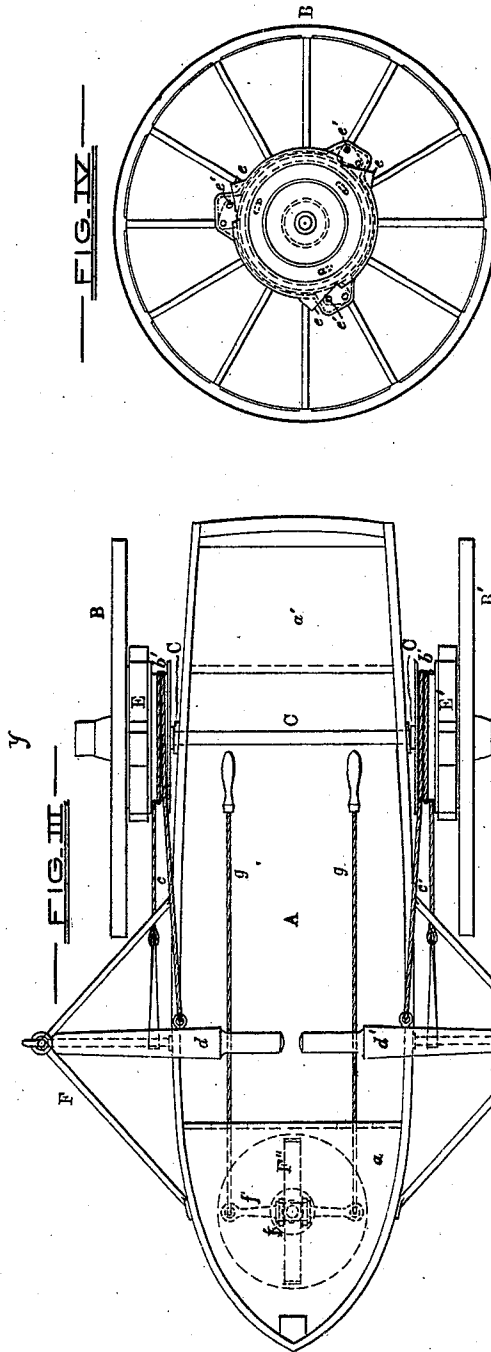
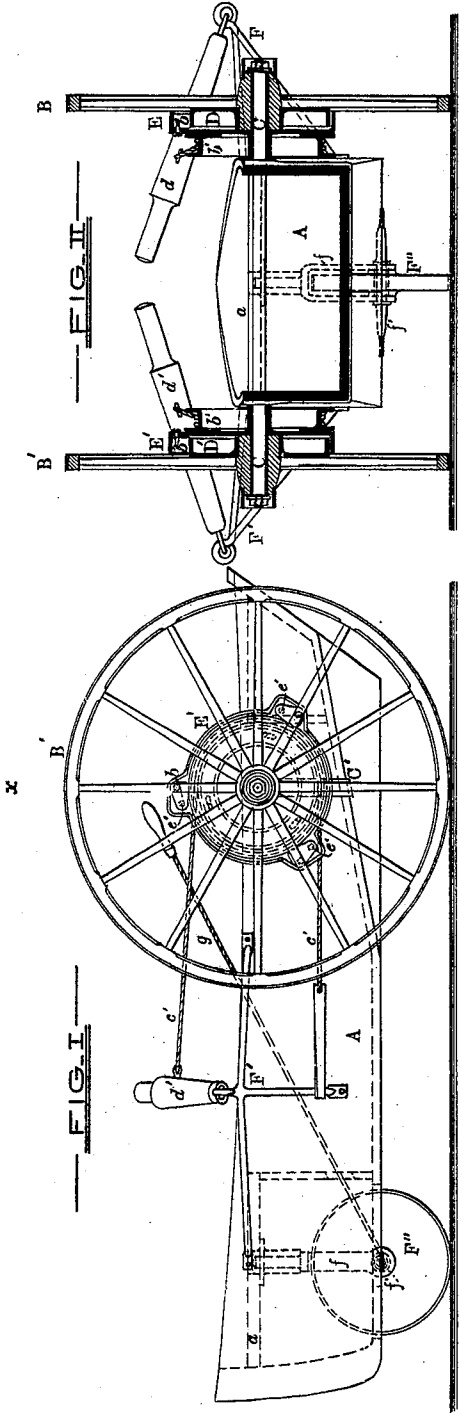


W. T. & G. H. HOWARD.
HAND-PROPELLED VEHICLE.

No. 170,629.

Patented Nov. 30, 1875.



WITNESSES.

Wm. W. Louison

W. W. Wharton

INVENTORS.

William Thompson Howard

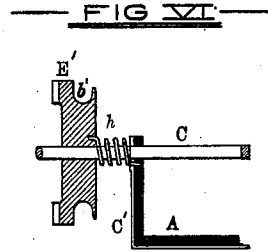
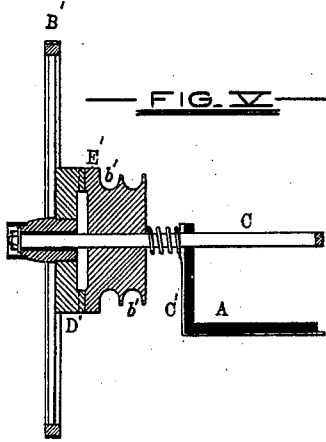
George Henry Howard

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UNITED STATES PATENT OFFICE.

WILLIAM T. HOWARD, OF BALTIMORE, MARYLAND, AND GEORGE H. HOWARD,
OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN HAND-PROPELLED VEHICLES.

Specification forming part of Letters Patent No. **170,629**, dated November 30, 1875; application filed
November 17, 1875.

To all whom it may concern :

Be it known that we, WILLIAM THOMPSON HOWARD, of the city of Baltimore, in the State of Maryland, and GEORGE HENRY HOWARD, of the city of Washington, in the District of Columbia, have invented certain Improvements in Hand-Propelled Vehicles, of which the following is a specification, reference being had to the accompanying drawing forming a part hereof.

This invention relates to a novel adaptation of a well-known movement to the propulsion of land-vehicles, in the present instance applied, preferably, to exercising and pleasure wagons for children and adults.

We apply a propelling movement to the vehicle unlimited as to length of pull or stroke, as in rowing, or as in the reciprocating movement given to a weight by means of a cord and pulley, the hand supplying the power, and gravity the "recover" or back motion of the hand. The recover in this invention, as in the illustrations above given, is negative or inoperative in its character as regards the results to be attained, the stroke alone being relied on to effect the useful work as opposed to the incident useless expenditure of energy in the recover.

It will be understood that the momentum of the propelled vehicle, under the influence of the stroke, will be adequate to prevent any appreciable diminution in speed during the intervals between the strokes; while, as above stated, the broad principle herein involved, so far as the movement in itself is concerned, is not claimed as a part of our invention, the details and their combinations, employed, as hereinafter shown, in adapting that principle to the aforesaid purpose, form a material part of our improvements.

In the accompanying drawing forming a part hereof, Figure 1 is a side elevation of our invention, partly in section. Fig. 2 is a transverse section of the same on line *x y*. Fig. 3 is a plan of the same. Fig. 4 is an inside view of one of the wheels, with its attachments. Figs. 5 and 6 show details of the propelling mechanism, in modified or optional forms.

Similar letters of reference show similar parts of the invention.

A represents the body of the wagon, which is preferably boat-shaped, and supplied with suitable seats, *a a'*. B B' are driving or traction wheels, turning loosely upon the outer ends of the axle C. For purposes of strength, a bar, C', serves to support the axle, said bar conforming to and extending around and under the boat, and being rigidly secured thereto. D D' are flanged disks fastened to the inner faces of the wheels B B' and adapted to engage with and be rotated by clutches E E', running loosely on and independently of the axle C. The clutches E E' are provided with pawls *b*, which rest within pockets in the edges or peripheries thereof, and bear upon the faces of the flanged disks D D' in such manner as to produce a combined motion of the said disks and clutches in one direction, under circumstances hereinafter described. The clutches E E' are provided with spools *b' b'* projecting from their inner faces, around which spools are coiled the central portions of cords or straps *c c'*, the ends of which are connected to fixed parts of the boat and to portions of the propelling mechanism, as more fully hereinafter shown. The upper ends of the cords or straps *c c'* connect the clutches E E' with levers *d d'*, which have substantially the office or function of the ordinary oars employed in the propulsion of rowing-boats. The lower ends of the said cords or straps are rendered elastic by the insertion therein of lengths of india-rubber, and unite the clutches E E' with fixed points in the boat. The levers *d d'* are pivoted at or near the extremities of outriggers F F', which project from the sides of the boat, and are sufficiently stayed or braced thereto. The inner ends of said levers, which constitute the handles thereof, extend over and within the gunwales of the boat, approaching, but standing somewhat apart from, each other.

The person applying the levers *d d'* as oars, seated in the ordinary manner, facing the stern of the boat, on initiating the stroke pulls both levers toward him, the pawls *b* having

previously engaged with the outer edges of the flanged disks $D D'$, thus turning both clutches $E E'$, and consequently both driving-wheels $B B'$, through the medium of the flanged disks.

It will be seen that during this operation or stroke the elastic portions of the lower ends of the cords or straps $c c'$ offer, by reason of the stretch given, such resistance as will, on change of motion being given to the levers, re-establish the former positions of the coils, clutches, and levers independently of the driving-wheels—or, in other words, effect the recover.

The use of the levers $d d'$ is to effect the forward movement alone of the boat; and, it becoming necessary at times to move the boat in a contrary direction, we have adopted expedients for effecting this result.

We provide the clutches employed herein with devices whereby they may be relieved from action and their pawls rendered inoperative in the following manner: The spools $b' b'$, before described as extending from the inner faces of the clutches $E E'$, are made capable of a slight rotary motion independently of the clutches, and are provided with lifting-fingers $e e$, which, at the extreme limit of the recover, or at any part thereof, engage with pins $e' e'$ projecting from the inner sides of the pawls $b b$, and through slots in the webs or plates of the clutches $E E'$. The independent rotary movement of the spools admits of their return, in the recover, slightly in advance of the rotary movement of the clutches, the fingers $e e$ being thereby brought in contact with the pins $e' e'$, causing the lifting of the pawls b . The clutches are thus rendered inoperative, and the driving-wheels of the boat may be conveniently revolved by hand, so as to produce the backward movement of the boat. This lifting of the pawls also prevents unnecessary wear of their active faces.

The propelling of the boat may be accomplished by a variety of clutches or their equivalent; but the appliances above described are preferred by us, as being noiseless and smoother in action than others in which teeth are employed and the friction of opposing surfaces not the acting agent.

As an example of that character of clutch in which friction is not depended on to effect the motion, we refer to Figs. 5 and 6, in which the disks $D D'$ and clutches $E E'$ are toothed upon their engaging surfaces. The backward movement of the boat in this construction is accomplished by moving the toothed surfaces apart by hand or lever power.

The steering appliances consist in a wheel, F'' , running in a pivoted and bifurcated vertical shaft, f . The wheel F'' is turned, with the shaft f , in an aperture cut in the bottom of the boat, and is, in a measure, concealed by the seat a . The pivoted shaft is suitably supported in bearings under the said seat.

The axle f'' , upon which the wheel F'' rotates, is extended at either side of said wheel and adapted for the attachment of guiding-cords g , which lead to the person steering, who occupies the seat a' . If one person is to propel the wagon and steer also, the guiding-cords are supplied with stirrups for the use of his feet.

As shown in Fig. 6, the recover is accomplished by means of spirals $h h$, occupying those parts of the axle between the clutches $E E'$ and the respective sides of the boat, the ends of said spirals being inserted into or attached to the inner faces of the clutches and the sides of the boat. In this modification the stroke compresses or coils the spirals, which, in their reverse or uncoiling movement, produce the recover. In addition to this use the spirals may be employed to effect the engagement and disengagement of the opposing clutches under the required conditions. It will be seen that in the use of the spirals the return of the propelling cords or straps is not requisite.

It is seen that the eyebolt-connection of the levers $d d'$ with the outriggers $F F'$ admits of a vertical as well as lateral movement of said levers, thus enabling the operator to approach the various movements of oars in rowing boats, such as increasing or diminishing the "dip," "feathering," &c. The effect of the oar action is thereby greatly enhanced.

An effective brake may be produced by the addition of a body of rubber or a pad of other material to the wheel sides of each of the hand-levers, which pads, by an excessive movement on the recover, are brought in contact with the rims of the driving-wheels, thus braking them.

We do not limit ourselves to the shape of the wagon-body herein shown, any other common shape being equally applicable to the combination therewith of the system of propulsion herein described.

Having described our invention, what we claim as new, and wish to secure by Letters Patent of the United States, is—

1. In combination with the body of a rowing-wagon, having a seat suitably arranged for the oarsman, the lateral oar-levers $d d'$ loosely pivoted to the respective sides of the wagon, substantially as specified.

2. In combination with the oar-levers $d d'$, pivoted at the respective sides of the wagon-body, the cords $c c'$, for communicating the muscular force of the oarsman to the rotating mechanism of the driving-wheels, substantially as herein described.

3. The lateral oar-levers $d d'$ and cords $c c'$, combined with the cord-spools $b' b'$, clutches $E E'$, disks $D D'$, and driving-wheels $B B'$ and their axles, all arranged as parts of a rowing or exercising wagon, substantially as and in the relation herein specified.

4. The slotted clutches $E E'$, combined with the spools $b' b'$, having the fingers $e e$, and

adapted to operate upon the pins *e' e'* of the pawls *b b*, substantially as and for the purpose set forth.

5. The combination of the flanged disks *D D'*, clutches *E E'*, provided with the pawls *b b*, and spools *b' b'*, substantially as herein described.

6. In a wheeled vehicle, the combination of the oar-levers *d d'* and the outriggers or supports *F F*, substantially as specified.

7. In a wheeled vehicle, the combination of the oar-levers *d d'*, outriggers *F F'*, and eye-bolt-connections between said levers and outriggers, substantially as and for the purposes specified.

8. In a rowing or exercising wagon, the lateral oar-levers *d d'* and spools *b' b'*, operating the rotary propelling mechanism, combined with coiled propelling and reactionary cords *c*

c', having their ends secured respectively to said oar-levers and fixed points in the wagon, substantially as hereinbefore described.

9. The perforated bottom of the wheeled vehicle, in combination with the steering-wheel *F*, vertical and bifurcated shaft *f*, and wheel-axle *f'*, adapted to receive the guiding-cords *g*, substantially as specified.

In testimony whereof we have hereto subscribed our names this 4th day of November, in the year of our Lord 1875.

WILLIAM THOMPSON HOWARD.
GEORGE HENRY HOWARD.

Witnesses:

WM. W. TOWSON,
W. W. WHARTON,
J. B. GREENE,
JNO. S. MADDOX.

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