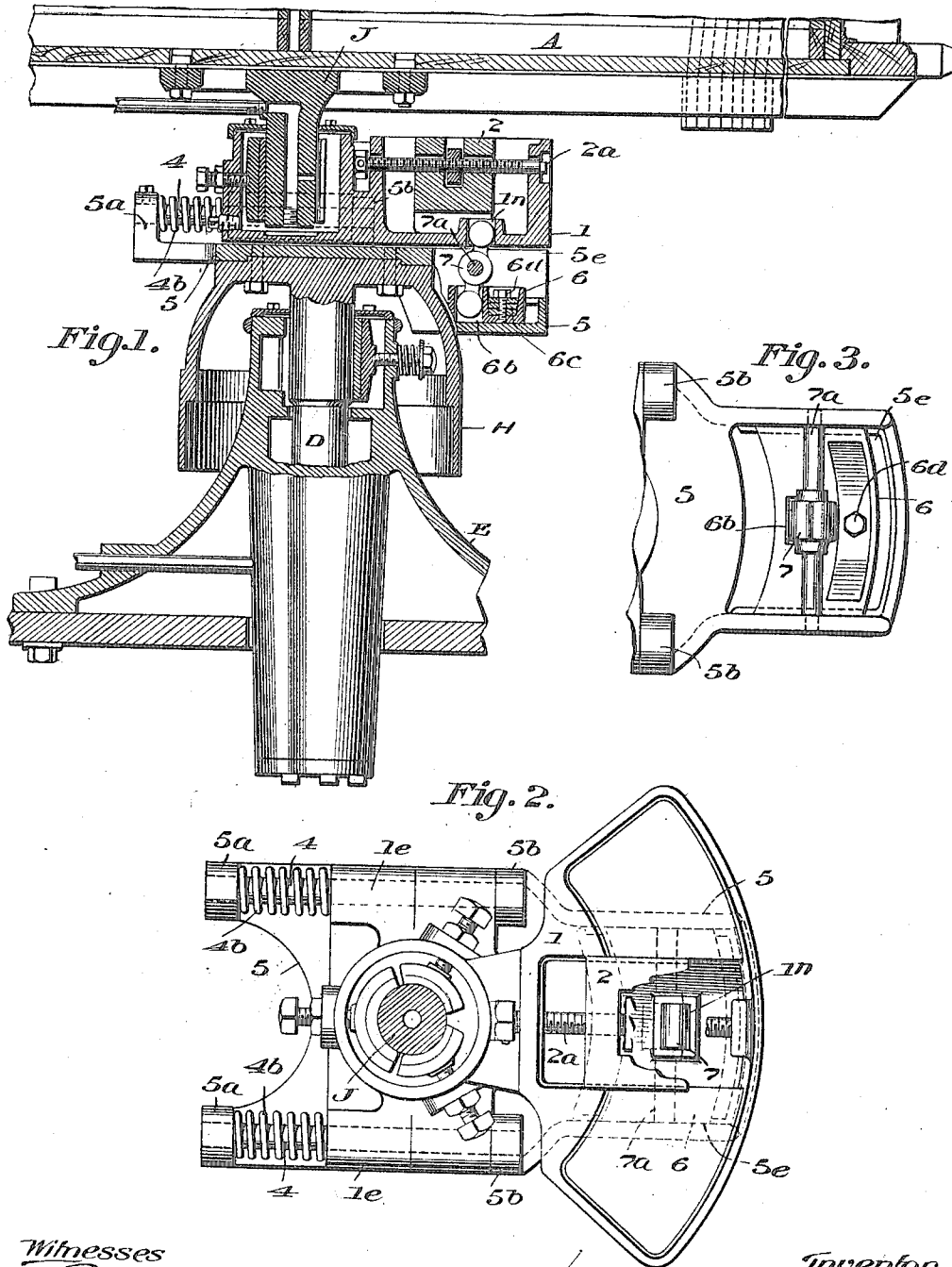


J. B. CORNWALL.
GYRATORY DRIVING MECHANISM.
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GYRATORY DRIVING MECHANISM.

1,208,100.

Specification of Letters Patent.

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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 Gyratory Driving Mechanisms; 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 so-called "gyratory drives," or means for imparting a gyratory motion to bodies, and in particular is an improvement upon the gyratory driving mechanism shown in my application for patent filed August 14, 1915, Serial No. 45,505; which was designed for use in connection with so-called "plansifter" bolting machines.

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 counter-balanced as to in itself automatically compensate for and counteract the strains of centrifugal force and practically obviate jarring and vibration, while enabling the degree of gyratory motion imparted from the driving shaft to the driven object to be varied; and the object of the present invention is to cause the means which compensates for or counteracts the centrifugal force to adjust itself automatically.

I will explain in detail one embodiment of the invention as illustrated in the accompanying drawings, to enable others skilled in the art to adopt and use the same in connection with other devices, and summarize in the claims the essential novel features and combinations of parts for which protection is desired.

In the drawings: Figure 1 is a sectional elevation of a plansifter driving mechanism containing one embodiment of the invention; Fig. 2 is an enlarged top plan view of the driving mechanism detached; Fig. 3 is a detail view of part of the driving mechanism.

Referring to the drawings, A designates part of the sieve box of a plansifter which may be suspended in the usual manner above the driving mechanism, that includes a base member E in which is a vertical driving shaft D supported at its lower end in

the base, and journaled near its upper end in adjustable bearings in the base member and carrying a pulley H by which it can be rotated.

Attached to the sieve box is a stud J which depends into a socket in a casting 1 (see Fig. 2) which is provided with sleeves 1^a 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 and preferably rigidly attached to the upper end of the shaft D. Springs 4^b strung on rods 4 normally tend to press the casting 1 in a direction away from the studs 5^a. The casting 1 is provided with a weight 2; which can be adjusted toward or from the stud J by means of a threaded shaft 2^a. The plate 5 is provided below the weighted end of the plate 1 with a slot or chamber 5^e in which is mounted an adjustable weight 6. The weight 6 should be normally sufficient to counter-balance or neutralize the centrifugal force tending to eccentrically displace the shaft D in its bearings during the normal operation of the machine; 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 spring 4^b when the machine is in normal operation.

The parts thus far referred to are, or may be, constructed as shown and described in my aforesaid application and need no further detailed explanation herein.

As shown weight 6 may have a slot 6^b with which is engaged the lower end of a rocking lever 7 which is pivoted on a pin 7^a extending across the slot 5^e above the weight. The upper end of this lever is engaged in a slot 1ⁿ in the plate 1 below the weight 2. Weight 6 may be provided with removable or changeable auxiliary weights indicated at 6^c which may be secured thereto by bolt 6^d; and by means of which the total effective weight of this counter-balance 6 can be obtained.

It will be observed that the parts above the plate 5 are not fixedly attached to the base, as plate 1 is slidably supported upon the rods 4 therefore when the plate 1 moves in one direction longitudinally of the plate 5, in order to permit a larger gyration of the sifter, the weight 6 in the plate 5 will be moved in the opposite direction by the action of lever 7 so as to counter-balance the

extra centrifugal force caused by the larger gyration of the sifter.

The lever 7 is so pivoted on the plate 5 that the counter-balancing weight 6 will always move simultaneously with but oppositely to the plate 1. The counter-balancing weight 6 will thus be moved outward or inward toward the shaft D according to the gyration or movement of the plate 1, so that whenever the speed or weight of the sifter tends to increase or enlarge the orbit of its gyrations,—thus tending to exert more force against the shaft D and its supporting base,—such additional thrust will be compensated for by the outward movement of the weight 6 in the plate 5, which weight is actuated by the lever 7 that will be rocked by the movement of plate 1 to allow the sifter to make a larger gyration, and this movement of weight 6 outward from the base automatically counter-balances the centrifugal thrust on the shaft caused by the larger gyration of the sifter.

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 automatically compensated for or neutralized.

The construction shown and described is practical and efficient, but I do not consider the invention restricted to such particular embodiment thereof, as when once understood others may readily adapt the invention to other devices and in other forms within the scope of the claims.

What I claim is:

1. In combination, a member, means for imparting gyratory movements to said member; counter-acting means, and means whereby when the member tends to be moved under the action of centrifugal force caused by variation in the load the counter-acting means is moved to counter-act the thrust of such force due to such variation in the load.

2. In combination, a body, a driven member for imparting gyratory movements to said body; counter-acting means, and means whereby when the driven member is moved in one direction under the action of centrifugal force the counter-acting member is positively moved in the opposite direction.

3. In a gyratory drive, the combination of a driving member, a driven member movable radially or transversely of the driving member under the action of centrifugal force, a counter-acting member, and connections whereby when the driven member is moved in one direction by centrifugal action the counter-acting member is moved in the opposite direction.

4. Means for imparting gyratory motion to objects, comprising a driving shaft, a

driven member mounted on and movable transversely of the driving shaft, counter-acting means, and means operatively controlled and automatically actuated by the first member whereby the counter-acting means is positively shifted to counter-act the thrust of centrifugal force on the shaft.

5. In a gyratory drive the combination of a driving member, a driven member movable transversely of the driving member under the action of centrifugal force, a counter-acting member, and connections whereby when the driven member is thrust by centrifugal force due to variations in the load the counter-acting member is automatically moved in to offset or neutralize such thrust.

6. In a gyratory drive the combination of a driving member, a driven member movable radially of the driving member under the action of centrifugal force, a counter-acting member, and connections whereby when the driven member is moved in one direction by centrifugal action the counter-acting member is positively and automatically moved in the opposite direction to offset or neutralize the thrust of centrifugal force on the driving member.

7. In means for imparting gyratory motion to objects, a driving shaft, a body to be gyrated, means connected with said body and operatively engaged with said driving shaft, means for resisting the centrifugal force due to speed tending to shift the body radially of the driving shaft when the machine is in operation, and automatic means for neutralizing the variations in centrifugal force caused by variations in the load on the body, substantially as described.

8. Means for imparting gyratory motion to objects, comprising a driving shaft, a driven member, an intermediate member connected with and movable transversely of the driving shaft and engaging the driven member, means carried by said intermediate member for counter-acting the effect of excessive centrifugal force; and operative connections whereby when the intermediate member moves transversely of said shaft in one direction said counter-acting means is shifted in the opposite direction.

9. Means for imparting gyratory motion to objects, comprising a driving shaft, a driven member movable transversely of the driving shaft, means adapted to resist the lateral movement of said driven member due to centrifugal force, movable means to counter-act or neutralize excessive effects of centrifugal force, and operative connections whereby when the driven member moves transversely of said shaft in one direction said counter-acting means is shifted in the opposite direction.

10. In a gyratory drive for plansifters and the like, the combination of a driving shaft, a member fixedly attached thereto,

a counter-acting weight movably mounted on said member, a movable member slidably mounted upon said fixed member, and means adapted to retain the movable member in normal position and resist the action of centrifugal force when the machine is in operation; with a rocking lever engaging said movable member and said counter-acting weight whereby said parts are caused to move oppositely.

11. In a gyratory drive for plansifters and the like, the combination of a driving shaft, a member fixedly attached thereto, a weight movably mounted on said member, 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 engaging said movable member, and a rocking lever engaging said movable member and said weight whereby excessive thrust of the gyrating body upon the shaft when the machine is in operation is counter-acted or neutralized.

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

JOHN B. CORNWALL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."