J. B. CORNWALL.

GYRATING DRIVING MECHANISM.

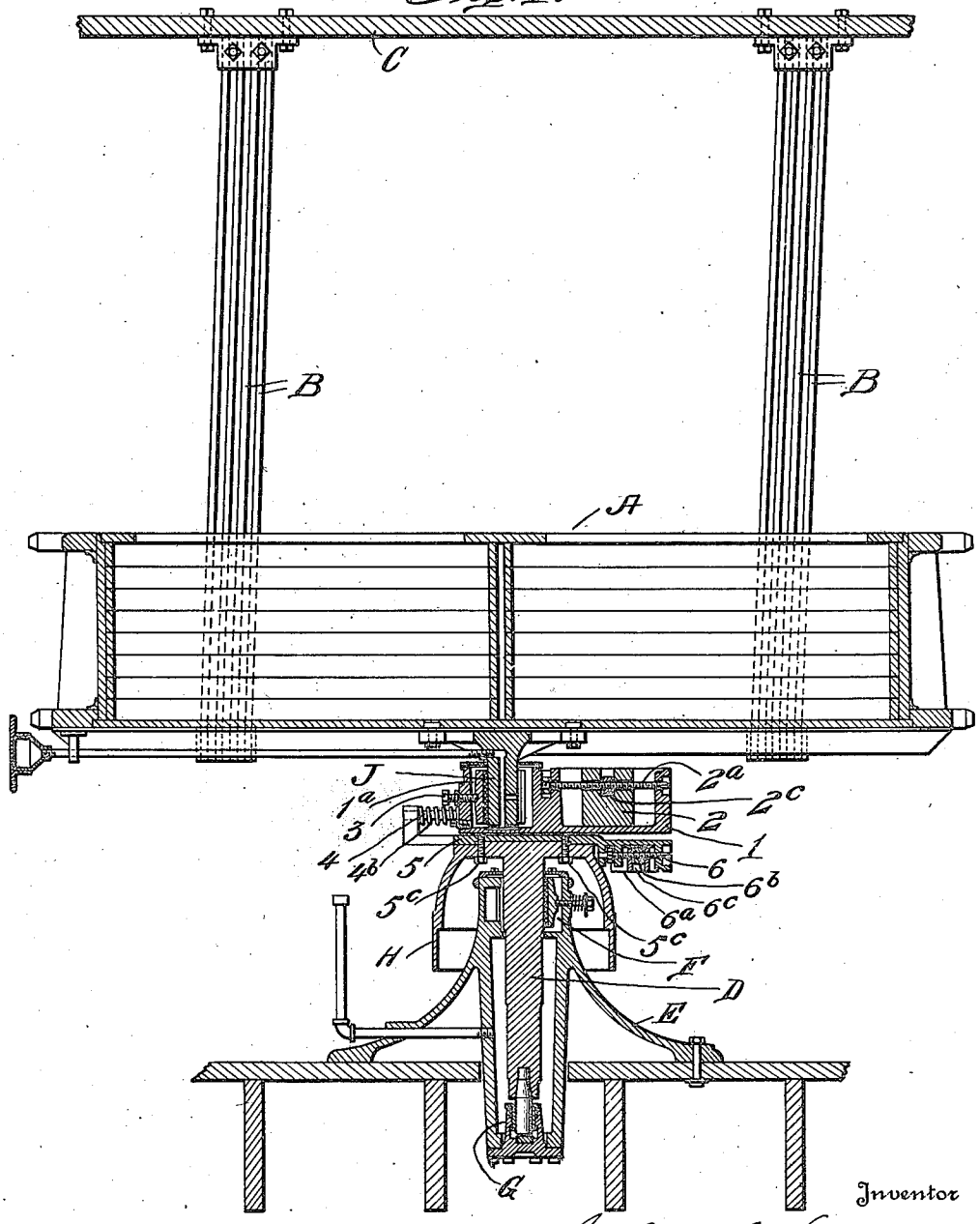
APPLICATION FILED AUG. 14, 1915.

1,188,903.

Patented June 27, 1916.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

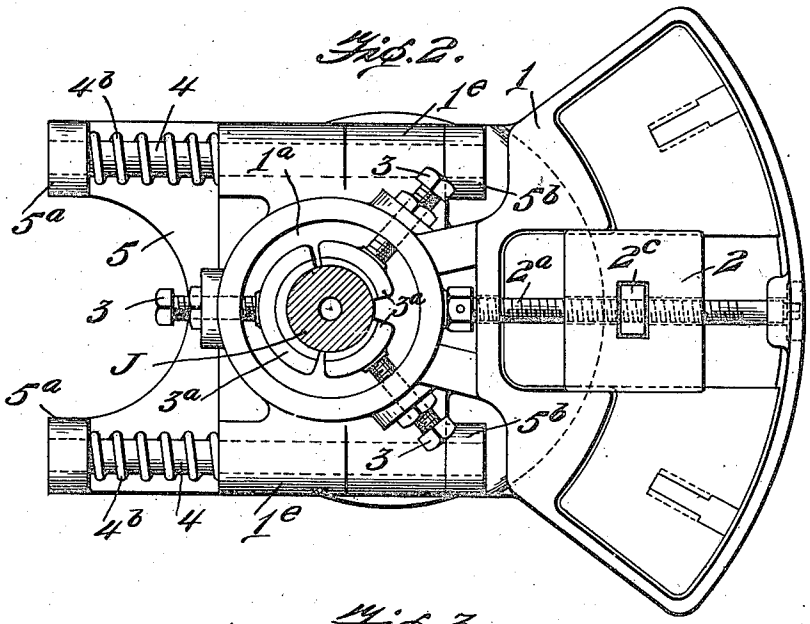


Fig. 3.

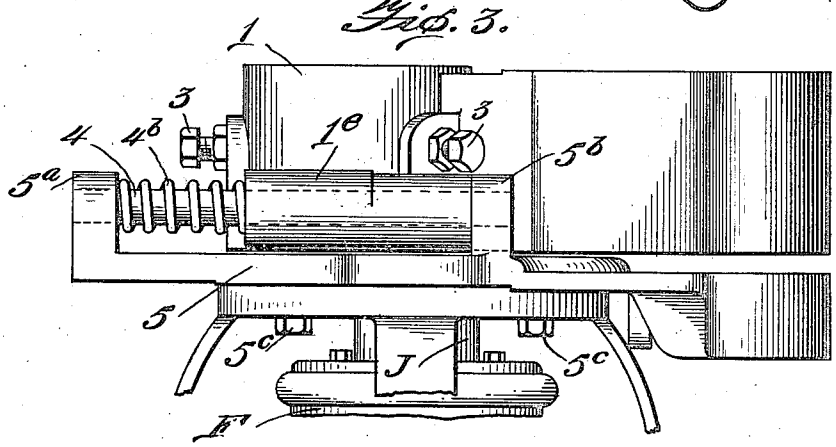
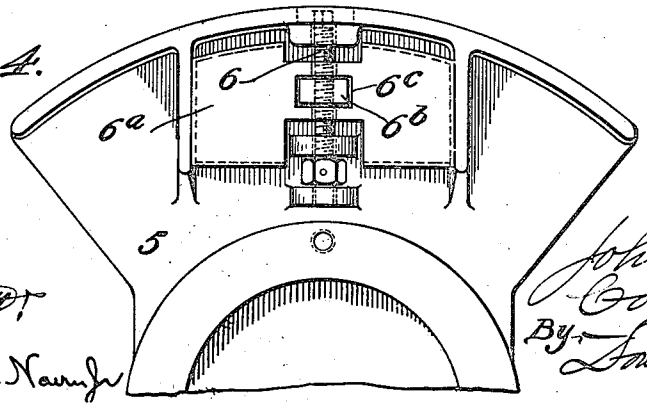


Fig. 4.



Witnesses

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GYRATING DRIVING MECHANISM.

1,188,903. Specification of Letters Patent. Patented June 27, 1916.

Application filed August 14, 1915. Serial No. 45,505.

To all whom it may concern:

Be it known that I, JOHN B. CORNWALL, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Gyrating Driving Mechanism; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to driving means for imparting a gyratory motion to bodies or parts of machines, and is particularly designed for use in connection with so-called "Plansifter" bolting machines.

The principal object of the invention is to obviate the objectionable jarring, shaking or vibrations ordinarily transmitted from the gyratory body to the building in which same is installed.

There are now in general use two principal types of gyratory drives for plansifters. One of these commonly known as the "rigid type drive" insures that the gyrations of the moving body shall be practically uniform when the machine is in operation, and the work of the machine is thereby rendered more uniform, but such rigid drive produces annoying vibrations and jarring of the building in which the machine having such a drive is installed. The other commonly known as the "vibro-motor drive" does not impart uniform or reliable gyratory motions to the moving body, and because of the variations in movement the work of the machine is rendered unequal or defective.

The present invention aims to retain the advantages and overcome the defects of both the aforesaid types of drives, and to provide a driving mechanism whereby the gyratory movements imparted to the sieve or other objects can be maintained constant and uniform, and the transmission of objectionable shocks or vibrations entirely eliminated, or reduced to such a minimum that the objections to and annoyances arising from the use of plansifters as heretofore constructed will be obviated.

The invention in brief consists in novel means for driving gyrating bodies, such as plansifter sieves and the like, said driving means being so constructed and counterbalanced as to in itself take up the strains of centrifugal force and obviate jarring and vibration, and being also flexible so that the degree of gyratory motion imparted from the driving shaft to the driven object may be varied.

I will explain the invention as employed in connection with a well known type of plansifter flour bolting machine, and set forth in the claims the features and combinations of parts for which protection is desired.

In the drawings: Figure 1 is a sectional elevation of a plansifter with a driving mechanism embodying my invention; Fig. 2 is an enlarged top plan view of the driving mechanism detached; Fig. 3 is a side elevation of the parts illustrated in Fig. 2; and Fig. 4 is a detail bottom plan view of a part of the driving mechanism.

Referring to the drawings, A designates the sieve box of a plansifter, which may be suspended by rods B in the usual manner from over-head supports C in the building in which the machine is to be used.

Below the sieve box is the driving mechanism which in general appearance resembles the so-called "rigid type drive," and includes a base member E in which is a vertical driving shaft D having its lower end mounted on a step-bearing G in the base, and journaled near its upper end in adjustable bearings F in the base member. A pulley H is attached to the upper end of said shaft by which it can be rotated.

Attached to the underside of the sieve box is a depending pin or stud shaft J which engages a member connected with the shaft D; so that when the shaft D is rotated a gyratory motion is imparted to the sieve box.

The parts thus far referred to are, or may be, similar to those commonly used on plansifters and need no further detailed explanation herein.

The stud J depends into a socket or recess 1^a in a casting 1 (see Fig. 2) which is movably mounted, as hereinafter explained, upon shaft D. The operative engagement between casting 1 and stud J may be adjusted by means of bearing plates 3^a engaging the sides of the stud J, and supported by means of bolts 3 tapped through the walls of the socket 1^a.

The casting 1 is provided at one side of socket 1^a with an adjustable weight 2; and

said weight can be adjusted toward or from the stud J by means of a threaded shaft 2^a journaled in the casting 1, as shown. The weight is shown as provided with an opening in which is confined a nut 2^c, threaded on the shaft 2^a, so that the nut travels along the shaft when the latter is rotated, thereby shifting the weight to or from the stud J. The shaft 2^a has a squared outer end by which it can be turned by a wrench or other suitable tool, to adjust the weight.

The casting 1 is shown as provided with sleeves 1^e at its sides by which it is slidably supported on rods 4 mounted between studs 5^a, 5^b on the upper surface of a casting or plate 5 mounted upon the upper end of the shaft D, and preferably rigidly attached thereto in any suitable manner, as by bolts 5^c, as indicated in Fig. 1. Springs 4^b are strung on rods 4 between the studs 5^a and the adjacent ends of the sleeves 1^e, and normally tend to press the casting 1 in a direction away from the studs 5^a.

The plate 5 is provided at one end, below the weighted end of the plate 1, with an adjustable weight 6^a having a slot 6^b in which is confined a nut 6^c threaded on a shaft 6 journaled in lugs or flanges depending from the plate 5; and by turning shaft 6 the nut 6^c is traveled along the shaft and the weight 6^a adjusted toward or from the shaft D.

The parts are so adjusted that when the shaft D is rotated the stud J will become more or less eccentric to the axis of the shaft D and thereby impart the desired extent of gyratory or orbital motion to the body or sieve box. The construction is such as will allow the sieve box when the machine is in operation to press the stud J in a direction to compress the springs 4^b. The momentum of the sieve box tends by centrifugal force to further increase the eccentric displacement of the stud J relative to the shaft D, but this is opposed by the springs 4^b, and by adjusting the weight 2 any excessive centrifugal force exerted by the sieve box upon the springs 4^b can be counterbalanced or neutralized.

The weight 6 is adjusted to counterbalance or neutralize the centrifugal force tending to eccentrically displace the shaft D in its bearings when the machine is in operation; and to relieve the plate 5 and shaft D of the lateral pressure which is exerted by centrifugal force through the plate 1 from the sieve box against the springs 4^b when the machine is in operation.

By the described construction and arrangement of the parts when the machine is in operation motion is transferred from the shaft D to the stud J and centrifugal force tending to unduly displace the sieve box is compensated for or neutralized by the weights when properly adjusted.

The construction above described and illustrated in the drawings will when properly adjusted automatically take care of and compensate for the eccentric thrust or pressure exerted by the centrifugal force of the sieve box through stud J against its bearings in plate 1, and all such strains will be taken up within the drive, and obviate or practically reduce to an immaterial factor the vibration and jarring which would be transmitted by the old type of plansifter drive.

What I claim is:

1. Means for imparting gyratory motion to objects, comprising a driving shaft, a driven member eccentric thereto and movable transversely of the driving shaft, means adapted to resist the lateral movement of said driven member due to centrifugal force, and means to counteract or neutralize excessive effects of centrifugal force.

2. In means for imparting gyratory motion to objects, a driven shaft, a body to be gyrated, a stud connected with said body and operatively engaged with said driving shaft, spring means for resisting the centrifugal force tending to shift the stud eccentrically of the driven member when the machine is in operation, and adjustable weights adapted to compensate for or neutralize the action of excessive centrifugal force.

3. Means for imparting gyratory motion to objects, comprising a driving shaft, a driven member eccentric thereto, an intermediate member connected with and movable transversely of the driving shaft and engaging the driven member, means adapted to resist the movement of said intermediate member due to centrifugal force exerted upon said driven member, and means carried by said intermediate member for counteracting the effect of excessive centrifugal force.

4. In means for imparting gyratory motion, a driven shaft, a member rigidly connected with said driving shaft, a second member slidably mounted upon said rigid member and movable transversely of the shaft; a body to be gyrated, a stud connected with said body and engaged with said transversely movable member, spring means resisting the centrifugal force tending to shift the movable member upon the fixed member when the machine is in operation, and means connected with said movable member to compensate for and neutralize excessive centrifugal force.

5. In a gyratory drive for plansifters and the like, the combination of a driving shaft, a member fixedly attached thereto, a transversely movable member mounted upon said fixed member, and springs adapted to retain the movable member in normal position and resist the action of centrifugal force when

the machine is in operation; with a body, a stud attached thereto having a rotatable engagement with said movable member, and means mounted on the movable member adapted to counterbalance or neutralize excessive thrust of the gyrating body when the machine is in operation.

6. In a gyratory drive for plansifters and the like, the combination of a driving shaft, a member fixedly attached thereto, a transversely movable member mounted upon said fixed member; springs mounted upon the fixed member adapted to retain the movable member in normal position and to resist the action of centrifugal force when the machine is in operation; with a body, a stud attached thereto axially parallel with the driving shaft and having a rotatable engagement with said movable member, and weights mounted on the said members to counterbalance or neutralize excessive thrust of the gyrating body when the machine is in operation.

7. In a drive mechanism for plansifters and the like, the combination of a base, a shaft journaled therein, means for rotating said shaft; a plate attached to the upper end of said shaft, a movable plate slidably mounted on the fixed plate, springs for holding said movable plate in normal position, a sieve body, a stud attached to said body and having a rotatable engagement with said movable plate, and an adjustable counterbalancing weight on said movable plate, substantially as and for the purpose described.

8. In a drive mechanism for plansifters and the like, the combination of a base, a vertical shaft journaled therein, means for rotating said shaft; a casting mounted transversely of and upon the upper end of said shaft and fixedly attached thereto, an adjustable weight on said casting, a second casting slidably mounted on the fixed casting, springs for holding said movable casting in normal position, and an adjustable weight on said movable casting, with a sieve body and a stud attached to said body having a rotatable engagement with said movable casting, substantially as described.

9. In a drive mechanism for plansifters and the like, the combination of a base, a shaft journaled therein, means for rotating said shaft; a plate attached to the upper end of said shaft, a movable plate slidably mounted on the fixed plate, rods mounted on the fixed plate, springs on said rods for holding said movable plate in normal position, a sieve body, a stud attached to said body and having a rotatable engagement with said movable plate, and adjustable weights on said plates whereby when the machine is in operation the shocks and jars due to the gyratory movements of the body are compensated for between said body and the driving shaft.

10. In a drive mechanism for plansifters and the like, the combination of a base, a vertical shaft journaled therein, means for rotating said shaft; a casting mounted transversely of and upon the upper end of said shaft and fixedly attached thereto, an adjustable weight on said casting, a second casting slidably mounted on the fixed casting, rods mounted on the first casting engaged by sleeves on the movable casting for guiding and holding the latter, springs on said rods for holding said movable casting in normal position, and an adjustable weight on said movable casting; with a sieve body to be gyrated, and a stud attached to said body and axially parallel with the driven shaft, said stud having a rotatable engagement with said movable casting whereby when the machine is in operation the shocks and jars due to the gyratory movements of the body are compensated for between said body and the driving shaft.

In testimony that I claim the foregoing as my own, I affix my signature.

JOHN B. CORNWALL.