Aug. 15, 1933. R. M. MILLER ET AL 1,922,447

TRANSFER

Filed Feb. 2, 1931 2 Sheets-Sheet 1

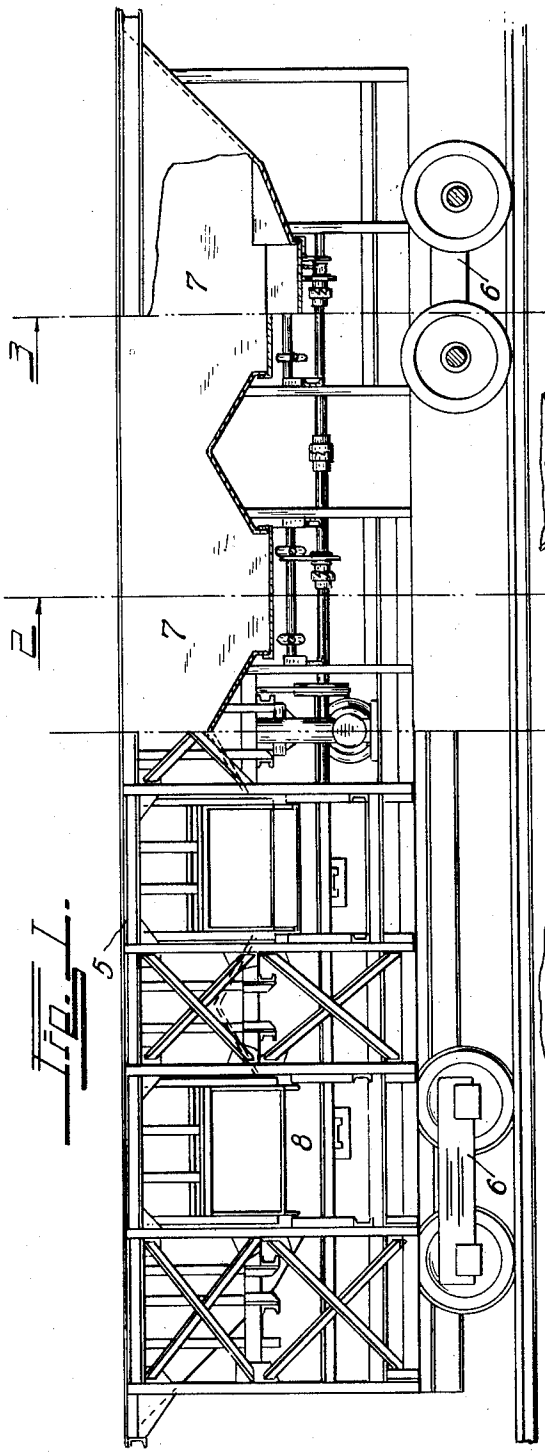


Fig. 1.

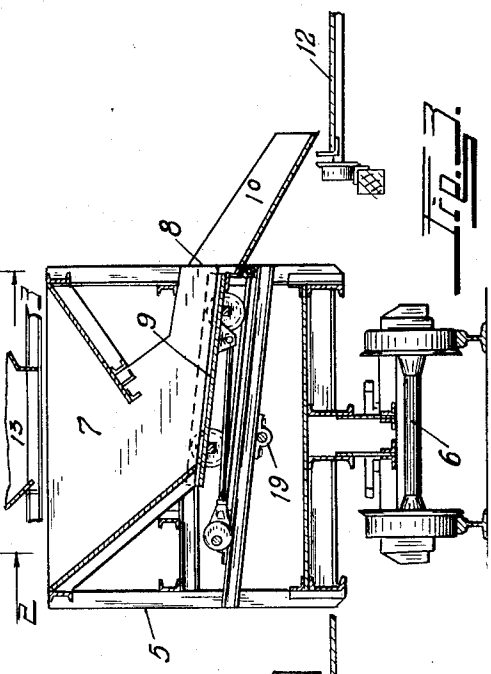


Fig. 3.

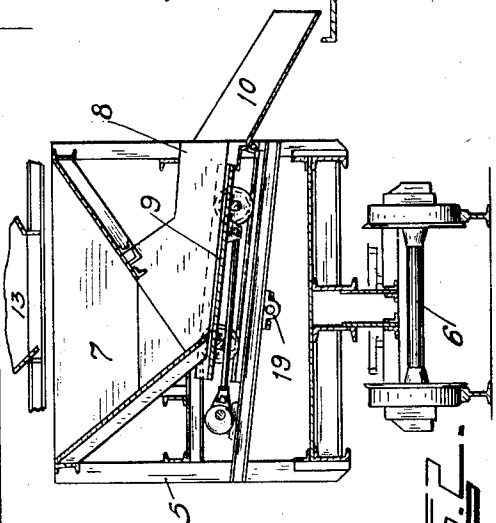


Fig. 2.

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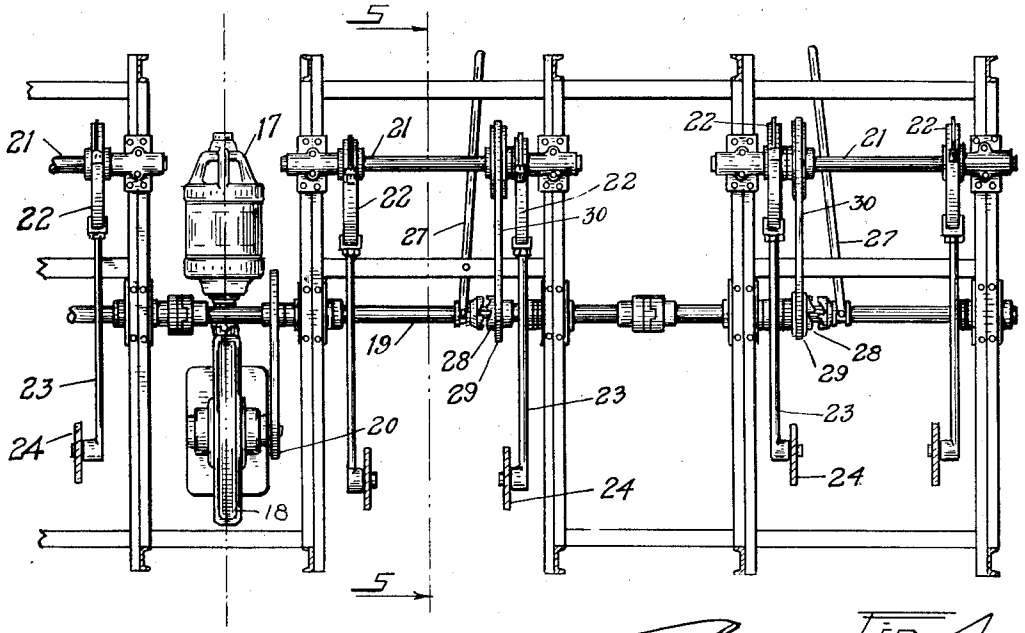
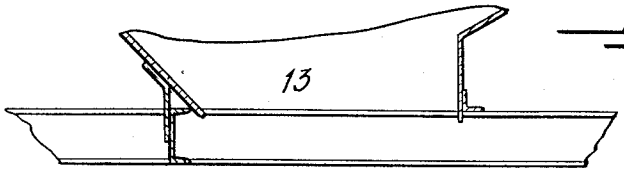


Fig. 4



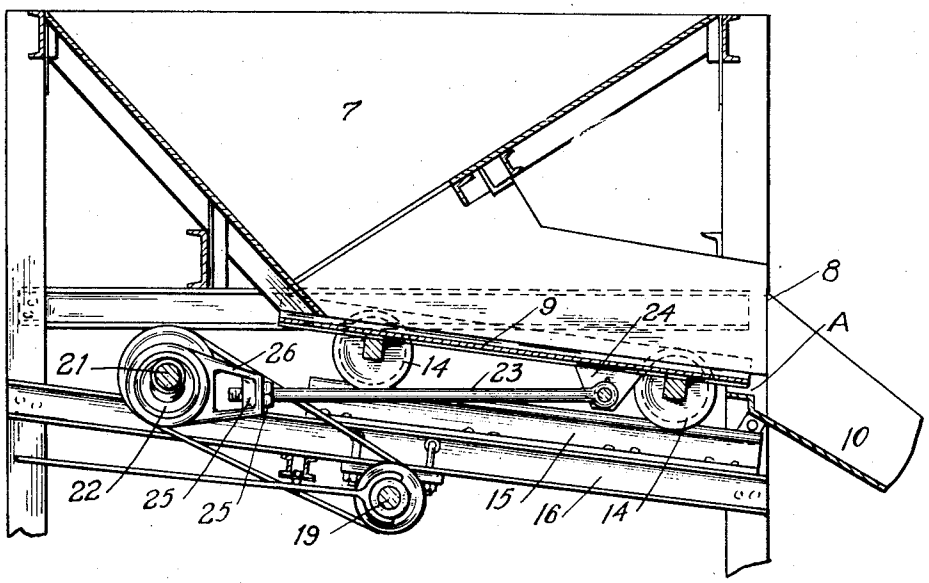


Fig. 5

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UNITED STATES PATENT OFFICE

1,922,447

TRANSFER

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Application February 2, 1931. Serial No. 512,882

7 Claims. (Cl. 214—83)

This invention relates to transportable transfers and its principal object is to provide in association with a wheeled vehicle a structure adapted to transfer material from an elevated point of supply to a determinate point of delivery at a side of the vehicle. It is preferred to construct the vehicle for use on railways and it is in this connection that it has been shown in the accompanying drawings.

The transfer car is particularly adapted for the conveyance of coal from an elevated car dump, to a screening plant such as used at stations on railways leading from the mines at which the coal is produced.

Other objects of the invention reside in the provision of reciprocating feed-elements as part of the transfer structure and in other novel details of construction and arrangements and combinations of parts as will be fully brought out in the course of the following description.

In the drawings in the several views of which like parts are similarly designated,

Figure 1 represents a sectional side-elevation of the transfer car,

Figure 2, a transverse section on the line 2—2, Figure 1,

Figure 3, a similar section taken on the line 3—3, Figure 1,

Figure 4, an enlarged plan view of a portion of the power-plant and power transmission mechanism for the operation of the reciprocating feed-elements of the structure,

Figure 5, an enlarged fragmentary sectional view of one of the reciprocating feed-elements and the mechanism employed in the operation thereof, the section being along the line 5—5 of Figure 4.

The car body 5 is of skeleton construction and it is supported on trucks 6 of the type commonly used on railway freight cars. The skeleton frame may be made of steel or other suitable material and it may be mounted on a standard railroad flat car equipped with standard railway appliances such as air brakes, automatic couplers, etc.

The car thus constructed can be transported over standard gauge railroads and its clearance dimensions are in accordance with standard railway specifications. While it is preferred to use the invention in association with a railway car, as stated hereinabove, it is to be understood that it may be employed in connection with any other vehicle propelled by any suitable means.

The main object of the invention is to provide a structure for the transference of material from an elevated point of supply to a point of delivery at a side of the same, which is movable to and from an operative position relative to the stationary parts of a receiving station at which it is employed.

A structure of this kind may be transported from one station to another and particularly on railways, it may be moved out of the way to clear the track for use in ordinary railway travel.

Mounted in the skeleton frame are a plurality of hoppers 7, which adjoin one another in unbroken longitudinal succession and which are open at the top of the frame to receive the material to be transferred. Each hopper has at its lower end a discharge-opening 8, and beneath this opening, is a reciprocating feed 9 which functions to convey the material discharged from the hopper to a point of delivery at a side of the car. Chutes 10 removably suspended at the side of the car connect with the discharge-openings of the hoppers to convey material fed thereinto by the reciprocating feeds, to a suitable receptacle such as a conveyor indicated at 12 in Figure 3, which may transport the material to a screening plant.

The material received in the hoppers, may under the same conditions be supplied from a so-called rotary dump, which turns the cars in which the coal is hauled from the mine, to a position in which their contents are dumped into a stationary hopper indicated at 13 in Figure 3.

The feeds are composed of flanged plates mounted on flanged wheels 14 for their movement along slanting rails 15 fixed upon members 16 of the frame-structure below the discharge openings of the hoppers and the reciprocating movement of the plates upon the rails is produced from a power plant on the car, through the instrumentality of a motion transmitting mechanism, which permits of the control of each feed-plate separate from the others.

An important feature of the mechanism resides in the provision of means for varying the stroke of the feed-plates in order to adapt the transfer-car for the conveyance of different materials.

Referring particularly to Figures 4 and 5 of the drawings, the power-plant comprises a motor 17 in connection with a suitable speed-reducer 18. The motor is preferably driven by electricity although an internal combustion engine may be used if so desired. A longitudinally extending line-shaft 19 is driven from the motor of the

speed-reducer by means of a belt 20 or chain and the line-shaft in turn, drives a plurality of longitudinally extending jack-shafts 21, which are individually associated with the several transfer-units of the structure.

Each unit, as stated hereinbefore, comprises one of the hoppers 7 and the respective reciprocating feed 9, and the jack shafts are provided to operate the feeds 5 by means of pairs of eccentrics 22. The eccentrics are adjustable on the jack shafts whereby to vary the stroke of the respective feed-plates and they are connected with the plates by means of rods 23 which are pivoted on lugs 24 extending downwardly from the plates. The length of the rods may be adjusted by nuts 25 which connect their ends to yokes 26 on the eccentric-straps. The rods 23 extend transversely of the car and in fact extend across the region in which the longitudinally extending shaft 19 is located. In the arrangement shown the line-shaft 19 is located below the feed plates and in fact below the transversely extending eccentric rods 23 with the result that an arrangement is provided in which the space occupied by the several shafts, by the rods 23 and by the driving mechanism for the main shaft occupies a relatively small amount of space. The driving mechanism for the main shaft comprises the motor 17, the speed reducing gearing 18 and the belt or chain 20. The parts just referred to are in effect located in the general regions between the ends of two adjacent jack-shafts 21 thus resulting in a compact structural arrangement which enables the general mechanism herein described to be utilized in a hopper car construction of the type herein illustrated.

The movement of the jack-shafts is controlled by clutch-levers 27 associated with clutches 28 which effect the rotative continuity between the line-shaft and loose pulleys 29 or sprockets from which the jack-shafts are driven through the medium of belts 30 or chains. It will thus be seen that the operation of each transfer unit is individually controlled not only with reference to the movement of the reciprocating feed but also as to the length of the stroke of the same.

The units can thereby be adapted for handling different kinds of material and any one or more of the units can be operated separate from the others according to the location of the supply or the quantity of material to be transferred.

In the operation of the invention, the transfer car is moved to a position in which the material discharged from a suitable source of supply is received in the hoppers 7 and the material discharged from the hoppers is delivered at a side of the car through the medium of the reciprocating feeds. The car is readily transported to and from any desired location and, when not in use, it can be moved out of the way so as not to interfere with the movement of trains along the railway track. The car, as shown in the drawings, is moved by means of a locomotive or a hoist or other suitable external propelling means, but it will be understood without further illustration, that it can be self-propelled by the provision of a motor in connection with one of its axles.

All classes of material such as coals, ores, limestone, sugar beets, etc. may be handled through the medium of the transfer-car in the minimum of time and without breakage and when the operation of the reciprocating feeds is synchronized with that of the dumping apparatus or/and the screening plants at stations at which the transfer is employed, the capacity of the transfer is practically unlimited.

The chutes 10 into which the material is delivered by the reciprocating feeds, may be hinged at the side of the car as indicated at A in the drawings, to be moved out of the way against the side of the car while the latter is being transported from one location to another.

When two or more of the transfer units are in operation at one time, the forward movements of the reciprocating feeds may be alternated whereby to obtain a balanced movement with little vibration or strain upon the structure by which the units are supported.

What we claim and desire to secure by Letters Patent is:

1. In a transfer for railway transportation, a wheeled vehicle in the form of a car of the hopper type having a longitudinally arranged series of hopper bins provided with a longitudinal series of discharge openings, there being a discharge opening at and for the bottom of each bin, a longitudinally arranged series of transversely reciprocal feed plates, there being a feed plate at and for each discharge opening, a longitudinally extending main shaft located under or below said feed plates, a longitudinally arranged series of jack-shafts arranged along a side portion of the vehicle structure, there being a jack shaft for and corresponding to each feed plate, an eccentric crank construction on each jack-shaft and transversely extending rods having one end on an eccentric crank and operable thereby and having the other end pivotally connected to the transfer plate to which the jack-shaft corresponds, means comprising a disengageable clutch whereby at will any jack-shaft can be operated from and by said main shaft, and means comprising a motor and reducing gearing for operating said main shaft.

2. In a transfer vehicle for railway transportation, a wheeled vehicle as defined in and by claim 1 constructed so that the motor and reducing gearing are located in the region between adjacent jack-shafts.

3. In a transfer for railway transportation, a wheeled vehicle as defined in and by claim 1, an arrangement according to which the transversely extending eccentric rods are located between the reciprocating feed plates and the longitudinally extending main shaft.

4. In a transfer for railway transportation, a wheeled vehicle as defined in and by claim 1 according to which the reciprocating feed plate provides the floor of a chute that extends from the bottom of the hopper to a side of the car.

5. In a railway car of the hopper type a body construction providing a longitudinally arranged series of hoppers provided with a longitudinal series of discharge openings there being a discharge opening for and at the bottom of each hopper, a longitudinally arranged series of transversely reciprocal feed plates, there being a feed plate at and for each discharge opening, a longitudinally extending main shaft carried by the body and located under said feed plates, a longitudinally arranged series of jack-shafts carried by the body along side portions thereof, there being a jack-shaft for and corresponding to each feed plate, means for operating said jack-shafts from said main shaft, each jack-shaft being provided with eccentric crank operating means, transversely extending rods each having one end carried by and operated from an eccentric crank

to which it corresponds and having the other end pivotally connected to a transfer plate, and means for actuating said main shaft.

6. In a railway car of the hopper type the construction as defined in and by claim 5, an arrangement according to which the transversely extending rods extend over the main shaft and are pivotally connected by members carried at the under side of the feed plates which are transversely reciprocated by said rods.

7. In a railway car of the hopper type as defined by claim 5, a motor and reducing gearing providing the means for operating the main shaft and which motor and reducing means is located in the region under and between sloping floor portions of adjacent hoppers.

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