No. 830,989. PATENTED SEPT. 11, 1906.

W. B. GILLON & J. M. RICKETTS.

COAL WASHING JIG.

APPLICATION FILED MAR. 20, 1906.

4 SHEETS—SHEET 1.

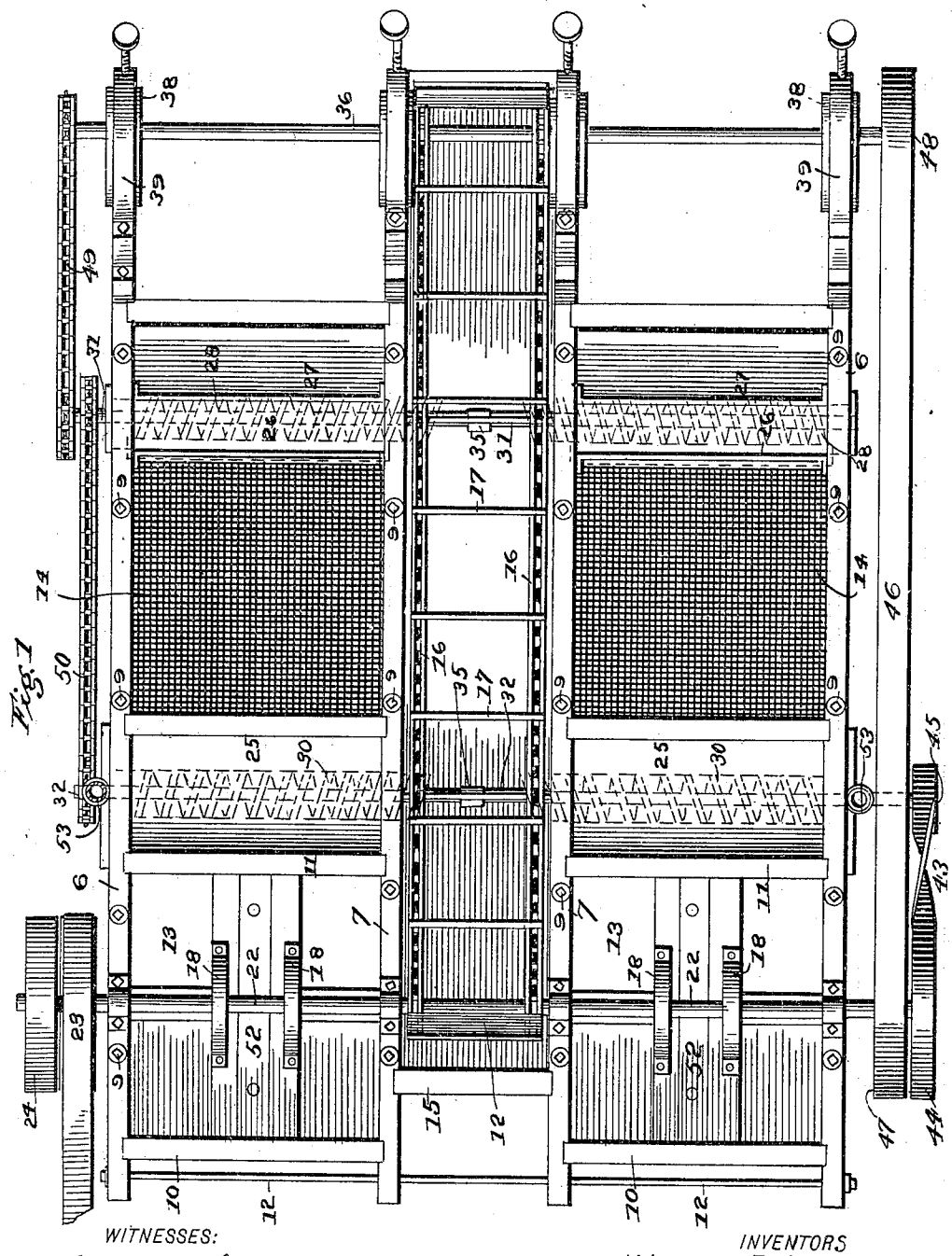


Fig. 1

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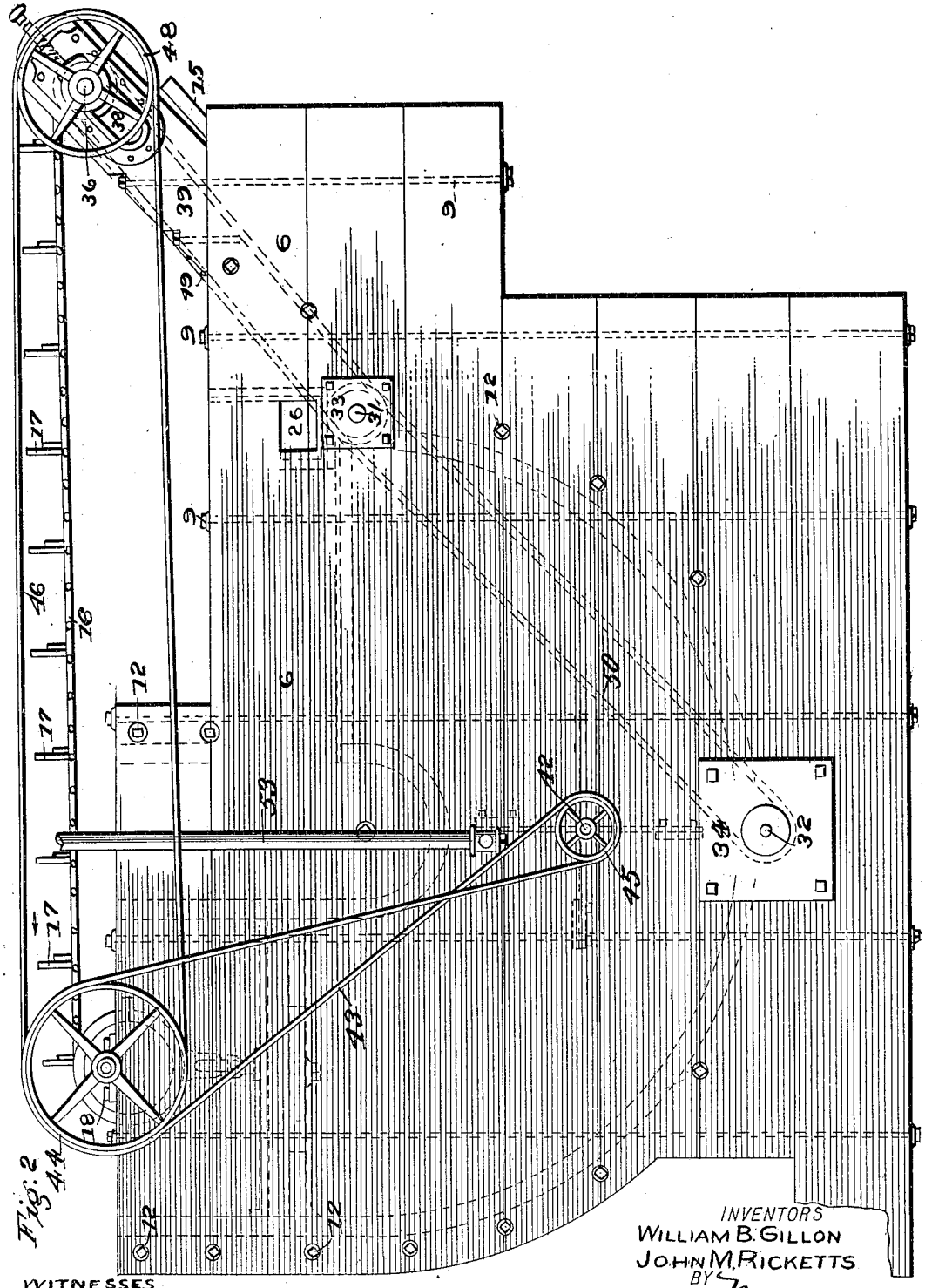


Fig. 2

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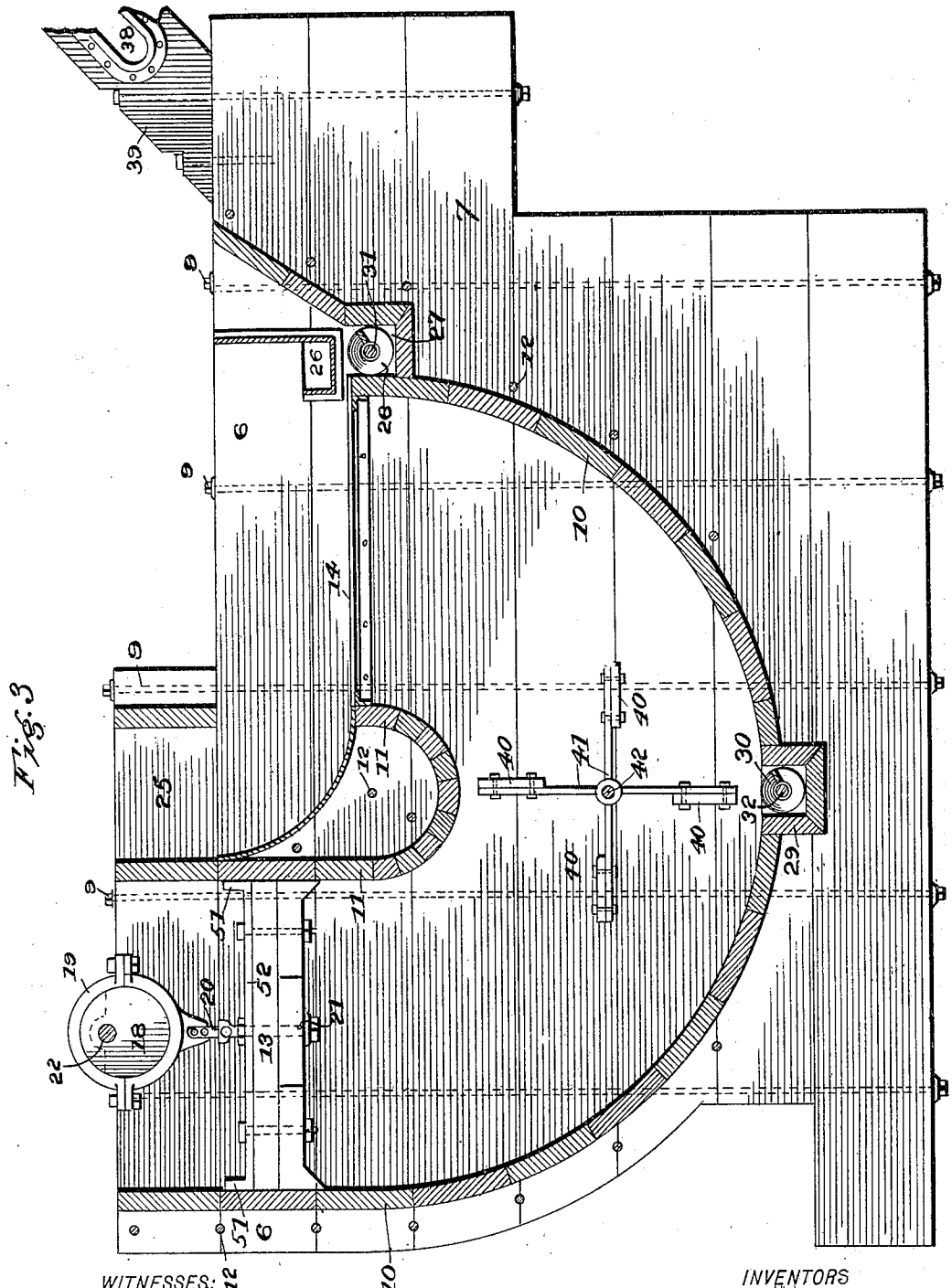


Fig. 3.

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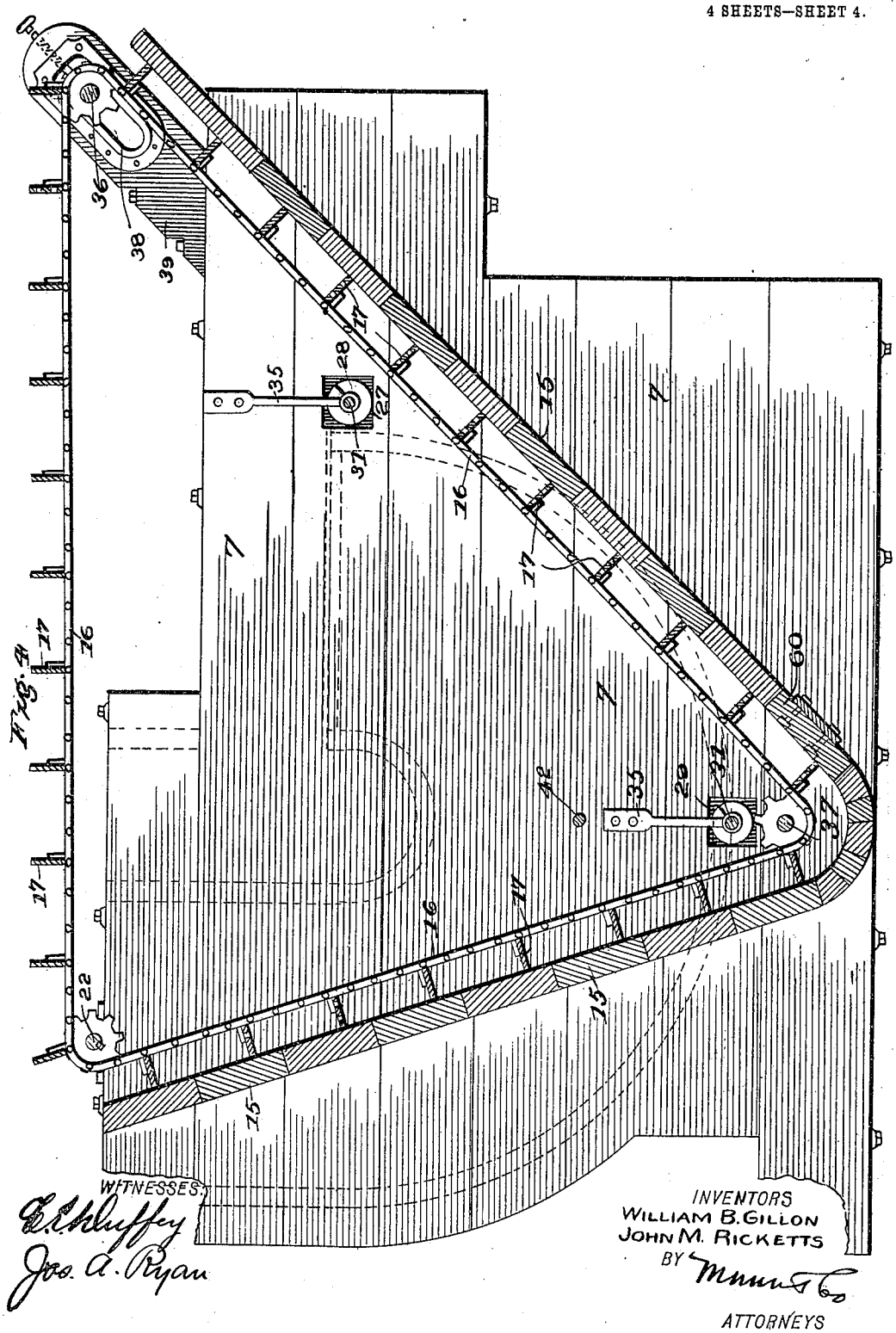


Fig. 4.

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UNITED STATES PATENT OFFICE.

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COAL-WASHING JIG.

No. 830,989. Specification of Letters Patent. Patented Sept. 11, 1906.

Application filed March 20, 1906. Serial No. 307,010.

To all whom it may concern:

Be it known that we, WILLIAM BRUCE GILLON and JOHN MIKE RICKETTS, citizens of the United States, residing at Sopris, in the county of Las Animas and State of Colorado, have invented a new and useful Improvement in Coal-Washing Jigs, of which the following is a specification.

This invention is a coal-washing jig to wash and separate coal from its impurities. This jig is of the plunger type, characterized especially by a pair of boxes standing side by side with an endless belt and flight conveyer therebetween which discharges the sludge and rock waste delivered to it by screw conveyers which work in the jig-boxes at each side and act to carry the waste from each jig to the compartment therebetween, which contains the flight conveyer. The inner side walls of the jig-boxes form the side walls of said compartment, which is completed by a double-inclined bottom extending across between said walls to suit the triangular run of the flight conveyer. A compact structure of large capacity for weight and amount of material is thus produced, since the waste from both jigs is delivered together and both jigs are operated by a single driving mechanism with cross-shafts from one jig or part to the other.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the machine. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical longitudinal section of one of the jigs. Fig. 4 is a similar section through the middle compartment containing the flight conveyer.

As stated, the apparatus includes a pair of jigs which are similarly constructed, and the description and similar numerals of reference indicate similar parts in both jigs. The vertical walls of each jig-box are indicated at 6 for the outside walls and 7 for the inside walls, and the latter form the side walls of the middle compartment therebetween. These walls are properly constructed of plank bolted together by long vertical bolts 9 and support the other parts of the structure. The semicircular bottom of each box is made of planks (indicated at 10) gained into the side walls, and a central semicircle at the top of the box is similarly formed of planks 11, all parts being securely held together by cross-bolts 12. This forms a U-shaped box, one end of which has the plunger 13 and the other the coal-screen 14. The double-inclined bottom of the compartment between the boxes is made of planks 15, gained at their ends into the walls 7 and properly inclined to suit the conveyer therein, which consists of chain belts 16 and perforated flights 17.

The plunger 13 is made of crossed planks bolted together and is reciprocated by means of a pair of eccentrics 18, the straps 19 of which are connected by knee-joints at 20 to the upper ends of bolts 21, which extend through the plungers. The eccentrics 18 for both jigs are mounted on a main cross-shaft 22, which has at one end fast and loose pulleys 23 and 24 and may be driven by any suitable power.

The screen 14 is mounted at the top end of the box opposite the plunger, and the raw coal is supplied thereto from a hopper 25 at the top of the box and at the rear or inner end of the screen. The discharge-trough for the clean coal is shown at 26 located across the tail or front end of the screen and a few inches above the same, having its low side, over which the clean coal drops into the trough, toward the screen and its high side opposite. The waste rock being heavier than the coal passes through the opening under the trough into a waste-trough 27, in which works a screw conveyer 28, which takes the rock to the middle compartment.

The sludge or matter which drops through the screen settles in the jig-box into a trough 29 at the bottom thereof, in which works a screw conveyer 30, which carries the sludge to the middle compartment. The shafts 31 and 32 of the rock and sludge conveyers, respectively, are mounted in water-tight bearing-boxes 33 and 34 in the outer side walls 6 and extend across both boxes and the middle compartment and are supported in the latter by hangers 35, secured to the inner walls 7.

The endless-belt conveyer in the middle compartment has a triangular run, its belts passing over sprockets on shafts 36 37 and the main shaft 22. The shafts 36 and 22 extend across both boxes and the middle compartment, the shaft 37 across the middle compartment only. The sprockets on the shaft 22 are keyed. Those on the other two are loose. The shaft 36 is mounted in take-up boxes 38 of known construction, supported by arms 39 on the side walls. The

flights 17 scrape the bottom of the middle compartment and discharge over the front end thereof. The screw conveyers are right and left screws in the opposite boxes, so as to draw toward the middle. The discharge of the flight conveyer may be reversed by keying the sprockets on the shaft 36 and allowing the others to run loose. To stir the sludge in the boxes and prevent it from caking, a set of paddles 40 are carried by spiders 41 on a shaft 42, which extends across both boxes. The paddles also assist the agitation of the water produced by the plunger.

The driving connections are as follows: The main shaft 22 drives directly the endless-belt conveyer and drives the stirrers by means of a crossed belt 43 and pulleys 44 and 45 on said shaft and the stirrer-shaft 42, respectively, also the shaft 36 by belt 46 and pulleys 47 and 48, these belts and pulleys being located at one end of said shafts. The shaft 36 drives the shaft 31 of the screw conveyers 28 by chain belt 49 and approximate sprockets, and the shaft 31 drives the shaft 32 of sludge-conveyers 30 by chain belt 50 and sprockets, these chains and sprockets being conveniently located at the other side of the machine. The plungers are guided by flanges 51 at the ends of metal cross-pieces 52 on the plungers, and water is supplied by a pipe 53.

In operation the raw coal is supplied to the hoppers 25 and resting on the screens 14 is stratified by the pulsations of the water produced by the plungers, the clean coal passing to the troughs 26 and the rock to the conveyers 27. The sludge drops through the screens to the conveyers 30. These conveyers carry the waste through openings in the inner walls 7 to the middle compartment, where it is elevated and discharged by the flight conveyer therein.

As best shown in Figs. 1 and 4, we employ take-up boxes 38 at the opposite sides of the intermediate compartment.

As best shown in Fig. 4, a flush wash-out gate 60 is provided at the bottom of the intermediate compartment and is secured by bolts whose inner ends are countersunk, so that the flights of the carrier will not come in contact therewith as the carrier moves in the operation of the machine.

In operation the coal passes from the trough 26 by the force of the water, the trough being ordinarily made with a pitch of about one-fourth of an inch in thirty, and said trough leading into another trough on the outside of the jig, which trough in practice may discharge to a wet revolving screen or to other suitable separating mechanism.

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

1. A jig comprising a box provided at one upper edge with a trough for rock waste, and at the bottom with a trough for sludge, a screen adjacent to the rock-waste trough, stirrers arranged for rotation above said sludge-trough, said box having openings through the side walls thereof at the ends of said sludge-trough, a compartment beside said side wall, screw conveyers located in said trough, which discharge through said openings into the compartment, and means to elevate and remove matter from the compartment.

2. The combination with a pair of jigs, provided with screens and extending side by side and having a communicating compartment therebetween with a double-inclined bottom extending above the water-level, shafts which extend across the jigs and said compartment, screw conveyers upon said shaft in the jigs, and arranged right and left to carry waste from the jigs into said compartment, an endless plate arranged in said compartment and having a triangular run and flights which scrape said bottom, and arranged to elevate and discharge the waste at the top thereof, a sludge-trough at the bottom of each jig and beneath and partially inclosing the screw conveyers, and stirrers above the sludge-trough.

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