

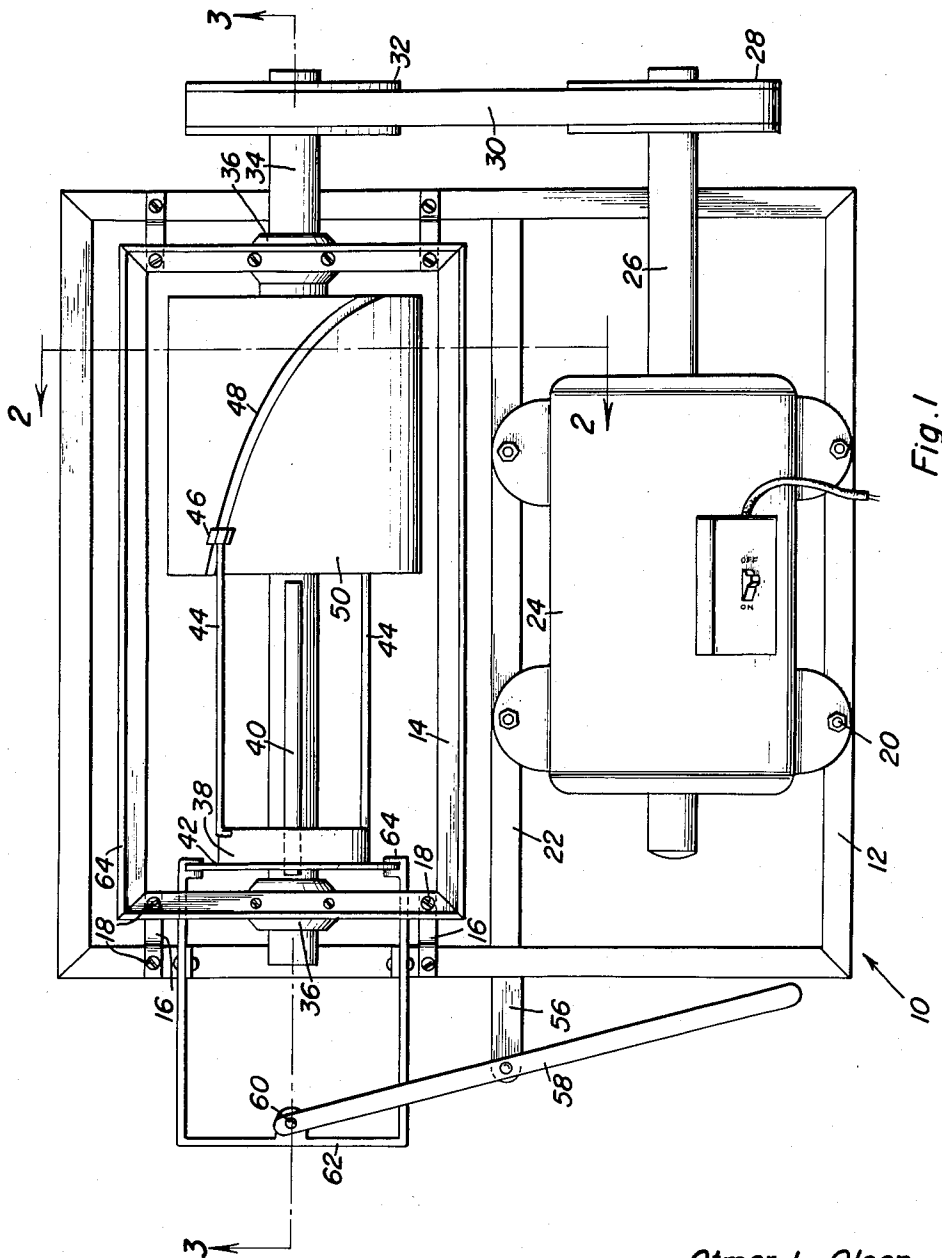
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O. L. OLSON
VARIABLE VIBRATOR

2,748,609

Filed Nov. 29, 1954

2 Sheets-Sheet 1



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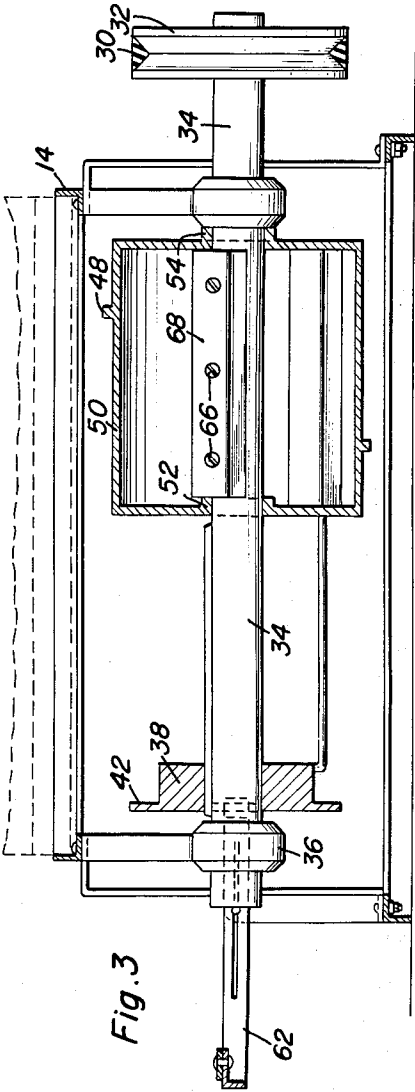
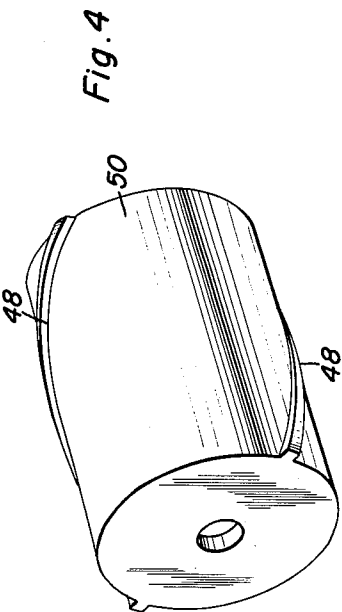
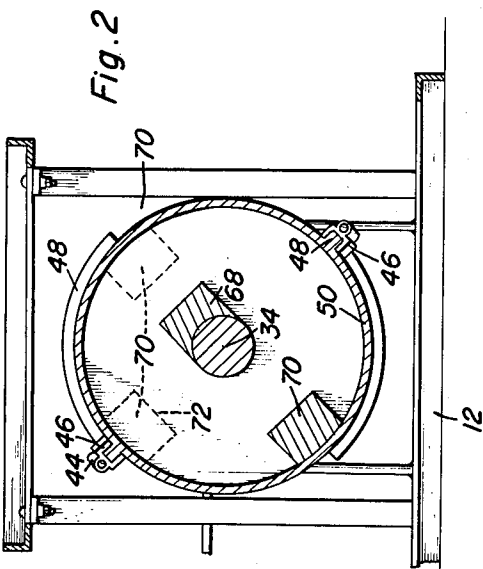
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VARIABLE VIBRATOR

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2 Sheets-Sheet 2



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VARIABLE VIBRATOR

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5 Claims. (Cl. 74—61)

This invention relates generally to improvements in the art of imparting motion to vibratory bodies and more particularly to a novel variable vibrator.

The primary object of the present invention resides in the provision of a new and useful mechanism for imparting a variable vibration to a resiliently suspended vibrating frame carried by a suitable supporting frame and especially adapted for use in the sorting of gravel or other material of varying particle sizes.

The construction of this invention features a novel means for varying the intensity of the vibrations applied on the vibrating frame utilizing a drum having a first weight mounted therein eccentrically disposed relative to the axis of rotation of the drum. A second weight is mounted on the drive shaft of the drum and eccentrically disposed relative to the axis of rotation of the shaft. One of the novel features of the invention is the means utilized for moving the drum relative to the shaft so that the weight attached to the drum can offset and counterbalance the weight attached to the shaft or can be so changed as to further aid in the imparting of vibratory movement of the mounting frame by being additively offset in the same direction as the weight attached to the shaft.

Still further objects and features of this invention reside in the provision of a novel variable vibrator and is simple in construction, highly efficient in operation, can be manufactured in various sizes for various types of employment, and which is highly efficient in operation.

These, together with the various ancillary objects and features of the invention which will become apparent as the following descriptions, are attained by this variable vibrator, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is a plan view of the variable vibrator comprising the present invention;

Figure 2 is a vertical sectional view as taken along the plane of line 2—2 in Figure 1 and illustrating the manner in which the weights are secured to the shaft and drum;

Figure 3 is a vertical sectional view as taken along the plane of line 3—3 in Figure 2 illustrating the construction of the means utilized for moving the drum relative to the shaft; and

Figure 4 is a perspective view of the drum.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, the reference numeral 10 generally designates a variable vibrator comprising the present invention which includes a comparatively rigid mounting frame 12 formed of angle iron or the like. Secured to the mounting frame 12 is a substantially rectangular vibrating frame 14 held by a plurality of resilient flexible mounts 16 which are terminally secured as by fasteners 18 to the mounting frame 12 and the vibrating frame 14. The vibrating frame 14 may also be formed of angle iron or the like.

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Bolted or otherwise secured to the frame 12 as at 20 and to a cross brace 22 is a motor 24 which drives a drive shaft 26 on which a pulley 28 is mounted. Entrained about the pulley is an endless V-belt 30 which engages a pulley 32 mounted on the shaft 34 journaled in bearings 36 provided on the vibrating frame 14. Slidably mounted on the shaft 34 is a collar 38 which is keyed for non-rotary movement as at 40 by a longitudinally extending key. The collar 38 has a flange 42 and carries a pair of arms 44 having fingers 46 of substantially U-shape which engages spiral bars or ribs 48 attached to a drum 50 which is mounted by means of integrally formed bearings 52 and 54 for rotary movement relative to the shaft 34. Of course, the arms 44 and the fingers 46 are held stationary, these members will hold the drum 50 in locked position relative to the shaft 34.

Secured to the mounting frame 12 is a bracket 56 to which a lever 58 is pivotally attached medial the ends thereof. Adjacent one end of the lever 58 is a pin or rivet 60 which pivotally attaches the lever 58 to a substantially U-shaped linkage 62 having bifurcated end portions as at 64 which engage the flange 42. Hence, upon movement of the lever 58 the linkage 62 will cause the collar 38 to slide along the shaft 34 non-rotatably so as to rotate the drum 50 to an adjusted position.

Secured to the shaft 34 by any suitable means such as fasteners 66 is a first weight 68.

A second weight 70 is secured to the interior surface of the drum 50 and in the position shown in the solid lines in Figure 2, the weight 70 is of sufficient size to counterbalance the weight 68. However, when the drum 50 is rotated so that the weight 70 is in the position as is indicated by reference numeral 72 in Figure 2, the weight 70 will not counterbalance the weight 68 and in the position as is shown at 74 in Figure 2, the eccentric position of the weight 70 will be additive in imparting vibrating movement to the vibrating frame 14 when the shaft 34 is rotated.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A variable vibrator comprising a mounting frame, a vibrating frame resiliently suspended from said mounting frame, a shaft journaled in said vibrating frame, drive means for driving said shaft carried by said mounting frame, a drum mounted on said shaft for rotary movement relative thereto, a first weight secured in said drum eccentrically disposed relative to the axis of rotation of said drum, a second weight secured to said shaft eccentrically disposed relative to the axis of rotation of said shaft, and adjusting means for rotating said drum relative to said shaft and to hold said drum in an adjusted position carried by said mounting frame and engaging said drum, said means including spiral bars secured to the outer face of said drum, fingers engaging said bars, a slidable collar slidably mounted on said shaft, arms carried by said collar, said fingers being secured to said arms.

2. A variable vibrator comprising a mounting frame, a vibrating frame resiliently suspended from said mounting frame, a shaft journaled in said vibrating frame, drive means for driving said shaft carried by said mounting frame, a drum mounted on said shaft for rotary movement relative thereto, a first weight secured in said drum eccen-

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trically disposed relative to the axis of rotation of said drum, a second weight secured to said shaft eccentrically disposed relative to the axis of rotation of said shaft, and adjusting means for rotating said drum relative to said shaft and to hold said drum in an adjusted position carried by said mounting frame and engaging said drum, said means including spiral bars secured to the outer face of said drum, fingers engaging said bars, a slidable collar slidably mounted on said shaft, arms carried by said collar, said fingers being secured to said arms, a bracket secured to said mounting frame, an operating lever pivotally secured to said bracket, a linkage pivotally attached to said lever, said linkage engaging said collar.

3. A variable vibrator comprising a mounting frame, a vibrating frame resiliently suspended from said mounting frame, a shaft journaled in said vibrating frame, drive means for driving said shaft carried by said mounting frame, a drum mounted on said shaft for rotary movement relative thereto, a first weight secured in said drum eccentrically disposed relative to the axis of rotation of said drum, a second weight secured to said shaft eccentrically disposed relative to the axis of rotation of said shaft, and adjusting means for rotating said drum relative to said shaft and to hold said drum in an adjusted position carried by said mounting frame and engaging said drum, said means including spiral bars secured to the outer face of said drum, fingers engaging said bars, a slidable collar slidably mounted on said shaft, arms carried by said collar, said fingers being secured to said arms, a bracket secured to said mounting frame, an operating lever pivotally secured to said bracket, a linkage pivotally attached to said lever, said linkage engaging said collar, said linkage being of substantially U-shape and having bifurcated end portions, said collar having a peripheral flange received in said bifurcated end portions.

4. A variable vibrator comprising a mounting frame, a vibrating frame resiliently suspended from said mounting frame, a shaft journaled in said vibrating frame, drive means for driving said shaft carried by said mounting frame, a drum mounted on said shaft for rotary movement relative thereto, a first weight secured in said drum eccentrically disposed relative to the axis of rotation of said drum, a second weight secured to said shaft eccentrically disposed relative to the axis of rotation of said shaft,

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and adjusting means for rotating said drum relative to said shaft and to hold said drum in an adjusted position carried by said mounting frame and engaging said drum, said means including spiral bars secured to the outer face of said drum, fingers engaging said bars, a slidable collar slidably mounted on said shaft, arms carried by said collar, said fingers being secured to said arms, said drive means comprising a motor secured on said mounting frame and driving a drive shaft having a first pulley mounted thereon, a second pulley mounted on said first recited shaft, and an endless belt entrained over said first pulley and said second pulley.

5. A variable vibrator comprising a mounting frame, a vibrating frame resiliently suspended from said mounting frame, a shaft journaled in said vibrating frame, drive means for driving said shaft carried by said mounting frame, a drum mounted on said shaft for rotary movement relative thereto, a first weight secured in said drum eccentrically disposed relative to the axis of rotation of said drum, a second weight secured to said shaft eccentrically disposed relative to the axis of rotation of said shaft, and adjusting means for rotating said drum relative to said shaft and to hold said drum in an adjusted position carried by said mounting frame and engaging said drum, said means including spiral bars secured to the outer face of said drum, fingers engaging said bars, a slidable collar slidably mounted on said shaft, arms carried by said collar, said fingers being secured to said arms, a bracket secured to said mounting frame, an operating lever pivotally secured to said bracket, a linkage pivotally attached to said lever, said linkage engaging said collar, said linkage being of substantially U-shape and having bifurcated end portions, said collar having a peripheral flange received in said bifurcated end portions, said drive means comprising a motor secured on said mounting frame and driving a drive shaft having a first pulley mounted thereon, a second pulley mounted on said first recited shaft, and an endless belt entrained over said first pulley and said second pulley.

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