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SCREEN SHAKING MECHANISM

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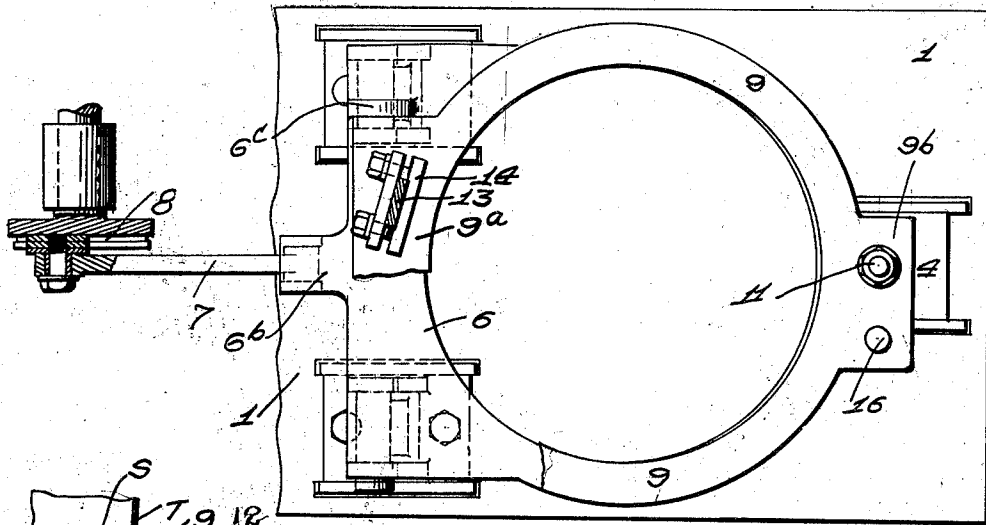


FIG. 1

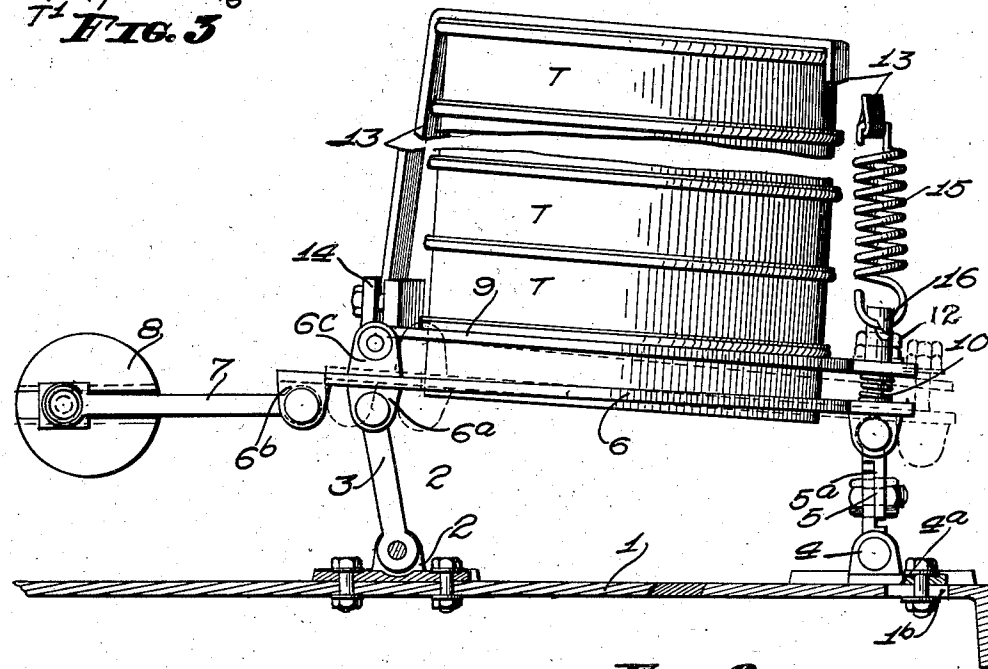


FIG. 2

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SCREEN SHAKING MECHANISM

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2 Claims. (Cl. 209—330)

My invention relates to screen shaking mechanisms, and the objects of my invention are:

First, to provide a mechanism of this class which is particularly suited in running an analysis of soil wherein a series of superposed screens of graduated meshes are used to classify the soil according to size of its particles;

Second, to provide a mechanism of this class which is particularly efficient in screening extremely fine particles whether light or heavy in character;

Third, to provide a mechanism of this class which may be readily and quickly adjusted to act efficiently on various kinds and types of soil, the movement of the shaking mechanism being so adjustable that the movement particularly suitable for a given type of soil may be provided;

Fourth, to provide a screen shaking mechanism of this class which incorporates a novel means of jarring the soil particles to facilitate their screening;

Fifth, to provide a mechanism of this class wherein a stack of screens may be readily and quickly positioned in the machine or removed therefrom;

Sixth, to provide a screen shaking mechanism which in its smaller sizes adapted for analysis work may be readily and easily transported from place to place and adapted for use in the field, and

Seventh, to provide on the whole a novelly constructed screen shaking mechanism which is particularly simply proportional to its functions, durable, efficient in its action and which will not readily deteriorate or get out of order.

With these and other objects in view as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawing and to the characters of reference thereon which form a part of this application, in which:

Figure 1 is a fragmentary top or plan view of my screen shaking mechanism with parts and portions broken away or in section to facilitate the illustration; Fig. 2 is a side elevational view thereof with the base member and other portions shown in section; and Fig. 3 is a fragmentary sectional view taken through 3—3 of Fig. 1.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawing.

Base 1, fixed bracket 2, connecting bars 3, ad-

justable bracket 4, connecting bar 5, platform 6, connecting rod 7, crank wheel 8, table 9, bolt 10, spring 11, nuts 12, strap 13, strap clamp 14, tension spring 15, and anchor 16, constitute the principal parts and portions of my novel screen shaking mechanism.

A base 1 is provided which carries the screen shaking mechanism as well as a suitable operating means therefor. Secured to the base near each side thereof is a fixed bracket 2. Each fixed bracket journals the lower end of an upwardly directed connecting bar 3. An adjustable bracket 4 is centered between the sides of the base and adjacent one end thereof. Said adjustable bracket is connected with the base through a securing means 4a and a slot 1b in the base so that the adjustable bracket 4 may be shifted backward or forward with respect to the fixed brackets 2. The adjustable bracket 4 journals the lower end of an upwardly directed connecting bar 5 which is slightly shorter than the pair of connecting bars 3.

The three connecting bars thus provided support a platform 6, the connecting bars being journaled at their upper ends with respect to depending lugs 6a of the platform. The main portion of the platform is in the form of a large ring with the lugs 6a generally defining a triangle. Between the lugs connected with the connecting bars 3 said platform 6 is provided with a bracket portion 6b which is joined to one end of a connecting rod 7, the connecting rod in turn being joined to a crank wheel 8. Said crank wheel is so arranged that the eccentricity of the connection between said wheel and the connecting bar may be varied to vary the stroke of the connecting bar. The crank wheel 8 is connected by any suitable means, not shown, to a source of power so that the platform 6 may be caused to oscillate back and forth between the solid and dotted line positions shown in Fig. 2.

At the end of the platform 6 supported by the connecting bars 3 said platform is provided with upwardly directed bosses 6c which journal one end of a table 9. Said table 9 is generally circular in form except for a relatively wide radiating portion 9a extending between the bosses 6c and a smaller radiating portion 9b diametrically opposite and substantially over the connecting bar 5. The extension 9b is apertured to receive a bolt 10 which extends upwardly from the platform 6. Said bolt receives a spring 11 mounted between the platform and table and nuts 12 at the upper side of the table to permit adjustment of the tension of said spring.

The opening provided in the table 9 receives the lowermost tray, designated T1 of a series of trays T. Each tray is in the form of a short cylinder and is provided except for the lowermost tray T1 with a screen S, as shown in Fig. 3. The several trays are arranged to be supported one on the other in such a manner that the screens are spaced from each other. Said screens of the various trays are graded according to size, the smallest screen being at the bottom. The several trays extend upwardly from the table 9, as shown in Fig. 2, and are held in position by a strap 13 which extends over the top of the trays and down one side where it is secured by a clamp 14 mounted on the extension 9a of the table, as shown in Figs. 1 and 2. The other end of the strap 13 is connected through a tension spring 15 to an anchor 16 secured to the extension 9b a short distance to one side of the bolt 10.

The relative position of the brackets 2 and 4 are such that the connecting bars 3 oscillate to extreme positions an equal distance from their vertical position, while the connecting bar 5 oscillates from a vertical position to an inclined position directed away from the connecting bars 3. Also, by reason of the fact that the connecting bars 3 are slightly longer than the connecting bar 5, the platform 6 slopes downwardly towards said connecting bar 5. With this arrangement oscillation of the platform tends to throw the particles of soil up in the air so as to strike the screens in the right direction. However, with the finer screens and the lighter material this movement does not always suffice and it is particularly in the screening of fine and light materials that the table 9 and its yieldable connection with the platform 6 is utilized.

The spring 11 is so adjusted that it supports the weight of the several trays when the machine is at rest. When the machine is oscillated to the dotted line position shown in Fig. 2 the inertia of the table 9 as well as the trays carried thereby depress the spring 11 slightly, as shown by dotted lines in Fig. 2, so that immediately upon the return movement towards the solid line position the table is caused to strike the under side of the nuts 12, jarring the trays and causing the particles to move in the desired manner in order to screen through the various trays.

The connecting rod 5 is extensible, as indicated by 5a. This adjustment, together with the adjustments provided by the bracket 4, eccen-

tric wheel 8 and tension spring 11, provides a range of action so that the mechanism can be adjusted to operate with the required efficiency on any type of soil or size of particles.

With soil of different specific gravity the position of the adjustable bracket is varied as well as the length of stroke provided by means of the connecting rod 7. Also the tension of the spring 11 may be varied to increase or decrease the shock or jarring action of the table 9 during oscillation.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, I do not wish to be limited to this particular construction, combination and arrangement, but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A screen shaking mechanism comprising, a screen supporting table, oscillatable means for supporting said table at a slight incline and arranged to impart a major movement endwise and a minor movement vertically, said oscillatable means adapted to impart a greater vertical movement to the lower end than to the upper end of the table, hinge means connecting the upper end of the table relative to the oscillatable means, and a jar imparting device including a stop connecting the lower end of the table with said oscillatable means, and a yieldable means interposed between the table and oscillatable means.

2. A screen shaking mechanism comprising, a screen supporting table, a plurality of oscillatable arms supporting the table, said table carried thereby at a slight incline, said arms being so relatively disposed that the lower end of the table has a greater vertical travel during oscillation than the higher side, means for oscillating said table, a platform interposed between said table and oscillatable arms, hinge means connecting the upper end of the table relative to the platform, and a jar imparting device including a stop connecting the lower end of the table with said platform, and a yieldable means interposed between the table and platform.

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