

No. 669,799.

Patented Mar. 12, 1901.

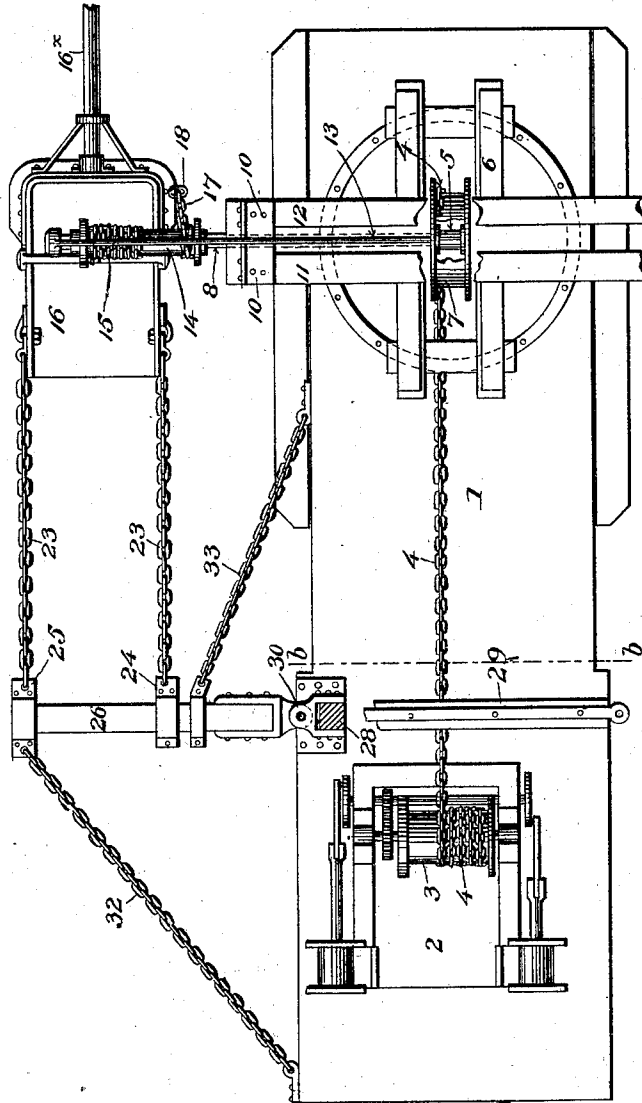
F. MERTSHEIMER & J. A. EDSON.
DITCHING MACHINE.

(Application filed Nov. 1, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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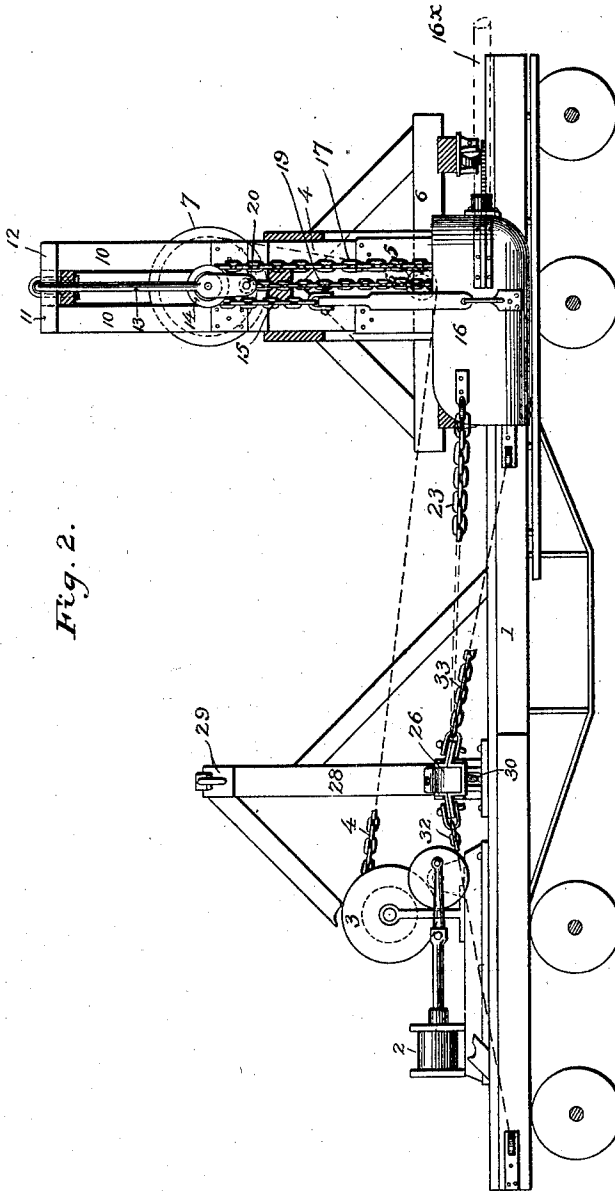


Fig. 2.

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Fig. 4.

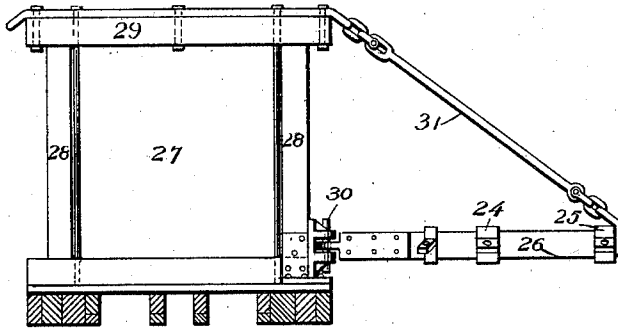
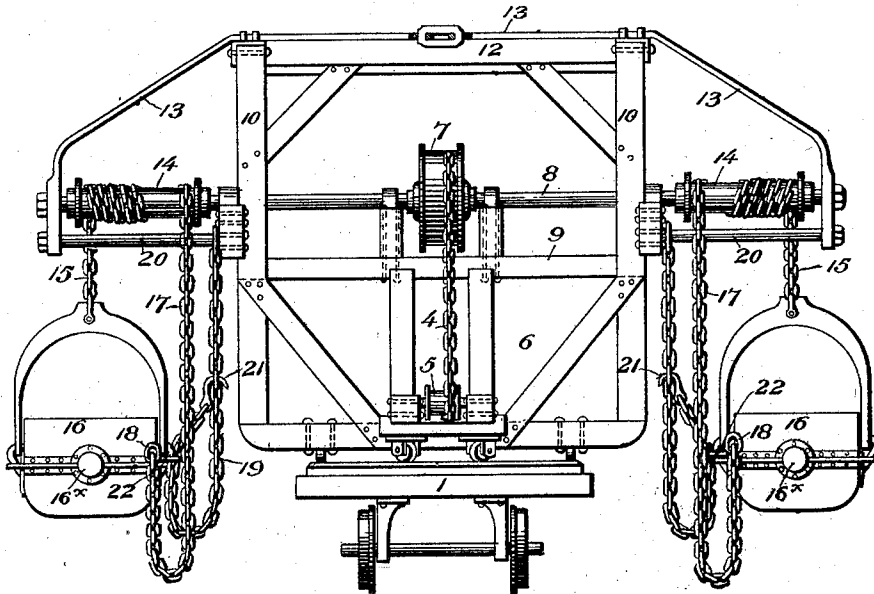


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK MERTSHEIMER AND JOB A. EDSON, OF KANSAS CITY, MISSOURI.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 669,799, dated March 12, 1901.

Application filed November 1, 1900. Serial No. 35,156. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK MERTSHEIMER and JOB A. EDSON, of Kansas City, county of Jackson, and State of Missouri, have invented a new and useful Improvement in Ditching-Machines, of which the following is a specification.

This invention has reference to a ditching-machine designed for widening and sloping ditches at the sides of railroad-tracks, and it relates more particularly to that type of machine in which ditching-scoops sustained by a car are drawn along at the sides of the track.

The invention consists of various improvements in machines of this nature directed mainly to the manner of sustaining and operating the scoops, the draft appliances therefor, the structure of the sustaining-frame for the scoops and draft appliances, and other details fully described hereinafter.

Referring to the drawings, Figure 1 is a top plan view of our improved device. Fig. 2 is a side elevation of the same. Fig. 3 is a rear elevation of the machine. Fig. 4 is a transverse vertical section on the line *b b* of Fig. 1.

In the accompanying drawings, 1 represents a platform-car adapted to travel on the track and giving support to the operative parts of the mechanism. On the forward end of the car is mounted a hoisting-engine 2, provided with a drum 3, on which is wound a cable 4, extending rearwardly, where it passes around a guide-pulley 5 in the base of a turn-table 6, sustained by the car. This cable is extended upward, where it is attached to a drum 7, fixed on a horizontal main shaft 8, mounted in suitable bearings in a vertical frame 9, rising from the turn-table, the cable being so connected that as it is wound on the engine-drum it will unwind from the other drum, and vice versa, for the purpose presently described.

The vertical frame 9 comprises two upright beams 10, connected by cross-beams 11 and 12, a truss-rod 13 extending across the upper ends of the upright beams and outwardly and downwardly at the outer sides of the frames, where its ends are bent vertically downward to give support to the outer ends of the main shaft, which have bearings therein.

The projecting ends of the main shaft have fixed to them each a hoisting-drum 14, on which is wound a hoisting-chain 15, connect-

ed at its lower end to a ditching-scoop 16, provided with a handle 16^x for guiding the same, the chain being so connected with the drum that when it is unwound therefrom the cable 4 will be wound upon drum 7 and unwind from the engine-drum. This arrangement enables the dumping of the scoops to be effected by gravity on the release of the engine-drum, the weight of the scoops causing the hoisting-chains to unwind and the cable to wind upon drum 7. In order that the scoop when it thus descends by gravity may be tilted to quickly discharge its contents, we provide a dumping-chain 17, connected at its lower end with the rear end of the scoop, as at 18, and attached at its upper end to the hoisting-drum in such manner that it will wind on the drum when the hoisting-chain unwinds. The length of the dumping-chain is such that it will be taut and exert an upward pull on the scoop when the latter is at the proper point in its descent to be dumped, the result being that the rear end of the scoop will be elevated and its forward end tilted downward.

In order that the scoop may cut on a slope at the side of the track, we provide means for holding it at an inclination when it is lowered in action. This we effect by a chain 19, which for the convenience of description is termed a "sloping" chain, connected at its lower end with the inner side of the scoop and at its upper end slidingly with a horizontal bar 20, extending outward from the vertical frame just below the hoisting-drum, with its outer end fixed to the end of the truss-rod and receiving support therefrom. This chain is of such length that it will hold the inner side of the scoop at a higher level than its outer side, so that the scoop will be inclined and cut on a slope. Means are provided for varying the length of the chain to continue and deepen the slope, so that the inner edge of the scoop may begin the next operation on the line of the outer edge of the previous action. A convenient means for effecting this variation in the chain comprises a hook 21 on the end of the chain, adapted to be engaged with the links when the chain is looped through a ring 22 on the scoop, as clearly shown in Fig. 3. By connecting the upper end of the chain slidingly with the supporting-bar provision is made for preserv-

ing the inclination of the scoop notwithstanding the distance from the side of the car, it being but necessary to move the chain along the bar to meet a corresponding adjustment
5 of the scoop.

The scoops are drawn forward as the car advances, each by means of two draft-chains 23, connected at their rear ends to the sides of the scoop and at their forward ends respectively to collars 24 and 25, slidingly
10 mounted on a draft-bar 26, projecting from the side of a vertical transverse frame 27 near the forward end of the car. This frame consists of two parallel vertical beams 28, rising
15 from the platform and connected at their upper ends by a horizontal cross-beam 29. The inner end of the draft-bar is jointed near the lower end of the vertical beam by a vertical pivot-pin 30, so that the beam may be swung
20 around to the side of the car when not in use to avoid bridges or other obstructions at the sides of the track. The outer end of the draft-bar is sustained by a link 31, jointed at its upper end to the end of the cross-beam
25 29 and at its lower end to the draft-bar, as shown in Fig. 4, this link permitting the draft-bar to be swung around to the side without the necessity of disconnecting the former. When in operation, the draft-beam
30 is held out horizontal to sustain the draft and is prevented from moving rearward by a horizontal link 32, connected with the side of the platform in front of the bar and coupled to the latter so that it may be detached when
35 the draft-bar is to be folded. The draft-bar is prevented from moving forward by a chain 33, connected at its forward end to the draft-bar about midway between its ends and at its opposite end to the side of the car.

It will be observed that by reason of the connection of the draft-chains slidingly with the draft-bar the scoops may be adjusted transversely, so as to act either closely at the side of the ties or at different distances from
40 the same.

In the operation of the device the car is drawn along with the turn-table adjusted so that the main shaft extends transversely and sustains the scoops at the sides of the track
45 lowered for action. In this position of the parts the engine-drum is unwound, drum 7 wound, and the hoisting-drums unwound. On the advance of the car the scoops act at the sides of the track, and when filled with
50 dirt the engine-drum is operated to wind its cable, which latter will unwind from drum 7, wind up the hoisting-chains, and elevate the scoops. The scoops are now run out of the cut for dumping, and the engine-drum being
60 released the weight of the scoops causes them to descend, unwinding the engine-drum and winding up drum 7, and when the scoops are lowered to the proper point the dumping-chains come into action and lifting the rear
65 end of the scoops the latter are tilted downward and the contents discharged. The scoops are again raised, run into the cut, and

lowered again into action, when the operation just described is repeated.

Having thus described our invention, what
70 we claim is—

1. In a ditching-machine the combination of a car, a vertical frame rising therefrom, a horizontal shaft sustained by said frame with its end projecting outward, a truss-rod fixed
75 to the frame and extending outward, bearings in the rod in which the end of the shaft is mounted, a hoisting-drum on the shaft, a ditching-scoop, and a hoisting-chain connecting the ditching-scoop with the drum. 80

2. In a ditching-machine the combination with the car, of a vertical frame rising therefrom, a horizontal shaft sustained in said frame with its ends projecting outward, a truss-rod extending along the top of the frame
85 above the shaft with its end extending outward and downward, bearings in the ends of the truss-rod, hoisting-drums on the shaft between said bearings and the sides of the frame, ditching-scoops, and hoisting-chains connect-
90 ing said scoops with the respective drums.

3. In a ditching-machine the combination with a vertical sustaining-frame, of a horizontal drum at the side of the same, a scoop, a hoisting-chain connecting the scoop with
95 the drum, and a sloping chain having its upper end fixed and its lower end connected with the side of the scoop.

4. In a ditching-machine the combination with the vertical sustaining-frame, of a horizontal
100 hoisting-drum at the side of the same, a ditching-scoop, a hoisting-chain connecting the scoop with said drum, a sloping chain having its upper end fixed and its lower end connected with said scoop, and means for
105 varying the length of the sloping chain.

5. In a ditching-machine the combination with a vertical sustaining-frame, of a hoisting-drum at the side of the same, a ditching-scoop, a hoisting-chain connecting the scoop
110 with the drum, said scoop being adjustable transversely, a sloping chain having its upper end connected with the frame and adjustable transversely and its lower end connected with the side of the scoop. 115

6. In a ditching-machine the combination with a vertical sustaining-frame, of a hoisting-drum at the side of the same, a ditching-scoop, a hoisting-chain connecting the scoop
120 with the drum, a horizontal bar fixed beneath the hoisting-drum, a sloping chain having its upper end slidingly connected with said bar and its lower end connected with the side of the scoop.

7. In a ditching-machine the combination
125 with a vertical frame of a truss-rod extending outward and downward therefrom, a hoisting-drum having a bearing in the end of said rod, a ditching-scoop, a hoisting-chain connecting the scoop and drum, a horizontal
130 bar having its outer end sustained by said truss-rod and a sloping chain connected at its ends respectively with said bar and the scoop.

8. In a ditching-machine the combination with a car provided with the usual floor or platform of a vertical frame rising therefrom, a draft-bar mounted near the base of the frame above the floor on a vertical axis, a sustaining-link jointed at the upper end of the frame and to the outer end of the draft-bar, a ditching-scoop, means for raising and lowering the same, and a draft-chain connecting the ditching-scoop with the draft-bar.

9. In a ditching-machine the combination with a car, of a ditching-scoop sustained at the side of the same, means for raising and lowering the scoop in a perpendicular line,

and a sloping chain having its upper end fixed and its lower end connected with the side of the scoop; whereby the chain will serve, when the scoop is lowered, to limit the descent of one side of the same and cause it to act at an inclination to form a slope.

In testimony whereof we hereunto set our hands, this 17th day of October, 1900, in the presence of two attesting witnesses.

FREDERICK MERTSHEIMER.

JOB A. EDSON.

Witnesses:

W. B. DUNLEVY,
E. M. STREET.