

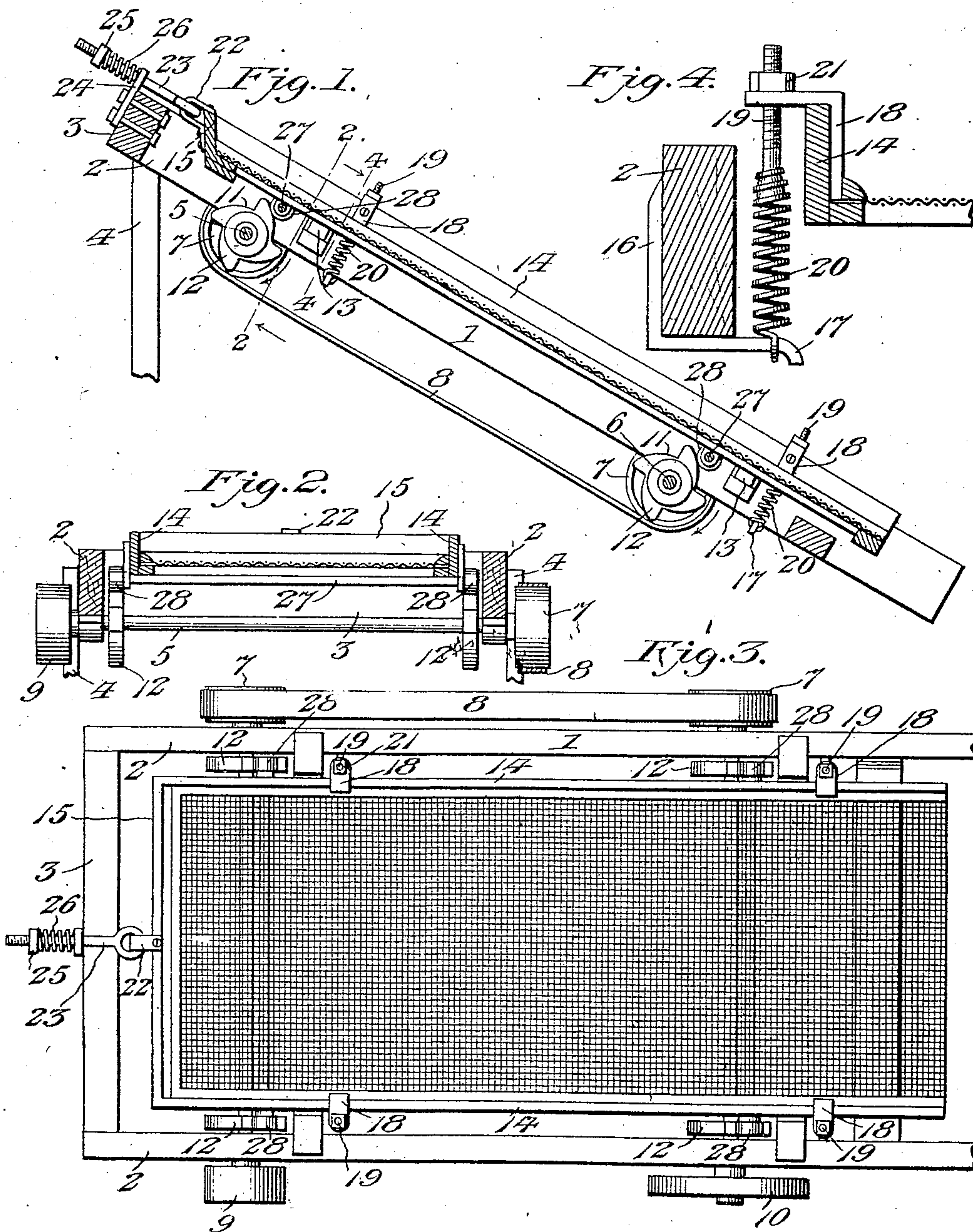
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W. E. PORTER.
SCREEN.

APPLICATION FILED MAR. 28, 1903.

NO MODEL.



Witnesses

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SCREEN.

SPECIFICATION forming part of Letters Patent No. 749,578, dated January 12, 1904.

Application filed March 28, 1903. Serial No. 150,010. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. PORTER, a citizen of the United States, residing at Sandfork, in the county of Gilmer and State of West Virginia, have invented new and useful Improvements in Screens, of which the following is a specification.

This invention relates to screens, and more particularly to means for vibrating a screen and regulating the extent of movement to accommodate various uses or screening different materials and also capable of being adjusted relative to the operating means to render it inactive or to produce what is known as a "dead screen."

The invention contemplates the screen proper having contacting means and cam devices or vibrators and adjusting devices whereby the screen proper may be moved longitudinally to change the position of the projections relatively to the cam devices or vibrators and positively control the degree of vibration.

The invention further consists in a screen proper having means for longitudinally adjusting the same, mechanism for causing the vibration thereof, and resilient devices disposed in planes at an angle to the position of the screen proper to return the latter to normal position and acting in opposition to the vibrating means.

The invention still further consists in the details of construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a vertical longitudinal section of the screen embodying the features of the invention. Fig. 2 is a transverse vertical section on line 2-2, Fig. 1. Fig. 3 is a top plan view of the screen, partially broken away; and Fig. 4 is a transverse vertical section on the line 4-4, Fig. 1.

Similar numerals of reference are employed to indicate corresponding parts in all figures of the drawings.

The numeral 1 designates a supporting-frame of suitable length and comprising side rails or beams, connected at their upper ends by a cross rail or beam 2. To the upper end of the frame 1 legs 4 are secured and are of such length as to give proper inclination to

the entire screen, and it will be understood that the lower ends of the rails 2 will rest upon the ground or other surface on which the screen is supported. Extending transversely across the under side of the frame and mounted in suitable bearings are shafts 5 and 6, having on one end of each a band-pulley 7, engaged by a belt 8, to render the rotation of the said shafts synchronous and on the opposite end of the shaft 5 a band-pulley 9, to which a power-belt may be applied. On the end of the shaft 6 opposite that having the pulley 7 thereon is a fly or balancing wheel 10. On both shafts 5 and 6 cam-wheels 11 are secured, and each has a plurality of cam projections 12, as clearly shown by Fig. 1. There is a pair of these cams on each shaft located inside of but close to the rails 2 of the main frame, and the projections 12 each have a gradual convex rise terminating at an abrupt shoulder, there being four of the projections in the present instance. It will be understood, however, that the form of these cam-wheels may be varied and the dimensions thereof will be regulated proportionately to the remaining parts of the screen structure.

At a suitable distance below the positions of the cam-wheels 11 buffers or striking-bars 13 extend from one side rail or beam 2 to the other.

Hung in the frame 1 is a screen proper, comprising side rails 14 and an upper end rail 15, the lower end of the screen proper being open to permit the material screened to pass freely outward therefrom. The screen proper will have a mesh suitable for general screening purposes, and the suspending devices therefor, and as clearly shown by Fig. 4, consist of angular clips 16, secured to the side rails 2 of the main frame and provided with inwardly-projecting members closely fitting under the lower edge of said side rails and terminating in downwardly-deflected or hooked ends 17. Secured to the side rails 14 of the screen proper are angular hangers 18, having their upper horizontal members projecting outwardly to adjustably receive suspending screw-bolts 19, with heads or enlargements at their lower ends to which the upper extremities of springs 20 are secured, the lower ends of said springs

being caught over the downwardly-deflected or hooked ends 17 of the clips 16. Resting on the horizontal members of the hangers 18 are nuts 21, through which the screw-bolts 19 also pass, and the vertical adjustment of said screw-bolts and the tension of the springs connected thereto are regulated by rotating the nuts in opposite directions.

As in ordinary screen constructions, the upper end rail 15 of the screen proper is inclined downwardly at an angle, and secured thereto at the center is a loop 22, engaged by the eye at the lower terminal of an eyebolt 23, the latter being movable through a guide-plate 24, secured to and rising above the upper edge of the end rail or beam 3 of the frame. The upper rear terminal of the eyebolt 23 is screw-threaded to adjustably receive a nut 25, between which and the adjacent side of the guide-plate 23 a spring 26 is interposed and surrounds the bolt. Secured to the under side of the screen proper are rods or small shafts 27, having rollers 28 thereon, which are always held in alinement with the cam-wheels 12, and the degree of vibration of the screen proper will depend upon the length of time the rollers 28 are permitted to contact with the projections 12 of the cam-wheels.

The screen proper is shown adjusted, for example, to obtain a normal vibrating movement thereof, and in operation the projections 12 of the cam-wheels will successively strike the rollers 28 and push the screen proper in a downward direction or longitudinally of the main frame against the resistance of the spring 26, which will immediately retract the screen proper when the rollers clear the maximum portions of said projections and are in alinement with the lowermost parts of the convex edges thereof adjacent to the shoulders. There are also alternate rise and fall movements imparted to the screen proper by the cam projections against the resistance of the springs 20, and the latter always tend to draw the screen proper downwardly when the rollers 28 are free to move behind the shoulders of the cam projections 12. The longitudinal movements of the screen proper can be decreased by drawing upwardly on the rail 15 through the medium of the bolt 23 and nut 25, and to increase the degree of vibration of the screen the nut 25 will be loosened by turning the same outwardly to such extent as to permit the screen proper to lower, and at the same time the bolts 19 will also be adjusted to permit the screen proper to depress, and hence the vibration will be prolonged. In order to render the screen proper inactive or to produce a dead screen, the bolt 23 may be adjusted to such an extent as to entirely clear the rollers 28 from engagement with the cam-wheels.

It will be understood that when the screen is active or vibrated by the cam-wheels the side rails 14 thereof will be brought into force-

ful contact with the buffers 13 to practically shift and move the screened material down toward the end of the screen proper and relieve such material of products or impurities desired to be eliminated therefrom.

The springs 20 and 26 cause a rebound of the screen proper to be effected in two directions, and while the screen impacts against the buffers 13 with considerable force the latter is to some extent reduced or absorbed, and wear and tear on the entire screen structure is lessened.

The screen is intended for use in cleaning ore, coal, sand, or other materials, and it will be understood that it may be provided with proper chutes for distribution of the material to be cleaned, and, furthermore, suitable means may be employed at intervals for cleaning the screen-mesh. The power for actuating the shafts may be derived from any source, and when the screen is inactive it will be seen that rotation of the shafts will be unnecessary.

From the foregoing it will be understood also that the particular advantage in the present form of screen is that it can be moved in a longitudinal direction and simultaneously given rising and falling movements and that said movements are adjustable at will.

Changes in the minor details of construction may be resorted to without departing from the spirit of the invention.

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

1. In a device of the class set forth, the combination of a frame, a screen loosely suspended therein, rollers secured to the screen adjacent opposite extremities of the latter, cam-wheels for engaging the rollers for imparting longitudinal and rising movement thereto, and a spring-controlled adjusting device loosely secured to one end of the center of the screen and operative to throw the latter out of or into engagement with the cam-wheels.

2. In a device of the class set forth, the combination of a rigid frame, a screen, adjustable spring devices for suspending the screen within the frame, rollers secured to the screen adjacent opposite extremities of the latter, cam-wheels for engaging the rollers for imparting longitudinal and rising movement thereto, and a spring-controlled means loosely secured to one end of the center of the screen operative to throw the latter out of or into engagement with the cam-wheels.

3. In a device of the class set forth, the combination of a frame, a screen resiliently and adjustably suspended within the frame, buffers rigidly held on the inner opposing sides of the frame and against which the screen normally bears, cam-wheels for engaging opposite extremities of the under portion of the screen for imparting longitudinal and rising movement thereto, and adjustable means loosely attached to one end of the screen to

control the degree of movement thereof or to move it entirely out of engagement with the actuating mechanism to render the screen dead, the said adjustable means having spring-controlling mechanism in connection therewith.

4. In a device of the class set forth, the combination with a frame, of a screen resiliently and adjustably suspended within the frame, 10 cam devices engaging the under side of the screen adjacent to opposite extremities thereof to impart thereto longitudinal and vertical movement, the screen being normally disposed

at a downward angle of inclination and unretarded in movement at its lower end, and adjustable means loosely attached to the upper 15 end of the frame and the screen and having a resilient mechanism cooperating therewith which always tends to pull the screen back to normal position in a longitudinal direction. 20

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM E. PORTER.

Witnesses:

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