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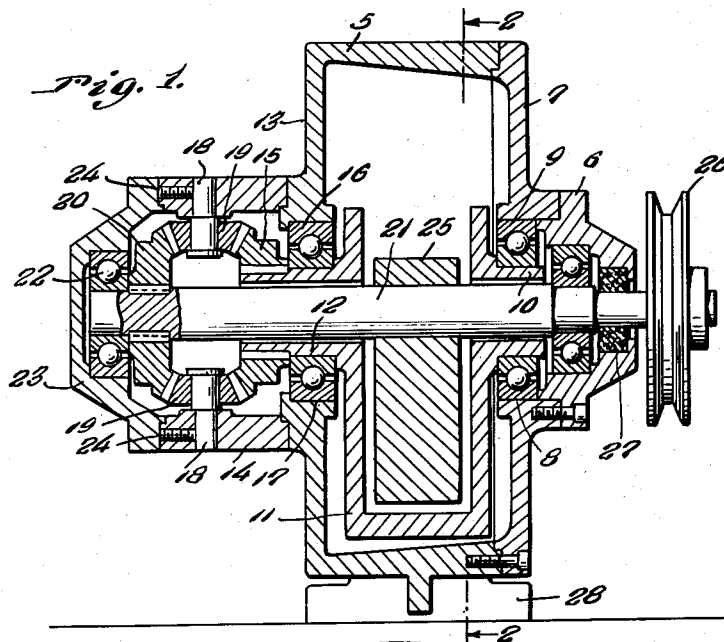
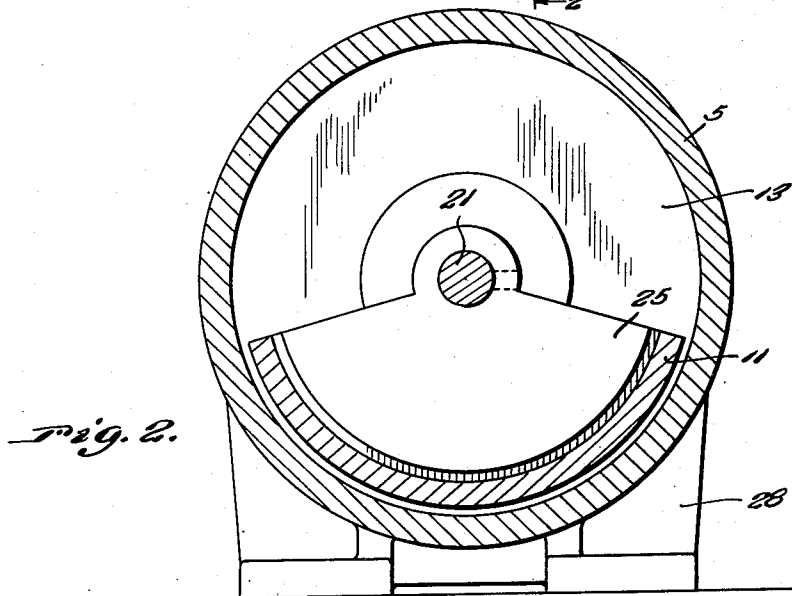
E. W. MATEER

2,248,182

VIBRATORY MOTION PRODUCING APPARATUS

Filed March 27, 1940

2 Sheets-Sheet 1



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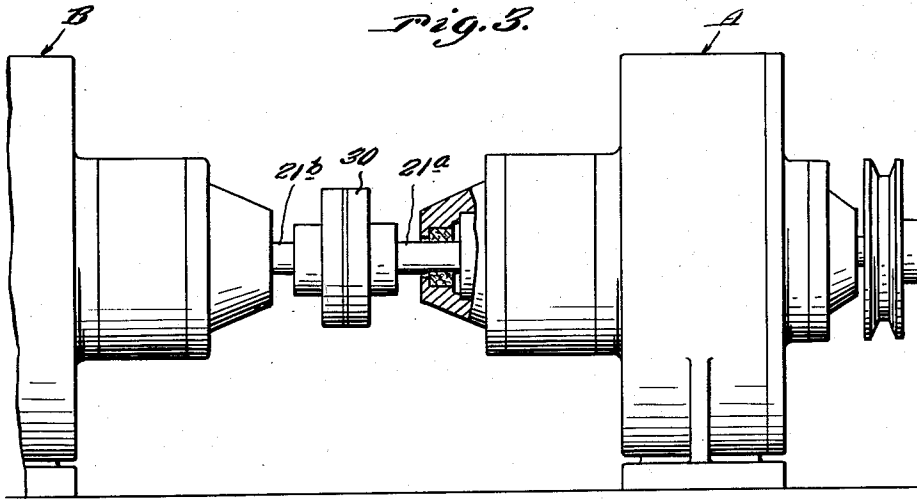
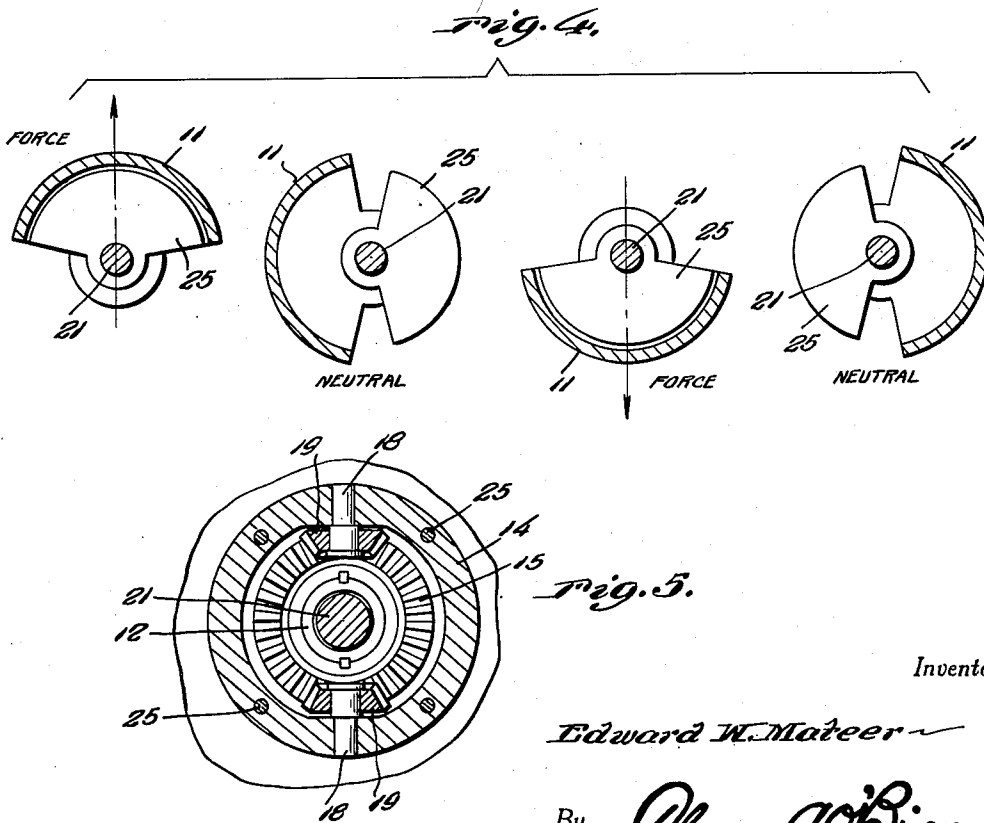
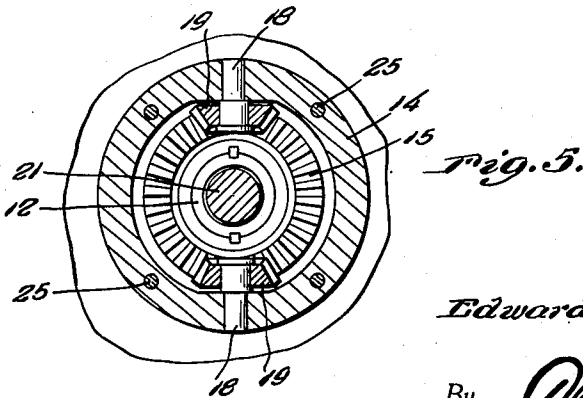
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VIBRATORY MOTION PRODUCING APPARATUS

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,248,182

VIBRATORY MOTION PRODUCING  
APPARATUS

Edward W. Mateer, Westfield, N. Y.

Application March 27, 1940, Serial No. 326,288

2 Claims. (Cl. 74-61)

This invention appertains to new and useful improvements in vibratory motion producing apparatus such as are conventionally used for vibrating screens and for other active uses. Devices of this general character have been proposed in which a pair of shafts are mounted in suitable bearings, each shaft carrying an unbalanced weight and the two shafts caused to rotate in opposite directions by intermeshed gears on their respective shafts.

The object of this invention is to provide an improved device of this class in which the centers of the unbalanced weights are brought to a common center on the same axis and the centrifugal force is generated by the unbalanced weights brought into the same force plane.

Other objects and advantages of the invention reside in the simplicity of construction, the facilities for ready adjustment, the promotion of higher speed, and the fact that two or more of these units can be connected by shaft extensions.

These and various other important objects and advantages of the invention will become apparent to the reader of the following specification.

In the drawings—

Figure 1 is a longitudinal sectional view.

Figure 2 is a transverse section on the line 2—2 of Figure 1.

Figure 3 is a side elevational view showing two units connected.

Figure 4 is a diagrammatic view showing the different positions of the weights, the same being shown in section.

Figure 5 is a cross section through the reversing gears.

Referring to the drawings wherein the numerals designate like parts, it can be seen that the device includes the housing 5 at one side of which is the cap 6 on the removable side plate 7. This cap closes the opening 8 in the side plate 7 in which the ball bearing assembly 9 is located and into which is disposed the tubular bearing 10 of the external weight member 11. The external weight member 11 which is of segmental and hollow construction has the tubular bearing extension 12 which extends through the end wall 13 of the housing 5 and into the annulus 14 where the beveled gear 15 is secured thereto. This tubular extension 12 is disposed through the bearing assembly 16 which is mounted within the opening 17 in the end wall 13.

Pintles 18 extending inwardly from the upper and lower portions of the annulus 14 carry the beveled pinions 19 which mesh with the beveled

gear 15 and also with the beveled gear 20 which is mounted on the elongated shaft 21 adjacent its end which is disposed into the bearing assembly 22 mounted in an end cap 23 for the annulus 14.

Set screws 24 are employed for holding the pintles 18 against displacement, and the bolts 25 are disposed through the edge portion of the cap 23 and through the annulus 14 to hold the same to the end wall 13 of the housing 5.

As shown in Figure 1, the shaft 21 extends through the tubular extensions 10 and 12 of the external weight 11, clear of the same while secured to the shaft 21, within the confines of the weight 11 is the internal and preferably solid weight 25.

The drive shaft 21 is equipped with a drive pulley 26 and extends through the packing gland 27 in the cap 6. Suitable supporting structure attaching formations 28 are provided at the bottom portion of the housing 5.

The operation of this device is as follows: The drive shaft 21 is rotated by external power applied to the pulley 26 which crosses the shaft with the internal weight 25 and the beveled gear 20 to rotate at a predetermined R. P. M. The differential arrangement of gears serve to reverse this rotation on the other weight 11 causing the outer weight to rotate at the same R. P. M. as the inner balance weight, but in the opposite direction. The weights are so set up that the inner weight and outer weight are one within the other and the center of gravity of each weight within the same plane. The gears are then keyed to fix this relationship, so as to take the position as illustrated in Figure 4. These positions follow in succession, acting in one direction, acting together in one direction in the first showing, separating and neutralizing at the second illustration, then acting together again in the opposite direction at the third illustration and then acting neutrally again in the fourth illustration, thus setting up in the unit or object to which it is attached a reciprocating vibratory action.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

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

1. A vibration producing apparatus comprising a housing, a hollow shaft in the housing, a

shaft extending through the hollow shaft, weights on the shafts, a drive at one end of the second-mentioned shaft, differential gearing between the shafts at the ends thereof opposite from the drive, said differential gearing being adapted to rotate said weights in opposite directions and at the same angular speed and to extend in the same direction at two diametrically opposed points in the line of vibrating movement and in opposite directions in a line perpendicular to said line of movement, the weight on the hollow shaft being of U-shape in cross section and having the weight on the second-mentioned shaft operative therein.

2. A vibration producing apparatus comprising 15

a housing, a hollow shaft in the housing, a shaft extending through the hollow shaft, weights on the shafts, a drive at one end of the second-mentioned shaft, differential gearing between the shafts at the ends thereof opposite from the drive, said differential gearing being adapted to rotate said weights in opposite directions and at the same angular speed and to extend in the same direction at two diametrically opposed points in the line of vibrating movement and in opposite directions in a line perpendicular to said line of movement, said weights being of hollow construction and the other weight being mounted to operate therethrough.

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