No. 655,161. Patented July 31, 1900.

P. F. POORBAUGH.

SLATE AND COAL SEPARATING DEVICE.

(Application filed Dec. 9, 1899.)

(No Model.)

Fig. 1.

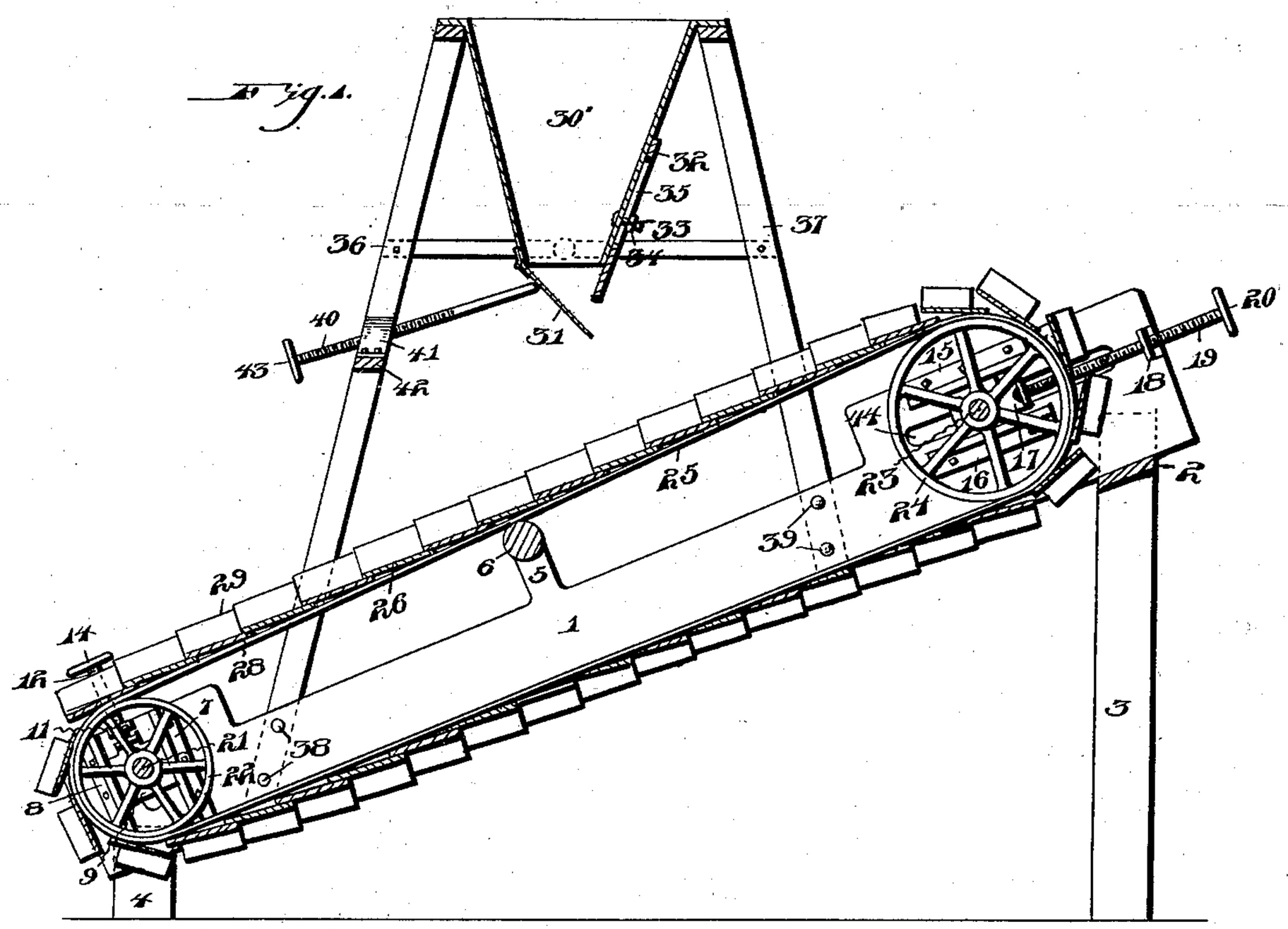


Fig. 2.

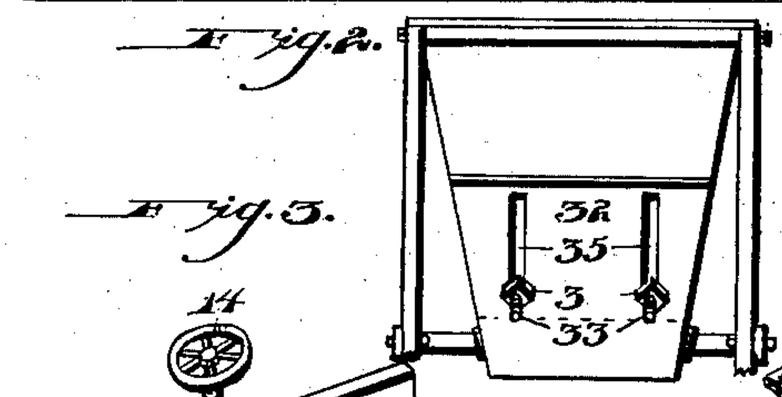


Fig. 3.

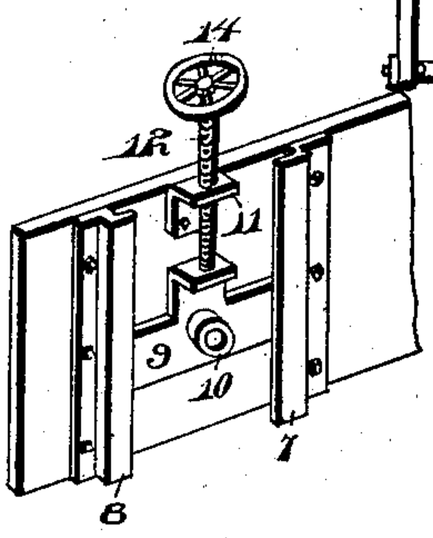


Fig. 4.

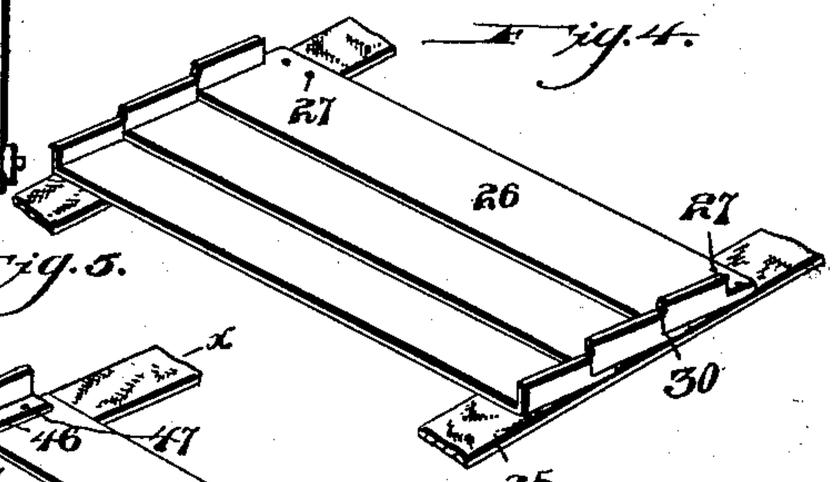


Fig. 5.

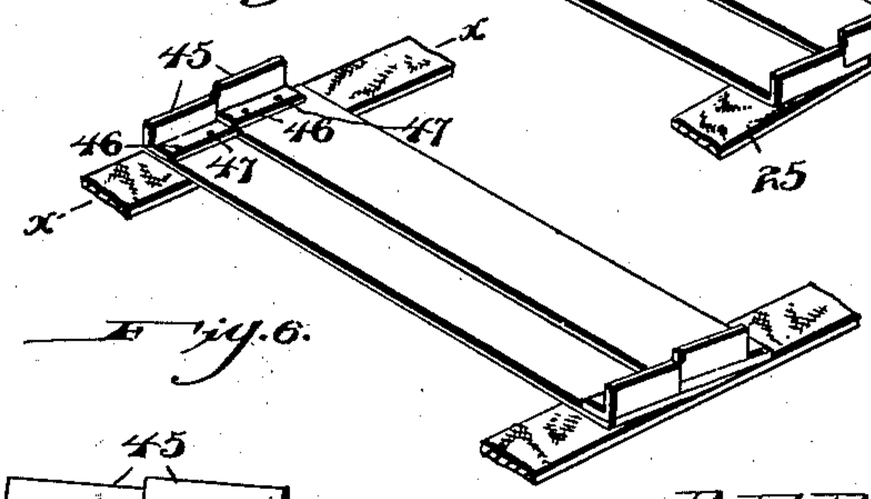
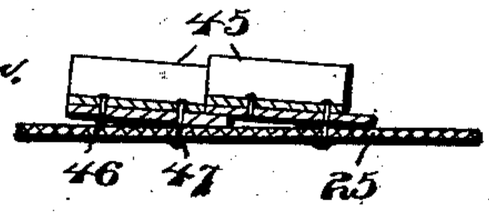


Fig. 6.



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PHILLIP F. POORBAUGH, OF ALLEGHENY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO FREDERICK C. MANCOURT, OF BELLEVIEW, PENNSYLVANIA.

SLATE AND COAL SEPARATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 655,161, dated July 31, 1900.

Application filed December 9, 1899. Serial No. 739,783. (No model.)

To all whom it may concern:

Be it known that I, PHILLIP F. POORBAUGH, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Slate and Coal Separating Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in separators, and is particularly adapted for separating slate from coal.

One object of my invention is to construct a separator of this character with a continuous carrier which is adapted to separate coal from slate, causing the coal to travel in an opposite direction to that of the slate during the separating operation.

A further object of my invention is to provide means in a device of this character for elevating and lowering the continuous carrier to the desired angle.

A further object of my invention is to provide means in a device of this character for keeping a continuous carrier taut, so that the operation of the separating will not be interrupted.

A still further object of my invention is to provide a device of this character with means for discharging the coal and slate upon different parts of the carrier.

Briefly described, my invention consists of a rectangular frame mounted upon suitable standards having secured thereto a hopper to permit of the discharging of the coal and slate upon a continuous carrier, which is mounted upon a pair or drums suitably journaled in the said frame and provided with means for elevating or lowering the carrier to any angle desired and with means for keeping the carrier taut.

My invention finally consists in the novel construction, combination, and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate corresponding parts throughout the several views, in which—

Figure 1 is a longitudinal sectional view of my improved separator. Fig. 2 is a rear view of the hopper, showing the adjustable slide-plate for regulating the size of the discharge-opening of the said hopper. Fig. 3 is a perspective view of the adjustable bearing to permit of the elevating and lowering of the carrier. Fig. 4 is a perspective view of a portion of the carrier. Fig. 5 is a perspective view of a modified form of a portion of the carrier. Fig. 6 is a cross-sectional view taken on the line *x x* of Fig. 5.

Referring to the drawings by reference-numerals, 1 indicates a rectangular frame supported at its upper end upon a cross-brace 2, secured to a pair of standards 3, (only one shown,) and at its lower end upon a cross-brace (not shown) secured to a pair of standards 4 of less height than the standards 3, (only one of these standards 3 4 being shown.) The rectangular frame has each side formed with an upward extension 5 at the center thereof and in which is journaled a transversely-extending friction-roller 6. The inner faces of the sides of the rectangular frame at their lower ends have suitably connected thereto a pair of vertical guide-plates 7 8, between which operates a lower sliding or adjustable bearing 9, having formed integral therewith a bushing 10.

11 indicates a guide suitably connected to each inner face of the sides of the frame, as shown, and is provided with a suitable opening, through which operates the vertical adjusting-screw 12, having its lower end secured to the bearing 9, as shown, and on its upper end carries a hand-wheel 14. The inner faces of the sides at their upper ends are provided with a pair of longitudinally-extending guide-plates 15 16, between which operates the upper sliding or adjustable bearing 17.

18 indicates a guide suitably connected to the inner face of the upper ends of the sides of the rectangular frame and is provided with an opening, through which operates a longitudinal adjusting-screw 19, having its inner end secured to the bearing 17 and its outer end provided with a hand-wheel 20.

Journaled in the bushings 10 of the lower

bearings 9 is a transversely-extending shaft 21, upon which is mounted a drum 22, and journaled in the upper bearing 17 is a transversely-extending shaft 23, upon which is secured a drum 24, and these drums 22 24 have mounted thereon a continuous carrier, to be hereinafter described.

My continuous carrier for separating coal and slate consists of a pair of continuous strips 25 of suitable material, which are mounted upon the drums 22 24 and which have mounted thereon a series of rectangular inclined metal plates 26, secured at their upper ends, as at 27, to the strips 25, as shown, and at their lower ends overlapping each other, as at 28. The sides of these plates are bent at an angle, as at 29, forming a flange to retain the coal and slate upon the carrier when the same is in position. The upper end of each of these angle portions of the plates 26 is cut away, as shown at 30, to permit of the overlapping of each adjacent plate.

30′ indicates a hopper provided at its lower end with a hinged bottom 31, forming a chute, and at one side with an adjustable slide 32, which is adjusted by means of bolts 33 and nuts 34. The bolts operate through one side of the hopper and through the slots 35, arranged in the slide, as shown. The hopper is supported above the continuous carrier by the standards 36 37, secured to the sides of the frame 1, as at 38 39. (Only one of each of these standards is shown.) The opening in the bottom of the hopper 30′ is regulated by means of a screw-rod 40, operating through a suitable bushing 41, mounted upon the cross-brace 42, the inner end of the screw-rod engaging the bottom 31, as shown, and having on its outer end a suitable hand-wheel 43.

To permit of a longitudinal movement, if desired, of the shaft 23, a slot 44 is provided in each side of the frame.

In the modified form of construction shown in Figs. 5 and 6 of the drawings the rectangular overlapping plates instead of having their ends bent at an angle are each provided with the angle-irons 45, which are secured to the plates, as shown, and the fastening means 46 at one end of the angle-iron 45 is secured to the plate only, while the fastening means 47 at the opposite end of the angle-iron 45 is secured to the plate and flexible strip. It will also be noticed that the width of this angle-iron is not as great as the width of the plates, which permits of the plates overlapping in the manner as heretofore referred to.

The operation of my improved separator is as follows: Motion being imparted to the shaft 23, the drums are revolved, moving the carrier therewith, and as the coal and slate are placed on the series of metal plates forming the carrier the coal will ride downward and be discharged over the drum at the lower end thereof, while the slate will be carried upwardly upon the carrier and be discharged therefrom at the upper end thereof.

Attention is called to the fact that by means of the adjustable slide-plate 32 on one side of the hopper and the hinged bottom 31 on the opposite side the size of the opening in the bottom of the hopper may be regulated and the material also discharged at different points upon the carrier, as will be readily apparent, by changing the relative positions of the bottom 31 and slide-plate 32. Attention is also called to the manner of elevating or lowering the lower end of the carrier by means of turning the screws arranged at this part of the frame and elevating or lowering the bearings 9, carrying the shaft, drum, and carrier therewith, and attention is also called to the means for keeping the carrier taut by the longitudinal adjustment of the bearings 17 by means of the screw-rod, as heretofore referred to.

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

1. In a separator, the combination with the frame mounted at an incline, of the guides 7, 8 secured to the inner faces of the frame at its lower end, bearings 9 mounted to slide vertically in said guides, adjusting-screws 12 connected to said bearings and operating through guides attached to the frame, a shaft 21 journaled in said bearings, a drum 22 mounted upon said shaft, longitudinal guides 15, 16 secured to the inner faces of the frame at its upper end, bearings 17 mounted to move within said longitudinal guides, adjusting-screws 19 connected to said bearings 17 for operating the same, a shaft 23 journaled in said bearings 17, a drum 24 mounted upon said shaft 23, an endless carrier mounted upon said drums 22, 24, and means carried by the frame for supporting the carrier intermediate of the drums, substantially as described.

2. In a separator, the combination with the frame mounted at an incline, of the guides 7, 8 connected to the inner faces of the frame at its lower end, the bearings 9 mounted to slide vertically in said guides, means connected to said bearings for adjusting the same vertically, a shaft 21 journaled in said bearings, a drum 22 mounted on said shaft, longitudinal guides 15, 16 connected to the inner faces of the frame at its upper end, bearings 17 mounted in said guides, means connected to said bearings 17 for moving the same longitudinally in their guides, a shaft 23 journaled in said bearings 17, a drum 24 mounted on said shaft, an endless carrier mounted upon said drums, means for supporting said carrier intermediate of the drums, a hopper supported by the frame above the carrier, and means for regulating the discharge from said hopper, substantially as described.

3. In a coal and slate separator, the combination, with the inclined supporting-frame, and the endless carrier mounted to travel within the frame toward the elevated end thereof, of means for adjusting the lower end of said frame vertically, separate means for adjusting the elevated end of the carrier lon-

gitudinally of the frame to tighten or loosen said carrier, a roller carried by the frame intermediate of its ends for supporting said carrier, a hopper supported by the frame above the carrier, an adjustable slide-plate connected to one side of said hopper, a hinged bottom connected to the opposite side, and a rod mounted in the supports of the hopper with its inner end engaging said hinged bottom for adjusting the same to control the point of discharge to the endless carrier, substantially as described.

4. In a separator, the combination, with an inclined supporting-frame, of a vertically-adjustable drum mounted in the lower end of said frame, means connected to the frame for adjusting said drum vertically, a longitudinally-adjustable drum mounted in the upper end of said frame, means connected to the frame for adjusting said drum vertically, an endless carrier mounted upon said drums and consisting of a series of overlapping slats having their ends turned upwardly at angles to the slats to form sides for the carrier, a friction-roller carried by the frame intermediate of the drums for supporting the carrier, a hopper supported by the frame above the carrier, and means connected to opposite sides of said hopper for regulating the outlet thereof and the discharge of the material onto the endless carrier, as and for the purpose set forth.

5. In a coal and slate separator, the combination, with the inclined supporting-frame, the endless carrier mounted to travel therein toward the elevated end of the frame and comprising a series of overlapping slats having their ends turned upwardly at right angles to form sides for the carrier, the means for adjusting the lower end of said carrier vertically, and the separate means for adjusting the elevated end of said carrier longitudinally to tighten or loosen said carrier, of the hopper supported above the carrier, the adjustable slide-plate connected to one side of said hopper, a hinged bottom forming a chute connected to the opposite side of said hopper, and means for adjusting said hinged bottom to vary the discharge of the material from the hopper to the endless carrier, as and for the purpose described.

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

PHILLIP F. POORBAUGH.

Witnesses:
JOHN NOLAND,
E. W. ARTHUR.