E. RAMSAY.

ROTARY DUMPING APPARATUS.

APPLICATION FILED JULY 9, 1917.

1,325,536.

Patented Dec. 23, 1919.

2 SHEETS—SHEET 1.

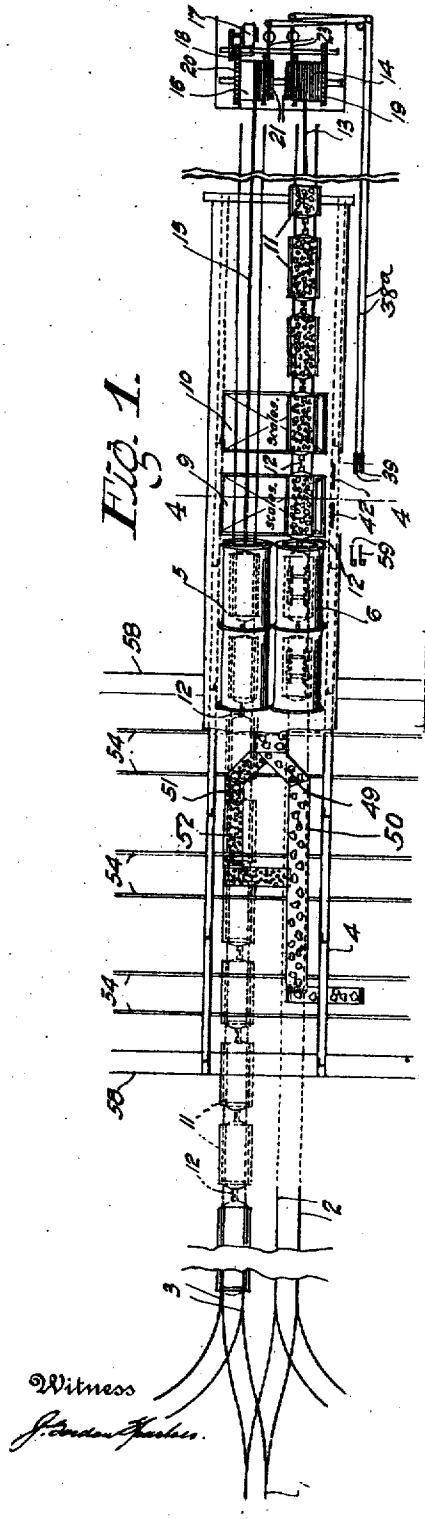


Fig. 1.

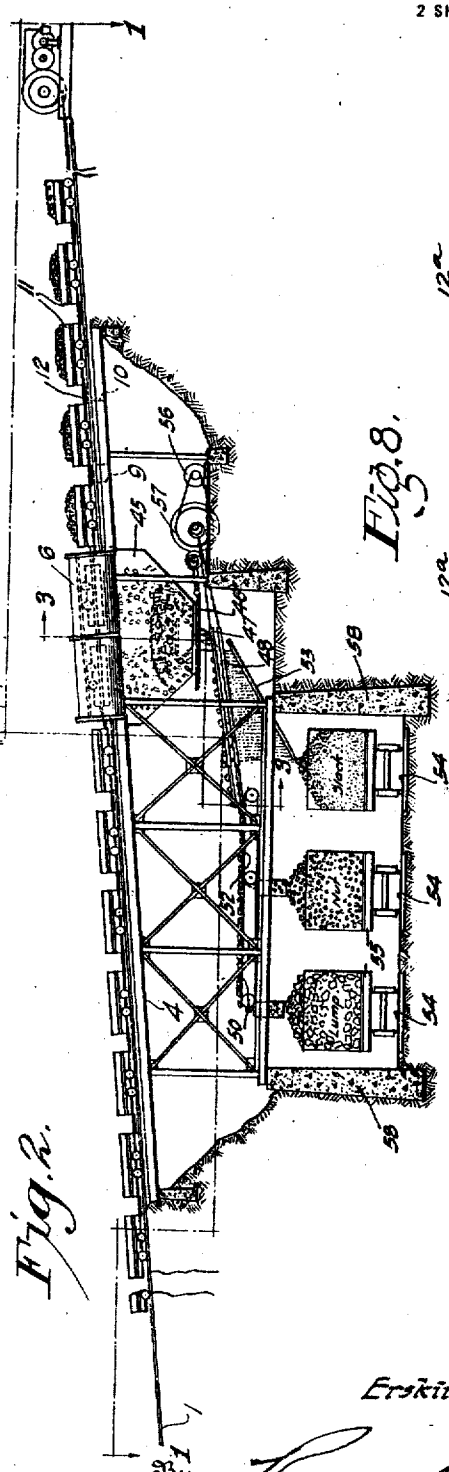


Fig. 2.

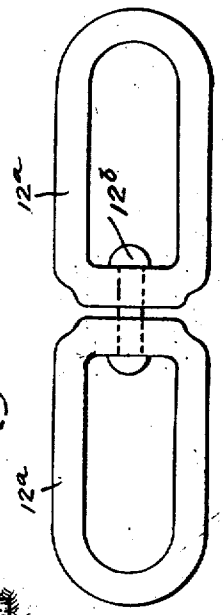


Fig. 3.

Witness

J. Linden Fischer.

Inventor

Erskine Ramsay.

By

Attorney

E. RAMSAY.

ROTARY DUMPING APPARATUS.

APPLICATION FILED JULY 9, 1917.

1,325,536.

Patented Dec. 23, 1919.

2 SHEETS—SHEET 2.

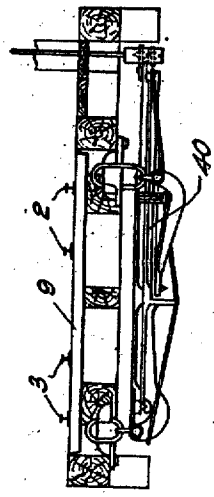


Fig. 4.

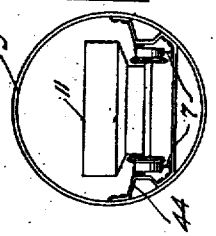


Fig. 5.

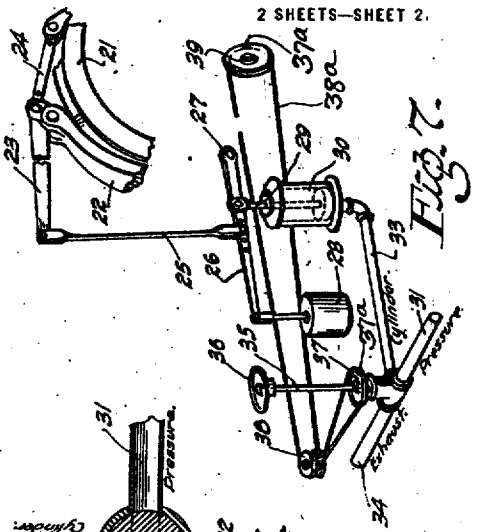


Fig. 7.

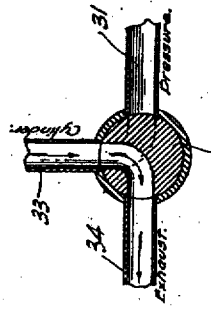


Fig. 6.

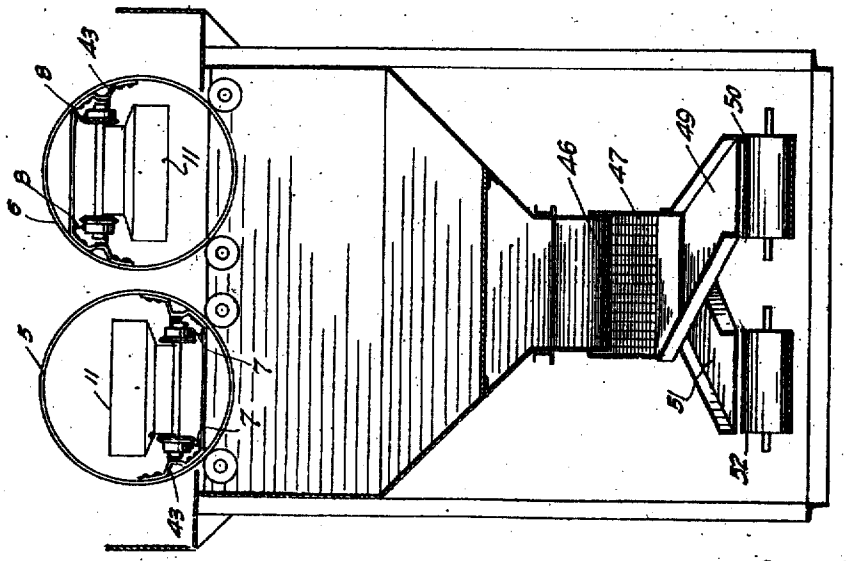


Fig. 3.

Witness

J. Gordon Sparkes

Inventor

Erskine Ramsay.

By Fetherstonhaugh & Co.

Attorneys.

UNITED STATES PATENT OFFICE.

ERSKINE RAMSAY, OF BIRMINGHAM, ALABAMA.

ROTARY DUMPING APPARATUS.

1,325,536. Specification of Letters Patent. Patented Dec. 23, 1919.

Application filed July 9, 1917. Serial No. 179,350.

To all whom it may concern:

Be it known that I, ERSKINE RAMSAY, a citizen of the United States of America, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Rotary Dumping Apparatus, of which the following is a specification.

My invention relates to an apparatus for the dumping of trips of cars, being more particularly adapted for the handling, weighing and dumping of trips of mine cars.

My invention contemplates the provision of a number of rotary dumps arranged preferably side by side in separate tipple tracks and which may each be designed to dump one or any greater number of cars at a time.

My invention contemplates dumping the cars of a trip without uncoupling them from each other and with or without uncoupling them from the motor or haulage cable by which they are drawn from the mine. Each tipple track is long enough to hold an entire trip of cars at either end of its respective rotary dump to the end that the loaded trip may come to rest thereon before being dumped and may still be held on the tipple track after being dumped, this arrangement permitting each loaded trip to be received dumped and held on its respective tipple track until everything is ready for its return into the mine.

My invention also contemplates providing a greater number of tipple tracks and dumps than there are mine tracks, so that by providing a haulage means capable of diverting the trips onto the desired tipple tracks, the empty trip or trips can be returned to the mine while the loaded trip or trips each under the control of any suitable mechanism is being dumped. This arrangement is peculiarly adapted for obtaining the maximum output from a single mine track, it being contemplated that two or more parallel tipple tracks shall each connect to each mine track and, where a motor is not used, that a separate haulage cable and drum shall be provided for each tipple track and dump and each adapted to move the trips into and out of the mine. A further advantage of this arrangement is that it enables the tipple operator to utilize the haulage means which brought out the last loaded trip to handle the latter over the track scales, when used, and through the dump, while the other haulage means are employed in handling the other trip or trips in the mines. When a drum and cable haulage means are used, this involves the arrangement of remote control means by which the operator at the scale house may control both haulage systems as well as the mechanisms for weighing and dumping the trips. Where it is not desired to use the haulage means to handle the trip when being dumped, any suitable car spotting or feed mechanism may be employed and provision made for its control by the dump operator. In order that weighing the cars may be most conveniently arranged for, I provide adjacent to the dumps one or more track scales, my preferred arrangement being a scale carrying sections of both tipple tracks so that a car on either track may be weighed thereon. If desired, where the dumps are capable of handling more than one car at a time, the number of these track scales may be increased to correspond with the number of cars that can be handled at one time by the dump, thus permitting the coupled trip to be moved to advance one or more cars at a time into the dump and while such cars are being dumped a corresponding number are being weighed, the swivel couplings permitting these independent operations to be simultaneously conducted without either interfering with the other.

The general objects and purposes of my invention having been briefly described, reference is made to the accompanying drawings which disclose an illustrative embodiment of the invention, it being understood however that the principles involved may be widely varied to meet different operating conditions.

In the drawings:—

Figure 1 presents in plan view a tipple layout for a single mine track having two tipple tracks and a separate dump and haulage cable for each tipple track.

2

Fig. 2 is a side elevation of Fig. 1.

Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a modification of the rotary dump structure.

Fig. 6 is a sectional detail view of the valve controlling the drum brake.

Fig. 7 is a detail view of an illustrative control apparatus for one drum brake.

Fig. 8 is a detail view of a swivel coupling for the cars.

Similar reference numerals refer to similar parts throughout the drawings.

As illustrated, the mine track 1 emerges and connects to two parallel tipple tracks 2 and 3 which extend over the tipple structure 4 to the rotary dumps 5 and 6 carrying track sections 7, the track sections 7 on the dump 5 forming a part of the tipple track 3, and those in the rotary dump 6 forming a part of the tipple track 2. The tracks 2 and 3 extend beyond the dumps, first passing over two scale platforms 9 and 10 and then continuing a sufficient distance to receive all the cars 11 of a trip. The cars 11 are shown as ordinary mine cars having swivel couplings 12 of any well known type and the trips that are received on the track 2 are handled by means of a cable 13 and drum 14 while the trips that are received on the track 3 are handled by a cable 15 and drum 16. The drums 14 and 16 may be of any ordinary standard design, preferably being both driven by a motor 17 which, through suitable gearing, drives a countershaft 18 carrying gears which mesh with and drive the spur gears 19 and 20 on the shafts of drums 14 and 16, respectively. Each haulage drum is provided with a brake drum 21, see Fig. 7, with which a brake band 22 coacts, the band being controlled by a brake lever 23 and link 24 in the manner well understood in the art.

In Fig. 8 I have illustrated a formal type of swiveled coupling comprising links 12^a which are connected by a swiveled headed pin 12^b so that they are free to turn relatively about the latter as an axis and permit one car to rotate freely relatively to the adjacent cars. Any other type of swiveled couplings may be employed.

It being desirable to provide means whereby both the engineer at the drums and the tipple man at the scales can control the drums 14 and 16 through their respective brake mechanisms, I have designed the following mechanism for each drum as illustrative merely of one means by which such control can be effected. Referring to Fig. 7, the brake lever 23 is connected by a link 25 to a lever 26 having a series of adjustment holes so that the point of attachment of the link 25 can be varied. This lever has a fixed pivot 27 at one end and a counterweight 28 at the other end, and at an intermediate point is connected to a piston rod 29 operating in a cylinder 30. Air, steam or other pressure is supplied through a pipe 31 to a three way rotary valve 32 which in one position delivers the pressure to a pipe 33 leading to the bottom of the cylinder 30 and in the other position connects the cylinder to an exhaust pipe 34. When pressure is admitted to the cylinder, the lever 26 is raised by the piston rod 29 and the brake band 22 is released. When the pressure is exhausted from the cylinder, the weight 28 applies the brake band and exerts a sufficiently powerful leverage thereon to frictionally hold the drum. The valve 32 is operated by a valve stem 35 which has a handle 36 at its upper end and a pulley 37 made fast thereon at an intermediate point. An endless sprocket chain, cable or suitable flexible connection 38^a is passed about the pulley whence it passes around a double pulley 38 to a hand wheel or other operating means 39 in convenient reach of the man at the scale house. As shown, the chain is made fast by any suitable fastenings such as 37^a at one end to the pulley 37 and at the other end to the hand wheel 39, thus making its action positive both to open and close the valve 32 and enabling such valve to be controlled either by the engineer at the drums or by the scale man on the tipple. This control mechanism is duplicated for each drum to provide for independent control thereof.

Each scale platform 9 or 10, as shown in Fig. 4, extends across and carries sections of both tracks 2 and 3, which is my preferred arrangement, but which is not essential as separate scales may be used for each track, or other types of scales well known in the art may be substituted. The scale platform may be supported by any suitable scale mechanism 40 which, through suitable connections, imparts motion to a scale beam formally illustrated at 42 in Fig. 1. These beams 42 are arranged side by side adjacent to the hand wheels 39. The mechanism for controlling each dump, which has been omitted from this drawing as the same forms no special part of my present invention, will be controlled by a lever 59 also conveniently arranged so that one man can control the operation of both dumps, both scales and both haulage drums.

The cars when received in each dump are held therein by a suitable hold-down mechanism 43. As shown in Fig. 3, these hold-downs comprise iron straps riveted to the sides of the dump frame and angle irons riveted to the straps and adapted to engage the wheel hubs on the cars 11. In Fig. 5 the hold-downs 44 have angle irons adapted to engage the treads of the wheels.

As the cars are dumped their contents fall

into a hopper 45 from which it is discharged under the control of a reciprocating feeder plate 46 onto the shaker screens 47 and 48, whence the lump coal passes by a chute 49 to a conveyer belt 50 while the nut coal passes by a chute 51 to a conveyer belt 52, and the slack is delivered to a chute 53. The belts 50 and 52 and the chute 53 are adapted, as shown in Fig. 2, to deliver the different grades of coal to cars 55 on different railroad tracks 54 which are arranged so that three railway cars 55 can be loaded at the same time with the different grades of coal or other minerals. The feeder 46 and the shaker screens may be of any standard construction and are driven by a motor 56 and suitable belt driven transmission machinery 57. In my preferred arrangement the tipple structure spans the tracks 54, being supported on concrete columns or walls 58 on each side of the tracks.

The operation of the particular embodiment of my invention shown in the drawings may be briefly described as follows:— A loaded trip, depending upon whether it is handled by the cable 13 or 15 as it comes up from the mine on track 1, is diverted to the tipple track 2 or 3. In Fig. 1 the last loaded trip was handled by the cable 13 and moved thereby on the tipple track 2 through the dump 6 and beyond the scales 9 and 10. The man at the dump then takes control of the trip and, by manipulating the brake mechanism that controls the drum 14, he lowers the trip until the two end cars stand respectively on the scales 9 and 10 where they are weighed and then the trip is further lowered to bring the next two cars on the scales and the two end cars that have been weighed into the dump, which is then rotated either partly or wholly and the cars therein dumped without being uncoupled from each other or from the cars on the scales. This operation is repeated until the whole trip has been weighed and dumped and is waiting on the track 2 below the dump. Meanwhile the cable 15 has drawn another trip from the mines. As soon as that comes up, it passes onto the tipple track 3, and the empty trip on track 2 is then lowered in the mine by its cable 13, the trip on track 3 meanwhile being weighed and dumped and made ready for its return into the mine as soon as track 1 is clear. It will thus be seen that there are practically no delays at the tipple and it is possible for one tipple man to manipulate the scales and dumps to handle the trips as fast as they are received.

It will be noted that means other than gravity may be employed on level tipples for moving the trips through the dump and that when I refer to rotary dumps I mean to include all types of dumps that rotate or pivot on an axis disposed parallel with the track and over which the trip of cars can be passed.

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

1. In an apparatus for dumping mineral, a plurality of tipple tracks, a mine track connecting with the plurality of tipple tracks, a separate mine haulage cable and drum for each tipple track adapted to handle trips on the mine track and spaced at least the length of the trip of cars to be dumped from the remote end of the dump, rotary dumps carrying portions of the tipple tracks, and control mechanism for the several haulages and dumps disposed adjacent to each other.

2. In an apparatus for dumping mineral, a plurality of tipple tracks, a mine track connecting with the plurality of tipple tracks, a separate cable and drum for each tipple track adapted to handle trips on the mine track, rotary dumps carrying intermediate portions of the tipple tracks, remote control mechanism for the several drums disposed adjacent to the rotary dumps, and scale mechanisms having their scale beams adjacent to said control mechanisms for the drums.

3. In a tipple mechanism for mine cars, a plurality of tipple tracks, a separate drum and cable for each tipple track, a lesser number of mine tracks connected to said tipple tracks, the cable being adapted to handle trips on the mine tracks, independent rotary dumps carrying intermediate portions of the tipple tracks, remote control mechanisms for the drums adjacent to the dumps, a weighing mechanism, and control means for the weighing mechanisms and the dumps all juxtaposed to the control mechanisms for the drums, substantially as described.

4. In a tipple mechanism for mine cars, a plurality of tipple tracks, a rotary dump for each track carrying an intermediate portion of its respective tipple track, a haulage cable and drum for each of said tipple tracks which are spaced from the dumps at least the length of the trips of cars to be handled, and a control mechanism for each drum which extends to a point near the dump.

In testimony whereof I affix my signature.

ERSKINE RAMSAY.

Witness:

NORRIE WELSH.