No. 648,262. Patented Apr. 24, 1900.

W. HONECKER.

COAL SEPARATOR.

(Application filed Oct. 30, 1899.)

(No Model.) 2 Sheets—Sheet 1.

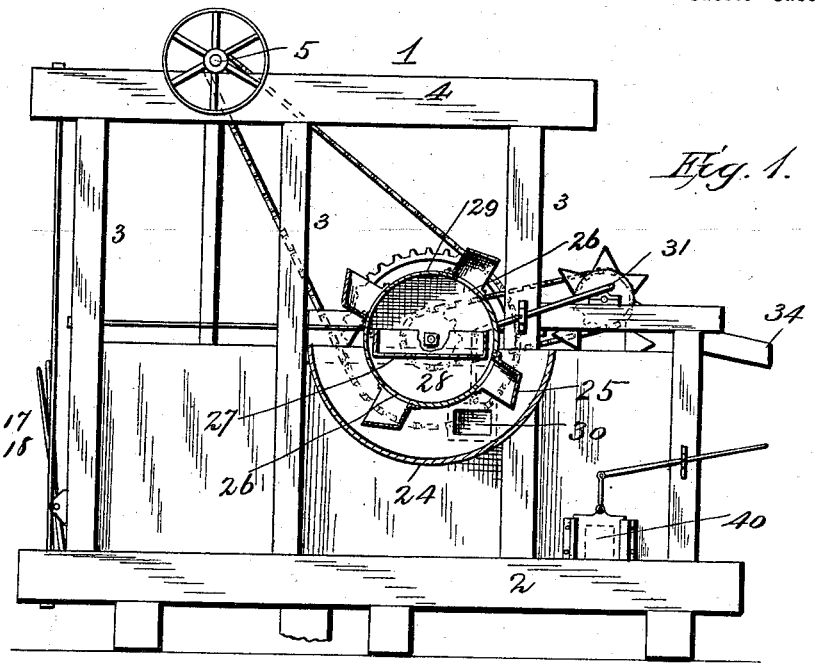

Fig. 1.

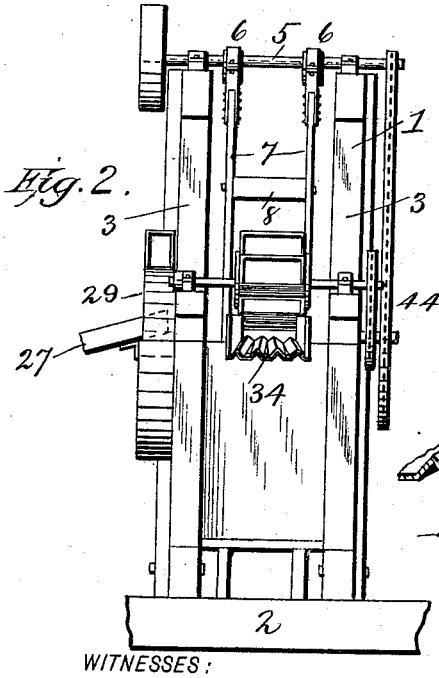

Fig. 2.

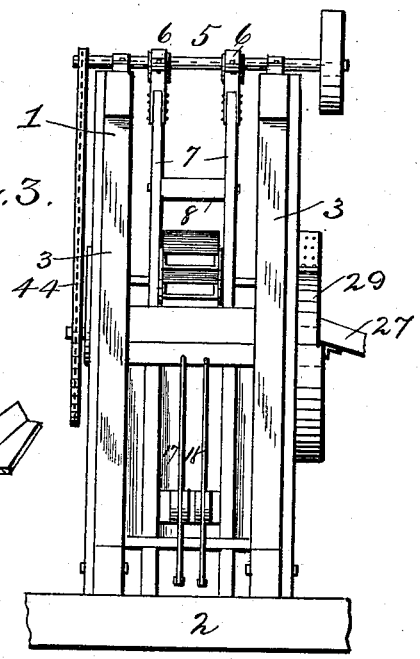

Fig. 3.

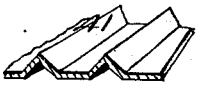

Fig. 7.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 4.

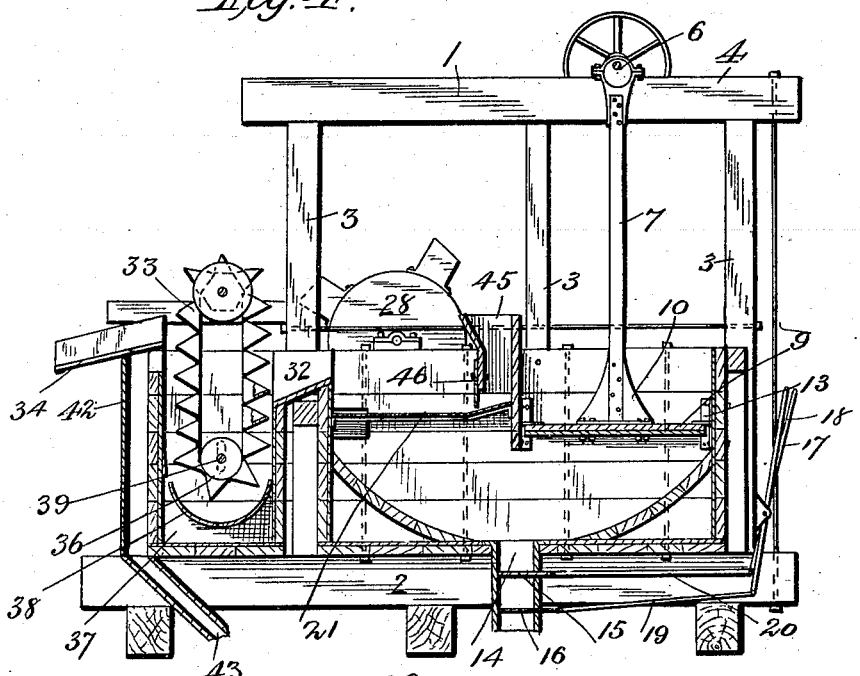
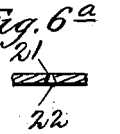


Fig. 6a.



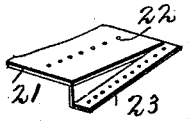
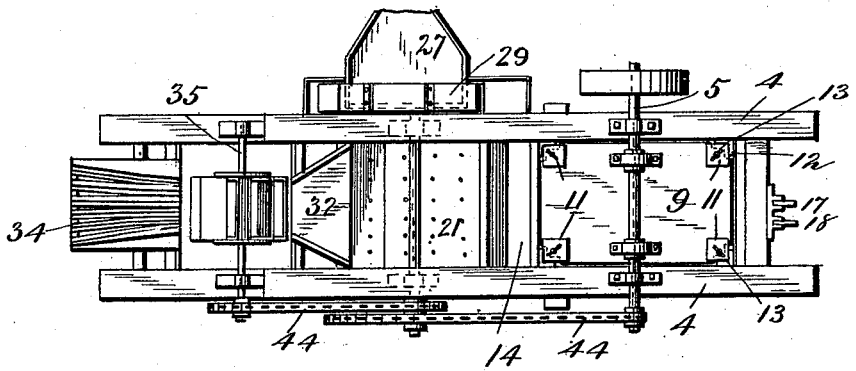


Fig. 6.

Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM HONECKER, OF MAHANOY CITY, PENNSYLVANIA.

COAL-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 648,262, dated April 24, 1900.

Application filed October 30, 1899. Serial No. 735,309. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HONECKER, a citizen of the United States, residing at Mahanoy City, in the county of Schuylkill and State of Pennsylvania, have invented new and useful Improvements in Coal-Separators, of which the following is a specification.

My invention relates to coal-separators; and the objects of the same are to produce an apparatus for this purpose which shall be simple in construction, reliable and efficient in use, which will not readily get out of repair, and which will be constructed of materials best adapted to resist the deleterious effects of the water to be had in coal regions. I attain these and other objects by means of the construction shown in the accompanying drawings, in which—

Figure 1 is a side elevation and partial section of an apparatus made in accordance with my invention. Fig. 2 is an end view of the same looking at the right-hand end of the machine shown in Fig. 1. Fig. 3 is an end view looking at the left-hand end of the machine shown in Fig. 1. Fig. 4, Sheet 2, is a longitudinal section of the machine. Fig. 5 is a plan view. Fig. 6 is a partial perspective view of the perforated bottom or slide. Fig. 6ª is a section of the perforated bottom, taken through one of the perforations. Fig. 7 is a similar view of the corrugated discharge-chute.

Like numerals of reference designate like parts wherever they occur in the different views of the drawings.

My apparatus is of that general type which forces water up through an inclined perforated bottom or slide, upon which the coal and slate are placed to elevate the coal to a discharge-opening, while the slate, being of greater specific gravity, falls to the bottom of an inclined slide to be discharged from a separate spout or chute. Machines of this character have usually been formed in great part of metal, and the water found in coal regions soon destroys the metal by rust and corrosion, and such a machine requires constant repairs, resulting in great loss of time, to say nothing of the cost of repairs.

In the construction of my apparatus I have avoided in so far as possible the use of metals and have built up the apparatus in great part of wood. In places where metal has been deemed necessary I have resorted to means for making the renewal of parts comparatively easy and expeditious.

Referring now to the drawings for a particular description, the numeral 1 designates the framework of the apparatus, consisting of a base 2, having suitable uprights 3 secured thereto and horizontal beams 4 for supporting the driving-shaft 5. This driving-shaft has a pair of eccentrics 6, strapped to the plunger-rods 7, and a brace 8 is secured between these rods to give them rigidity. The plunger-head or dasher 9 is secured to the lower ends of the plunger-rods by angle-plates 10, and said plunger-head consists of a wooden body portion having metal wear-plates 11 attached thereto at the corners. These wear-plates 11 are provided with diagonal slots 12, which permit them to be adjusted outward to take up wear, and the bottom and top of the plunger-head may be provided with these wear-plates. Secured in the corners of the square box or reservoir are angle-plates 13, against which the corner-plates 11 bear and reciprocate.

The sides and bottom of the reservoir are of wooden staves secured together by rods or bolts which pass through the staves. In the curved bottom of the reservoir a slush-box 14 is formed, and in order that the contents of this box may be discharged without the loss of water I provide a double gate consisting of the slides 15 16, operated by levers 17 18 through the connecting-rods 19 20. By means of this construction the upper slide 15 may be withdrawn by actuating its lever, thus permitting the slush to fall upon the slide 16. The slide 15 is then closed and the slide 16 opened to discharge the slush with comparatively little waste of water. Another advantage of this arrangement is that if through carelessness or otherwise one gate is left open the other will remain closed, as but one gate will be operated at any time. This results in a great saving of water, which is a desideratum in certain localities.

The perforated bottom 21 is suitably secured within the reservoir and may be formed of a metal plate having a series of tapering apertures or perforations 22, which are larger at the bottom and smaller at the top, as shown

in Fig. 6. This bottom has an inclined shelf 23, Fig. 6, which forms a gravity-chute for the slate. The discharge end of this chute is located within a semicircular trough 24, Fig. 1, from which the slate is elevated by buckets 25, having open bottoms, by means of which the slate is dropped upon a spout or tray 27, when the buckets are continuously brought into position to discharge their contents through the openings 26. These buckets are secured to a sheet-metal disk 28, having a flanged rim 29, the discharge-openings 26 being formed in said rim. An ordinary slide-gate 30, operated by lever 31, may be opened to discharge the slate into the trough 24.

It will be understood that water is placed in the reservoir and that the buckets 25 are for the purpose of lifting the slate out of the water in trough 25 to discharge it comparatively dry. The coal is lifted by the body of water forced by the plunger-head 13 up through the perforations 22 in the bottom 21 and is discharged into the inclined spout 32, from whence it slides down into the elevator-buckets 33, which are continuously discharged into the chute or spout 34. The elevator-buckets are connected to a flexible chain or belt passing over shafts 35 and 36, said shaft 36 being journaled in slotted bearings which admit of adjustment of the shaft. The boot or box 37, within which the elevator-buckets 33 work, is provided with a curved bottom 38, which has its upper edge 39 set away from the box to form an opening for water, which may pass down into the bottom of the box 37 and be discharged through gate 40. The chute or spout 34 is provided with a corrugated bottom 41, and these corrugations diverge from the point at which the coal enters them to their discharge ends, the object of which construction is to prevent choking or clogging of the chute. Waste water and fine particles of coal drop into the opening 42 and are discharged at 43.

Sprocket-chains 44 connect the drive-shaft 5 with the bucket-wheel shaft and the elevator-shaft to actuate said parts.

The coal and slate are fed from the hopper 45 down onto the perforated bottom 21, and an adjustable plate 46 regulates the feed-opening to suit the different qualities and conditions of material to be separated.

The operation of my apparatus will be readily understood by those conversant with such machines. Water is forced from the reservoir by the plunger up through the perforated bottom 21, upon which the unseparated coal and slate are placed. The force of water lifts the coal until it reaches the chute 32, upon which it is discharged and from whence it passes to the elevator-buckets, which carry it to the corrugated spout 34. The slate in the meantime is conveyed by the inclined shelf 23 to the trough 24, where it is lifted from the water by the buckets 25 and discharged dry into the tray 27.

Having thus fully described my invention, what I claim is—

1. In a coal-separator, a reservoir composed of wooden staves, clamping-bolts passing through the staves and holding them edge to edge, in combination with a plunger provided with a head having adjustable wear-plates at the corners thereof, and angular metal plates secured in the corners of the reservoir, substantially as described.

2. In a coal-separator, a water-reservoir composed of wooden staves held edge to edge by clamping-bolts passing through them, in combination with a plunger having a head provided with adjustable wear-plates at the corners thereof, angular metal plates secured at the corners of the reservoir, a slush-box in the bottom of said reservoir, and a double gate for said box, substantially as described.

3. In a coal-separator, a reservoir composed of wooden staves held edge to edge by clamping-bolts passing through them, a plunger provided with a head having adjustable corner wear-plates, angular metal plates secured in the corners of the reservoir, a perforated bottom in said reservoir, the perforations therein being larger at the bottom than the top, in combination with a corrugated delivery-spout, and an elevator for discharging the coal upon said spout, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM HONECKER.

Witnesses:
EMMA M. GILLETT,
BENNETT S. JONES.