

O. CROSBY.
DITCHING MACHINE.
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1,249,035.

Patented Dec. 4, 1917.

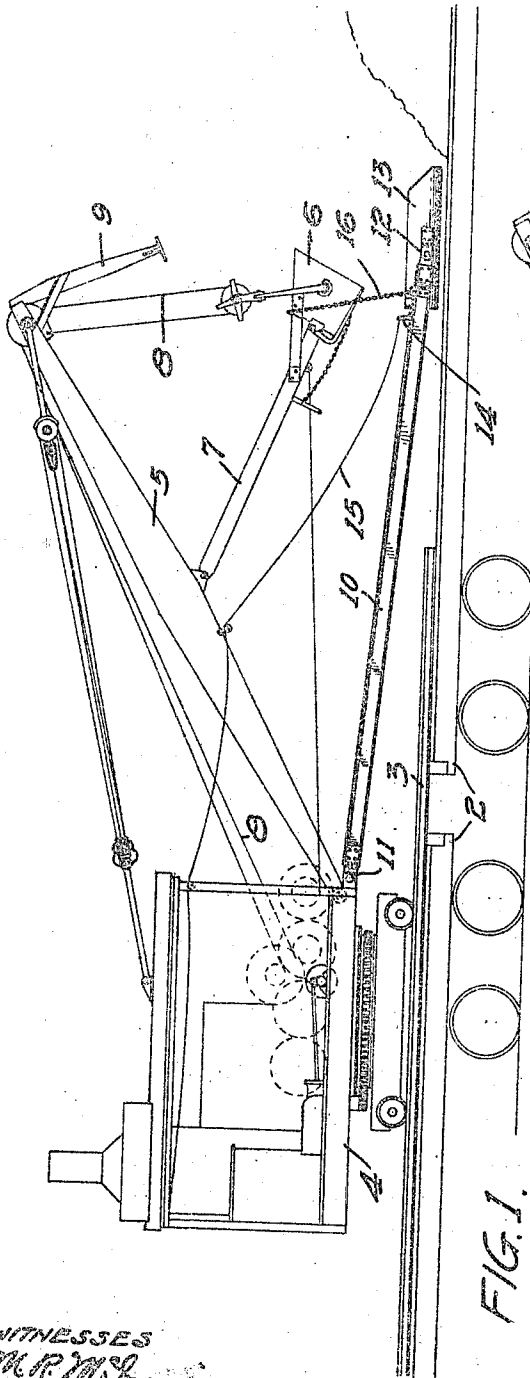


FIG. 1.

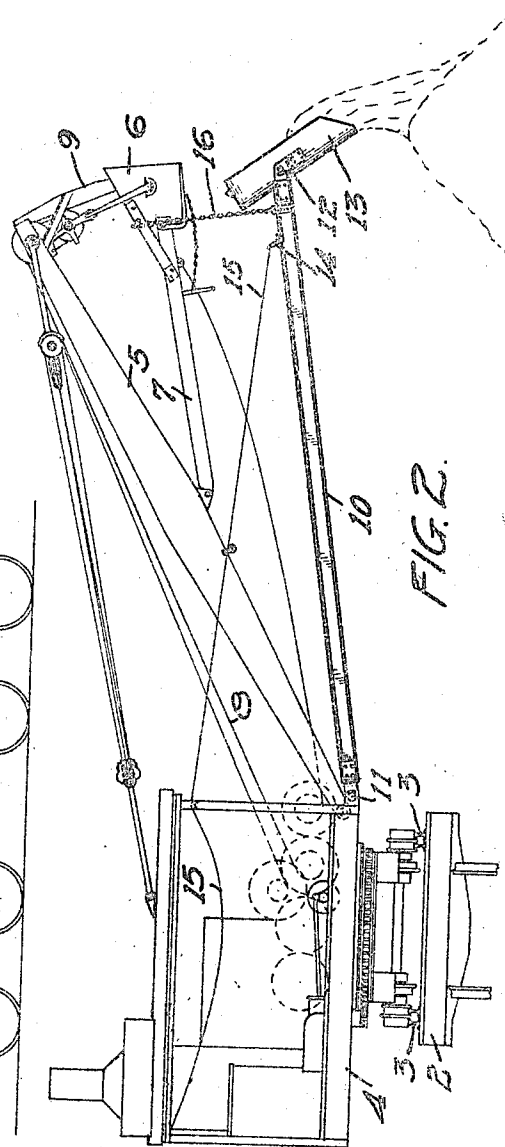


FIG. 2.

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OLIVER CROSBY, OF ST. PAUL, MINNESOTA, ASSIGNOR TO AMERICAN HOIST & DERRICK CO., OF ST. PAUL, MINNESOTA, A PARTNERSHIP.

DITCHING-MACHINE.

1,249,035.

Specification of Letters Patent.

Patented Dec. 4, 1917.

Application filed March 31, 1914. Serial No. 828,609.

To all whom it may concern:

Be it known that I, OLIVER CROSBY, citizen of the United States, resident of St. Paul, county of Ramsey, State of Minnesota, have invented certain new and useful Improvements in Ditching-Machines, of which the following is a specification.

My invention relates to that type of ditching machine that is usually mounted on a flat car, rolling back and forth upon a suitable track thereon and provided with an ordinary type of dipper or bucket for loading the cars. The cars have been usually unloaded by means of a plow that is drawn over the cars by a locomotive, the gravel being discharged upon either side.

The object of my invention is to provide an attachment for the ditcher by means of which it may be utilized as a means for unloading and the use of the large heavy plow, a locomotive, and a gang of men dispensed with.

A further object is to provide an unloading means in connection with the dipper by means of which the gravel can be gathered up and deposited on either side of the track at a distance from the cars instead of being merely pushed off the cars, as is usually done with the plow.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a side elevation of a ditcher, showing my invention attached thereto, the shovel being in its loading position,

Fig. 2 is a similar view, showing the ditcher swung to one side of the track and the shovel in its dumping position.

In the drawing, 2 represents a string of flat cars having rails 3 thereon to support the ditcher 4. 5 is the ditcher boom, 6 the bucket carried by the pivoted arm 7 and raised and lowered by means of the cable 8, which extends to the drums of the ditcher in the usual way. 9 is a cleaning device for the bucket. 10 is an auxiliary or supplemental boom or arm, pivoted at 11 to the ditcher, the pivots being removable to allow the arm to be detached when the ditcher is used for loading purposes. The arm is of

suitable length and construction and at its outer end has bearings for trunnions 12 mounted on the side walls of a scoop shovel 13. This shovel is preferably pivoted off the center and when empty will swing to a substantially horizontal loading position, as indicated in Fig. 1, where it will be held by a pivoted locking latch 14. A trip line 15 extends from this latch back to the cab of the ditcher. 16 is a chain, attached at each end to the arm and passing over the dipper or bucket 6 for maintaining the proper and constant distance between the dipper and shovel. This chain may be detached at any time when it is desired to remove the scoop shovel from the ditcher.

In unloading the cars, the operator of the ditcher may drop the shovel to the desired loading level or down upon the floor of the car by slacking the line 8. The ditcher is then moved forward on the rails 3 and the flat bottom of the scoop shovel, sliding on the floor of the car, will dig into the gravel piled on the car. When the shovel is filled, the operator will wind up the line 8, raising the bucket and through the chains 16 lifting the shovel also. The ditcher is then partially revolved until the shovel is above the desired dumping spot. The locking latch 14 is tripped and as that portion of the shovel in front of its pivots has a larger capacity than in the rear of the pivots, the additional weight of the gravel at the front of the shovel will tilt it to a discharging position as soon as the rear end is released. As soon as the gravel has been discharged from the shovel, the rear end of the shovel, being counter-weighted, will over-balance the forward portion and return the shovel to its horizontal position, where it will be automatically locked and ready to be pushed into the gravel to gather up another load.

This attachment may be used with the ditcher on the cars, or it may be used with the ditcher resting on the main rails, where the shovel can slide on the ground or be moved horizontally to gather up its load. When the cars have been unloaded, the shovel and its supporting arm may be removed to the side of the track, ready for use again when the cars are loaded.

With this ditcher attachment I am able to utilize the ditcher both for loading and unloading, dispense with the plow usually employed and the locomotive for drawing it,

and thereby greatly reduce the cost of maintenance of an equipment of this kind.

I do not wish to be confined to the form of shovel used or the particular means for mounting, as in various ways these details of construction may be modified and still be within the scope of my invention.

I claim as my invention:

1. The combination, with a ditching machine having a boom and bucket, of an arm pivoted on said machine and projecting outwardly therefrom beneath said boom, a shovel pivotally supported by said arm and having a locking means, and a trip device therefor, and means connecting said arm with said bucket.

2. The combination, with a ditching machine having a boom and a bucket, of an arm pivoted on said machine beneath said boom, a shovel pivotally supported by said arm beneath said bucket, said shovel having a locking latch and a trip line therefor, and flexible means connecting said arm with said bucket and supporting said arm and shovel at a predetermined distance from said bucket.

3. The combination, with an excavating machine having a boom and a bucket, an arm pivoted on said machine, a shovel pivoted on said arm, means for normally holding said shovel in a horizontal loading position or releasing it to allow it to tilt to its dumping position and means connecting said arm with said bucket for simultaneous movement.

4. The combination, with an excavating machine having a boom and bucket, of an arm pivoted on said machine adjacent to the pivots of said boom and projecting outwardly beneath said boom, the pivots of said arm being removable to allow the convenient separation of said arm from said machine or the mounting of the same thereon, a shovel pivoted on said arm, and means connecting said arm with said bucket for simultaneous vertical movement of said arm and shovel with said bucket.

5. The combination, with an excavating machine having a boom and bucket, an arm

pivoted on said machine, a shovel pivotally mounted in said arm and having means for normally holding it in a horizontal loading position, and a flexible connection between said arm and bucket.

6. An excavating machine comprising a truck, a turn table mounted thereon, a boom pivoted on said turn table and having an excavating bucket, an arm pivoted on said turn table independently of said boom, a shovel pivoted on said arm and having a lock and trip device and a single hoisting rig for said bucket and arm.

7. An excavating machine comprising a turn table, a boom pivoted thereon and provided with a bucket, an arm having an independent pivot on said turn table, the pivots of said arm being removable to permit separation thereof from said turn table, a shovel pivoted on said arm and a hoisting cable for raising or lowering said bucket and arm.

8. An excavating machine comprising a truck and turn table, a boom pivoted on said turn table and having a bucket, an arm also pivoted on said turn table, and a shovel for said arm, said arm being mounted for movement simultaneously with said bucket and a single operating cable for said bucket and arm.

9. An excavating machine comprising a truck and turn-table, a boom pivoted on said turn table, a hoisting cable for raising or lowering said boom, an arm mounted on said boom, a bucket carried by said arm, a cable connected with said bucket for raising or lowering it independently of said boom, an arm having a horizontal pivot on said turn table near the pivot of said boom, a shovel carried by said last named arm, and means whereby, when said bucket is raised, a corresponding movement will be imparted to said shovel and its supporting arm.

In witness whereof, I have hereunto set my hand this 28th day of March 1914.

OLIVER CROSBY.

Witnesses:

FREDERICK A. TIFFANY,
R. L. REILLY.