

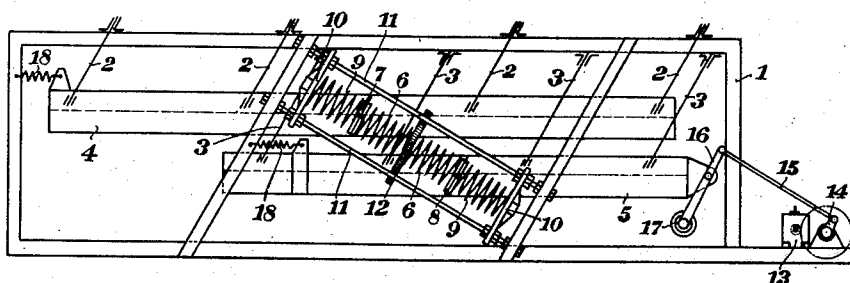
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H. SCHIEFERSTEIN ET AL

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OSCILLATING SIEVE

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Inventors:
Heinrich Schiefelstein
Herhard Linke
By Thwait Bros.
attys.

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OSCILLATING SIEVE

Heinrich Schieferstein, Berlin, and Gerhard Linke, Magdeburg, Germany, assignors to the firm Fried. Krupp Grusonwerk Aktiengesellschaft, Magdeburg-Buckau, Germany

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4 Claims. (Cl. 209—365)

The present invention relates to oscillating or vibrating sieves having two sieve boxes vibrating synchronously or approximately synchronously, but displaced in phase by about 180° with respect to each other, the chief object being, in a sieve of this nature, to secure a satisfactory sifting action.

According to the invention the vibrating system is constituted by two vibrating boxes moving synchronously or approximately synchronously and with a phase displacement of about 180° with respect to each other, wherein one box is connected through a kinetic coupling adapted to store kinetic energy with a source of power and also in a resilient manner with a rigid supporting frame, while the other box is connected, on the one hand, by means of a potential resilient coupling with the first-named box and, on the other hand, also resiliently with the frame.

The invention is shown in the accompanying drawing, which is a side view of one form of sieve in accordance therewith.

On a stationary frame 1, there are carried two superposed sieve boxes 4 and 5, capable of rocking on suspension hangers 2 and 3 arranged at an angle inclined from the vertical direction. The hangers 2 of the box 4 and the hangers 3 of the box 5 are made of equal length and are arranged parallel to each other. The sieve boxes are connected together by elastic means arranged at the side which, in the example shown, are formed by springs placed at right angles to the suspension hangers. A pair of springs 6 is fitted on each side of the boxes between two supporting plates 7 and 8, respectively fixed upon the boxes 4 and 5, on lines passing through the center of gravity of each. Also, on each side of the boxes, a second pair of springs 9 is arranged between bearing members 10 fixed on the frame 1 and the supporting plates 7 and 8. These bearing members are connected together by tie rods 11, so that the varying forces occurring between the bearing members, in particular the outward thrusts simultaneously imparted to the springs 9, are transmitted to a self-contained unit. The supporting frame, the natural vibration of which often acts very detrimentally, is thus free from any inducement to such natural vibration. On each side the springs 6 are separated from each other by an intermediate member 12, capable of longitudinal displacement on the tie rods 11 and serving as a retaining and guiding member for the springs. Instead of a pair of springs, a single spring may be provided, omitting the intermediate member 12. This spring would then

preferably be prevented, by a central guide rod, from lateral deflection, as otherwise, above a certain length, it could easily bend outwardly, which would prejudicially affect the rocking of the sieve boxes.

The actuation of the vibrating system is effected in known manner by a yieldable kinetic coupling such as an unbalanced pendulum, coupling springs or eccentric flyweight. This coupling acts to store the kinetic energy imparted to it, and by a yielding movement thereof, in turn, imparts the energy stored therein to the vibrating system. In the present case, a motor 13, by means of a crank or eccentric 14 and a rod 15 serves to rock a double-armed lever 16 jointed to the sieve box 5, the other end of the lever carrying a weight 17. The oscillations imparted by this arrangement to the lower box 5 are transmitted to the upper box 4 by the elastic means operating as a potential coupling between the two sieve boxes. The dimensions of any coupling and the number of oscillations per minute are so chosen that the two sieve boxes work in resonance or approximate resonance to each other, that is, displaced in phase by about 180°. Thus, the varying forces developed in the vibrating masses equalize each other in consequence of the generation of the forces from the centres of gravity and their impingement at these points, and also by reason of the arrangement of the elastic medium at right angles to the suspension hangers. In particular, no free moment tending to a rotation of the whole sieve occurs.

In order to avoid unsymmetrical oscillations such as might arise owing to the action of the earth's gravitational field, springs 18 acting oppositely to such field are provided in known manner between the sieve boxes and the supporting frame.

Without in any way altering the essence of the invention, a counter-weight might replace one of the sieve boxes; also a number of the oscillating systems described might be combined together.

What we claim is:

1. A vibrating sieve system comprising two vibrating sieve boxes, a stationary and rigid supporting frame for said sieve boxes, driving means for said system, a kinetic coupling between said driving means and one of said sieve boxes, a potential coupling between said two sieve boxes, potential couplings between each of said sieve boxes and said supporting frame, all said potential couplings being coaxially arranged and passing through the centers of gravity of said sieve boxes.

2. A vibrating sieve system comprising two vibrating sieve boxes, a stationary and rigid supporting frame for said sieve boxes, driving means for said system, a kinetic coupling between said driving means and one of said sieve boxes, a potential coupling between said two sieve boxes, potential couplings between each of the sieve boxes and bearing plates fixed upon said supporting frame, tie rods between said bearing plates, all said potential couplings being coaxially arranged and passing through the centers of gravity of said sieve boxes.

3. A double-mass vibrating sieve system comprising a stationary and rigid supporting frame, two separate vibrating sieve boxes independently supported by said frame, driving means for said system, a yieldable connection between said driving means and one of said sieve boxes constituting

the sole actuating means for said one sieve box, and a resilient connection directly positioned between said two sieve boxes constituting the sole actuating means for the other sieve box.

4. A double-mass vibrating sieve system comprising a stationary and rigid supporting frame, two separate vibrating sieve boxes independently supported by said frame, driving means for said system, a yieldable connection between said driving means and one of said sieve boxes constituting the sole actuating means for said one sieve box, a resilient connection directly positioned between said two sieve boxes constituting the sole actuating means for the other sieve box, and resilient connections between each of said sieve boxes and said supporting frame.

HEINRICH SCHIEFERSTEIN.
GERHARD LINKE.