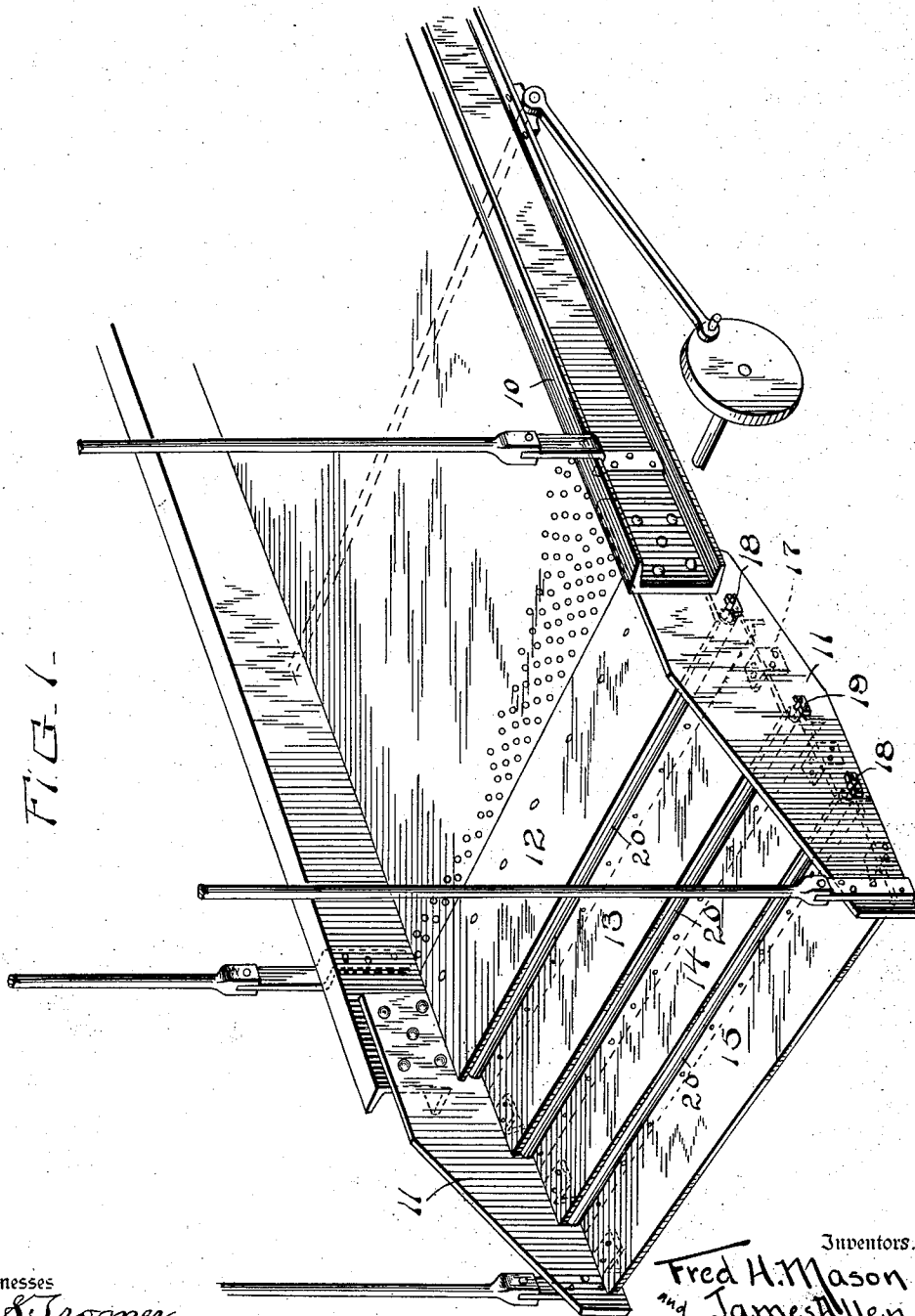


F. H. MASON & J. ALLEN,
SEPARATING MECHANISM.
APPLICATION FILED NOV. 15, 1911.

1,021,690.

Patented Mar. 26, 1912.

2 SHEETS—SHEET 1.



Witnesses

R. S. Troegner.

L. D. Morrell

Inventors.

Fred H. Mason,
and James Allen,

By *Mason Farnick Lawrence*,

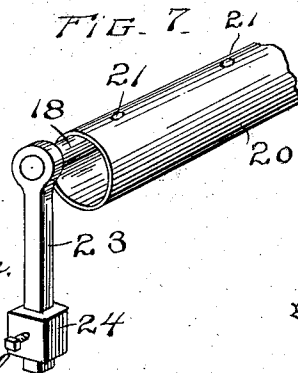
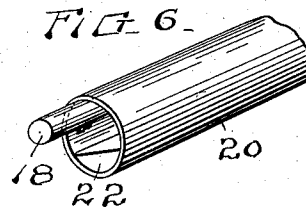
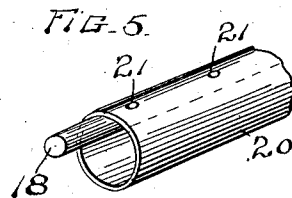
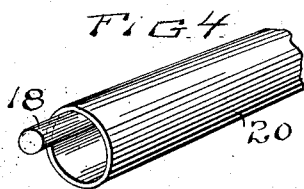
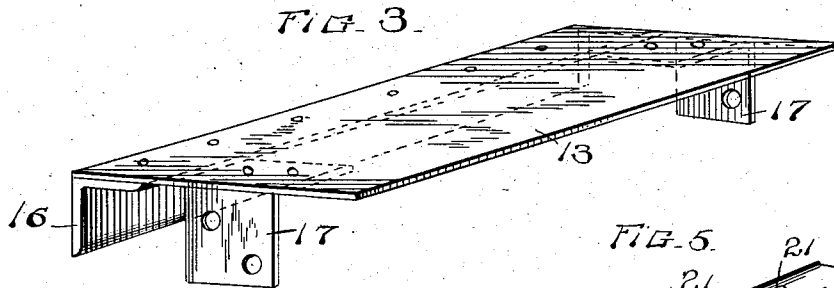
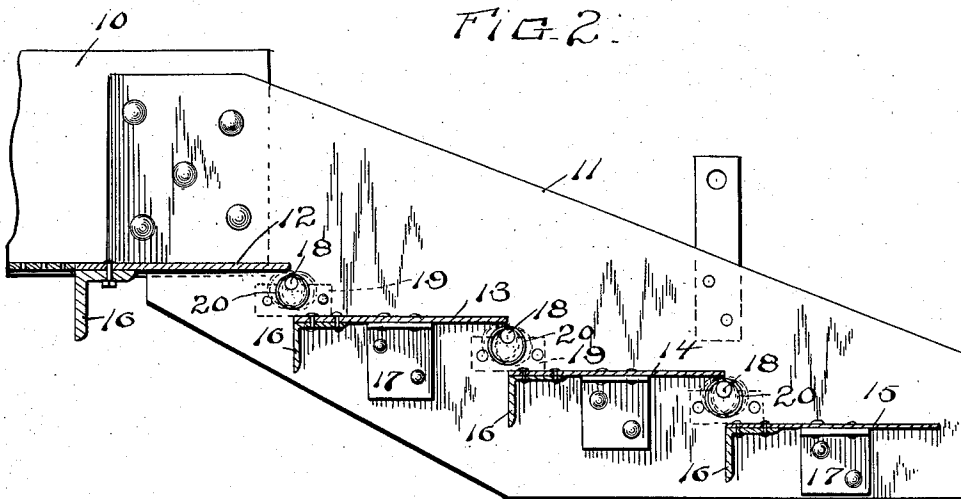
Attorneys

F. H. MASON & J. ALLEN,
SEPARATING MECHANISM.
APPLICATION FILED NOV. 15, 1911.

1,021,690.

Patented Mar. 26, 1912.

2 SHEETS—SHEET 2.



Witnesses
R. S. Troegner.
D. D. Morrell.

Inventor
Fred H. Mason,
and James Allen.
By Mason, Farnick & Lawrence,
Attorneys

UNITED STATES PATENT OFFICE.

FRED H. MASON AND JAMES ALLEN, OF SCRANTON, PENNSYLVANIA.

SEPARATING MECHANISM.

1,021,690.

Specification of Letters Patent.

Patented Mar. 26, 1912.

Application filed November 15, 1911. Serial No. 660,681.

To all whom it may concern:

Be it known that we, FRED H. MASON and JAMES ALLEN, citizens of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Separating Mechanism; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to means for separating materials and while especially designed for separating coal from slate, rock, "bone" and other extraneous matter, is of course not limited to such use and is adapted for separating any materials the specific gravity and frictional resistance of which vary in degree.

In separating coal from extraneous matter it is usually found that the slate and other foreign substances are flat or in thin pieces as distinguished from thicker and larger pieces of the coal so that the slate and other such foreign matter will pass through an opening of less vertical dimension than will the coal. This well known feature is taken advantage of to a certain extent in the present invention, as well as the difference in specific gravity and frictional resistance.

An object of the present invention is to provide a shaking device composed of a plurality of steps over which the material to be separated is passed, with means interposed between the steps for permitting the thinner material having greater frictional resistance to pass but to prevent the passage of the thicker material or the material with less frictional resistance.

A further object of the invention is to provide a stepped extension secured directly upon the extremity of the ordinary shaking screen and over which the material to be separated passes, with gravity controlled means for preventing the passage of certain of said material and permitting the passage of certain other of said matter between the steps.

A further object of the invention is to provide a stepped extension to a shaking screen having swinging cylinders interposed between the steps which prevent the passage of part of said material while permitting

the passage of the thinner portions of such materials.

With these and other objects in view the invention comprises certain novel constructions, combinations and arrangements of parts as will be hereinafter more fully described and claimed.

In the drawings:—Figure 1 is a perspective view of a fragment of a conventional shaking screen with the invention attached thereto. Fig. 2 is a vertical view transverse relative to the step. Fig. 3 is a perspective view of one of the steps removed from the side plates. Fig. 4 is a fragmentary view of one of the cylinders and supporting shafts. Fig. 5 is a fragmentary perspective view of a slightly different embodiment of one of the cylinders. Fig. 6 is a fragmentary perspective view of still a different embodiment of the cylinder. Fig. 7 is a perspective view of a fragment of still a different embodiment of the cylinder, showing a pendulum for operating the same.

Like characters of reference indicate corresponding parts throughout the several views.

The mechanism which forms the subject matter of the present application is adapted to be rigidly secured to the lower end or extremity of an ordinary shaking screen, shown at 10, and the device itself comprises side plates 11 between which are disposed a plurality of plates of any approved or desired number, here shown as 12, 13, 14 and 15. The plates 12 to 15 inclusive are arranged between the side plates 11 in stepped relation, the rearward edge of one step being substantially beneath and spaced from the outer or forward edge of the step above and the rearward edge of each of the said steps is preferably strengthened and reinforced in any approved manner as by the use of angle irons 16. The step is preferably secured between the side plates by the use of brackets 17 at the ends of such plates.

Immediately beneath the forward edge of each of the plates except the lower one, a shaft 18 is provided which extends through the side plates 11 and is carried by a bearing block 19. Upon the shaft 18 is supported a cylinder 20 which may either be free to swing upon the shaft 18, as indicated at Figs. 4 and 6, or may be secured to and swing with the shaft, as indicated at Figs. 5 and 7, such securing means being provided

by bolts 21. Under some conditions it is found that the weight of the cylinder or pipe 20 is not sufficient to provide the necessary resistance to the passage of material so that it is found desirable to weight such pipe as indicated at 22 in Fig. 6, such weighting being accomplished by inserting a weight within the pipe, preferably by flowing molten metal therein although adding some weight in any approved manner is equally satisfactory.

Instead of weighting the pipe or in addition thereto, an arm 23 is, under some conditions, secured to the extremity of the shaft 18 and provided with a weight 24 which becomes a pendulum so that as the shaking screen moves the pipe 20 either by reason of its own gravity or the added weight of the insert 22, the pendulum swings as indicated in dotted lines at Fig. 2.

The operation of the device will be described in connection with separating coal as a more convenient means of describing such operation but it is to be understood that the invention is not limited to such material but includes any and all material which would naturally be handled by such a device. In operating upon coal then, the coal from the crushing mechanism or other source passes over the shaking screen 10 which is given motion in any ordinary manner. The material after being subjected to the cleaning of the screen passes over the first plate 12. It is well known that slate, rock, "bone" and the like are heavier than coal and also present greater frictional resistance so that the coal in passing from the plate 12 upon the plate 13 is thrown farther than the slate and other extraneous matter. The result is that the slate and other extraneous matter is deposited upon the lower plate nearer to the pipe 20 than the coal and as the shaking continues the plates being substantially horizontal the material thereon is moved backwardly as well as forwardly so that the slate and like material which is nearer to the pipe 20 is forced through under the pipe, the pipe swinging as indicated in dotted lines to permit such passage. Upon the return movement the weight of the pipe or of the pendulum forces the pipe to move the coal and other material forward. This may be repeated as many times as is found desirable by employing as many of the plates as may be found necessary so that at each passage

of the material from one plate to the next the coal is thrown farther than the heavier material while the latter is deposited nearer the pipe and consequently is forced through the opening which is too narrow to permit the passage of the usual pieces of coal.

We claim:—

1. In a separating mechanism, a plurality of plates arranged in horizontal planes and as spaced steps, and cylinders journaled to swing in the space between the steps.

2. In a separating mechanism, a plurality of substantially horizontal plates arranged in stepped relation with the rear of one step substantially beneath and spaced from the forward edge of the step above, and a cylinder journaled to swing in the space between such steps.

3. In a separating mechanism, a plurality of substantially horizontal plane steps spaced apart vertically, cylinders disposed and substantially filling the space between the steps, means to oscillate the structure, and means to impart swinging motion to the cylinders.

4. In a separating mechanism, side plates, plates disposed in substantially horizontal planes secured between the side plates and spaced apart with the rearward edge of one plate spaced substantially below the forward edge of the plate above, and cylinders mounted to swing upon axes adjacent the forward end of some of the steps and to substantially fill the space between the steps.

5. In a separating machine, stepped planes the rearward edge of one plane being below the forward edge of the plane above, and cylinders eccentrically journaled to swing between the steps to vary the space between the lower limit of the cylinder and the top of the step beneath.

6. In a separating mechanism, a plurality of substantially horizontal steps spaced apart vertically, cylinders eccentrically journaled to swing in the space between the steps, the axis of movement of such cylinders being substantially vertically above the rear edges of the steps.

In testimony whereof we affix our signatures in presence of two witnesses.

FRED H. MASON.
JAMES ALLEN.

Witnesses:

FRED WARNER,
E. D. SHIRES.