





# UNITED STATES PATENT OFFICE.

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## FEED MECHANISM FOR COAL-CHUTES.

SPECIFICATION forming part of Letters Patent No. 640,549, dated January 2, 1900.

Application filed June 8, 1898. Serial No. 682,868. (No model.)

*To all whom it may concern:*

Be it known that I, FREDRICK H. EMERY, of Scranton, in the county of Lackawanna, State of Pennsylvania, have invented certain  
5 new and useful Improvements in Feed Mechanisms for Coal-Chutes, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce improved mechanism for supplying coal to picking or separating mechanisms, particularly of that class in which the coal is separated from the slate and other refuse through the action of gravity acting upon the particles of different weight. In devices of this class the coal to be separated is discharged upon an inclined chute, along which, descending by gravity, it acquires considerable momentum, and its course being interrupted by an obstruction in  
15 the chute each particle is caused to make a leap over an open space or break in the chute. The width of this space is adjusted so that the coal will clear it and pass on down the chute, while the slate or other refuse drops  
20 into the space.

It is necessary in apparatus of the kind above described to employ some means for supplying the chute with material in suitable quantities. If too much coal be allowed to  
30 pass into the chute at one time, it will interfere with its practical operation, tending to retard the momentum of the descending mass or by conflict between the particles to prevent the free action of gravity upon each particle in the separating process. For that reason feeding mechanism has been devised for the purpose of supplying the chute. An example of such mechanism consists of a shaft provided with radially-disposed plates arranged longitudinally around the shaft and providing upon its periphery a series of buckets. The shaft is mounted in the chute and by constant rotation at a required speed is adapted to discharge at regular intervals a  
45 bucketful of coal to the chute and no more. The coal by this means is taken from the upper part of the chute, and being carried over through the rotation of the shaft is deposited upon its lower side. It is found in practice  
50 that however well this device may work under favorable conditions it is objectionable when the driving machinery is reversed, as it

is often required to be, the driving mechanism being necessarily, for the sake of economy, connected with other and independent  
55 mechanism.

It is impracticable in the feed above described to impart a backward movement to the shaft without danger of injury to the apparatus.  
60

My invention is designed to supply a feed which is equally well adapted to supply material in required quantities to the chute and also to move in either direction.

In the accompanying drawings, Figure I is  
65 a top plan view of a section of a chute with my feed mechanism attached thereto. Fig. II is a section on the line II II of Fig. I. Fig. III is a section on the line III III of Fig. I.

Referring to the figures on the drawings, 1  
70 indicates the bottom, and 2 the side walls, of a section of a chute.

3 indicates a transverse aperture in the floor of the chute, within which fits a mutilated cylinder 4, that by means of trunnions 5 and  
75 6 is carried within suitable bearings in the side walls 2 of the chute. The cylinder 4 is mutilated by being provided upon one side with a trough 5<sup>a</sup>, whose ends are preferably defined by sector-shaped plates 6<sup>a</sup> and 7, that  
80 work snugly against the sides of the chute. The cylinder is so united and the trough 5 therein is of such shape that one wall of the trough lies flush with the floor 1 when the cylinder turns in one direction and the other  
85 wall of the trough lies flush with the floor when the cylinder is turned in the opposite direction.

The cylinder is free to turn in either direction in consequence of its external shape,  
90 which allows it to work even against a superimposed weight of coal without excessive friction or injury to itself.

The cylinder may be operated by a rocking motion or by a rotary movement. I prefer,  
95 however, the rocking motion, and illustrate pins 8 for limiting its movement in the opposite direction. Other limiting mechanism, however, may be substituted for the pins 8, it being practicable to incorporate such mechanism in the driving mechanism proper.  
100

The driving mechanism in itself forms no part of my invention, but may include any suitable device for imparting requisite mo-



tion to the cylinder 4. It may, for example, embody a crank 9, secured to the end of the trunnions 6, elongated for its accommodation. Motion may be imparted to the crank through any ordinary mechanism. (Not necessary to illustrate.)

What I claim is—

1. In feed mechanism for separators, the combination with an inclined chute provided with a transverse recess, of an oscillatory troughed cylinder located in the recess and means for limiting the oscillation of the cylinder to cause the walls of the trough to aline substantially with the bottom of the chute, substantially as specified.

2. In feed mechanism for separators, the combination with an inclined chute provided with a transverse recess, of an oscillatory troughed cylinder within the recess and stop mechanism carried by the cylinder to effect the substantial alinement of the walls of the trough with the floor of the chute, substantially as specified.

3. In feed mechanism for separators, the combination with a longitudinally-inclined chute provided with a transverse recess, of an oscillatory cylinder located within the recess

and having its axis in the plane of the chute-floor, said cylinder being provided with a trough having angularly-related walls, and means for limiting the oscillation of the cylinder to cause the substantial alinement of the trough-walls with the chute-floor at the limits of oscillation of the cylinder, substantially as specified.

4. In feed mechanism for separators, the combination with a longitudinally-inclined chute provided with a transverse recess, of an oscillatory cylinder within the recess, provided with angularly-related walls forming a juncture on the axial line of the cylinder, stop mechanism carried by the cylinder beneath the chute and designed to compel the walls of the trough to lie substantially flush with the chute-floor when the cylinder reaches the opposite limits of its oscillation, and means for transmitting power to the cylinder, substantially as specified.

In testimony of all of which I have hereunto subscribed my name.

FREDRICK H. EMERY.

Witnesses:

GEORGE G. BROOKS,  
THOMAS R. HUGHES.