

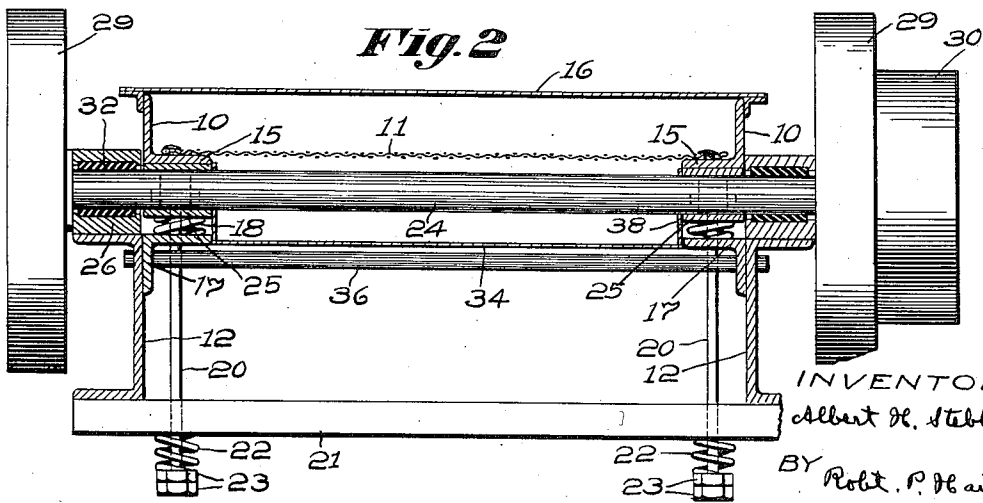
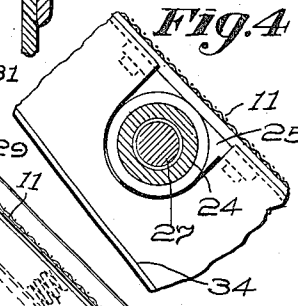
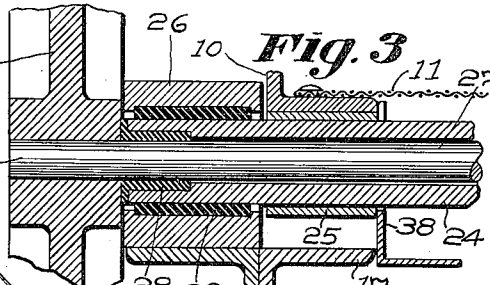
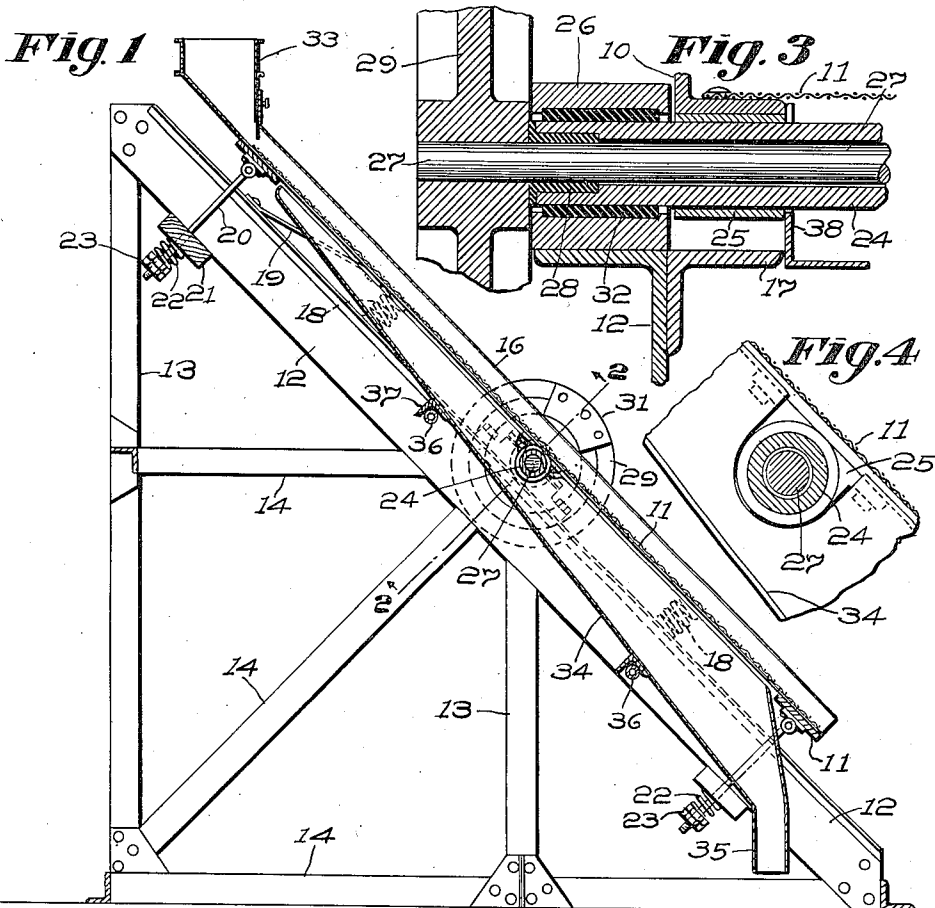
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A. H. STEBBINS

SCREEN

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UNITED STATES PATENT OFFICE.

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SCREEN.

Application filed July 1, 1922. Serial No. 572,253.

To all whom it may concern:

Be it known that I, ALBERT H. STEBBINS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented an Improvement in Screens, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to screen separators for grading materials, and more particularly to means for vibrating the screen clothing.

In screening materials, difficulty is experienced in keeping the meshes of the screen from becoming clogged, and it is customary to vibrate the screen to dislodge particles from the meshes thereof.

Various means have been employed heretofore for shaking or vibrating screens to maintain the meshes thereof free and open for efficient grading effect, and since some materials are much more likely to clog the meshes of the screen than others, different classes of work may require different types of vibrating means.

The vibratory movement imparted to the screen necessarily increases the strain upon the screen clothing and this movement therefore should not be greater than is required to keep the meshes of the screen open and to promote travel of the materials along the screen.

The present invention relates to simple means for vibrating screens with sufficient energy to keep the meshes thereof open during the treatment of various materials, while at the same time the vibratory motion imparted to the screen is not sufficiently violent to injure the screen clothing.

One important feature of the present invention resides in an unbalanced wheel operable to vibrate the screen by imparting thereto the vibratory movement resulting from the unbalanced rotation of the wheel.

Another feature of the present invention resides in novel means for supporting the screen frame for vibratory movement.

Other features of the invention and novel combination of parts in addition to the above will be hereinafter described in connection with the accompanying drawings which illustrate one good practical form thereof.

In the drawings:

Fig. 1 is a longitudinal vertical sectional

view through a screen separator constructed in accordance with the present invention;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged sectional view taken longitudinally through an operating shaft and associated mechanism; and

Fig. 4 is a transverse sectional view of parts shown in Fig. 3.

The present invention is applicable either to horizontal or inclined screens, and in the embodiment of the invention shown a screen consisting of a rectangular frame 10 having screen clothing 11 secured thereto, is supported in an inclined position by a triangular shaped frame. The supporting frame may consist of spaced side rails 12 supported in an inclined position by uprights 13 connected by braces 14.

The side members of the screen frame 10 may be conveniently formed of L-shaped angle irons as will be apparent from Fig. 2, and the screen clothing 11 may be secured to the horizontally extending portions 15 of the angle irons, while a cover 16 may rest upon the upstand portion of these angle irons.

The side rails 12 of the supporting frame preferably are provided with angle irons 17 secured thereto with a flange portion extending inwardly to form supporting means for the screen frame 10, and in the present case the screen frame is yieldingly supported from the angle irons 17 by coiled springs 18 mounted between the upper face of the angle irons 17 and the lower face of the portions 15 of the screen frame. The screen frame 10 is prevented from moving along the supporting frame in the direction in which it slopes by straps 19 secured to the screen frame and supporting frame respectively.

The coiled springs 18 support the screen frame 10 for floating or vibratory movement, and movement of the screen frame away from the supporting frame may be limited by bolts 20 secured to the frame 10 and extending inwardly through apertures in beams 21 secured against the lower face of the side rails 12. Springs 22 preferably are confined between the beams 21 and the nuts 23 of the bolts to permit yielding movement of the screen frame 10, and the springs 22 and 18 may be compressed by tightening up the nuts 23.

As stated, an important feature of the present invention resides in mechanism for vibrating the screen frame 10, and satisfac-

tory means to this end will now be described. In the construction shown a hollow shaft 24 extends transversely of the frame 10 and passes through brackets 25 secured to the laterally extending flanges 15 of the frame 10, the arrangement being such that the shaft is carried by and rigidly secured to the frame 10. The ends of the hollow shaft 24 extend outwardly beyond the sides of the screen frame and extend through openings in brackets 26 rigidly secured to the side rails 12 of the supporting frame, the construction being such that the brackets 26 which surround the shaft 24 serve to limit the vibratory movement imparted to the shaft.

Within the hollow shaft 24 is rotatably mounted a second shaft 27 preferably journaled in bushings 28 rigidly secured within the hollow shaft as shown in Fig. 3. Unbalanced wheels 29 are secured to the shaft 27 upon each side of the screen frame 10, and the shaft 27 and unbalanced wheels may be rotated by a pulley 30. A weight 31 secured to each wheel 29 serves to throw the wheel out of balance.

Rotation of the unbalanced wheels 29 will impart vibratory movement to the hollow shaft 24 in which the shaft 27 is journaled, and since the hollow shaft is rigidly secured to the screen frame 10 it will vibrate this frame and the screen clothing 11 to dislodge materials from the meshes of the clothing. A bushing 32 of rubber or other resilient material preferably is mounted in each bracket 26 about the shaft 24 yieldingly to limit the vibratory movement of the shaft, and also to prevent the shaft from banging against the surrounding bracket.

In the construction shown, the hollow shaft 24 is secured to the screen frame 10 about midway between the ends of the frame, but if more than one vibratory means of the type herein disclosed is employed they will be secured to the frame 10 in spaced relation to each other.

The materials to be treated may be delivered to the screen clothing 11 by a hopper 33 supported by the screen frame, and a pan 34 preferably is supported below the screen to catch the materials that pass through the screen and direct them downward to the discharge spout 35 of the pan. The pan 34 is conveniently supported by cross braces 36, and angle plates 37 secured to the under face of the pan rest upon the braces 36 and prevent the pan from sliding downwardly. The pan 34 preferably has upwardly bent side walls 38 that prevent the materials from escaping from the sides of the pan.

What is claimed is:

1. A screen separator for grading materials, comprising, in combination, a frame, screen clothing carried by the frame, means for supporting the frame for vibratory

movement, a hollow shaft extending transversely of the frame and rigidly secured thereto, a second shaft extending through the hollow shaft and journaled therein for rotation, and unbalanced wheels secured to the second shaft for rotation thereby to impart the vibratory movement resulting from their unbalanced rotation to the frame.

2. A screen separator for grading materials, comprising, in combination, a screen consisting of a frame having screen clothing secured thereto, a supporting frame upon which the screen frame is mounted for vibratory movement, a shaft extending transversely of the screen frame and supported thereby, brackets surrounding said shaft and rigidly secured to the supporting frame, unbalanced wheels rotatably supported by said shaft to impart the vibratory movement resulting from their unbalanced rotation to the screen frame, and yielding packing between said shaft and the surrounding brackets for restricting vibratory movement of the shaft.

3. A screen separator for grading materials, comprising, in combination, a screen consisting of a frame having screen clothing secured thereto, a supporting frame upon which the screen frame is mounted for vibratory movement, a shaft secured to the screen frame, means for imparting vibratory movement to the shaft to shake the screen frame, a bracket secured to the supporting frame and having walls in spaced relation to said shaft to limit the vibratory movement imparted to the shaft, and yielding packing between the shaft and the bracket for yieldingly restricting the vibratory movement.

4. A screen operator for grading materials, comprising, in combination, a screen consisting of a frame having screen clothing secured thereto, a supporting frame upon which the screen frame is mounted for vibratory movement, a hollow shaft extending transversely of the screen frame and firmly secured thereto, a second shaft extending through the hollow shaft and journaled therein for rotation, unbalanced wheels secured to the second shaft for rotation thereby to impart the vibratory movement resulting from their unbalanced rotation to the screen frame, and brackets secured to the supporting frame and loosely embracing the hollow shaft to limit its vibratory movement.

5. A screen separator for grading materials, comprising, in combination, a frame, screen clothing carried by the frame, means for supporting the frame for vibratory movement, a hollow shaft extending transversely of the frame and secured rigidly to the frame, a second shaft extending through the hollow shaft and journaled therein for rotation, and means for vibrat-

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ing the second shaft and imparting its vibratory movement to the screen frame.

6. A screen separator for grading materials, comprising, in combination, a screen consisting of a frame having screen clothing secured thereto, a supporting frame upon which the screen frame is mounted for vibratory movement, a shaft extending across the screen frame and rigidly secured thereto, means for imparting vibratory movement to the shaft to shake the screen frame, and brackets secured to the supporting frame and having walls in spaced relation to said shaft to limit the vibratory movement imparted to the shaft.

7. A screen separator for grading materials, comprising, in combination, a screen consisting of a frame having screen clothing secured thereto, a supporting frame upon which the screen frame is mounted for vibratory movement, a shaft rigidly secured to the screen frame, means for imparting vibratory movement to the shaft to shake the screen frame, and brackets secured to

the supporting frame and having walls in spaced relation to said shaft to limit the vibratory movement imparted to the shaft.

8. A screen separator for grading materials, comprising, in combination, a screen consisting of a frame having screen clothing secured thereto, a supporting frame upon which the screen frame is mounted, springs positioned between said frames to support the screen frame for vibratory movement, and means for imparting vibratory movement to the screen frame, including a shaft secured to the screen frame, an unbalanced wheel supported by the shaft and operable to impart the vibratory movement resulting from its unbalanced rotation to the frame and screen clothing, and a bracket secured to the supporting frame and having walls in spaced relation to said shaft to limit the vibratory movement imparted to the shaft.

In testimony whereof, I have signed my name to this specification.

ALBERT H. STEBBINS.