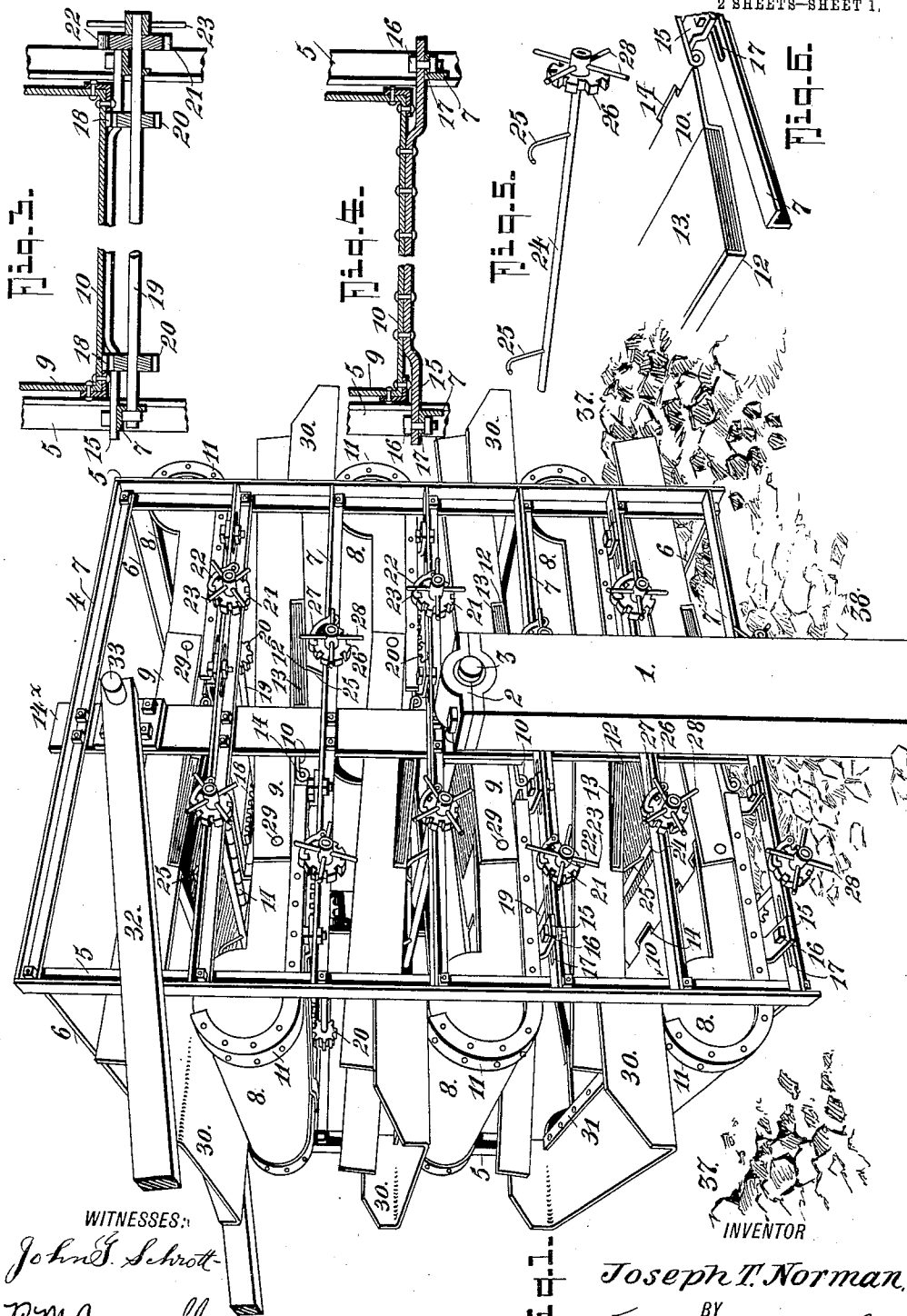


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 OSCILLATING SLATE PICKER.
 APPLICATION FILED OCT. 2, 1912.

1,053,858.

Patented Feb. 18, 1913.

2 SHEETS—SHEET 1.



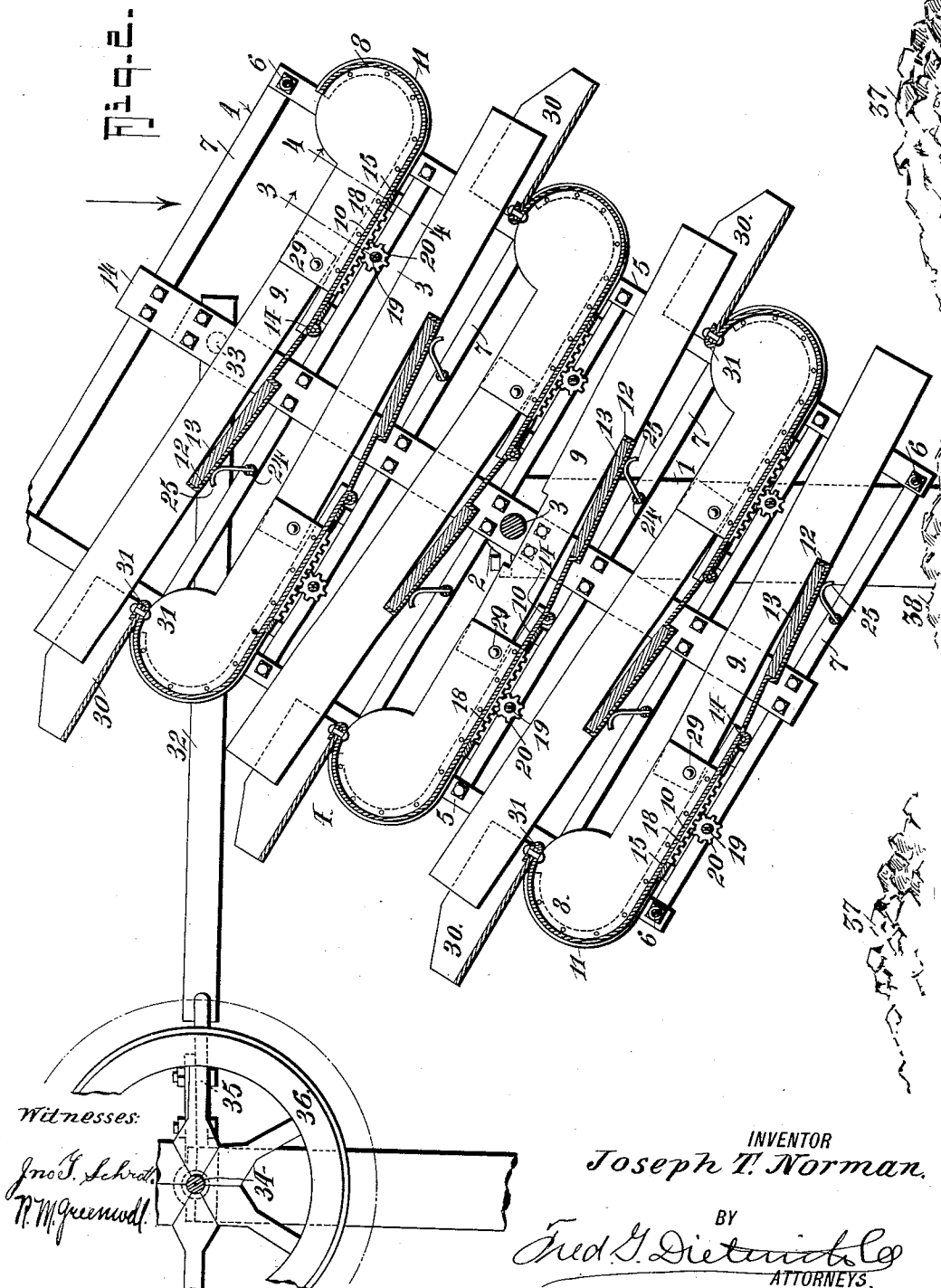
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UNITED STATES PATENT OFFICE.

JOSEPH T. NORMAN, OF NANTICOKE, PENNSYLVANIA, ASSIGNOR TO NORMAN PICKER CO., OF NANTICOKE, PENNSYLVANIA, A PARTNERSHIP.

OSCILLATING SLATE-PICKER.

1,053,858.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed October 2, 1912. Serial No. 723,468.

To all whom it may concern:

Be it known that I, JOSEPH T. NORMAN, residing at Nanticoke, in the county of Luzerne and State of Pennsylvania, have
5 invented certain new and useful Improvements in Oscillating Slate-Pickers, of which the following is a specification.

My invention is an improved apparatus for separating coal and slate, and it primarily has for its object to provide an apparatus in which a relatively large number of successive separations can be effected in a machine of moderate size.

The invention also has for its object to
15 provide an apparatus in which the flow of material is brought to a complete stop between each separation; to provide a machine wherein the material flows at a uniform speed throughout the machine; to provide
20 an apparatus in which the material on one deck cannot catch up with or bank up onto that of a succeeding deck; to provide an apparatus that cannot be overloaded and will not clog up.

In its general nature, the invention comprises an oscillatable frame which supports a series of decks that are located one above another, alternate decks being directed in the same direction to form two sets of decks,
30 one set discharging at one side of the machine, and the other set discharging toward the opposite side. Each deck has a separate coal and slate discharge, the slate discharge of a deck being arranged to deposit the slate
35 and any coal that falls through with it, onto the next deck below for further separation, while the separated coal is discharged directly from the machine.

More subordinately the invention includes
40 those novel details of construction, combination and arrangement of parts, all of which will be first fully described, and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which:—

Figure 1 is a perspective view of a preferred form of the apparatus. Fig. 2 is a central vertical longitudinal section showing the manner of operating the machine.
50 Fig. 3 is a cross section on the line 3—3 of Fig. 2. Fig. 4 is a cross section on the line 4—4 of Fig. 2. Figs. 5 and 6 are detail views of parts of the invention.

In the drawings like numerals of reference designate like parts in all the figures.

Upon a suitable supporting base 1, on which bearings 2 are mounted, the main supporting shaft 3, is journaled. The shaft 3 carries an oscillatable frame 4 which is composed of vertical channel irons 5, those
60 on one side being connected to those on the other side by cross braces 6, the channel irons at one side being connected to each other by longitudinally extending braces 7 which are also connected to the central vertical support 14*.

In my apparatus a plurality of separating decks are mounted on the frame 4 in vertical succession and alternate decks discharge in one direction while the remainder
70 discharge in the other direction. As the construction of each deck is substantially the same, a description of one will be sufficient.

Each deck comprises a chute-like member consisting of sides 9 and a bottom 10. The
75 bottom 10, at the entrant end of the deck, is curved back as at 8 to form a receiving pocket, and the bottom 10 and sides 9 are braced by a suitable reinforcing iron 11.

The sides of the chute are made in two
80 sections hinged together as at 29, and the bottom 10 is also provided with an adjustable table 13 of slate or other suitable material which is held in the recess 12 of the forward end of the bottom 10. The recessed
85 portion 12 of the bottom is made separately from the remaining portion of the bottom, and the two parts are hinged together as at 14 to enable the table 13 to be raised or lowered as desired. The deck is supported
90 in the frame 4 by laterally projecting lugs or feet 15, which are bolted at 16 to the side bars 7, which bars 7 may be slotted as at 17 to receive the bolts 16 and for purposes of adjustment. In order to adjust the deck
95 longitudinally, the underside is provided with rack portions 18 that engage pinions 20, on a shaft 19 which is mounted in the frame 4, and carries a ratchet 21 to cooperate with the pawl 22 and prevent the shaft
100 19 from turning under normal conditions. The shaft 19 is provided with a turn-stile 23 by means of which it may be turned when the pawl 22 is disconnected from the ratchet 21. The second deck from the top and
105 those below it are provided with discharge chutes 30 adjacent their entrant ends to discharge the coal from the next deck above the chutes 30, being secured at 31. The table 13 is adjusted on the hinge connection
110

14 by means of arms 25 that are carried on a shaft 24, which is mounted in the frame 4 and carries a ratchet 26 to cooperate with the pawl 27. The shaft 24 is also provided with a turn-stile 28 by means of which it may be turned when desired.

The frame 4 is adapted to be oscillated on its axis by any suitable means, such as a crank and pitman arrangement, best shown in Fig. 2 of the drawings, by reference to which figure it will be observed that 34 indicates a driving shaft that carries the pulley 36, which receives power from any suitable source. The shaft 34 also carries adjustable cranks 35 that are connected to the frame 4 at 33, by the pitmen 32.

37 designates the coal piles, and 38 the slate pile, in Figs. 1 and 2.

In order to adjust the gap between the table 13 and the corresponding discharge chute 30, the shafts 19 may be turned to move the decks longitudinally to increase or diminish the gap as may be found desirable.

In operation, the decks are adjusted to provide suitable "jump spaces" through which the heavier slate may gravitate, while the lighter coal jumps the space and deposits on the discharge chutes 30. The operator shovels or dumps the coal and slate onto the upper deck 8 when the apparatus is in the position shown in Fig. 2, or places the material on the entrance or receiving deck in any desired way. The movement of the shaft 34 will impart oscillation to the frame 4 to move it from the position of Fig. 2 to an oppositely inclined position, and vice versa. Now as the frame 4 is rocked from one position to the other, the material on the alternate deck will slide off, the slate and some of the coal carried with it will drop into the pocket 8 of the next below deck, while the coal will jump the gap onto the chute 30 and be discharged from the machine. As the machine is rocked back, the material on the second deck from the top will be shot onto the third deck from the top, the separated coal passing out while the slate and coal carried by it, will drop through onto the third deck and so on. The slate is finally discharged in a pile 38 through the gap in the lowermost deck, intermediate the coal piles 37.

It will be understood, of course, that a fresh supply of coal and slate is deposited on the upper deck at each oscillation of the machine so as to keep a constant stream of material in the machine. It will also be noted that the speed of movement of the mass on each deck is the same, that is to say, the mass on one deck does not move any faster than the mass on the other deck, and the movement of the mass is entirely arrested as the apparatus reaches the limit of its inclination in each direction, as will

clearly be understood by reference to Fig. 2 of the drawings.

What I claim is:—

1. In a slate picker, a longitudinally oscillatable frame, a set of coal and slate separating decks mounted in and carried by said frame, alternate decks discharging in opposite direction, said decks having slate gaps, the slate gap of one deck discharging into the next below deck, and coal chutes cooperating with said decks for delivering the separated coal out of the machine, means for oscillating said frame and decks to a degree sufficient to alternately reverse the inclinations of said decks.

2. In a coal and slate separator, a support, a shaft mounted in said support, a skeleton frame mounted on said shaft and projecting upwardly therefrom, and a plurality of separating decks mounted in said frame in vertical succession, alternate decks adapted to move the mass toward one side of the machine while the remaining decks are adapted to move the mass toward the other side of the machine, each deck having separate coal and slate discharges, the slate discharge of a deck delivering on to the next deck below, some of said decks including pocket portions to receive the discharge from the above and a mechanism for rocking the said frame with said shaft as an axis to oscillate said decks to a degree sufficient to alternately reverse the inclinations thereof.

3. In a coal and slate separator, a support, a shaft mounted in said support, a skeleton frame mounted on said shaft and projecting upwardly therefrom, and a plurality of separating decks mounted in said frame in vertical succession, alternate decks adapted to move the mass toward one side of the machine while the remaining decks are adapted to move the mass toward the other side of the machine, each deck having separate coal and slate discharges, the slate discharge of a deck delivering on to the next deck below, some of said decks including pocket portions to receive the discharge from the decks above, said decks also including side portions extending in the longitudinal direction of the deck, said side portions including upwardly projecting members, coal discharge chutes having projecting sides to embrace said upwardly projecting members, means for adjustably holding said decks in position and a mechanism for rocking the said frame with said shaft as an axis to oscillate said decks to a degree sufficient to alternately reverse the inclinations thereof.

4. In a slate picker an oscillatable frame, a set of coal and slate separating decks mounted in vertical succession in said frame, alternate decks discharging in opposite directions, each of said decks including a receiving pocket near one end, and a slate re-

tarding table near the other end, the table of one deck terminating short of the entrance pocket of the next below deck to leave a gap, means for longitudinally adjusting the position of said decks to vary said gap and means for oscillating said frames and decks to a degree sufficient to alternately reverse the inclinations of said decks.

5. In a slate picker an oscillatable frame, a set of coal and slate separating decks mounted in vertical succession in said frame, alternate decks discharging in opposite directions, each of said decks including a receiving pocket near one end, and a slate retarding table near the other end, the table of one deck terminating short of the entrance pocket of the next below deck to leave a gap, and means for longitudinally adjusting the position of said decks to vary said gap, means for adjusting the plane of the table of a respective deck without changing the position of the deck as a whole in the frame and means for oscillating said frame and decks to a degree sufficient to alternately reverse the inclinations of said decks.

6. In a slate picker an oscillatable frame, a set of coal and slate separating decks mounted in said frame in vertical succession with alternate decks discharging in opposite directions, each of said decks comprising a bottom and side members, said bottom being curved upwardly at one end to form a receiving pocket, said bottom including a hinged table section at its other end, means for supporting said decks in position in said frame, and means for adjusting the plane of the table of a respective deck, coal discharge chutes carried by certain of said

decks at their entrant ends for receiving the discharged coal from the next above deck and discharging it from the machine, the table of a deck being spaced from the discharge chute of the next below deck to leave a jump gap together with means for oscillating said frame and decks to a degree sufficient to alternately reverse the inclinations of said decks.

7. In a slate picker an oscillatable frame, a set of coal and slate separating decks mounted in said frame in vertical succession with alternate decks discharging in opposite directions, each of said decks comprising a bottom and side members, said bottom being curved upwardly at one end to form a receiving pocket, said bottom including a hinged table section at its other end, means for supporting said decks in position in said frame, and means for adjusting the plane of the table of a respective deck, coal discharge chutes carried by certain of said decks at their entrant ends for receiving the discharged coal from the next above deck and discharging it from the machine, the table of a deck being spaced from the discharge chute of the next below deck to leave a jump gap, and rack and pinion devices coöperative with said decks for adjusting the same longitudinally to thereby vary the length of said gaps together with means for oscillating said frame and decks to a degree sufficient to alternately reverse the inclinations of said decks.

JOSEPH T. NORMAN.

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