April 30, 1935. W. T. SHALER 1,999,213

SIEVE SHAKER

Filed Dec. 2, 1933 2 Sheets-Sheet 1

Fig. 1

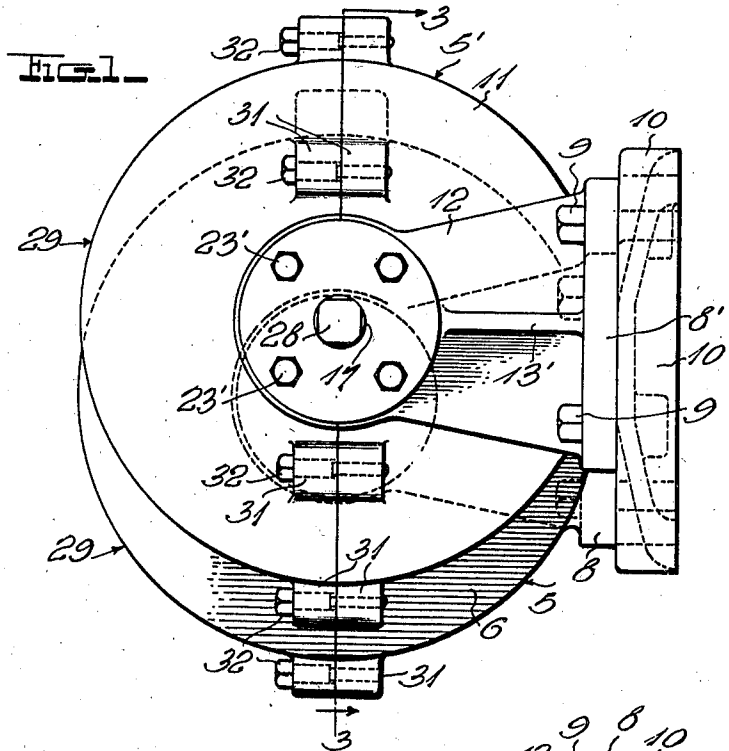
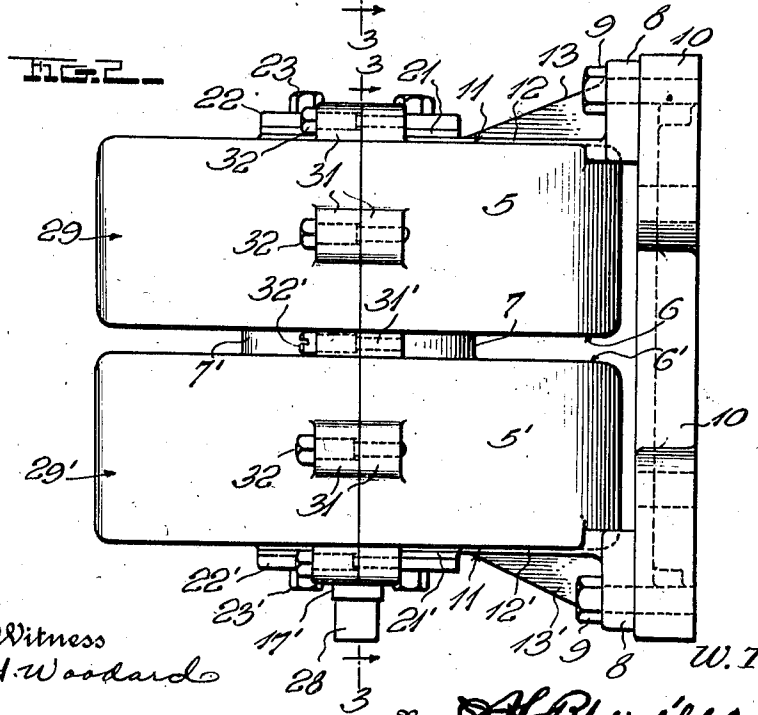


Fig. 2



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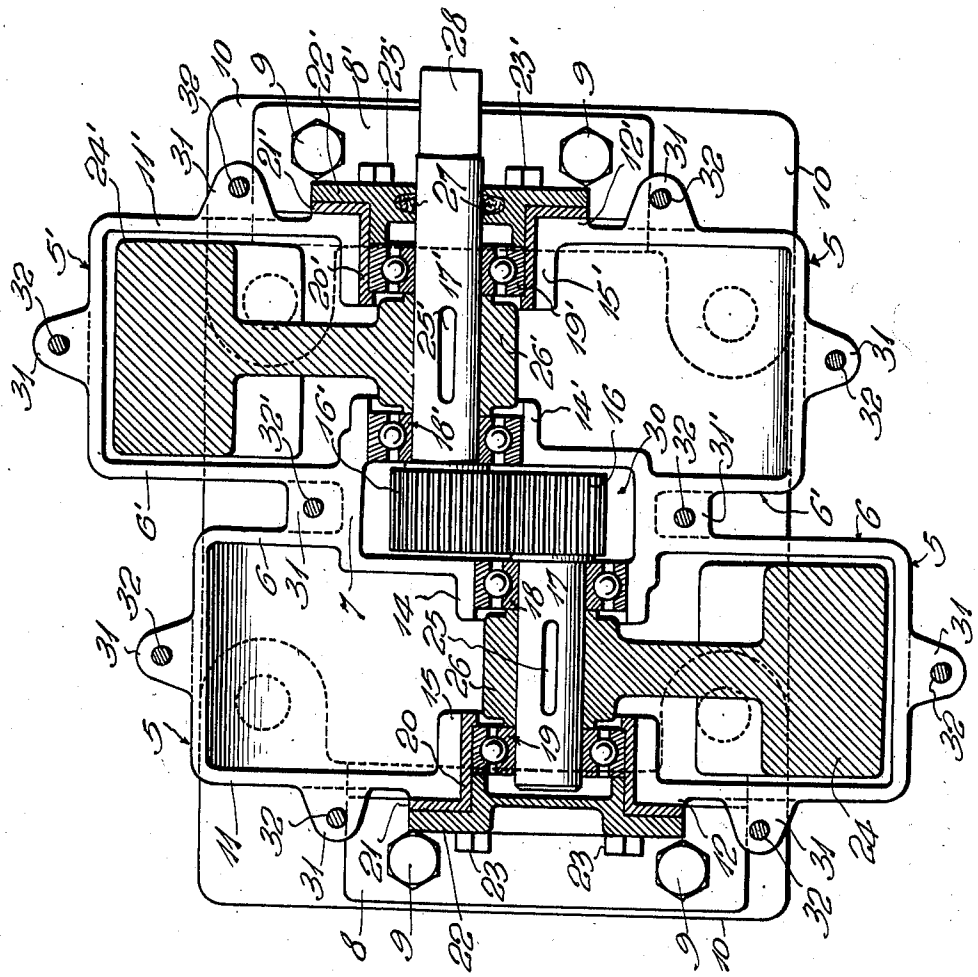


Fig. 1.

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UNITED STATES PATENT OFFICE

1,999,213

SIEVE SHAKER

William T. Shaler, Silver Creek, N. Y.

Application December 2, 1933, Serial No. 700,736

6 Claims. (Cl. 74—606)

The invention relates to shakers for sieves and the like, of the general type in which off-center weights are driven to produce the required shaking impulses. While shakers of this type are quite common, difficulties have heretofore been experienced in producing structures which will not have a severe tendency to throw parts out of their true intended relation, resulting in excessive friction, wear and noise, and tending to cause deviation in the directions in which the impulses are to be transmitted to the sieve or the like.

It is the aim of my invention to overcome such difficulties as those above discussed, and to provide a simple, inexpensive, efficient and durable shaker.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawings.

Fig. 1 is an end elevation of a sieve shaker constructed in accordance with the invention.

Fig. 2 is a top plan view.

Fig. 3 is a vertical sectional view on line 3—3 of Figs. 1 and 2.

A preferred structure has been shown and will be specifically described, with the understanding however, that within the scope of the invention as claimed, variations may be made.

Two semi-cylindrical casing sections 5 and 5' are provided, said casing sections having their open sides disposed at a common plane in which the axes of said sections lie, said axes being laterally offset from each other in said plane and being in parallel relation. The casing sections 5 and 5' are disposed in slightly spaced end-to-end relation, and their inner end walls 6 and 6' are integrally joined to each other by means of a substantially semi-circular wall 7 which not only rigidly connects the central portions of the end walls 6 and 6', but forms half of a gear casing, hereinafter described. The closed peripheral portions of the casing sections 5 and 5' are rigidly tied together to prevent any relative movement or vibration, and in the present showing, said peripheral portions are provided with integral lateral feet 8 and 8' respectively, said feet being secured by cap screws or other suitable fasteners 9 to a base 10 of one-piece inherently rigid form, said base being adapted to be bolted or otherwise secured to the sieve or the like to be shaken. The outer end walls 11 and 11' of the casing sections are preferably thickened outwardly as at 12 and 12', and provided with reinforcing webs 13 and 13', said thickened portions and webs being integral with the laterally projecting feet 8 and 8'.

The inner side walls 6 and 6' are provided with integral semi-circular bearing seats 14 and 14' respectively, and similar seats 15 and 15' are provided on the outer end walls 11 and 11' respectively. Preferably the central portions of the end walls 6 and 6', carrying the seats 14 and 14' and joined to the semi-circular wall 7, are inwardly offset to some extent from the remainders of said end walls, giving more space within the above mentioned gear casing, half of which is formed by said wall 7. In the present showing, two intermeshed gears 16 and 16' are received in this casing, said gears being integral with or otherwise fixedly mounted on the inner ends of two shafts 17 and 17'. These shafts are mounted at their inner ends in annular ball bearings 18 and 18' which are engaged for half of their diameters, with the seats 14 and 14'. The outer ends of the shafts are supported by bearing assemblies 19 and 19' which are engaged with the seats 15 and 15' respectively. The bearing assemblies 19 and 19' include retainers 20 and 20' having flanges 21 and 21' lying against the outer sides of the end walls 11 and 11' respectively, and said assemblies also include guard plates 22 and 22', said guard plates and flanges being secured to the end walls 11 and 11' by screws or the like 23 and 23'. Both the inner and outer bearings for each shaft are snugly fitted to said shaft to prevent any movement of the latter with respect to the former, and the outer bearing is held against any axial movement by the retainer 20 or 20' and the guard plate 22 or 22'. The inner bearing however, is not held against axial movement in the seat 14 or 14', which overcomes any possibility of tightly binding one bearing or another during assembly, even if inaccuracies exist in machining, casting or the like.

Shaft 17 carries an off-center weight 24 operable in the casing section 5, and a similar weight 24' is carried by the shaft 17', keys for the two weights being shown at 25 and 25'. The hubs 26 and 26' of these weights, preferably co-act with the gears 16 and 16' in holding the inner bearings 18 and 18' against any movement along the shafts 17 and 17'. The outer bearings are pressed onto the shafts and abut the hubs 26 and 26'.

In the present showing, shaft 17' passes through a packed opening 27 in the guard plate 22' and is provided with a reduced extending portion 28 for the attachment of a driving pulley thereto. The other shaft 17 could extend in a similar manner should it be desired to provide for driving this shaft also by means of a pulley, but the driving of one shaft will suffice, for the two are operatively connected by the gearing 16—16'.

Two additional semi-circular casing sections 29 and 29' are complemental to the sections 5 and 5' in forming two complete casings for the off-center weights 24 and 24' respectively. The casing sections 29 and 29' are integrally joined at their central portions by a substantially semi-circular wall 7' complemental to the wall 7 in form-

ing a casing 30 for the gearing 16—16', and obviously this casing and the two weight casings may contain adequate lubricant to insure smooth and easy operation without wear. The casing sections 29 and 29' are provided also with bearing seats which are duplicates of the seats 14, 14' 15 and 15', said seats of said sections 29 and 29' co-operating with said seats 14, 14', etc., in holding the inner and outer shaft bearings properly in place. At suitable locations, the casing sections are provided with integral lugs at their abutting edges. Most of these lugs are indicated at 31, and they receive bolts or screws 32. Additional lugs however, are denoted at 31', these lugs being not only integral with the inner end walls 6 and 6' of the weight casings, but being integral also with the walls 7 and 7', forming additional rigid connecting means between the two weight casings. Screws 32' are shown engaged with the lugs 31'.

Viewed differently, it will be seen that the parts 8, 12, 13 and 15, and the central portion of casing section 29, constitute a rigid support for the bearing 19 at the outer end of shaft 17; that the corresponding parts 8', 12', 13', and 15', etc. form a rigid support for the bearing 19' at the outer end of shaft 17'; and that the casing sections 5 and 29, and 5' and 29', constitute inherently rigid yokes extending transversely around the paths of the weights 24 and 24' respectively, the inner ends of said yokes being rigidly joined to the gear case 7, 7' and the outer ends of said yokes being rigidly joined to said bearing supports, thereby rigidly connecting the supporting means for the inner bearings with the supporting means for the outer bearings. As these supporting means for the outer bearings are rigidly mounted upon the base 10, it follows that the supporting means for the inner bearings will also be rigidly supported.

By providing the novel construction shown and described, there is no danger of the bearings for one shaft springing or throwing out of proper relation with those of the other shaft, under the influence of the weights 24 and 24', for the two weight casings are so rigidly and unitarily connected that no relative movements can take place between them, and without such movements, the shaft bearings will be held accurately in proper position. The operation of the weights therefore, has no tendency to cause excessive friction, wear and noise, and no tendency to cause such distortion of the shaker as to produce deviation in the directions in which the impulses are transmitted to the sieve or the like. The invention therefore provides, even though by a rather simple and inexpensive structure, for efficiency, durability and quiet operation, free from troubles which commonly exist with shakers of the unbalanced weight type.

While the details disclosed may be considered as preferred, attention is again invited to the possibility of making variations within the scope of the invention as claimed.

I claim:

1. In a sieve shaker, two substantially flat cylindrical weight casings disposed end-to-end in spaced relation and having their axes in spaced parallel relation, said casings being provided with means for attaching them to a sieve, a continuous wall between said casings and rigidly joined to the inner end walls of said casings to rigidly unite the same and to provide a gear case, and central shaft bearings carried by the inner and outer end walls of said casings.

2. In a sieve shaker, two substantially flat cylindrical weight casings disposed end-to-end in spaced relation and having their axes in spaced parallel relation, said casings being provided with means for attaching them to a sieve, a continuous wall between said casings and integrally joined to the inner end walls of said casings to rigidly unit the same and to provide a gear case, and central shaft bearings carried by the inner and outer end walls of said casings.

3. In a sieve shaker, two substantially flat cylindrical weight casings disposed end-to-end in spaced relation and having their axes in spaced parallel relation, a base rigidly joined to peripheral portions of both of said casings to rigidly unite said peripheral portions and to provide for attaching the shaker to a sieve, a continuous wall between said casings and rigidly joined to the inner end walls of said casings to rigidly unite the same and to provide a gear case, and central shaft bearings carried by the inner and outer end walls of said casings.

4. In a sieve shaker, two substantially flat cylindrical weight casings disposed end-to-end in spaced relation and having their axes in spaced parallel relation, a base rigidly joined to peripheral portions of both of said casings to rigidly unite said peripheral portions and to provide for attaching the shaker to a sieve, a continuous wall between said casings and integrally joined to the inner end walls of said casings to rigidly unite the same and to provide a gear case, and central shaft bearings carried by the inner and outer end walls of said casings.

5. In a sieve shaker, two semi-cylindrical casing sections disposed end-to-end and having their open sides presented at a common plane in which their axes lie, said axes being laterally offset in said plane and disposed in parallel relation, a base at the closed sides of said casing sections and rigidly joined thereto, a substantially semi-circular wall between the inner end walls of said casing sections and integrally joined thereto, said inner end walls and the outer end walls of said casing sections having central semi-cylindrical bearing seats, and annular shaft bearings engaged throughout half of their diameters with said seats, two additional semi-cylindrical casing sections complementary to the aforesaid sections in forming two cylindrical weight casings, said additional casing sections being integrally joined by a substantially semi-circular wall complemental to the aforesaid substantially semi-cylindrical wall in forming a gear case, said additional casing sections having semi-cylindrical bearing seats cooperable with the aforesaid seats in holding said shaft bearings, and means rigidly and detachably connecting said casing sections and said wall sections.

6. In a sieve shaker of the type having two overlapped rotatable shafts provided with intermeshing gears on their inner ends, and off-center weights carried by said shafts; an inherently rigid case for said gears having bearings for the inner ends of said shafts, spaced rigid supports having bearings for the outer ends of said shafts, a rigid base to which said supports are rigidly secured, and inherently rigid yokes extending transversely around the paths of said weights, the inner ends of said yokes being rigidly joined to said gear case, the outer ends of said yokes being rigidly joined to said bearing supports.

WILLIAM T. SHALER.