

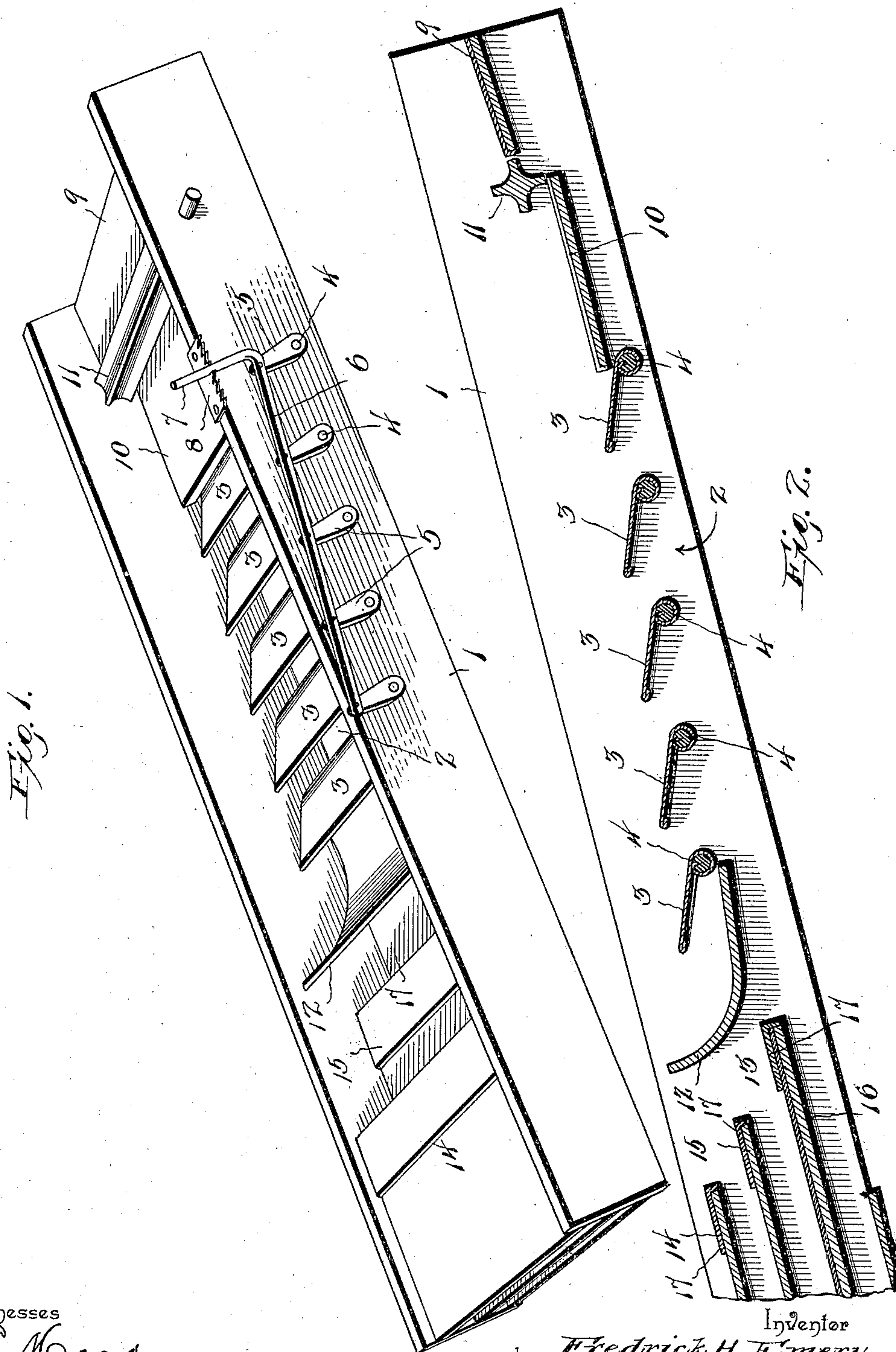
No. 755,472.

PATENTED MAR. 22, 1904.

F. H. EMERY.
COAL SEPARATOR.

APPLICATION FILED MAY 28, 1902.

NO MODEL.



Witnesses
J. L. Moorman
G. S. Roy.

Inventor
by *Fredrick H. Emery*
J. D. Lane
Attorneys

UNITED STATES PATENT OFFICE.

FREDRICK H. EMERY, OF SCRANTON, PENNSYLVANIA.

COAL-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 755,472, dated March 22, 1904.

Application filed May 28, 1902. Serial No. 109,324. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK H. EMERY, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Separators, of which the following is a specification.

This invention relates to coal-separators, and relates more particularly to that type of said machines which are designed to effect a separation of slate from coal.

To this end the invention contemplates a simple and practical construction of separator which is designed especially as an improvement upon that class of coal-separators employing a plurality of inclined chutes and has in view a construction wherein a single separating chute or trough embodies means for thoroughly and effectually separating the slate from all grades of coal with which it may be intermingled.

One of the important objects of the invention is to provide a construction wherein an active separation of the slate from the coal is taking place throughout the entire length of the chute during the travel of the material through the latter and wherein a final and complete separation of the slate, bone, and coal is positively insured as the material is discharged from the single chute or separating-trough.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts, as will be hereinafter more fully described, illustrated, and claimed.

The essential features of the invention are necessarily susceptible of embodiment in a variety of constructions so long as the operative features of the invention are preserved; but a preferred construction of the machine is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a coal-separator constructed in accordance with the present invention. Fig. 2 is a longitudinal sectional view thereof.

Like numerals of reference designate corresponding parts throughout the figures of the drawings.

In carrying out the invention it is of course understood that the minor structural details are unimportant, as the essential feature of the invention resides in the peculiar construction and arrangement of parts whereby an active separation of slate from coal is caused to take place throughout the entire length of the chute and a final and complete separation of the slate, bone, and coal is effected at the discharge or emptying end of the chute. Inasmuch as the preferred embodiment of the invention to effect this result is shown in the drawings, particular reference will be made thereto.

In the drawings the numeral 1 designates the main separating-chute, which is supported in any suitable manner and in any convenient position. This chute in general form and area does not differ essentially from the usual form of coal-separating chutes, inasmuch as the same is preferably in the form of a rectangular trough open throughout from end to end and at the top; but in the present invention one of the important features thereof resides in practically providing the separating-chute 1 with an open bottom. At least for the major portion of its length the said separating-chute is provided with an open-bottom area, (designated in general by the reference-numeral 2.) This extended open-bottom area 2 is designed to be controlled—that is, covered or partially covered—through the medium of duplicate adjustable riffle elements 3. These riffle elements are preferably in the form of flat metallic slats extending transversely across the open space of the separating-chute 1 from side to side thereof and are operatively mounted upon pivot shafts or rods 4, journaled in suitable bearings at the sides of the chute. The said pivot shafts or rods 4 of the individual riffle elements or slats 3 have connected to one of the extremities thereof, exterior to the chute, the crank-arms 5, to which is pivotally connected a common connecting-rod 6, having a suitable connection at one end with an adjusting-lever 7, cooperating with a toothed

catch-plate 8 to provide for locking the series of riffle elements or slats 3 in an adjusted position.

At the receiving end of the chute, in advance of the riffle elements or slats, the chute has arranged therein a fixed receiving-table 9 and a fixed feed-apron 10, the latter directing the material onto the first or uppermost riffle or slat 3, and in the interval between the plate 8 and the apron 10 is arranged a winged or equivalent rotary feeder or impelling-wheel 11, which serves to move the material onto the apron 10, from whence it is delivered to the riffle elements or series of conveying and separating slats.

In connection with the riffle elements or slats it is to be observed that by reason of a uniform pivotal mounting thereof at one edge through the medium of the shafts or rods 4 the body or main portion of each of said slats is free to be swung synchronously upward or downward to vary the inclination of the slats, as well as the openings between the same. Ordinarily in the operation of the chute the slats are set upwardly at an obtuse angle to the line of movement of the material as it passes in an inclined plane along the chute, and consequently necessarily provide what might be properly termed a "retarding" riffle action, which does not, however, prevent the movement forward and downward of the main body of the coal and other material from one slat to another, but at the same time causes a material separation of the coal from quantities of slate, which will fall out through the open-bottom area 2.

Immediately below the lowermost riffle element or slat 3 the open chute 1 has arranged transversely therein an upturned curved arresting-wall 12, which projects upwardly above the plane of the riffle-slats 3, and consequently serves to arrest or check the momentum of the coal and slate moving against the same. Below the upturned curved arresting-wall 12 the chute is provided with a lower bottom discharge-opening 13, within which is arranged a succession of auxiliary delivery-chutes 14, 15, and 16. These auxiliary delivery-chutes are arranged in stepped series—that is, with their upper edges successively at different distances from the arresting-wall 12—so that as the material bounds into the discharge-opening 13 the separate portions thereof—namely, slate, bone, and coal—will respectively fall into and discharge through the separate chutes designed therefor. Of course any number of such chutes may be employed so long as the stepped arrangement is preserved. Also cushions 17 are provided for said chutes in order to prevent any breakage of the coal taking place.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described coal-separator will be

readily apparent to those familiar with the art, and it will also be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or scope of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a series of adjustable interconnected slats which constitute the only means for closing the opening in said mid-length portion of the chute, an upturned curved resting-wall arranged below the series of said adjustable interconnected slats and projecting above the plane thereof and a lower discharge-opening below said wall.

2. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a series of adjustable interconnected slats which constitute the only means for closing the opening in said mid-length portion of the chute, an upturned curved resting-wall arranged below the series of said adjustable interconnected slats and projecting above the plane thereof, a lower discharge-opening below said wall, and a series of auxiliary delivery-chutes for receiving the material directed into said opening.

3. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a series of adjustable interconnected slats which constitute the only means for closing the opening in said mid-length portion of the chute, an upturned curved resting-wall arranged below the series of said adjustable interconnected slats and projecting above the plane thereof, a lower discharge-opening below said wall, a series of auxiliary delivery-chutes for receiving the material directed into said opening, and cushions cooperating with said delivery-chutes.

4. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a receiving-table located at the upper end thereof, an impelling-wheel to which the material is adapted to be fed from the receiving-table, a feed-apron adapted to receive the material from the impelling-wheel, a series of adjustable interconnected slats for receiving the material from the feed-apron, an upturned curved resting-wall arranged below said adjustable interconnected slats and projecting above the plane thereof, and a lower discharge-opening below said wall.

5. In a coal-separator, a separating receptacle or chute which in its central or mid-length

portion is open above and below and closed at its sides only, a receiving-table located at the upper end thereof, an impelling-wheel to which the material is adapted to be fed from the receiving-table, a feed-apron adapted to receive the material from the impelling-wheel, a series of adjustable interconnected slats for receiving the material from the feed-apron, an upturned curved resting-wall arranged below said adjustable interconnected slats and projecting above the plane thereof, a lower discharge-opening below said wall, and a series of auxiliary delivery-chutes for receiving the material directed into said opening.

6. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a receiving-table located at the upper end thereof, an impelling-wheel to which the material is adapted to be fed from the receiving-table, a feed-apron adapted to receive the material from the impelling-wheel, a series of adjustable interconnected slats for receiving the material from the feed-apron, an upturned curved resting-wall arranged below said adjustable interconnected slats and projecting above the plane thereof, a lower discharge-opening below said wall, a series of auxiliary delivery-chutes for receiving the material directed into said opening, and cushions cooperating therewith.

7. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at

its sides only, a series of slats arranged within the central or mid-length portion of said receptacle or chute and pivotally supported at their lower edges, a common adjusting device having similar connections with the pivoted supports of all of the slats to effect the synchronous adjustment thereof, an upturned curved resting-wall arranged below the series of said slats and projecting above the plane thereof, and a lower discharge-opening below said wall.

8. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a series of slats arranged within the central or mid-length portion of said receptacle or chute and pivotally supported at their lower edges, cranks having connection with the extremities of the pivoted supports, an adjustable lever connected to said cranks and cooperating with a toothed catch-plate to provide for locking the series of slats in an adjusted position, an upturned curved resting-wall arranged below the series of said slats and projecting above the plane thereof, and a lower discharge-opening below said wall.

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

FREDRICK H. EMERY.

Witnesses:

THOS. R. HUGHES,
THOS. H. HAWLEY.