D. COLE.

SCREENING DEVICE.

APPLICATION FILED DEC. 3, 1915.

1,234,447.

Patented July 24, 1917.

3 SHEETS—SHEET 1.

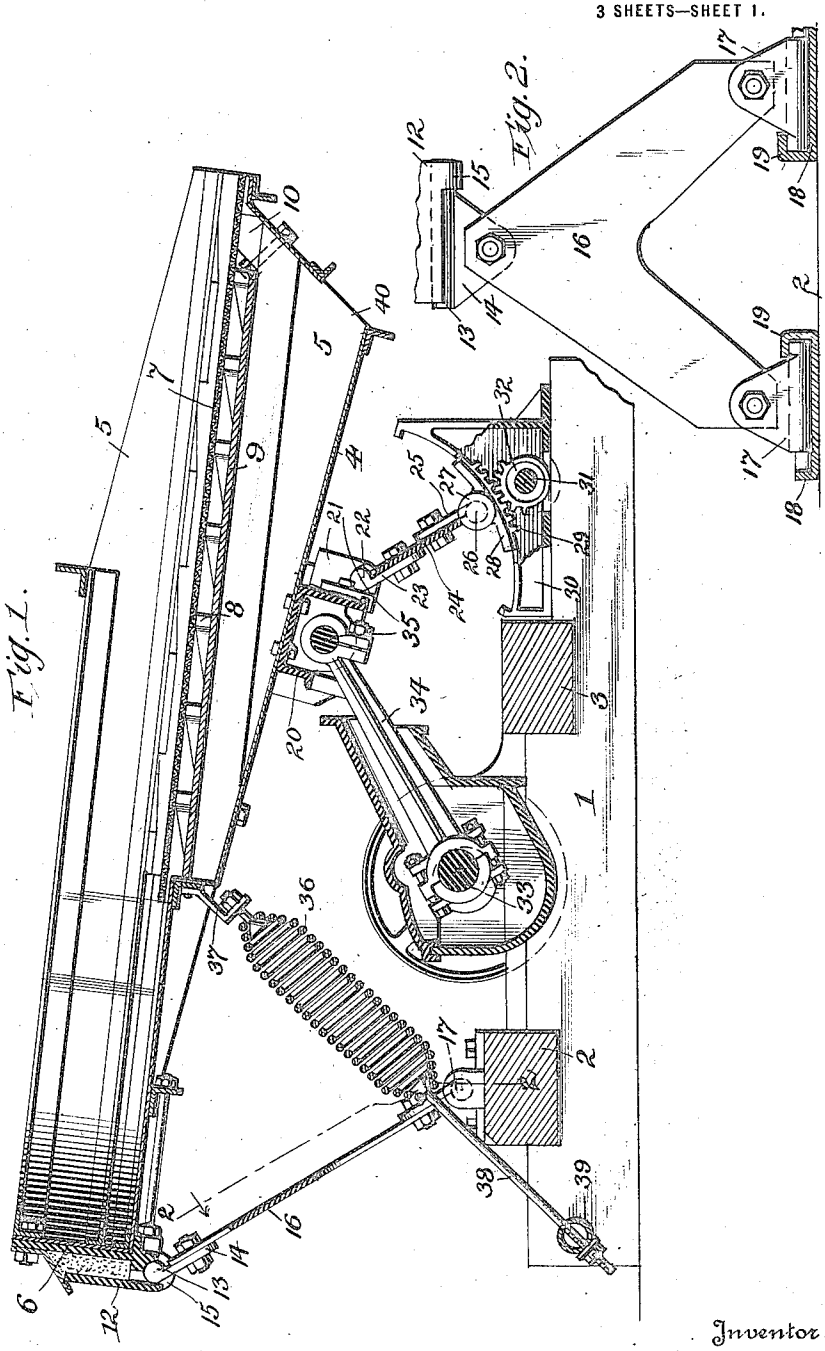


Fig. 1.



Fig. 2.

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3 SHEETS—SHEET 2.

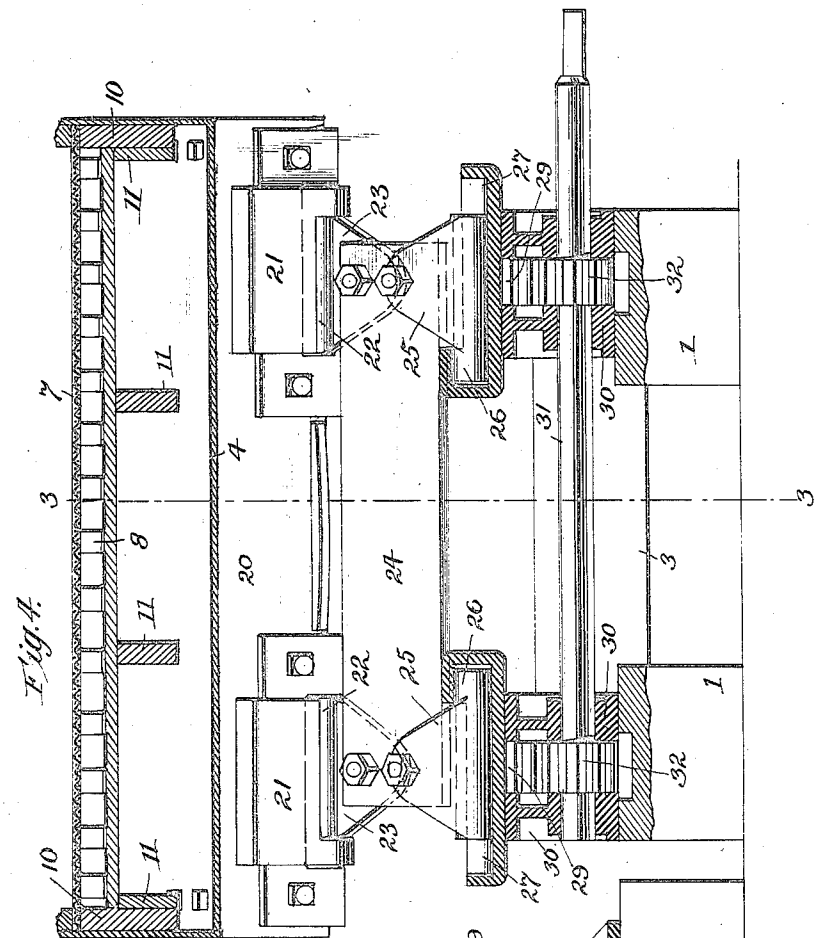


Fig. 4.

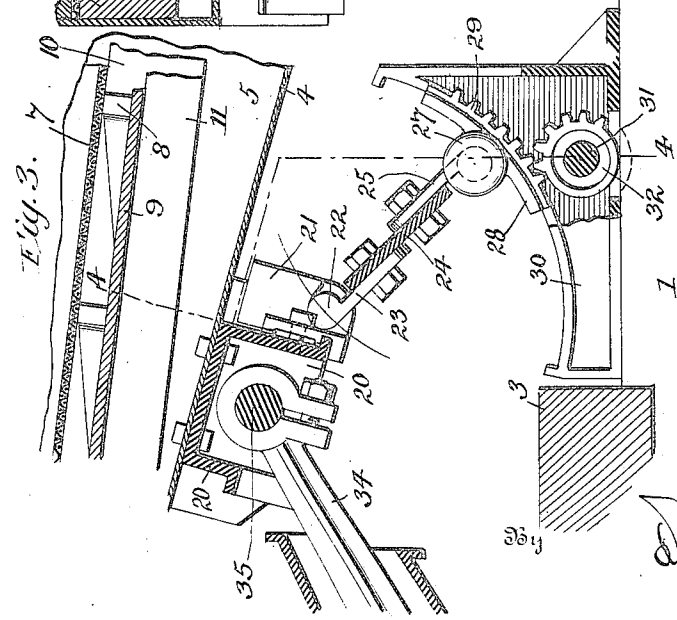


Fig. 3.

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Fig. 5.

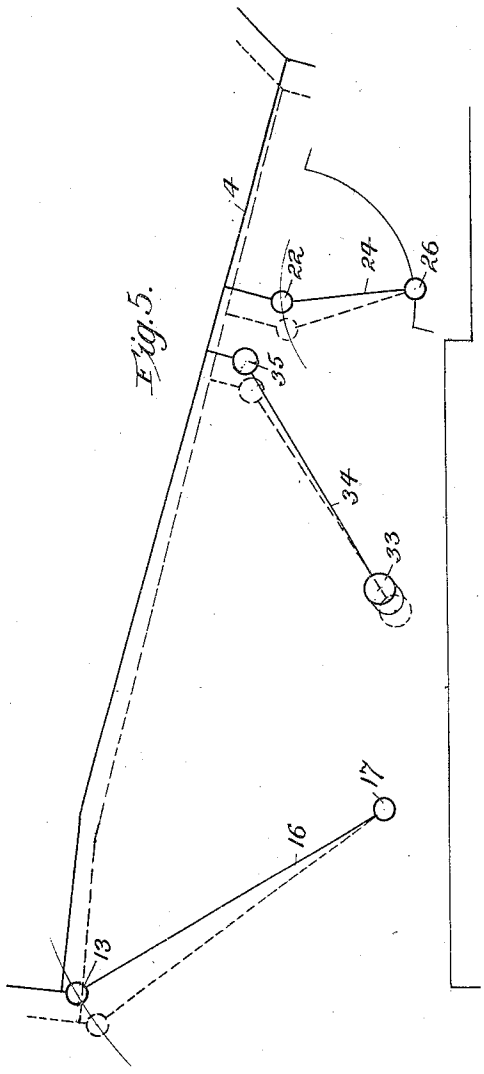
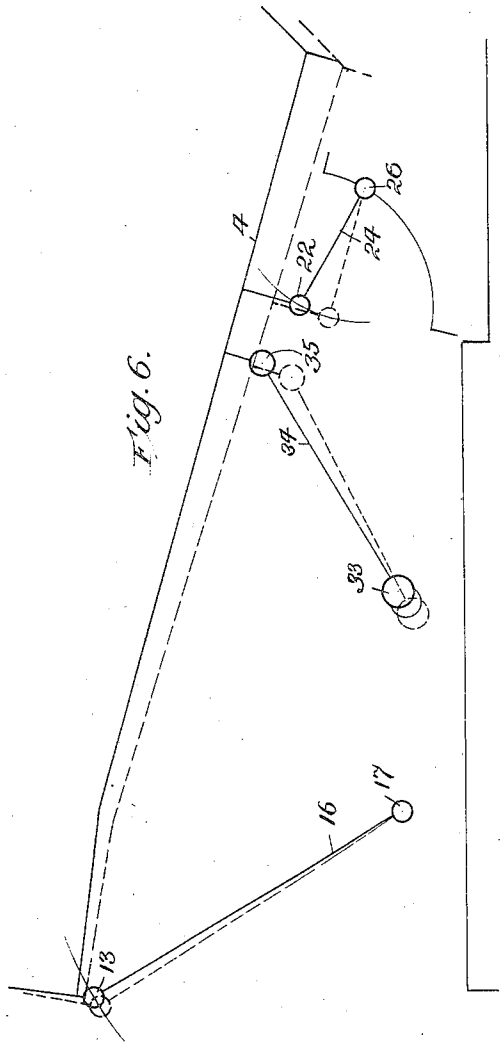



Fig. 6.




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# UNITED STATES PATENT OFFICE.

DAVID COLE, OF EL PASO, TEXAS.

## SCREENING DEVICE.

1,234,447. Specification of Letters Patent. Patented July 24, 1917.

Application filed December 3, 1915. Serial No. 64,848.

*To all whom it may concern:*

Be it known that I, DAVID COLE, a citizen of the United States, residing at El Paso, in the county of El Paso and State of Texas, have invented certain new and useful Improvements in Screening Devices, of which the following is a specification.

My present invention pertains to screening devices, and has reference more particularly to an improved means for imparting motion to and controlling or varying the motion of the screen to effect a separation of the materials undergoing treatment.

The main object of the invention is to provide a motion-imparting mechanism for the screen which may be readily and with facility adjusted, and this while the machine is in operation, a point of manifest advantage, in that it enables the operator to effect such adjustment while making a test run of the material, and to thus bring the parts to such positions as will produce that motion or character of motion which is necessary to effect the best separation. With certain grades and characters of material a relatively quick stepping forward or travel of the same, with a correspondingly decreased pulsing action, is advantageous, whereas with others, a slow forward travel and a greater pulsing action is necessary.

The invention is illustrated in conjunction with a wet screening device, wherein a pulsating action is imparted to the submerged screen to effect a separation of the material into different grades, the screening mechanism being substantially the same as that disclosed in Letters Patent No. 1,111,217, granted to me under date of September 22nd, 1914. While the mechanism is especially useful in conjunction with a wet machine, it is also efficient when employed with a dry-screening machine.

The invention in its preferred form is illustrated in the annexed drawings, wherein:

Figure 1 is a longitudinal vertical sectional view of a screen with the improved motion-imparting mechanism applied thereto;

Fig. 2 a detail sectional view, on the line 2—2, of Fig. 1;

Fig. 3 a longitudinal sectional view, on the line 3—3 of Fig. 4, illustrating the strut located at or adjacent the discharge or tail end of the screen;

Fig. 4 a transverse vertical section, taken on the line 4—4 of Fig. 3; and

Figs. 5 and 6 diagrammatic views illustrating the characteristic movements of the screen under different adjustments of the motion-imparting mechanism.

Referring to the drawings, the base of the machine may be said to comprise a pair of longitudinal sills 1, 1, connected together by a pair of superposed cross sills 2 and 3, though, of course, any substantial base construction may be employed.

The screening structure, in the form illustrated, comprises a box-like construction, preferably formed from metal, having a bottom 4, and side walls 5, 5, which walls are integral with or form extensions of the end wall 6, located at the upper or head end of the machine. The screen proper, which is denoted by 7, overlies a series of baffles or riffles 8, secured upon the upper face of a base-board 9, the screen being supported at its opposite edges upon outer longitudinal sills 10, and the base-board upon intermediate sills 11. The screening structure or mechanism is supported upon a rear strut, and a forward strut, a pulsing or vertical motion and a longitudinal motion being imparted thereto by a suitable crank or head mechanism, the details of which will now be set forth.

Secured to the upper head end of the structure, or more specifically to the end wall 6, is a bracket or bearing 12, said bracket having a semicylindrical bearing face on its under side adapted to receive the cylindrical member 13, formed upon a casting 14, said member 13 extending outwardly to one side of said casting and passing into a socket formed in a downward extension 15 of the bracket 12. Casting 14 is bolted to the upper end of a Λ-shaped strut 16, and to the lower end of each leg of said strut is secured a foot piece or casting 17, similar in all respects to the casting 14. The cylindrical member of each of said castings 17 finds its bearing in the bearing-block or shoe 18, securely bolted to cross-sill 2, the bearing blocks 18 (of which there are two) each having an overhanging recessed end 19, adapted to receive the projecting cylindrical end of the casting 17. By this construction the strut may be readily secured in place and when once positioned cannot get out of place, inasmuch as the cylindrical extensions

of the castings 17 (which are made right and left) extend in opposite directions, while that of the upper casting or bearing member 14 extends oppositely to one of the lower ones.

Secured to the under face of the screen structure and extending transversely of the same is a beam 20, secured to the outer or forward face of which is a pair of members 21, each having formed on its lower face a bearing seat similar in all respects to that on bracket 12. Said members are adapted to receive the cylindrical bearing members 22 of castings 23, which castings are secured to the upper portion of a bar or plate 24. Castings 25, having cylindrical bearing members 26, are secured to the lower portion of the bar 24, said bar and the attached castings 23 and 25 forming the supporting strut for the lower end of the screening structure or mechanism. Members 26 find their bearings in seats 27 (similar in construction to the bearings or seats heretofore described), each seat being formed as an integral part of a curved slide 28. Said slides 28 are each provided on their under face with a curved rack 29, said racks extending through slots or openings formed in the upper curved faces of guide or bearing blocks 30, of which there are two, one for each slide.

Blocks 30 are rigidly secured to sills 1, and are provided with bearings for the reception of a cross-shaft 31, upon which are secured sector gears or pinions 32, which mesh with the racks 29 of the slides. A crank or handle may be placed on the outer end of the shaft and the position of the slides simultaneously adjusted to vary their position, and consequently the angular position or relation of the strut which finds its lower bearing in said slides.

To impart motion to the screen, I employ a power-driven shaft, having a crank or eccentric 33 and a pitman or rod 34, which extends forwardly therefrom and is connected at its upper end to a pin 35, which finds its bearings in the cross-beam 20.

A spring 36 connected at its upper end to a fixed portion of the screen mechanism, as for instance a bracket 37, is employed to take up any back-lash in the parts, a rod 38, connected to the opposite end of the spring, being in turn secured to a cross-bar 39 and holding the spring in place and under tension.

As above indicated, with various grades of materials it is advantageous and advisable to vary the character of movement of the screen, which may be readily and accurately accomplished by the mechanism above set forth, and this while the operator is standing at the discharge end of the machine watching the fine material which passes off the board 9 and out through the opening 40 (Fig. 1), and the coarse material which is discharged from the screen 7.

In Figs. 5 and 6 there are illustrated the two extreme adjustments of the mechanisms. With the adjustment shown in Fig. 5, wherein the front adjustable strut is brought to that position where it nears or approximates the vertical, the pitman will impart a relatively long backward and forward motion to the screen with a minimum of vertical movement; consequently, the material will be stepped forward with rapidity and the pulsing action will be at its lowest. In Fig. 6, with the forward strut being brought nearer to the horizontal, the reverse is true; that is to say, the backward and forward motion or horizontal reciprocation will be slight, while the vertical or pulsing movement will be at its greatest. Any intermediate adjustment may, of course, be had, and that with ease and facility.

While I have set forth the details of the construction somewhat in detail, it is to be understood that the same may be readily varied and the claims are to be read with this statement in view.

Having thus described my invention, what I claim is:

1. In a screening mechanism, the combination of a screen; a pivoted strut forming a support for the upper end thereof; a second strut pivotally connected at its upper end to the screen adjacent the discharge end thereof; a pair of fixed supporting members having curved bearing faces; a slide mounted upon each of said supporting members; pivotal connection between said slides and the lower end of the last-named strut; a rack carried by each slide; a shaft mounted in said supporting members; a pair of pinions mounted upon the shaft and meshing with said racks; and means for imparting a reciprocatory motion to the screen, and thereby, by reason of the strut supports aforesaid, likewise imparting a pulsing movement to the screen.

2. In a screening mechanism, the combination of a screen; a strut located adjacent each end of the screen; bearing-blocks secured to the screen for each strut, said blocks each having a curved bearing face and an alining socket; bearing members secured to said struts, each member having a lateral extension adapted to enter the socket in the adjacent bearing member; like bearings for the lower end of each strut; means for shifting the lower bearings of that strut adjacent the discharge end of the screen; and means for imparting a reciprocatory motion to the screen.

3. In a screening mechanism, the combination of a screen; a bracket secured at one end of the screen, said bracket having a bearing face on its under side and likewise having an alined socket; a casting or mem-

ber, as 14, having a bearing element adapted to coact with said bearing face and to enter and interlock with the socket; a A-shaped strut secured at its upper end to said casting; a pair of shoes; a foot-piece secured to each of the lower ends of the strut, said foot-pieces each being provided with an extension adapted to enter a recess or socket formed in the shoe; a second strut pivotally and detachably connected at its upper end to the screen adjacent the discharge end thereof; a pair of fixed supporting members having arch-shaped bearing faces; a slide mounted upon each of said supporting members; pivotal connections between said slides and the lower end of the last-named strut, a rack carried by each slide; a shaft mounted in said supporting members; a pair of pinions mounted upon the shaft and meshing with said racks; and means for imparting a reciprocatory motion to the screen.

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

DAVID COLE.