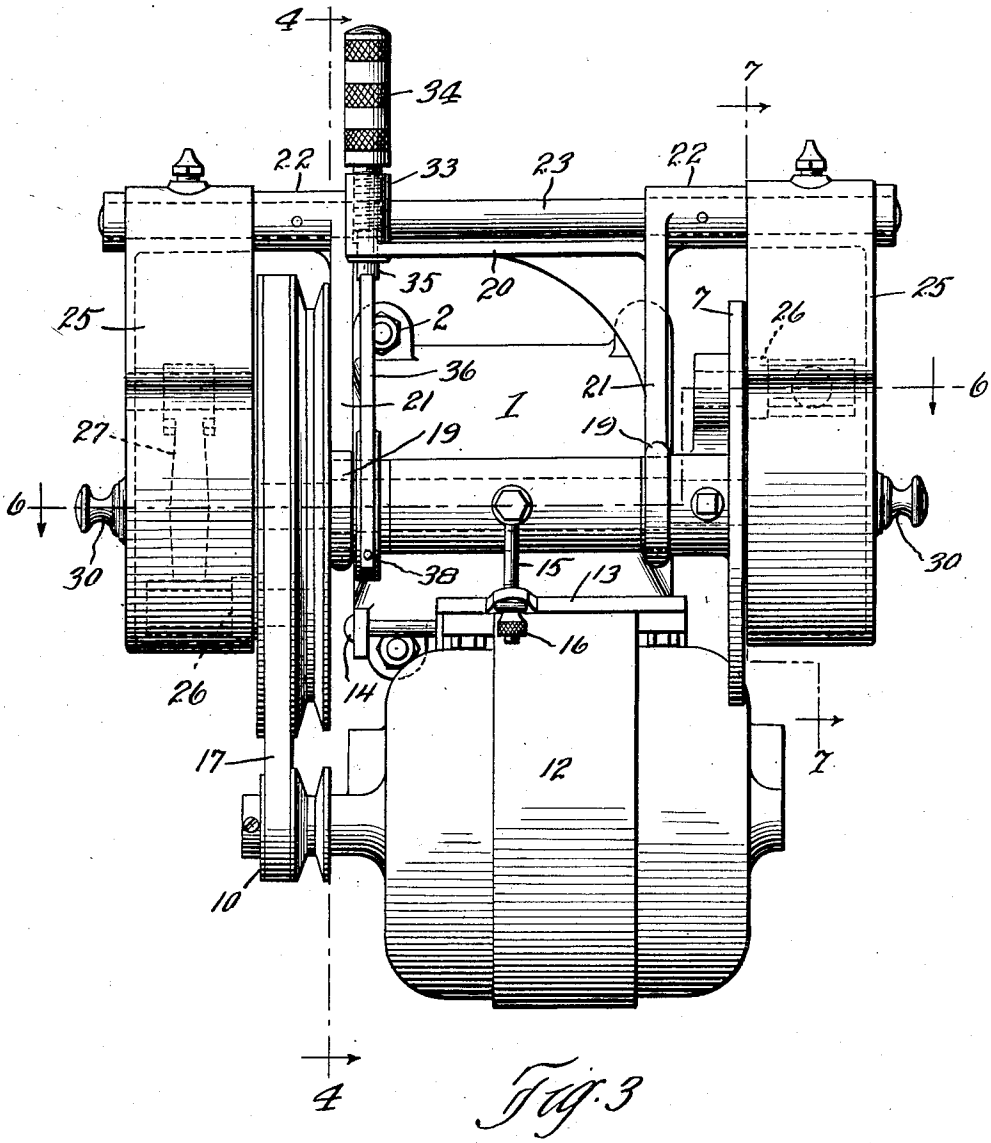


Fig. 3

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Fig. 5

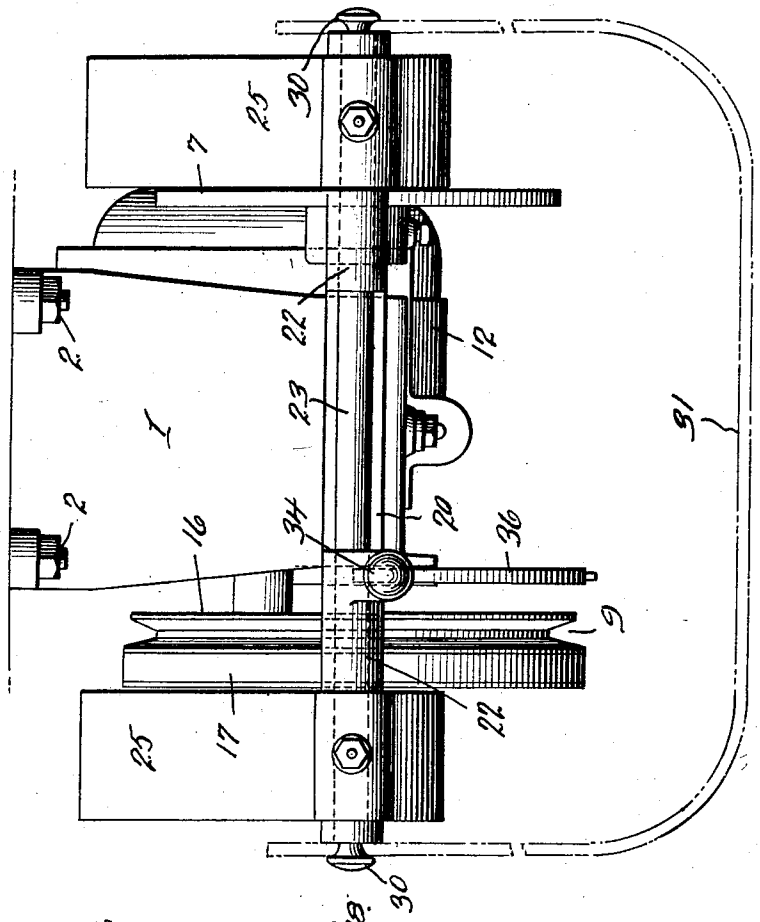
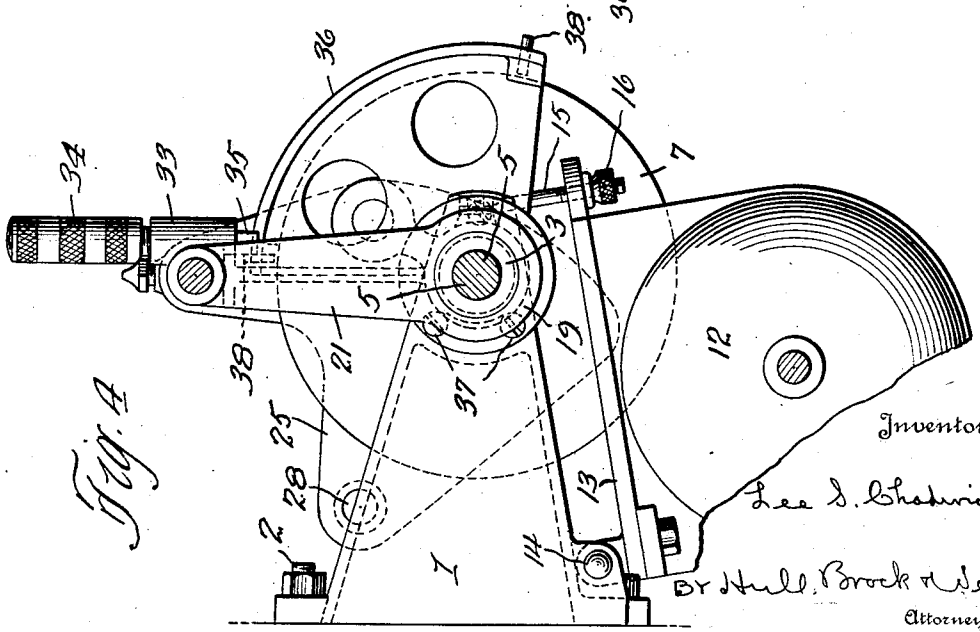


Fig. 4



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Fig. 7

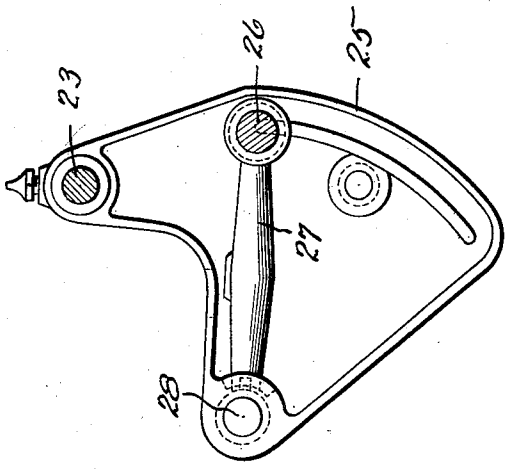
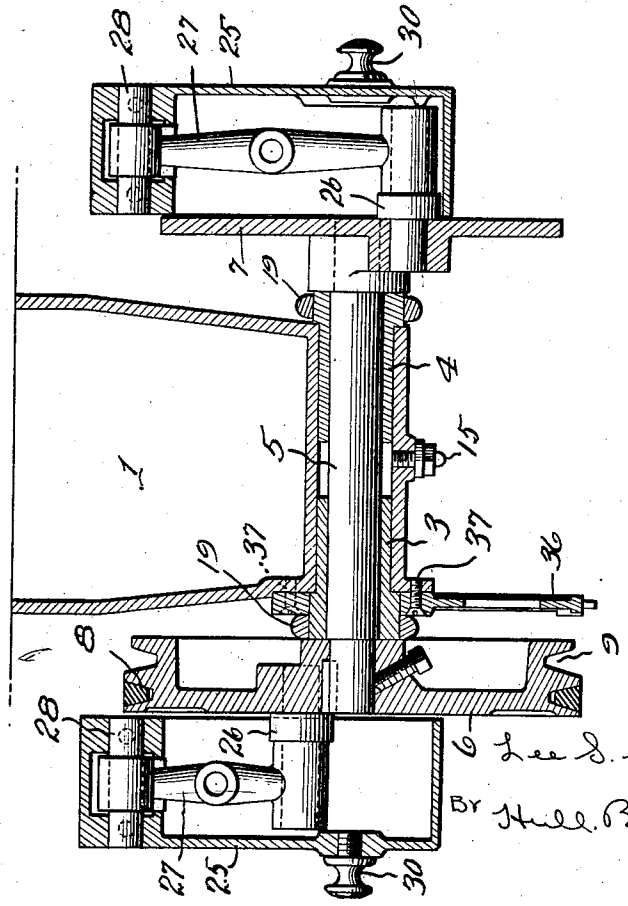


Fig. 6



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Patented Mar. 15, 1932 1,849,706

UNITED STATES PATENT OFFICE

LEE S. CHADWICK, OF SHAKER HEIGHTS, OHIO

VIBRATING MECHANISM

Application filed June 25, 1928. Serial No. 288,008.

This invention relates to improvements in vibrating machines belonging to the same general class as those disclosed in my copending applications Serial Nos. 267,828 and 267,829, filed April 6, 1928.

Machines of the class referred to involve applicator bands or straps that are adapted to be engaged about the part of the body that it is desired to treat, and mechanism for vibrating the bands or straps by imparting to them in rapid succession quick jerks in opposite directions.

The primary purpose of my present invention is to provide a machine of the above class wherein the throw of the vibrating elements to which the ends of the applicator band or strap are connected may be conveniently adjusted to obtain any length stroke desired within a relatively wide range and preferably while the machine is in operation.

Other objects of the invention are to provide a machine of the aforesaid class that is very efficient, is strong and durable, is compact, and is relatively simple of construction.

The foregoing objects, with others that will appear as I proceed to describe the invention in detail, are attained in the embodiment illustrated in the accompanying drawings wherein Fig. 1 is a side elevation of my improved vibrating machine adjusted to obtain the maximum stroke of the applicator; Fig. 2 is a similar view of the machine adjusted to produce the minimum stroke; Fig. 3 is a front elevation of the machine; Fig. 4 is a sectional side elevation, the plane of section being indicated by the line 4—4 of Fig. 3; Fig. 5 is a plan view of the machine; and Figs. 6 and 7 are sectional details on the respective lines 6—6 and 7—7 of Fig. 3.

The present machine is of the so-called "wall type", like that constituting the subject matter of the second of the above mentioned applications, although it will be understood that the present invention is applicable to the floor type of machine as well. 1 is a supporting structure that is adapted to be secured, by fastening means 2, to a wall or the like, and at its forward end is provided with a transverse bore into the ends of which are fitted bushings 3 and 4, said bushings having enlarged outer ends, as best shown in Fig. 6. Journaled within the bushings 3 and 4 is a shaft 5 to the opposite ends of which are keyed or otherwise fastened crank disks 6 and 7, the former having a relatively wide flange that is provided with circumferential grooves 8 and 9 of differing diameters so as to effect of this disk a pulley of the cone type. A similar but smaller pulley 10 is fastened to the armature shaft of an electric motor 12. This motor is suspended from a plate 13 that has its rear end pivoted at 14 to the underside of the supporting structure 1 and its forward end adjustably connected to the corresponding end of the supporting structure by means of a screw 15 to which a knurled nut 16 is applied, and by adjusting this nut along the screw the motor may be moved toward and from the supporting structure for the purpose of regulating the tension of a belt 17 that is engaged about the aforesaid pulleys. Obviously the speed of the machine may be changed by shifting the belt 17 from one set of grooves of said pulleys to the other.

Mounted for oscillation upon the enlarged outer ends of the bushings 3 and 4 are the hub portions 19 of a yoke 20, the side branches 21 of which extend radially from the hubs 19 and terminate at their outer ends in laterally extending bosses 22 that support a shaft 23.

Journaled on the ends of the shaft 23 are vibrating elements 25 that are in the nature of casings having inner open sides disposed adjacent the crank disks 6 and 7 so that crank pins 26 that are carried by said disks extend into the cavities of the vibrating elements. Also enclosed by these elements are connecting rods 27 that are journaled at one of their ends on the crank pins 26 and at their other

ends on pins 28 that are secured within laterally spaced bosses formed in the vibrating elements 25. Knobs 30 are carried by the vibrating elements 25 for the attachment of the ends of the vibrating band or strap, indicated in dot-and-dash lines at 31 in Fig. 5. The parts enclosed by the vibrating elements are intended to be kept well lubricated, and one reason for making said elements in the form of casings that enclose said parts is to prevent the lubricant from being thrown when the machine is in action.

The yoke 20 incorporates a hollow radial boss 33 within which is threaded the shank of a handle 34, the inner end of said shank engaging a plunger 35 that occupies the inner end of the bore of the boss 33 and is notched to embrace the face of a quadrant 36 whose hub surrounds the enlarged end of the bushing 3 adjacent the supporting structure 1 and is secured to the latter by screws 37, as best shown in Fig. 6. Stops 38 are located at the ends of the quadrant to limit the swinging movement of the yoke 20.

In the use of the machine, the applicator band or strap, with its ends applied to the knobs 30, is engaged about the part of the body that is to be treated, and by the closing of a suitable switch (not shown) current is supplied to the motor 12. With the motor thus energized, the rotation of its shaft is transmitted, through the pulley 10, belt 17, and the pulley constituted of the crank disk 6, to the shaft 5. As the shaft 5, and consequently the crank disks 6 and 7, rotate, the vibrating elements 25 are oscillated on the shaft 23 through the intervention of the connecting rods 27. As will be seen by reference to Fig. 1, the maximum stroke is imparted to the vibrating band or strap when the yoke occupies a vertical position, the length of such stroke being indicated by the line x. To shorten the stroke of the applicator band or strap, the handle 34 is turned to release the pressure of the plunger 35 on the quadrant 36, and, by means of the handle, the yoke 20 is swung toward a horizontal position. When the yoke is swung to the horizontal position, as illustrated in Fig. 2, the stroke of the applicator band or strap is at its minimum, as indicated by the line y in Fig. 2. While the actual stroke of the knobs 30 is constant, the movement imparted in a substantially horizontal direction to the applicator strap or band depends upon the angular adjustment of the yoke 20 and of the vibrating elements 25. Any desired length of stroke within the range between the minimum and maximum may be obtained by an adjustment of the yoke between its extreme positions, and it is adapted to be held in any position to which it is adjusted by screwing the shank of the handle 34 inwardly to press the plunger 35 against the quadrant 36.

Having thus described my invention, what I claim is:—

1. In a vibrating machine, the combination of a vibrating element, a pivotal support therefor, a crank action for imparting vibratory motion to said element, and an applicator connected to the element, said pivotal support being adjustable substantially circumferentially of the rotating axis of the crank, and means for holding said pivotal support in various positions to which it is adjusted.

2. In a vibrating machine, the combination of a crank, a member supported for oscillation substantially on the rotating axis of the crank, means for holding said member in various positions of adjustment about said axis, a vibrating element pivoted to said member, an applicator connected to the vibrating element, and a connecting rod having one of its ends journaled on the crank and its opposite end pivotally connected to the vibrating member.

3. In a vibrating machine, the combination of a crank, a member supported for oscillation substantially on the rotating axis of the crank, a quadrant concentric with said rotating axis, means for securing said member to said quadrant in various adjusted positions, a vibrating element pivoted to said member, an applicator connected to the vibrating element, and driving connections between the crank and the said element.

4. In a vibrating machine, the combination of a crank, a member supported for oscillation substantially on the rotating axis of the crank, a vibrating element pivoted to said member, an applicator connected to the vibrating element, driving connection between the crank and said element, a handle on said member by means of which the same may be oscillated, and means adapted to be operated by said handle for securing the member in any position to which it may be adjusted.

5. In a vibrating machine, the combination of a supporting structure, a shaft journaled therein, cranks secured to the shaft, a member supported for oscillation substantially on the axis of the shaft, means for maintaining said member in any position to which it may be adjusted, vibrating elements pivotally supported by said member adjacent the cranks, driving connections between each crank and the corresponding vibrating element, and an applicator band having its opposite ends connected to the respective vibrating elements.

6. In a vibrating machine, the combination of a supporting structure, a shaft journaled therein, cranks secured to said shaft, an electric motor sustained by the supporting structure, driving connections between the motor and said shaft, a member mounted for oscillation on substantially the axis of the shaft, a quadrant supported by the structure in concentric relation to the oscillating axis of said

member, means for securing the member to said quadrant in the various positions to which it may be adjusted, vibrating elements pivoted to the member adjacent the cranks, driving connections between each crank and the corresponding vibrating element, and an applicator band having its opposite ends connected to the respective vibrating elements.

In testimony whereof, I hereunto affix my signature.

LEE S. CHADWICK.