B. F. DAY.

Improvement in Apparatus for Separating Coal from Slate.

No. 128,791. Patented July 9, 1872.

Fig. 1

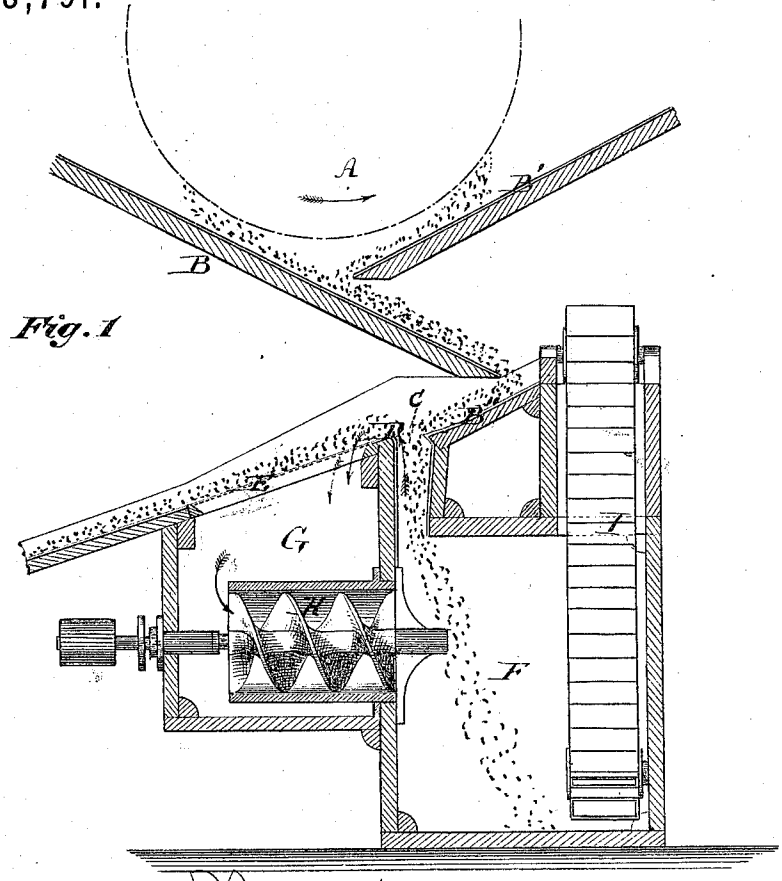
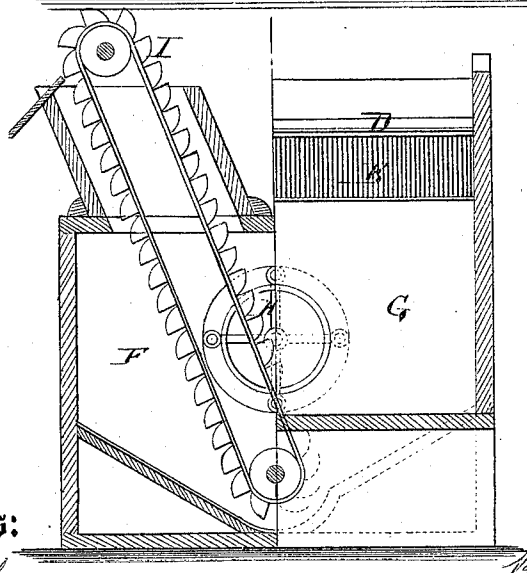


Fig. 2



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UNITED STATES PATENT OFFICE.

BENJAMIN FRANKLIN DAY, OF HAZLETON, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR SEPARATING COAL FROM SLATE.

Specification forming part of Letters Patent No. 128,791, dated July 9, 1872.

Specification describing a new and Improved Machine for Separating Coal from Slate, invented by BENJAMIN FRANKLIN DAY, of Hazleton, in the county of Luzerne and State of Pennsylvania.

This invention relates to a new machine for separating coal from slate or one kind of ore from another; and consists in exposing the mixed ores to an ascending vertical or inclined column of water of such force that it will overcome and carry forward the lighter ore, but not that having a greater specific gravity, which will drop through the column of water. In this manner the desired separation is automatically and completely effected.

The following is a description of the construction and operation of my machine, reference being had to the accompanying drawing, which is made with regard to the position which the machine will occupy in a coal-breaker of ordinary construction—

Figure 1 being a transverse section through the center of the machine, and Fig. 2 a longitudinal section, showing half of the back and front compartments, respectively.

Similar letters of reference indicate corresponding parts.

The dotted circle A in Fig. 1 shows the position of the large revolving screen used in all coal-breakers for separating the different sizes, said screen revolving in the direction of the arrow. The mixed slate and coal, after passing through said screen, is conveyed, by means of the chutes B B′ B″, to the top or mouth of a column of water ascending through the throat C, the velocity of said column of water (which may be vertical or ascending at an angle) being such that the coal, being of a less specific gravity, will be carried over the apex at D, and from thence pass over the draining-bars E to the pockets for the different sizes, ready for shipment, while the slate, from its greater specific gravity, overcomes the force of the ascending column of water and drops through the throat C into the compartment F, from which it is removed by means of elevators I, as shown. The water, after passing over the apex at D, passes through the draining-bars E into the compartment G, and from thence is forced back into the compartment F, and up again through the throat C, thus making a regular circuit. H is a screw, revolving with sufficient velocity to impart to the column of water the desired force. I do not, however, wish to confine myself to the use of a screw for the purpose named, as the same result may be obtained—perhaps better—by pumping the water into a reservoir at an elevation above the machine, with pipes connecting said reservoir with the compartment F; or, where a sufficient volume of water can be obtained from a natural head, the same may be used without any other force. I is an elevator for removing the slate and dirt from the compartment F. Said elevator extends through the top of compartment F by means of a box or well of sufficient height above the throat C, so that the water cannot overflow from the top of the well.

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

The apparatus consisting of the chute B″, throat C, apex D, draining-bars E, and receptacles F and G, substantially as herein shown and described.

BENJAMIN FRANKLIN DAY.

Witnesses:
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