No. 843,067. PATENTED FEB. 5, 1907.

H. O. BOWSMAN.

DRIVING MECHANISM FOR BOLTING MACHINES.

APPLICATION FILED JUNE 4, 1906.

Fig. 1.

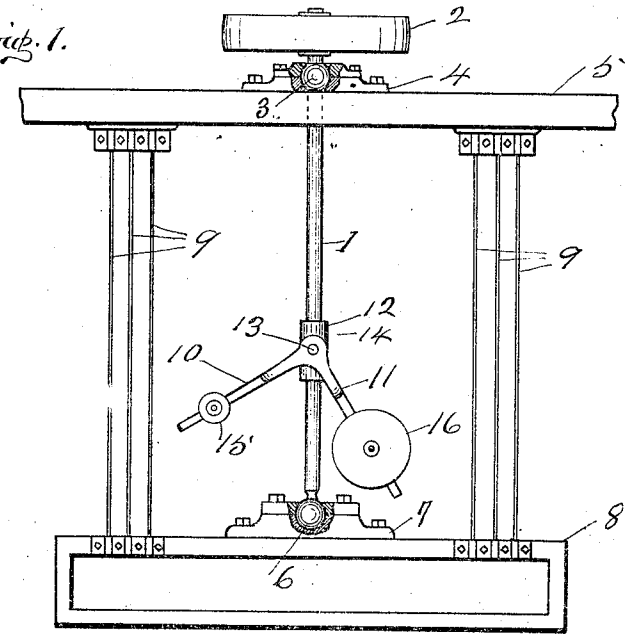


Fig. 2.

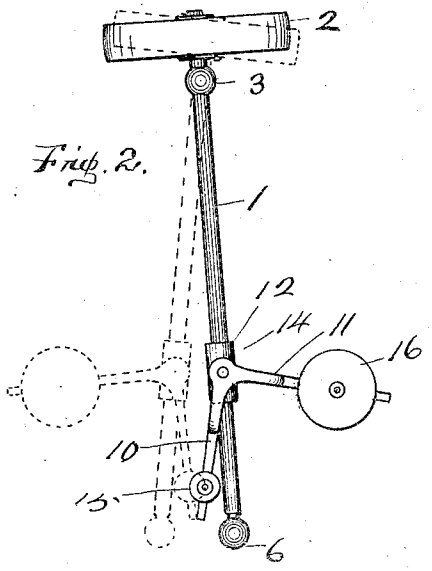


Fig. 3.

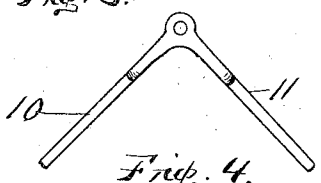
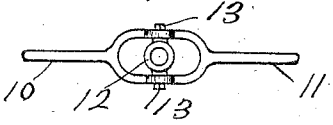


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRY O. BOWSMAN, OF DECATUR, INDIANA, ASSIGNOR OF ONE-HALF TO FRANCIS E. LEHMAN, OF INDIANAPOLIS, INDIANA.

DRIVING MECHANISM FOR BOLTING-MACHINES.

No. 843,067. Specification of Letters Patent. Patented Feb. 5, 1907.

Application filed June 4, 1906. Serial No. 320,033.

To all whom it may concern:

Be it known that I, HARRY O. BOWSMAN, a citizen of the United States, residing at Decatur, in the county of Adams, in the State of Indiana, have invented certain new and useful Improvements in Driving Mechanism for Bolting-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in driving mechanism for bolting-machines.

The prime object of my present invention is to provide an improved driving mechanism for bolting-machines of simple and economical construction, efficient and reliable in operation, and provided with means for regulating and changing the limit of travel of the sieve-box in its gyratory movement without changing the speed of the driving-shaft.

My invention consists of a sieve-carrying frame or box suspended by flexible supports and adapted to have a free lateral movement, a vertical revoluble shaft carrying an unbalanced load, whereby by the rotation of the shaft the sieve-frame is given a gyratory movement, and a weighted arm adjustably mounted on the vertical shaft and adapted to vary or regulate the gyration of the sieve-frame without changing the speed of the shaft.

The principal novel feature of my invention resides in the means for varying the gyration of the sieve-frame without changing the speed of the driving-shaft.

Similar reference-numerals indicate like parts throughout the several views, in which—

Figure 1 is a view in elevation of my invention with all parts in their normal position when at rest. Fig. 2 is a side view of the vertical driving-shaft with the weighted arm in the position it assumes at a certain speed of the vertical shaft and also showing by dotted outline the path of the shaft's gyratory movement. Fig. 3 is a detail side view of the pivoted weighted arm with the adjustable weights removed. Fig. 4 is a plan view of the weighted arm, showing the bifurcated construction of its pivoted end.

The vertical driving-shaft 1 has upon its upper end a fixed driving-pulley 2 and having near its upper end a globular enlargement 3 to form a ball-and-socket bearing in the boxing 4, which is rigidly fixed on the supporting beam or plate 5, having a suitable vertical opening for the shaft 1.

The lower end of the vertical shaft has a fixed or integral terminal ball 6, having a suitable ball-and-socket bearing in the boxing 7, which is rigidly fixed on the upper face of the sieve box or frame 8 of any proper construction. This sieve-frame 8 is securely suspended from the supporting-beam 5 by any proper flexible supports 9, whose opposite ends are firmly secured to the plate 5 and the box 8, respectively. The length of the supports 9 are of course determined by the length of the vertical revoluble shaft.

In the vertically-slotted upper end of the arm having approximately right angular branches 10 and 11 is arranged the collar 12, pivotally suspended therein by means of the diametric pins 13. This collar 12 is adapted to loosely receive the shaft 1, upon which the collar with its pivoted arms is adjustably mounted by a set-screw 14 or other proper manner. On the arm 10 is mounted an adjustable weight 15, and on the arm 11 is adjustably mounted a larger weight 16 for the purpose about to be described.

The operation of my invention thus described is obvious and, briefly stated, is as follows: When power is applied to the drive-pulley 2, the shaft 1 will be rotated at any desired speed, thereby proportionately elevating the large weight, as shown in Fig. 2, through the impulse of its centrifugal force, which in turn is continuously imparted to the lower end of the shaft by means of its pivotal or ball-and-socket connection therewith. It is obvious that the effect of the centrifugal force of the weight 16 is to cause the lower end of the shaft 1 to describe a gyratory movement, whose range or limit is determined by the adjustment of the collar 12 on the shaft and the weights upon their respective arms 10 and 11, as follows: As the vertical shaft 1 is pivotally fulcrumed near its upper end on its ball-bearing 3, it is evident that the nearer the weighted arms are adjusted to the lower end of the shaft the greater will be the degree of centrifugal force exerted thereon, and consequently the greater will be the gyratory movement of the

lower end of the shaft. It is also evident that the centrifugal force and range of gyratory movement of the lower end of the shaft 1 is proportionately increased by the adjustment of the heavier weight 16 toward the outer end of its supporting-arm and at the same time adjusting the lesser weight 15 toward the inner end of the arm. So it is obvious that the smallest range of vibratory movement can readily be secured by the adjustment of the collar 12 at its uppermost limit on the shaft 1, and by giving the larger weight 16 and the smaller weight 15 their inner and outer adjustments, respectively. As the gyratory movements of the sieve box or frame 8 will in use necessarily at all times coincide with the gyrations of the lower end of the shaft 1, it follows that the range of gyratory movements of the sieve-box can readily and conveniently be changed or regulated at pleasure by my invention without changing the speed of the driving-shaft. It is also obvious that in the use of my invention the weighted arms produce an automatic adjustment of the gyratory movements of the sieve-box, which under all conditions is proportional to the speed of the driving-shaft, thereby preserving the balance between the weighted arms as the speed of the driving-shaft changes.

Having thus described my invention and the manner of operating the same, what I desire to secure by Letters Patent is—

1. Driving mechanism for bolting-machines consisting of a sieve-carrying frame so suspended as to have a free lateral movement; a vertical revoluble shaft carrying an unequally-weighted arm; an unequally-weighted arm having a vertical adjustment on the shaft, and adapted to impart to the said frame a gyratory movement; and means, adjustably mounted on the said arm, adapted to limit the range of the gyratory movement of the frame without changing the speed of the shaft.

2. In driving mechanism for bolting-machines for grading flour or other pulverulent materials, the combination of a flexibly-suspended sieve box or frame; a vertical revoluble shaft having its lower end mounted in a ball-and-socket bearing and adapted for a free gyratory movement; an unequally-weighted arm vertically adjustable on the said shaft, and adapted to impart to the said sieve-box a gyratory movement; and means for limiting the extent of the gyratory movement of the frame without changing the speed of the shaft.

3. The combination in a bolting-machine-driving mechanism of a sieve-carrying frame so suspended as to have a free lateral movement; a vertical revoluble pivotally-suspended shaft whose lower end has a ball-and-socket connection with the sieve-frame; a longitudinally-adjustable arm mounted on the shaft and provided with unequal adjustable weights adapted to limit the extent of the gyratory movement of the frame without changing the speed of the shaft.

4. A bolting-machine-driving mechanism consisting of a pendent revoluble shaft whose free end is adapted for a vibratory movement, and whose upper end has a driving connection; a suspended sieve box or frame having a free lateral movement, and having a pivotal connection with the lower end of the shaft; an unequally-weighted arm adjustably mounted on the shaft, and provided with unequal adjustable counterbalancing-weights adapted to limit the range of the gyratory movement of the sieve-frame without changing the speed of the shaft.

Signed by me at Fort Wayne, Allen county, in the State of Indiana, this 31st day of May, A. D. 1906.

HARRY O. BOWSMAN.

Witnesses:
AUGUSTA VIBERG,
WATTS P. DENNY.