D. HESS.

DITCHING MACHINE.

No. 186,006. Patented Jan. 9, 1877.

Fig. 1.

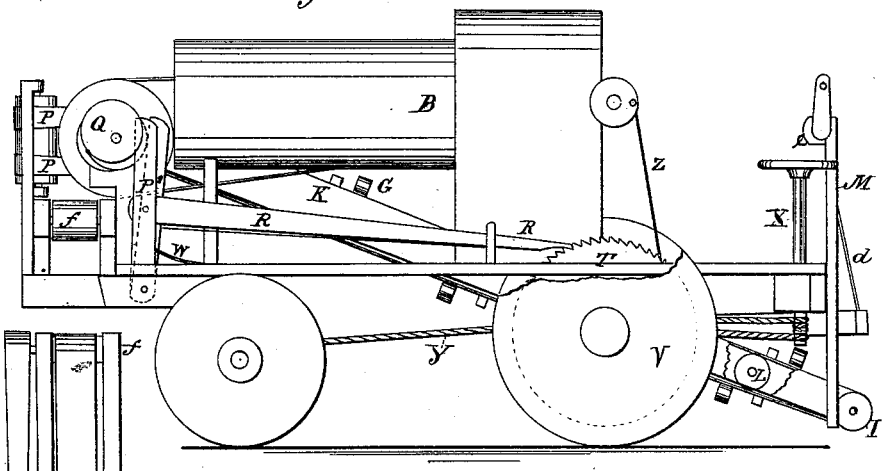
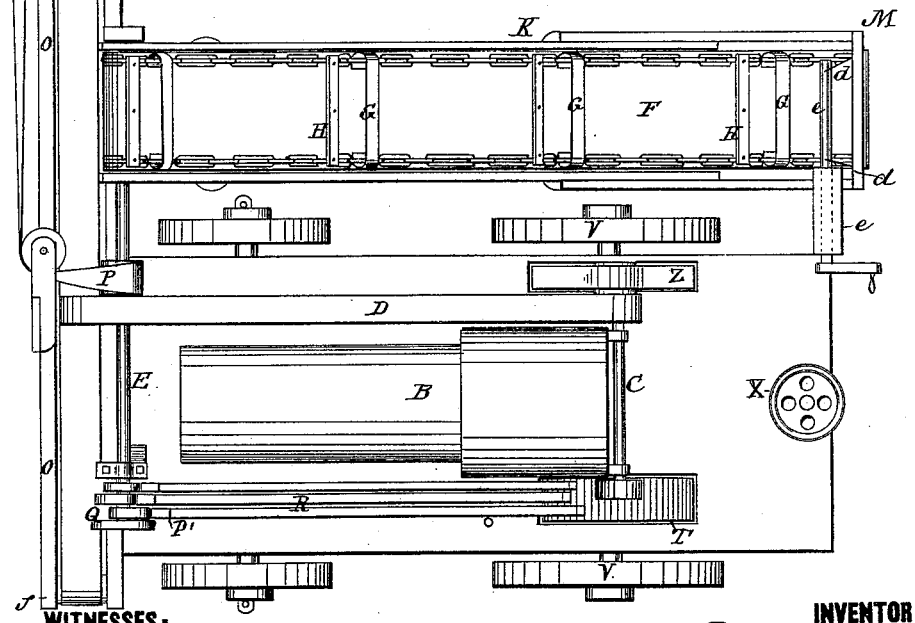


Fig. 2.



WITNESSES:

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Fig 3.

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DANIEL HESS, OF GREENVILLE, MISSISSIPPI.

IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. **186,006**, dated January 9, 1877; application filed June 24, 1876.

To all whom it may concern:

Be it known that I, DANIEL HESS, of Greenville, in the county of Washington and State of Mississippi, have invented a new and Improved Ditcher and Excavator; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improvement in the class of ditchers having an endless belt or apron, by which the earth is elevated and deposited upon a cross-belt or carrier.

The improvement relates particularly to the construction and arrangement of devices for causing the machine to advance; to the form of the cutters, and mode of attaching them to the elevator belt or apron, as hereinafter specified.

In the accompanying drawing, forming part of this specification, Figure 1 is a side elevation of the machine. Fig. 2 is a plan view. Fig. 3 is an edge view of a fragment of the elevator or traveling apron.

The wheeled vehicle carries a boiler, B, and a propelling-engine, from which latter motion is communicated to the shaft C. A belt or chain, D, runs from a pulley on said shaft to the shaft E, which drives the entire ditching and elevating apparatus.

The earth cutting and elevating device consists of an endless apron or belt, F, bars H, and knives or cutters G. The latter are straight in their middle portion and curved at the ends, which are bent inward and inserted in the links of the chains that extend along the edge of the apron or belt F and around the chain-pulleys on shaft E, and around a roller, I, having its bearings at the lower end of the adjustable frame K. The bars H are attached to the chains in substantially the same manner, their ends being inserted in the links.

In practice the chains will be arranged along the edges of the apron or directly beneath the same, and attached thereto in any suitable manner.

Rollers L are located in the frame K intermediate of the shaft E and chain-roller I to support the apron F and its superincumbent load. The frame K is pivoted upon the shaft C and adapted to be vertically adjusted in guides M for the purpose of cutting deep or shallow. The adjustment is effected by means of cords *d* and a horizontal windlass, *e*, and the adjustment may be made while the ditcher is in operation.

The knives G cut away the earth as the machine advances, and the cross-bars H, attached to the apron, assist in taking up and holding the earth upon the apron F till it is discharged from the upper end thereof upon the cross-carrier N, as will be readily understood without detailed description.

The carrier is an endless belt or apron arranged to pass around drums or pulleys *f*, located at each end of the frame O, and operated by the belt P from the shaft E. The carrier may be adjusted at its outer end to discharge the earth into a wagon or cart, but ordinarily it will be fixed in a horizontal position.

The mechanism for causing the machine to advance steadily, for the purpose of ditching and excavating, consists of three eccentrics, Q, which are fast on the end of shaft E, and three pawls, R, that are pivoted to vertical pivoted bars P′, and engage a ratchet-wheel, T, mounted on the front axle. The front transporting-wheels V are likewise fast on the said axle, and hence, as these pawls are successively operated, (the eccentrics being so located that no two levers move together,) a continuous rotation is imparted to the wheels, and a steady forward movement to the machine.

The free ends of the bars or levers P′ are held in contact with the eccentrics by means of springs W.

When it is desired to run the machine from one point to another without operating the ditching apparatus proper, the elevator-frame K is raised by the windlass *e*, the pawls raised off the ratchet-wheel T, and the connection made between the front axle and the shaft C by means of a belt, Z.

The machine is guided by a turn-shaft, X, and cord Y, attached to the pivoted rear axle.

What I claim is—

1. In a ditching-machine, the combination, with the elevator and the ratchet-wheel mounted on the front axle, of the three pivoted pawls R, vibrating bars P′, the eccentrics Q, and shaft E, all arranged as shown and described, to operate as specified.

2. In a ditching-machine, the cutters, having their ends bent inward and inserted in and attached to the links of the elevator-chains, as shown and described.

DANIEL HESS.

Witnesses:
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