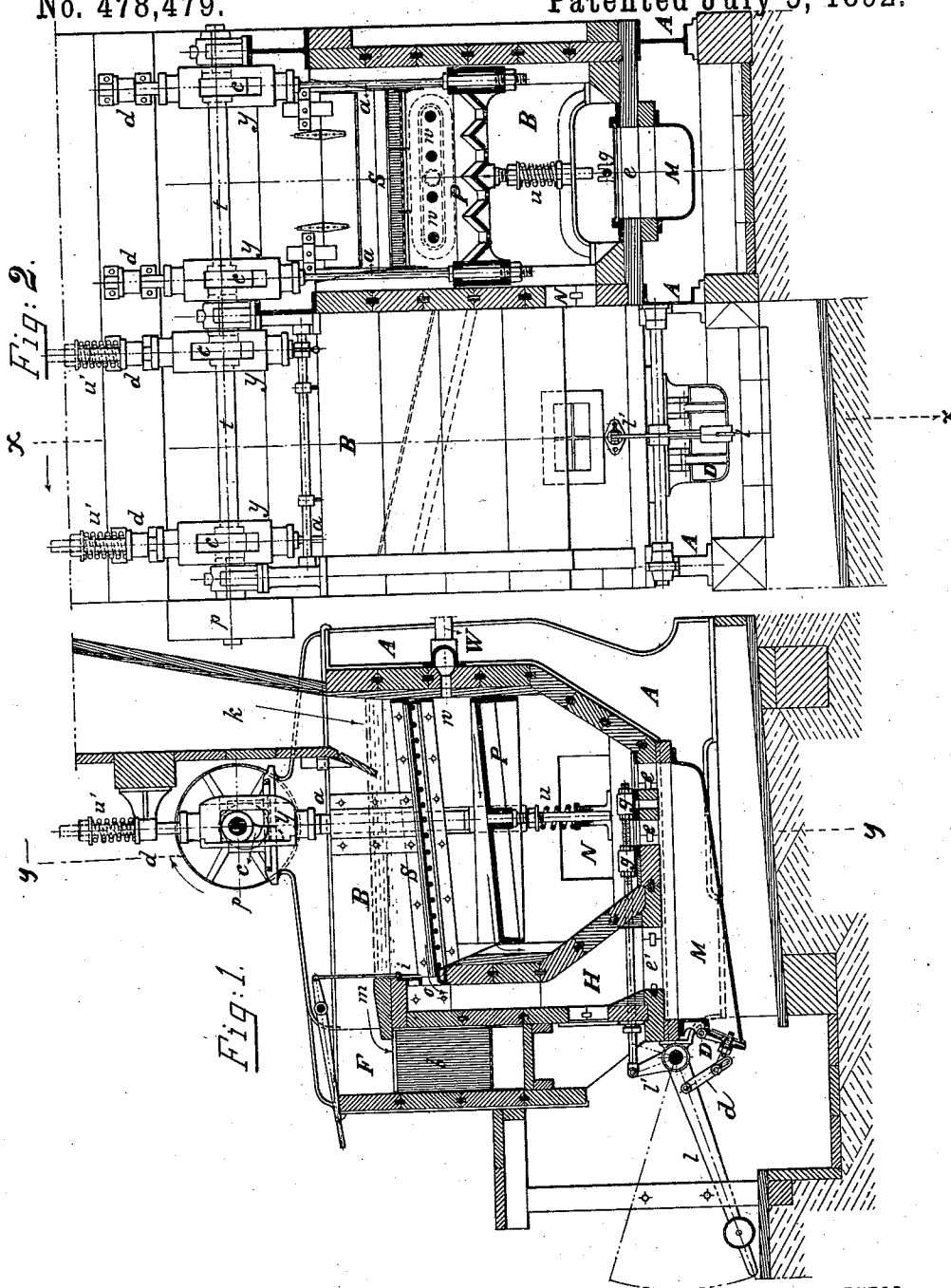


(No Model.)

S. STUTZ.
COAL WASHER.

No. 478,479.

Patented July 5, 1892.



WITNESSES:

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SEBASTIAN STUTZ, OF PITTSBURG, PENNSYLVANIA.

COAL-WASHER.

SPECIFICATION forming part of Letters Patent No. 478,479, dated July 5, 1892.

Application filed March 3, 1892. Serial No. 423,581. (No model.)

To all whom it may concern:

Be it known that I, SEBASTIAN STUTZ, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Washers; and I 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 coal and ore jiggers or washers.

The object of the present invention is to produce an ore or coal jigger or washer whereby by a simple construction both coarse and fine impurities may be collected in an auxiliary receiver below the washer from which they may be discharged at will.

The object of the invention is, furthermore, is to produce a coal and ore jigger or washer in which the mechanism for forcing the water through the coal or ore shall be given a differential back-and-forth movement, the movement by which the water is forced through the coal or ore being more rapid than the return movement.

With these objects in view the invention consists in a coal or ore washer or jigger comprising a separating-chamber, a sieve or screen arranged in the chamber, a piston arranged to reciprocate vertically beneath the sieve or screen, and an auxiliary receiver arranged below the washer and communicating with the separating-chamber.

The invention consists, furthermore, in a coal or ore washer comprising a separating-chamber, a sieve or screen fitted in the chamber, a slate-chamber adjacent to the separating-chamber, and an auxiliary receiver arranged below the washer and communicating with both the separating and slate chamber.

The invention consists, furthermore, in a coal or ore washer comprising a separating-chamber, a sieve or screen arranged in the chamber, a piston or plunger working below said sieve or screen, a spring device arranged beneath the plunger, whereby a quick upward movement of the plunger is given.

The invention resides, furthermore, in various novel details of construction, whereby the objects of the invention are attained.

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

Figure 1 is a longitudinal vertical section of a coal or ore washing-machine constructed in accordance with my invention, taken on the line *xx* of Fig. 2; and Fig. 2 represents a front view of a double washer, one portion being in section, taken on the line *yy* of Fig. 1.

In the drawings, A represents brackets, preferably of cast-iron, upon which is supported a rectangular box B. Arranged within the box B is a screen or sieve S, a piston or plunger P, and the mechanism whereby the plunger is caused to reciprocate vertically.

H represents a slate-chamber, which communicates at its upper end with the washing-chamber B through an opening *o*, governed by a suitable valve *i*.

F represents a trough communicating with the chamber B, designed to receive the washed coal as it passes from the chamber B.

Arranged beneath the chamber B is an auxiliary receiver M, communicating with the washing-chamber by means of openings *ee*, governed by suitable gates *gg*. The receiver M also communicates with the slate-chamber H through an opening *e'* for the passage of the coarse impurities. By arranging an auxiliary receiver M below the bottom of the washer the unnecessary waste of water is prevented and the machine made to operate continuously, since the level of the water cannot sink below the delivery-bridge *m*, arranged between the chamber B and the trough F.

The auxiliary receiver M is provided with an outlet-gate D, and this gate is operated by bell-crank levers *ll*, being connected by a link with the gate D and by suitable rods with the valves *gg*. The link *d*, by which the lever is connected with the gate D, is provided with a slot, so that the valves *gg* will be operated by a movement of the lever *l*, slightly in advance of the operation of the gate D, and a single movement of the levers will permit the discharge from the machine of both large and small impurities.

The rod of the piston P is provided with a spring *u*, arranged beneath the piston, and motion is imparted to the piston by cams *c*, arranged upon a suitable shaft *t*, having a

pulley *p*, the cams working in yokes *y y*, attached to the piston by rods *a*. By this arrangement a quick upward and a slow downward movement of the piston is produced and better results obtained since ample time can be allowed for each fresh supply of water to come in and fill the space between the piston and the screen between the upward strokes. This arrangement also allows more time for the material upon the screens to settle and arrange into layers, according to specific gravity.

Coal to be washed is supplied to the screen *S* through the hopper or feed-channel *k*. The pulsations of the water caused by the movement of the piston agitate and spread the material out over the entire surface of the screen, and at the same time gives the heavier parts time to take the lower positions on the screen, while the lighter substances remain on top. As the space above the screen becomes filled, the lighter material—the coal—is discharged over the bridge *m* upon a screen *b* of the trough *F*, leading to the elevator or receptacle, while the heavier material—slate, sulphur, and the like—pass through the opening into the slate-chamber *H*, and thence into the receiver *M*. During the working of the machine the gates *g* are left open to allow the sediment—the fine sulphur and slate—passing through the meshes of the sieve to enter the receiver *M*, the front gate *D* of which is kept closed. Before letting the impurities to the outside from the receiver *M* the gate *i* is closed to prevent water above the screen from escaping. Water is conducted into the washer by the pipe *W*, entering the separating-chamber below the screen through ports or small holes *n*.

I do not wish to be understood as claiming herein a coal or ore washer or jigger comprising a separating-chamber, a sieve or screen arranged in said chamber, a slate-chamber adjacent to the separating-chamber, a piston or plunger chamber, a piston or plunger reciprocating vertically in said chamber, and an auxiliary receiver arranged below the washer and communicating with both the slate-chamber and the separating-chamber, as this forms the subject-matter of my pending application Serial No. 426,911, filed March 29, 1892.

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

1. A coal or ore washer comprising a separating-chamber, a sieve or screen arranged in the chamber, a slate-chamber adjacent to the separating-chamber, and an auxiliary receiver arranged below the washer and communicating with both the separating-chamber and the slate-chamber, substantially as described.

2. A coal-washer comprising a separating-chamber, a sieve or screen fitted in the chamber, a piston working underneath the sieve or screen, a slate-chamber adjacent to the separating-chamber, and an auxiliary receiver secured below the bottom of the washer

and communicating with both the separating-chamber and slate-chamber, substantially as described.

3. A coal or ore washer comprising a separating-chamber, a slate-chamber adjacent to the separating-chamber, and an auxiliary receiver arranged below the separating-chamber and communicating with both the separating-chamber and the slate-chamber, substantially as described.

4. A coal or ore washer comprising a separating-chamber, a sieve or screen fitted in the chamber, a piston or plunger arranged beneath the sieve or screen, designed to reciprocate vertically, cams connected with the piston or plunger, a spring arranged beneath the piston or plunger to impart a differential movement thereto, a slate-chamber adjacent to the separating-chamber, and an auxiliary receiver arranged below the separating-chamber and communicating with both the separating-chamber and the slate-chamber, substantially as described.

5. A coal or ore washer comprising a separating-chamber, an auxiliary receiver arranged below the separating-chamber and communicating therewith by means of openings, valves for controlling said openings, a slate-chamber adjacent to the separating-chamber and communicating therewith through an opening, and a gate for governing said opening, substantially as described.

6. A coal or ore washer comprising a separating-chamber, a slate-chamber adjacent thereto and communicating therewith, an auxiliary chamber arranged below the separating-chamber and communicating with the separating-chamber and slate-chamber, valves for controlling the openings between the separating-chamber and the auxiliary chamber, a gate for governing the outlet-opening from the auxiliary chamber, and a lever connected to the gate, and valves for opening and closing the same, substantially as described.

7. A coal or ore washer comprising a separating-chamber, a screen or sieve arranged in said chamber, a piston working underneath the sieve or screen, cams connected with the piston or plunger, a spring arranged beneath said piston or plunger, an auxiliary receiver secured below the separating-chamber and connected therewith by means of openings, valves for controlling said openings, a gate governing an outlet from the auxiliary receiver, a lever connected to said valves and gate for opening and closing the same, a slate-chamber adjacent to and communicating with the separating-chamber and auxiliary receiver, and a gate for governing the opening between the separating-chamber and slate-chamber, substantially as described.

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

SEBASTIAN STUTZ.

Witnesses:

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THOS. S. HOPKINS.