

1,170,077.

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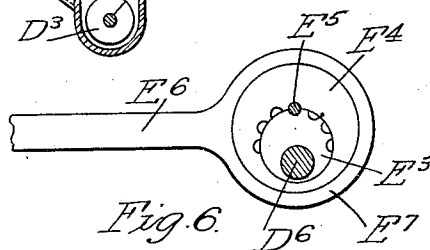
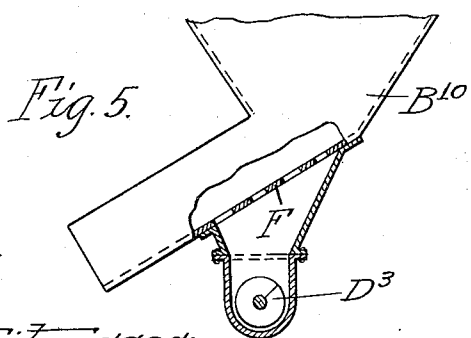
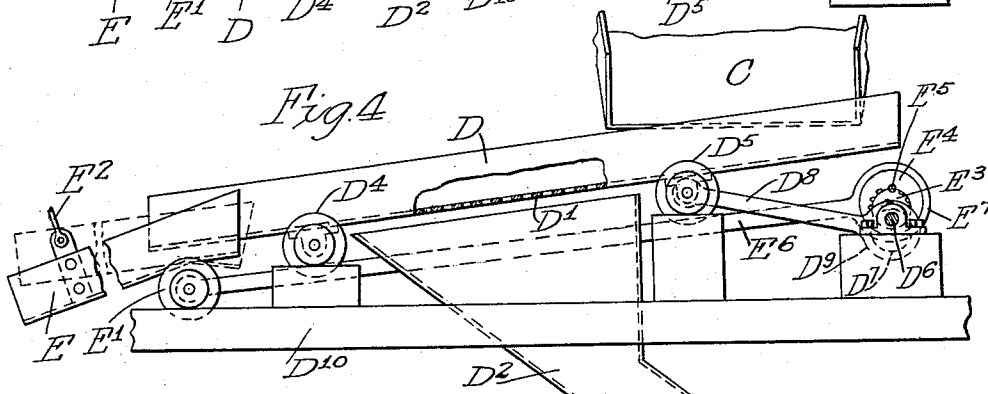
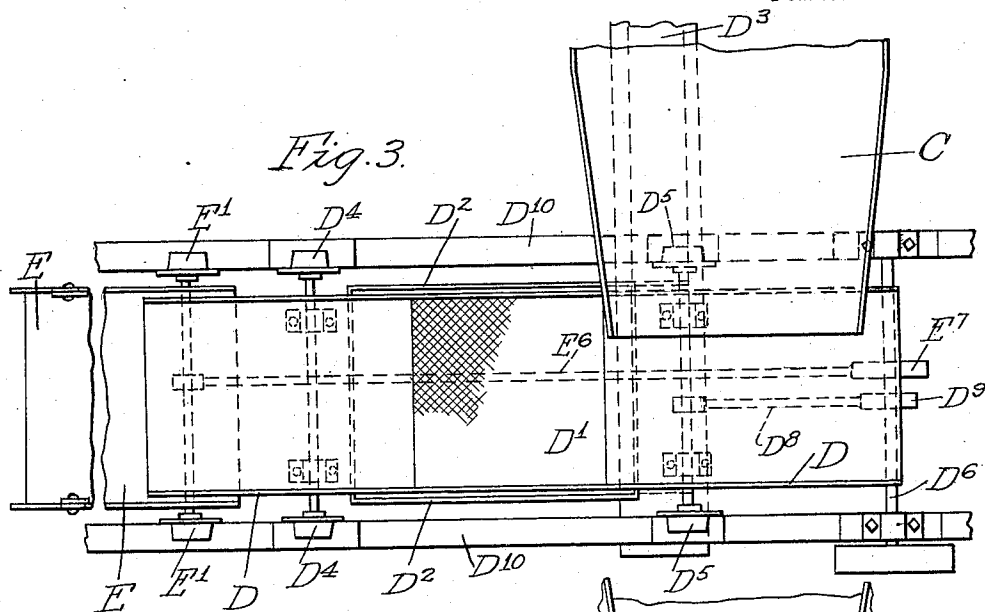
by Parks & Harris
his Attys

R. G. LAWRY.
CAR LOADING APPARATUS.
APPLICATION FILED FEB. 5, 1915.

1,170,077.

Patented Feb. 1, 1916.

2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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CAR-LOADING APPARATUS.

1,170,077.

Specification of Letters Patent.

Patented Feb. 1, 1916.

Application filed February 5, 1915. Serial No. 6,217.

To all whom it may concern:

Be it known that I, RAYMOND G. LAWRY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Car-Loading Apparatus, of which the following is a specification.

My invention relates to improvements in means for conveying, screening, separating and loading granular and flowing materials such as coal, and has for one of its objects to provide a new and improved means for conveying and loading lump and other larger sizes of coal into the cars without breaking.

It is illustrated diagrammatically in one form in the accompanying drawing wherein—

Figure 1 is a diagrammatic plan view of the essential parts of my device; Fig. 2 is a diagrammatic side elevation; Fig. 3 is a detail in plan of a portion of the feeding machinery; Fig. 4 is a side elevation in part section of the parts shown in Fig. 3; Fig. 5 is a section on the line 5—5 of Fig. 2; and Fig. 6 is a detail of the adjustable eccentric.

Like parts are indicated by like letters throughout the several figures.

A—A are railroad tracks along which the coal cars shown in dotted lines at A¹ are adapted to travel.

A² is a supporting frame work which carries a combined screen and conveyer chute A³. The chute A³ is mounted for reciprocation on the rollers A¹³ on the supporting framework A², and is connected for reciprocation by means of the drive link A⁴ with any suitable source of reciprocating power. The combined screen and conveyer chute has the side walls B and between them a combined screening and conveying deck along which coal or other suitable material is fed from the chute B¹ toward the discharge end by the reciprocation of the conveyer.

The smooth conveying surfaces B² of the conveyer deck are broken up at certain points by a fine screen B³, a medium screen B⁴ and a coarse screen B⁵, the fine screen being at the upper end and the coarse screen adjacent the lower end of the conveyer.

Beneath the deck B² and supported between the side walls B is a lower deck B⁶ apertured at B⁷, B⁸ and B⁹ below the lower boundaries of the screens B³, B⁴ and B⁵. These apertures discharge into the chutes B¹⁰, B¹¹ and B¹² which are mounted for discharge into the separate cars A¹. The spout C forms a continuation or discharge end for the conveyer chute A³ and is gradually reduced in cross section downwardly toward the discharge point where it discharges into an inclined chute D, which in my preferred form is arranged at right angles to the chute A³. The chute D is supported on rollers D⁴, which rollers ride upon the frame D¹⁰, and it is adapted to be reciprocated by the link D⁵ having a strap D⁹ surrounding the eccentric D⁷. The chute D is apertured or screened as at D¹ in register with the funnel or chute D², discharging into a spiral screw conveyer D³.

D⁶ is a drive shaft which drives the eccentric D⁷ to reciprocate the chute D and thus feed the material forward down the inclined surface thereof as it is deposited upon the upper extremity by the spout C. The chute D discharges at its lower end into the upper end of the pivotally mounted chute E.

E¹ is a roller supporting the upper end of the chute E free to reciprocate along the frame D¹⁰.

E² is a supporting connection applied to the outer end of the chute E for raising and lowering it by means of any suitable tackle not here shown.

E³ is an eccentric on the shaft D⁶ and E⁴ is an eccentric cam rotatable about the eccentric E³ and apertured as indicated to permit engagement of the pin or key E⁵ to hold the eccentric and eccentric cam in any suitable position with respect one to the other and thus form a single adjustable eccentric whose eccentricity may be varied at the will of the operator by a manipulation of the outer cam.

E⁶ is a connecting rod having a strap E⁷ surrounding the eccentric cam E⁴ and pivoted at its other end on the axle E¹ so that the chute E may be reciprocated by the eccentric in response to the rotation of the shaft D⁶. The conveyer D³ it will be noted extends back beneath the chute A³ and dis-

charges adjacent the discharge end of the chute B¹². It passes beneath the chutes B¹⁰, B¹¹, which chutes are provided with fine screens F, F¹ to permit the extraction of fine material and it is returned to the fine material car into which the chute B¹² normally discharges.

It will be evident that although I have shown in my drawings an operative device, still many changes might be made both in size, shape and arrangement of parts without departing materially from the spirit of my invention, and I wish, therefore, that my drawings be regarded as in a sense diagrammatic.

The use and operation of my invention are as follows: When cars are to be loaded with the screened, separated or graded material, the coal, for my device is designed primarily for use with coal, is fed to the upper end of the combined screen and conveyor chute through the spout B¹. The reciprocation of the inclined chute tends to feed the coal down toward the lower end, and as it is thus fed it passes over the screens in the bottom of the platform as indicated. The first very fine screen takes out only the very finest particles, such as dust, slack, and the like, and that being small is permitted to drop freely into the car below. The next screen takes out pea or nut coal, or the like, and it drops down through the chute across the stepped screen, and this also being small, each particle may be allowed to fall freely into the car without danger of undue breakage. The dust which was not extracted at the first screen, or which may have been subsequently formed by rubbing together of the particles, passes through the fine screen to the conveyor which conveys it back to the discharge point above the first car. The remaining coal on the separator or conveyor passes on, part of it, such as egg coal, passing through the coarse screen. This size may be re-screened before it goes to its car the same as the pea or the nut coal. The remainder is discharged as lump from the end of the chute. This coal thus finds itself upon the inclined reciprocating chute and is fed downwardly toward the discharge end going over the perforations in the bottom. These perforations permit a dropping out of the fine particles not previously removed or subsequently formed, and these fine particles are conveyed or discharged to the conveyor which carries them back to the first car. The coarse material, such as egg or coarse lump coal, is then discharged in a continuous, gradually moving stream from the end of the inclined chute to the pivotally mounted chute "E". In order that this material may not be broken up and pulverized so as to produce irregularly graded and unsatisfactory car loads it is necessary that it be

gently and easily conveyed to the car without an abrupt fall. The inclined shaking feed spout "E" does this. As the car is first being loaded the chute will be lowered so that it approaches the bottom of the car. As the coal piles up in the car it is necessary to raise the chute a small amount at a time so that material discharging from the end of chute falls only a short distance.

It is evident that for different sizes of coal and under different weather conditions or conditions of moisture and the like, the relation between the inclination of the chute and the amplitude of its reciprocation will vary and it may be necessary to change the stroke of the inclined chute and it therefore becomes necessary to permit the operator, who alone knows the conditions by being on the ground at the time, to make the necessary changes in the feed, and this the operator can conveniently do by changing the position of the chute and thus its angle of inclination, and also by changing the length of stroke by moving the cam around a certain amount on the eccentric.

I claim:

1. Means for discharging materials and the like comprising a chute having one end pivoted and held against vertical displacement, means for reciprocating the chute in a horizontal plane and means for raising and lowering the free end of it during operation independent of such reciprocation to vary its angle of inclination.

2. Means for conveying and discharging fragmentary materials and the like comprising an inclined feed chute and means for reciprocating it in a generally horizontal direction, a discharge chute having its axis in the same vertical plane as, and pivoted at one end, immediately below the discharge end of the feed chute, separate means for reciprocating it in a horizontal plane, means for controlling such reciprocation and means for raising and lowering the free end of the chute to vary its angle of inclination without longitudinally displacing it.

3. Means for conveying and discharging fragmentary materials and the like comprising an inclined feed chute and means for reciprocating it in a generally horizontal direction, a discharge chute having its axis in the same vertical plane as, and pivoted at one end immediately below the discharge end of the feed chute and separate means for reciprocating it in a horizontal plane.

4. Means for conveying and discharging fragmentary materials and the like comprising an inclined feed chute and means for reciprocating it in a generally horizontal direction, a discharge chute having its axis in the same vertical plane as, and pivoted at one end immediately below the discharge end of the feed chute, separate means for reciprocating it in a horizontal plane and

means for raising and lowering the free end of the chute to vary its angle of inclination without longitudinally displacing it.

5 5. Means for conveying and discharging fragmentary materials and the like comprising an inclined feed chute and means for reciprocating it in a generally horizontal direction, a discharge chute having its axis in the same vertical plane as, and pivoted at
10 one end immediately below the discharge

end of the feed chute, separate means for reciprocating it in a horizontal plane and means for controlling such reciprocation.

In testimony whereof, I affix my signature in the presence of two witnesses this 2nd 15 day of February 1915.

RAYMOND G. LAWRY.

Witnesses:

BESSIE S. RICE,
MINNIE M. LINDENAU.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."