No. 780,142. PATENTED JAN. 17, 1905.

R. H. THORPE.

SCREENING MECHANISM.

APPLICATION FILED JAN. 16, 1904.

2 SHEETS—SHEET 1.

FIG. 1.

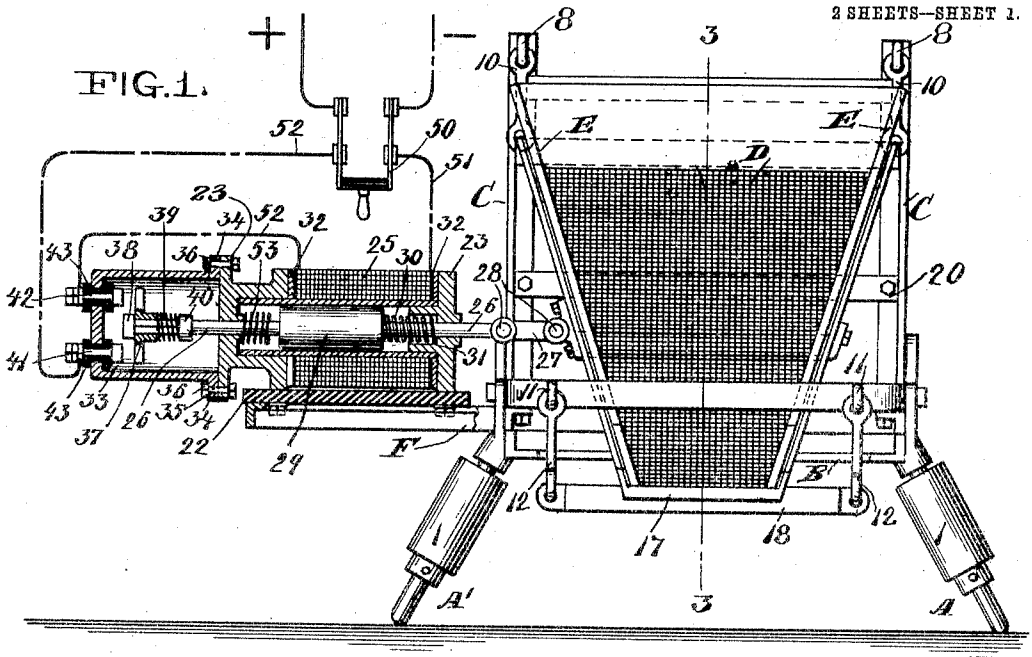


FIG. 2.

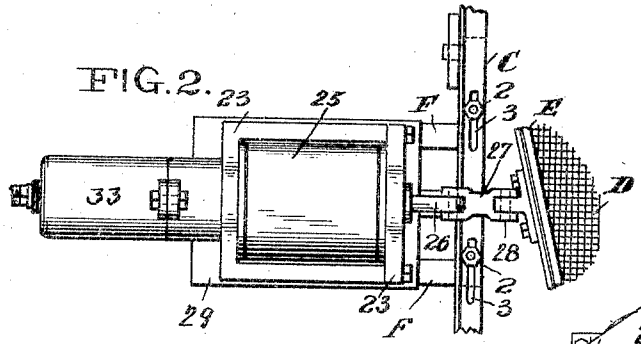


FIG. 3.

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2 SHEETS—SHEET 2.

FIG. 6.

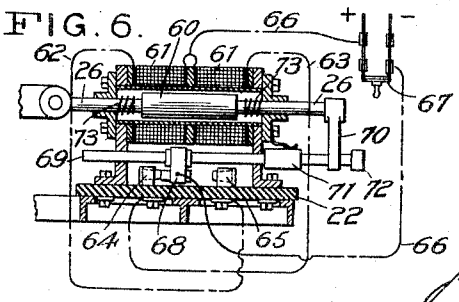
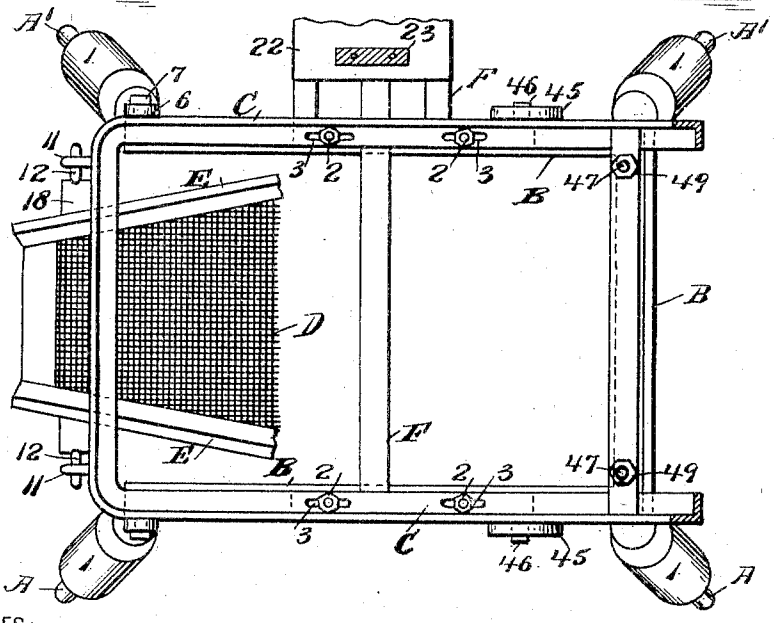


FIG. 4.

FIG. 5.



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No. 780,142. Patented January 17, 1905.

UNITED STATES PATENT OFFICE.

ROBERT H. THORPE, OF MONTCLAIR, NEW JERSEY.

SCREENING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 780,142, dated January 17, 1905.

Application filed January 16, 1904. Serial No. 189,239.

To all whom it may concern:

Be it known that I, ROBERT H. THORPE, a subject of the King of Great Britain and Ireland, residing at Montclair, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Screening Mechanisms, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to an improved screening mechanism, the especial object of the invention being to provide a simple and efficient electrically-operated sand-screening machine, so that the latter may be conveniently portable and avoid the expensive and inconvenient use of the steam, compressed-air, and other power operated devices heretofore employed.

The invention also includes certain features of construction and combinations of parts in a screening machine which may be used in screening mechanisms not employing my electrical devices.

For a full understanding of the invention a detailed description of a construction embodying all the features of the same in their preferred form will now be given in connection with the accompanying drawings, forming a part of this specification, and the features forming the invention will then be specifically pointed out in the claims.

In the drawings, Figure 1 is a front view of the screening-machine. Fig. 2 is a plan view of the screen-actuating devices. Fig. 3 is a section on the line 3 of Fig. 1. Fig. 4 is a similar section showing the screen adjusted to a different position, and Fig. 5 is a plan view of the screen and its supporting-frame with the screen partly broken away. Fig. 6 shows a double-acting solenoid which may be used in place of the single-acting solenoid shown in the other figures.

Referring to the drawings, A A′ are the legs supporting the screening mechanism, which are held down firmly by weights 1, these legs being pivoted to the machine-frame B for leveling the frame. At the forward end of the frame B are brackets 6, in which is pivotally mounted at 7 the frame C, which frame carries the screen and screen-vibrating mechanism. At the rear end the frame is provided with adjusting means by which it may be adjusted to different inclinations by swinging on the pivot 7, this adjusting means consisting of screws 47, passing freely through a bar on the frame C, and adjusting-nuts 48 49 above and below the bar by which the frame may be locked in different positions on the screws 47.

The inclined screen D is carried by the screen-frame E, which frame is swung at its upper end from lugs 8 on frame C by links 10 and lugs 16 on the screen-frame, and at its lower end the screen-frame E is similarly supported from lugs 11 on the frame C by links 12 supporting bar 18, on which rests the lower end of the screen-frame E. The screen-frame E, therefore, is free to swing sidewise for vibrating the screen and endwise as the frame C is adjusted to different inclines.

The frame C carries a plate F, which extends sidewise beyond the screen and is supported on the frame C by bolts 2, moving in slots 3, so as to be movable longitudinally of the frame C. This plate F carries pins 46, which move in inclined guide-slots 44 in brackets 45 on frame B, so as to automatically move the plate F forward and back on the frame C as the latter is raised and lowered on screws 47, so that the position of the solenoid is adjusted in accordance with the position of the frame C. On the plate F is mounted, so as to be adjusted toward and from the screen, a plate 22, which carries the solenoid-frame 23, having the solenoid-coil 25 and solenoid-core 29. The solenoid-core is connected by a spindle 26 and link 27 to the screen-frame C, the pivoting of the link to the spindle 26 and screen-frame being shown at 28.

The solenoid is shown as a single-acting solenoid moving the core electrically in only one direction, and for returning the core the spring 30 on the spindle 26, abutting against the core and against the inner side of the plate 23, is shown. At the opposite end of the core a light spring 53 is used abutting against the opposite end plate 23 of the solenoid-frame, this spring acting as a cushion on the return of the core by spring 30. Upon the outer end of the solenoid-frame 23 is formed or

mounted a chamber 33, through the end wall of which pass the contacts 41 42, suitably insulated in the wall by insulation 43. The core-spindle 26 extends into this chamber and carries therein contact-piece 37, which is mounted to slide on the spindle and held in position thereon by the spindle-head 38 and a spring 39 between the contact-piece and collar 40 on the spindle. This light spring serves to assure contact between the contact-piece 37 and the contact-pieces 41 42, the spring 39 yielding as the contact-piece 37 is pressed against the contact-pieces 41 42 as the core and spindle are moved outward by the spring 30, the contact thus being continued for a short time on the inward movement of the core.

The circuit of the solenoid is indicated diagrammatically by wires 51 52 and switch 50.

It will be seen that the invention provides a very simple and efficient portable screening-machine and that by the adjustment of the frame C the inclination of the screen D may be changed as desired without affecting the action of the electrical vibrating devices, so that the action of the screen on the material may be varied as desired by thus varying its inclination.

It will be understood that the invention is not limited to machines having an inclined screen nor to the specific construction or arrangement of parts in the screening mechanism illustrated, but that many modifications may be made in the construction illustrated without departing from the invention.

While a single-acting solenoid is shown and described and is preferably used, because of the quick jerky motion which is secured by the action of such a device, it will be understood that the invention, considered broadly, is not limited to a single-acting solenoid, but that a double-acting solenoid may be used, if desired, within the broader features of the invention. Thus I have shown in Fig. 5 a double-acting solenoid which may be used. In this construction the spindle 26 is on the core 60 of a double-acting solenoid having the coils 61, the wires 62 63 of which are connected to the posts 64 65 and the wire 66 through switch 67 to the contact-piece 68, this contact-piece 68 being carried by a reciprocating rod 69, actuated by an arm 70 on spindle 26, which engages alternately tappets 71 72 on rod 69 to throw the contact-piece 68 into engagement with one or the other of contact-pieces carried by the posts 64 65. Springs 73 on spindle 26 are preferably used for cushioning the core 61 on its movement in opposite directions and aiding to secure a quick reversal of the core.

What I claim is—

1. In a screening-machine, the combination with a screen, of means for actuating the screen with a quick movement in both directions, said means including a solenoid connected to the screen, and means for automatically controlling the solenoid.

2. In a screening-machine, the combination with a screen, of a solenoid, connections between the solenoid and screen for vibrating the latter, means for automatically controlling the solenoid, and means coacting with the solenoid to secure a quick movement of the screen in both directions.

3. In a screening-machine, the combination with an inclined screen and a vibrating screen-frame, of a frame supporting the screen-frame and adjustable vertically to vary the inclination of the screen, electrically-operated means carried by the adjustable frame for vibrating the screen, and connections between the adjustable frame and vibrating means for automatically adjusting the position of the vibrating means on the adjustable frame as the latter is adjusted.

4. In a screening-machine, the combination with an inclined screen and a vibrating screen-frame, of a frame supporting the screen-frame and adjustable vertically to vary the inclination of the screen, a solenoid carried by the adjustable frame, connections between the solenoid and screen for vibrating the latter, means for automatically controlling the solenoid, and connections between the adjustable frame and vibrating means for automatically adjusting the position of the vibrating means on the adjustable frame as the latter is adjusted.

5. In a screening-machine, the combination with a screen, of means for actuating said screen with a quick movement in both directions, said means including a solenoid, connections between the solenoid-core and the screen, and a spring for cushioning the core.

6. In a screening-machine, the combination with a screen, of a single-acting solenoid, connections between the solenoid-core and the screen for vibrating the latter, a spring for moving the solenoid-core in one direction arranged to secure a quick movement of the core, and a spring for cushioning the core on the spring movement.

7. The combination with the machine-frame B, of the frame C adjustable to different inclinations thereon, screen-frame E having inclined screen D suspended from the frame C to swing freely, and a screen-vibrating solenoid connected to the screen-frame, and means coacting with the solenoid to secure a quick movement of the screen in both directions.

8. The combination with the machine-frame B, of the frame C adjustable to different inclinations thereon, screen-frame E having inclined screen D suspended from the frame C to swing freely, and a screen-vibrating solenoid connected to the screen-frame E and carried by the adjustable frame C.

9. The combination with a movable screen, of a single-acting solenoid having the core 29 connected to the screen, contact-piece 37 car-

ried by the core-spindle for making contact to close the solenoid-circuit, and spring 39 yielding when the circuit is closed by contact-piece 37.

10. The combination with a movable screen, of a single-acting solenoid having core 29 connected to the screen, spring 30 for moving the core in one direction, and spring 53 for cushioning the core on the spring movement.

11. The combination with a movable screen, of a single-acting solenoid having core 29 connected to the screen, spring 30 for moving the core in one direction, spring 53 for cushioning the core on the spring movement, and spring-pressed contact-piece 37 for closing the solenoid-circuit.

12. The combination with the machine-frame B, of the frame C adjustable to different inclinations thereon, screen-frame E having inclined screen D suspended from the frame C to swing freely, a solenoid connected to the screen-frame E and adjustably mounted on the frame C, and slotted guides 45 engaging the solenoid-support to adjust the position of the solenoid on the frame C as the latter is adjusted.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ROBERT H. THORPE.

Witnesses:
J. A. GRAVES,
G. M. BORST.