

(No Model.)

H. E. DEPP.
CAR PROPELLER.

No. 255,496.

Patented Mar. 28, 1882.

Fig 1.

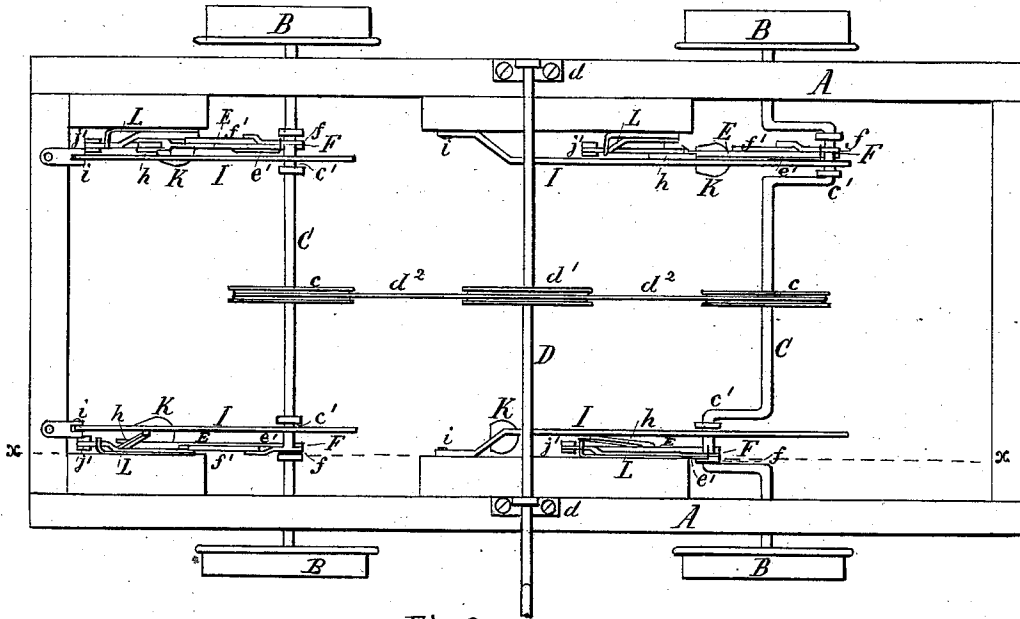


Fig 2.

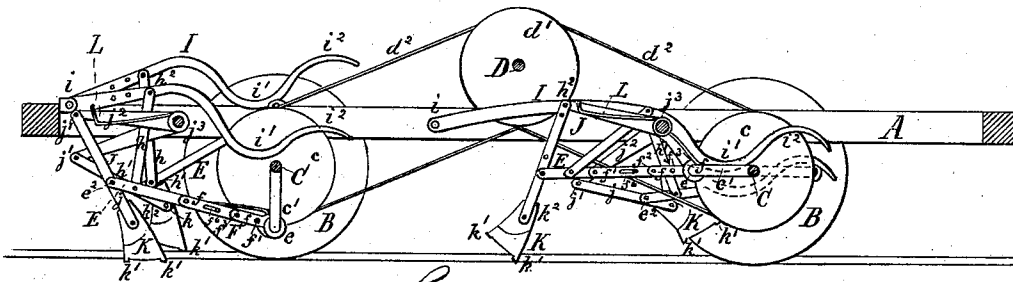
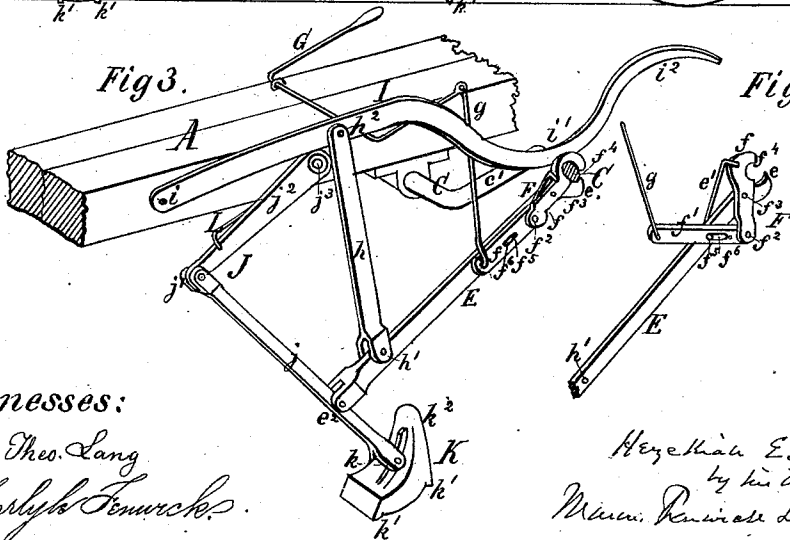


Fig 3.

Fig 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

HEZEKIAH E. DEPP, OF SEDALIA, MISSOURI.

CAR-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 255,496, dated March 28, 1882.

Application filed January 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, HEZEKIAH E. DEPP, of Sedalia, in the county of Pettis and State of Missouri, have invented a new and useful Improvement in Mechanical Movements Adapted for Propelling Cars and Boats, which improvement is fully described in the following specification and shown in the drawings, in which—

Figure 1 is a top view of my propelling device attached to a lower part of a car. Fig. 2 is a vertical longitudinal section in the line x of Fig. 1. Fig. 3 is a perspective detail view of one of the propellers, and Fig. 4 a perspective detail view of a clasp opened in order to connect the propeller with the crank of a power-shaft.

The object of my invention is to prevent cars which are moved by steam, compressed air, or other means from slipping while ascending heavy grades; and another object is to provide an improved propeller for either land or marine uses.

The nature of my invention consists, first, in a propeller having a crank-axle, a connecting-rod, a knee-joint lever adapted for having either a calked-foot or a web-foot propeller attached to its lower end, and a lifting-lever, whereby a motion similar to that of a horse's hind leg is secured and utilized for propelling either a car or a boat, as will be presently described; second, in a clasp device in combination with the propeller, whereby the propeller may be coupled to the power-shaft for action and uncoupled and thrown out of action; and, third, in the combination of the propeller hereinafter described with a wheeled vehicle.

In the annexed drawings, A represents the bottom frame of a car; B, the wheels; C, the axles; and D is a power-shaft, provided with suitable bearings, d_1 , on the car-frame, and with a pulley, d' , which, by means of cords or chains d^2 , gives motion to pulleys e , fastened to the car-axes C; but I do not confine myself to these means for operating my propeller, as the same may be done by ordinary driving mechanism, such as is employed on locomotive-engine trucks.

The car-axes C are each provided with two cranks, c' , or eccentrics, as preferred, standing in opposite directions. To each crank a connecting-rod, E, is attached by means of a clasp, F. The crank end e of the connecting-

rod E is of semicircular shape, as plainly shown in Fig. 4, and constitutes the counter-bearing of the clasp. The clasp F consists of two levers, f, f' , joined by a pivot, f^2 , the lever f being pivoted at f^3 to the connecting-rod E, and having a semicircular hook, f^4 , opposite the crank end e of the connecting-rod. By means of this clasp device the propeller can be clasped upon the crank of the axle for action, and when the propeller is not required for use to aid in propelling the wheeled vehicle it can be unclasped from the axle of the wheels and adjusted in position out of the way of the cranks of said axle, thus avoiding unnecessary wear. The lever f' is held upon the connecting-rod E by a headed guide-pin, f^5 , which guide-pin f^5 passes through a fulcrum-slot, f^6 , of lever f' .

A crank-lever, G, (shown in Fig. 3,) suitably attached to the car, is connected by a rod, g , to the free end of the lever f' , and by this crank-lever the lever f' is moved out of its normal position when the clasp F is to be opened, as shown in Fig. 4, and the propeller adjusted out of action and range of the crank of the axle C. The clasp is closed automatically around the axle by means of a spring, e' , fastened to the connecting-rod and bearing upon the clasp end of the lever f .

The connecting-rod E is held suspended by a link, h , pivoted to it at h' , and a lifting-lever, I, at h^2 . The end of the connecting-rod E is forked, and pivoted at e^2 to the lower lever, j , of a knee-joint lever, J. The lever j is pivoted at j' to the upper lever, j^2 , of the knee-joint lever J, which lever j^2 is pivoted at j^3 to the car-frame. Below the pivot e^2 a foot, K, is pivoted at k to the lever j . The lower surface of the foot K is flat, and is provided with calks k' , in order to take a firm hold on the ground; and the upper part of the foot in front of the pivot-pin k is provided with a transverse shield, k^2 , which leans against the lever j , and thus prevents the shoe from turning over when near the end of its stroke. The lifting-lever I is pivoted to the car at i . It is of ogee shape at its front end, being turned down, as at i' , and ending with an upward curve, i^2 , these portions i' i^2 being so shaped that they are within range of the crank of the axle C when the propeller is in action, and thus enable this crank, by means of the lever I, while it is describing the upper half of its revolution, to

lift the foot K from the ground. A spring, L, suitably fastened to the car, bears upon the lever j^2 of the knee-joint lever J and causes the foot K to be firmly pressed upon the ground during the back-stroke of the connecting-rod E. The cranks of one of the car-axles stand at right angles to the cranks of the other, whereby the feet K are caused to tread the ground successively and at equal intervals.

Operation: If the propeller is applied to a car, it is kept out of action while the car moves over level ground or low grades, as the traction of the wheels B is sufficient in such case, the propelling devices being held up unclasped from the crank-axles by suitable means, such as the lever G; but when the car has to ascend a steep incline the propeller is lowered by the lever G, and the clasps F are attached to their respective cranks c' and the apparatus set in motion. The cranks c' revolve and operate the connecting-rods E and the lifting-levers I. By making its upper half-revolution the crank c' moves the connecting-rod E forward and swings the lever I up, whereby the foot K is lifted from the ground and moved forward. By making its lower half-revolution the crank c' moves the connecting-rod E backward and allows the lever I to swing down. The lifting of the foot K begins as soon as the back-stroke of the connecting-rod is finished, and simultaneously with the beginning of the back-stroke of the connecting-rod the foot is let down upon the ground. During the back-stroke of the connecting-rod the lever I does not bear upon the crank, and is supported by means of the foot K and its connections, thereby giving the foot a firm hold upon the ground, which hold is increased by the pressure of the spring L upon the levers j^2 . As the cranks are neces-

sarily smaller than the wheels B, the connecting-rod E is attached to the levers j a suitable distance above its connection h with the shoe, and thus a proper stroke of the shoe is effected, which keeps pace with the wheels.

By the above-described arrangement of the cranks c' the steps of the feet K will be in succession and at equal intervals of time, so that the car is continuously propelled and no chance given the wheels to slip upon the track.

By substituting appropriate web-foot propellers for the feet K and applying the described mechanism to a boat my invention will answer as a marine propeller.

The apparatus may be all attached to one axle or to a separate driving-shaft, as may be found most convenient.

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

1. In a land or a marine propeller, the combination of the axles C, having a crank, c' , connecting-rod E, knee-joint lever J, lifting-lever I, and link h , substantially as and for the purpose set forth.

2. The combination of the connecting-rod E, knee-joint lever J, and a clasp, F, substantially as and for the purpose set forth.

3. The combination, with a wheeled vehicle provided with power-transmitting mechanism, of the axles C, having cranks c' , connecting-rods E, knee-joint levers J, and lifting-levers I, links h , and feet K, substantially as and for the purpose set forth.

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Witnesses:

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