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COAL TIPPLE.

(No Model.)

2 Sheets—Sheet 1.



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No. 665,463.

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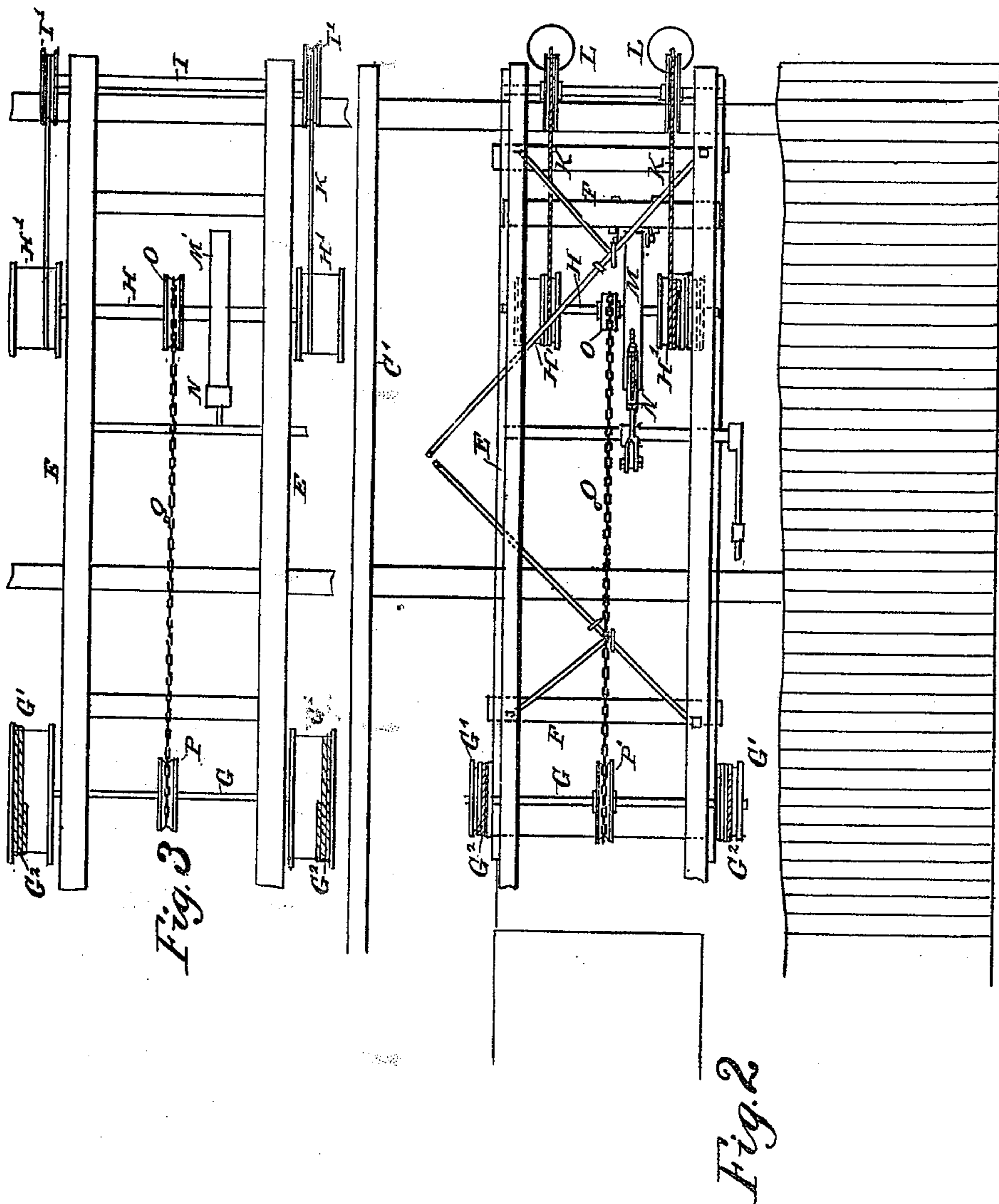
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COAL TIPPLE.

(Application filed Sept. 19, 1899.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JOHN M. PHILLIPS AND JOHN J. FLEMING, OF PITTSBURG, PENNSYLVANIA,
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COAL-TIPPLE.

SPECIFICATION forming part of Letters Patent No. 665,463, dated January 8, 1901.

Application filed September 19, 1899. Serial No. 731,007. (No model.)

To all whom it may concern:

Be it known that we, JOHN M. PHILLIPS and JOHN J. FLEMING, citizens 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-Tipples; and we do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention has relation to the apparatus used at mines for dumping, weighing, screening, and delivering the coal or ore from the mines to cars, the entire structure, with its appurtenant parts, being commonly called a "tipple."

In coal-tipples as ordinarily constructed it has been customary to dump the coal from the cars as it comes from the mine into a chute, where it passed over a screen or a series of screens, so as to separate the different sizes of coal, the larger pieces known as "lump" coal passing over the screen into a basket which was pivoted at one end and supported at the other end by means of a rope or chain passing over a pulley and having a counterweight at the other end. The basket is so arranged that as it is depressed by the weight of the coal it will be automatically opened and discharge the contents of the basket into a car standing beneath the tipple. The smaller coal which passes through the screens before reaching the basket falls upon a second chute, which is also provided with a screen, and the coal which falls through the screen of the second chute is caught in a third chute and passed to other cars beneath the tipple structure. In devices of this character as heretofore constructed it has been necessary to give a very considerable range of motion to the pivoted basket, so as to accommodate it to high and low cars, and it has been found that where very low cars are to be loaded the amount of slant which it was necessary to give the pivoted basket was so great that the lump coal was discharged into the car with such force as to break a large proportion of it.

Our invention is intended to obviate the inordinate tilting of the pivoted basket which carries the coal, and in order to accomplish this object we so construct and arrange the tipple structure, the screens, chute, basket, and appurtenant parts that the basket instead of being pivoted at one end and movable at the other will be vertically movable at both ends, the forward end of the basket, however, being moved at a slightly-greater rate than the rear end of the same, so that while when the basket is being lowered it will descend at both ends the forward end will descend at a greater rate of speed than the rear end, so as to slightly increase the angle of the basket as it descends toward the car.

A further object of our invention is to provide for the more perfect screening and distribution of the several grades or sizes of coal; and our invention consists in the novel construction, combinations, and arrangements of parts hereinafter described and claimed.

Referring to the accompanying drawings, wherein we have illustrated our improvements, Figure 1 is a vertical sectional view of a tipple constructed according to our invention; Fig. 2, a plan view of the same, and Fig. 3 a plan view of a modified form.

A' A² A³ A⁴ designate the vertical timbers, and B' B² the horizontal timbers, of the tipple structure, and C' C² the longitudinal timbers of the same.

E E designate horizontal timbers which are hung from the pivoted arms E' E' of a weighing-scale by means of rods e e, which hang from the scale-beams and are secured to cross-timbers F F', springs f f being interposed between the timbers E and the timbers F. Upon the timbers E E are journaled horizontal shafts G H I. The shaft H has on each end pulleys H' H' and the shaft I has on its ends sheaves I' I', and a rope K passes over each of the pulleys H' H' and passing over the sheaves I' I' has secured to its end a heavy counterbalance-weight L. At or near the center of the shaft H, a brake-wheel M is fixed and a brake N contacts with this brake-wheel, and being under the control of the operator in charge of the tipple structure can be manipulated to regulate the rotation of shaft H or stop it, as may be desired. A sprocket-

wheel O is fixed on the shaft H, and a sprocket-wheel P, of somewhat larger diameter than the sprocket-wheel O, is fixed on the shaft G, and these sprockets are connected together by a chain Q. The shaft G has on each end a pulley G', and a cable G² is attached at one end to the pulley G', while its lower end is attached to the movable basket R. The end of the cable K is attached to the outer end of the movable basket R, and by reason of the difference in the diameter of the sprocket-wheels O and P the cables K and G² are unwound at different rates, so that as the basket R is lowered the front end of the same will descend somewhat faster than its rear end and the angle of the basket will by this motion be slightly increased as the basket descends. A section S is arranged at the end of the basket R, being attached thereto by means of arms s, which are pivoted at r' to arm r on the basket R. A chain T is attached to the outer end of the basket S and at the other end is attached to the upright A⁴, so that when the basket is lowered the chain T, becoming taut, will open the basket, as shown in the dotted lines in Fig. 1, and discharge the coal from the basket into the car beneath. The chain may be adjusted in length to cause the basket to open at any desired point to accommodate cars of different height.

U designates the screen which discharges the lump coal into the basket R, and V a second screen arranged below the screen U and adapted to deliver the coal which passes over it into a chute W, that has a supplementary chute W' at its middle, which is directed in reverse direction to the chute W, a fly w being arranged in the bottom of the chute W, so that when desired the coal may be diverted from the chute W to the chute W' or when the fly is closed may be delivered the whole length of the chute W into the same car that receives the coal from the basket. Beneath the screen V a hopper X is arranged, and the hopper X joins the upper end of the chute W, so that the coal which passes through the screen V and over the hopper X may be delivered by the chute W into the same car that receives the coal from basket R or it may be delivered by the chute W' into a separate car by opening the fly w. Under the hopper X a chute Y is arranged that runs in reverse direction to the hopper X, and a fly y is arranged near the end of the hopper X, so that when desired the coal which passes over the hopper X may be diverted into the chute Y instead of passing into the chute W and delivered by the chute Y into a third car.

Operation: The coal coming from the mine is dumped from the coal-cars into the screen W, and the small coal passes through the screen onto the screen V, while the larger lumps pass into the basket R. The basket R when in its elevated position is at such an angle to the screen W that the coal will glide

easily into the basket, whereby breaking of the coal is avoided. When the basket is lowered, the angle is increased, so as to cause the coal to slide out of the basket into the car, and by dropping both ends simultaneously, but to different degrees, inordinate slanting of the basket is avoided. When the basket has received a charge of coal, it is weighed, and the brake N being released from the brake-wheel M the basket descends, the forward end of the basket descending more rapidly than the rear end of the same by reason of the difference in diameter of the sprocket-wheels O and T. The weight of the coal and of the basket R overcomes the weight of the counterbalances L, and hence when the brake is released the basketful of coal descends until the chain T opens the basket, as shown in the dotted lines in Fig. 1, whereupon the coal is discharged into the car beneath the basket, and the counterbalance L then returns the basket to its original position. The coal which passes through the screen W and falls upon the screen V is screened and the larger lumps fall onto the chute W, while the finer coal falls onto the hopper X and is delivered onto the chute W if the fly y is closed or onto the chute Y if the fly y is open.

In the modification shown in Fig. 3 of the drawings the pulleys H' H' and the sheaves I' I' are arranged outside the timbers E E instead of inside the same, as shown in Fig. 2; but in other respects the construction and operation of the apparatus are the same as that of the apparatus illustrated in Figs. 1 and 2. In this figure of the drawings we have also shown a modification of the means for causing one end of the chute R to descend more rapidly than the other end, such modification consisting in making the sprocket-wheels O P of the same size, while the pulleys H' are smaller in diameter than the pulleys G', such modification being obviously within the spirit of our invention. So, too, the pulleys G' G' may be made smaller than the pulleys H' H' and placed on the same shaft and the cables G² carried over sheaves on shaft G.

Having described our invention, we claim—

1. In an apparatus for screening and loading coal, a suspended basket and means for lowering said basket at both ends simultaneously but at different rates of speed, substantially as described.

2. In an apparatus for loading coal, the combination with a screen of a basket arranged to receive the coal from the screen with means substantially as described, whereby the weight of the coal will cause the basket to descend, both ends descending simultaneously but at different rates of speed, whereby the angle of the basket is changed in its descent as set forth.

3. In a coal-loading apparatus, the combination of a basket, cables supporting said basket at each end, pulleys over which said cables pass, sprocket-wheels of different size arranged on the shafts with said pulleys, a

chain connecting said sprocket-wheels, and a counterbalance-weight attached to the cable passing over one of said pulleys, substantially as described.

- 5 4. In a coal screening and loading apparatus, the combination of screen U, basket R, arranged and adapted to receive coal passing over said screen and convey it to a car, a second screen V arranged beneath the screen U,
10 a chute W arranged and adapted to receive coal passing over screen V and deliver it to the same car and a hopper X arranged beneath the screen V and arranged and adapted to deliver slack into the chute W, substantially as described.

- 15 5. In a coal-loading apparatus the combination of the pivoted basket R, the pulley G',

and the rope G² attached thereto, the sprocket P, sprocket-chain Q, sprocket O, pulley H', on the shaft with said sprocket O, and cable 20 K, attached to the basket and passing over pulley H', of the counterbalance-weight L, attached to the cable K, the brake-wheel M, mounted on the shaft with pulley H', and the brake N, all constructed and arranged substantially as described. 25

In testimony whereof we have affixed our signatures in presence of two witnesses.

JOHN M. PHILLIPS.
JOHN J. FLEMING.

Witnesses:

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