Aug. 18, 1925. 1,550,344

L. COPES

LAND AND WATER VEHICLE

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Fig. 1.

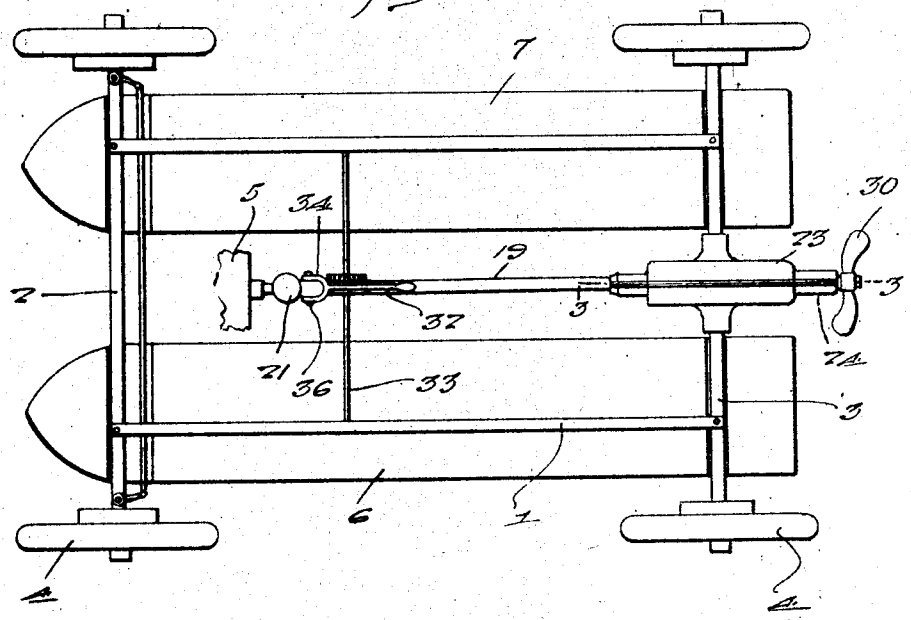
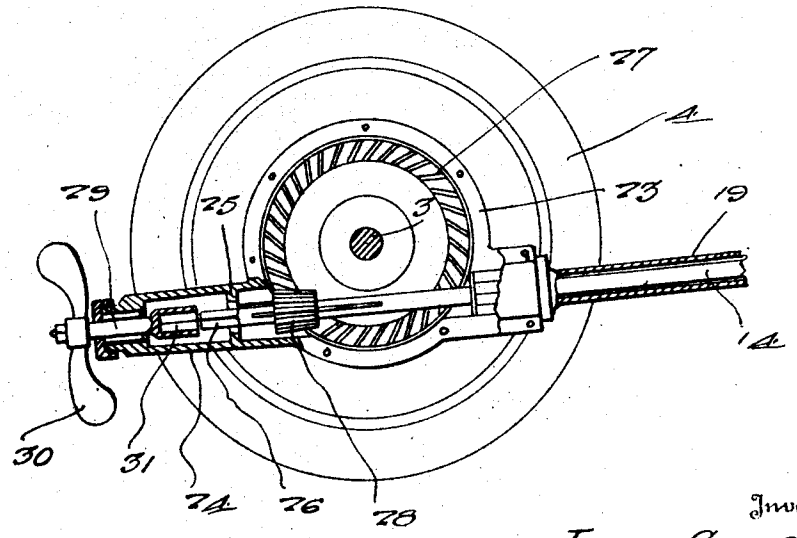


Fig. 3.



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Fig. 7.

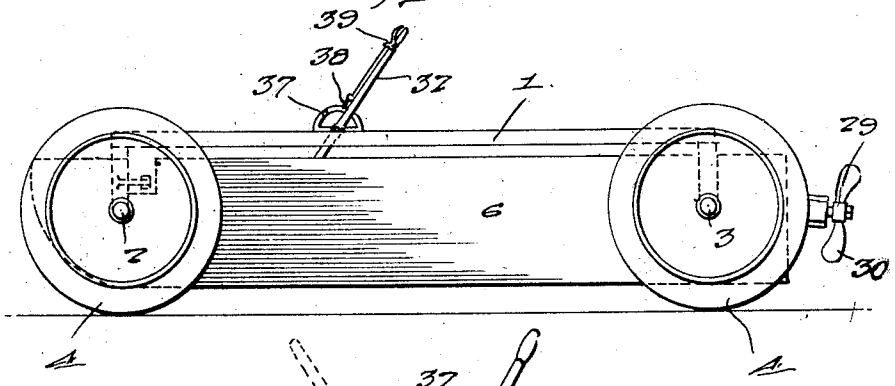
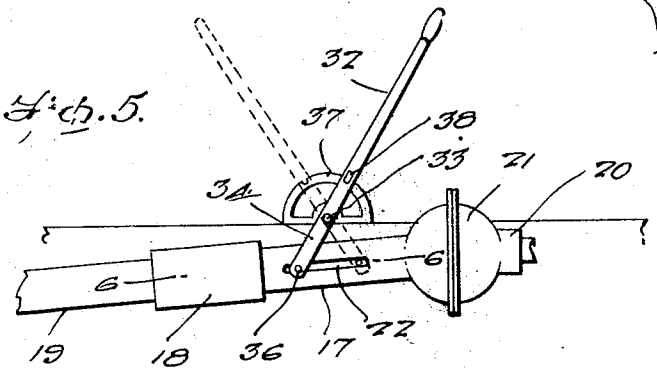


Fig. 5.



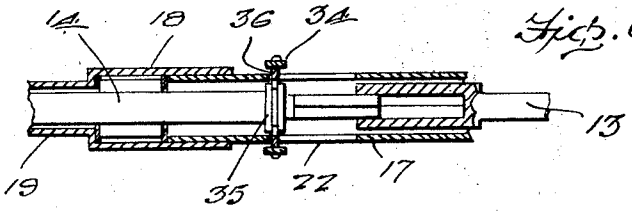
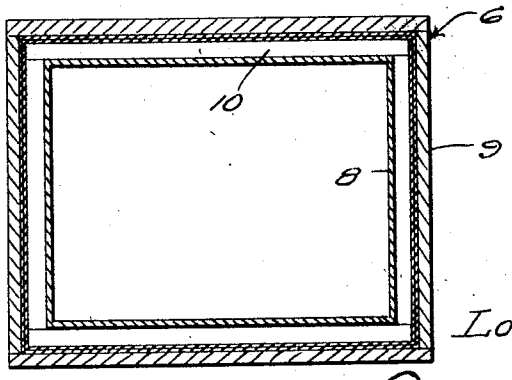


Fig. 6.

Fig. 4.



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UNITED STATES PATENT OFFICE.

LOUIS COPES, OF DETROIT, MICHIGAN.

LAND AND WATER VEHICLE.

Application filed February 14, 1925. Serial No. 9,227.

To all whom it may concern:

Be it known that I, LOUIS COPES, a subject of the King of Italy, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Land and Water Vehicles, of which the following is a specification.

This invention relates to a combined land and water vehicle which may be readily and easily operated either for use upon land or water in an efficient manner.

One of the important objects of the present invention is to provide a combined land and water vehicle of the above mentioned character, wherein a normally idle propeller shaft is mounted on the vehicle, the same being inoperative during the use of the vehicle upon land, means being provided for operatively connecting the propeller shaft with the drive shaft when the vehicle is to be used on the water, a pair of hulls being provided for rendering the vehicle buoyant.

A still further object is to provide a combined land and water vehicle of the above mentioned character, which is simple in construction, inexpensive, strong and durable and further well adapted for the purposes for which it is designated.

Other objects and advantages of this invention will become apparent during the course of the following description.

In the accompanying drawings forming a part of this specification, and in which like numerals designate like parts throughout the same:

Figure 1 is a top plan view of the vehicle embodying my invention.

Figure 2 is a side elevation.

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 1.

Figure 4 is a cross sectional view through one of the hulls.

Figure 5 is a fragmentary detail of the manually controlled operating lever, and

Figure 6 is a sectional view taken approximately on line 6—6 of Figure 5.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates generally the supporting frame or chassis. The front and rear axles mounted transversely on the chassis are illustrated at 2 and 3 respectively. Ground engaging wheels of any well known construction are supported on the ends of each of the axles as illustrated generally at 4. A motor of any well known construction is adapted to be supported on the frame or chassis 1 at the forward end thereof in any suitable manner, the same being indicated at 5.

A pair of elongated hulls 6 and 7 respectively are supported longitudinally on the chassis on the opposite sides of the motor 5 as clearly illustrated in Figure 1. Each of the hulls is substantially annular in cross section as clearly illustrated in Figure 4, the forward ends of the hulls being slightly pointed as illustrated in Figure 1. Each of the hulls is constructed substantially of the same material and in the same manner as the hull construction of any well known type of hydroplane. Each hull includes an aluminum inner casing 8, the same being divided into a plurality of compartments by suitable vertical partitions. A wooden box or casing 9 encloses the aluminum casing or box. Suitable spacing strips 10 are interposed between the inner and outer casings or boxes. A coated waterproof fabric and a sheet of rubber are interposed between the spacing strips and the outer casing or box as indicated at 11 and 12. The hulls are adapted to be supported below the chassis and the hulls are provided with cut out portions in the upper faces thereof adjacent their respective ends for receiving the front and rear axles respectively as clearly illustrated in the drawings.

The drive shaft which extends from the motor 5 includes the forward and rear sections 13 and 14 respectively. The forward section 13 which is relatively short is provided at its rear end with a substantially rectangular socket 15 for receiving the squared forward end 16 of the rear section 14 of the drive shaft, said squared end being adapted for slidable movement within the socket portion 15 in the manner to be hereinafter more fully described.

A sleeve 17 is associated at its rear end with the enlarged portion 18 of the tube 19 provided for the rear section 14 of the drive shaft, the forward end of the sleeve being connected to the tube 20 associated with the forward section 13 of the drive shaft through the medium of the universal coupling 21. The sleeve 17 is provided with a pair of diametrically opposed longitudinally

extending slots 22 as is clearly illustrated in Figures 5 and 6 and the purpose thereof will hereinafter be more fully described.

The rear end of the rear section 14 of the drive shaft extends into the differential housing 23 supported on the rear axle 3. A housing 24 extends rearwardly from the differential housing 23 and has communication therewith. The housing 24 is provided with a guide 25 through which extends the squared rear end 26 of the rear section 14 of the drive shaft. Arranged in the differential housing 23 in the manner well known in the art is the driving gear 27, the same being adapted to be driven by the driving pinion 28 which is keyed on the rear portion of the rear section 14 of the drive shaft as clearly illustrated in Figure 3.

A propeller shaft 29 is supported in the rear end of the housing 24, a propeller 30 of any conventional construction being supported on the rear outer end of the propeller shaft 29, the forward end of said shaft being provided with a socket 31 for receiving the squared rear end 26 of the section 14 of the drive shaft when it is desired to use the vehicle on water in the manner to be hereinafter more fully described. Normally, the parts are arranged as shown in Figure 3 of the drawing, thus rendering the propeller shaft and the propeller carried thereby idle. The rear section 14 of the drive shaft is adapted for longitudinal slidable movement. The means for facilitating the sliding movement of the rear section 14 of the drive shaft comprises a lever 32. The lever is pivotally supported adjacent its lower end on the transversely extending bar or rod 33 which is supported on the chassis. The lower end of the lever is provided with a yoke 34, the same having the free ends of the arms thereof disposed downwardly on opposite sides of the sleeve 17 and adjacent the diametrically opposed slots 22. A collar 35 is secured on the section 14 of the drive shaft adjacent the squared forward end 16 thereof and associated with the collar are the laterally extending members 36, the same being adapted to extend outwardly through the respective slots 22 provided in the sleeve 17. The outer ends of the laterally extending members associated with the collar 35 are secured to the respective ends of the arms of the yoke 34 formed on the lower end of the lever 32. A segmental rack 37 cooperates with a pawl 38 associated with the lever 32 for holding the latter in any desired adjusted position. The pawl 38 is controlled by the action of an auxiliary lever 39 in the manner well known in the art.

When the vehicle is to be used on land, the lever 32 is in the position shown in Figure 2 of the drawings, whereby the squared rear end 26 of the rear section 14 of the drive shaft is held out of engagement with the socket 31 provided on the forward end of the propeller shaft 29. The laterally projecting members associated with the collar 35 will be disposed in the forward end of the slot 22, thereby causing the pinion 28 to be in engagement with the driving gear 27 and enabling the motor 5 to operate the rear wheels through the differential. It is of course to be understood that the front wheels of the vehicle are provided with the usual steering apparatus and it is also to be understood that the usual brake mechanism is adapted to be associated with the vehicle. When it is desired to use the vehicle on water, the lever 32 is moved forwardly to the position shown in Figure 5 causing the rear section 14 of the drive shaft to move rearwardly through the tube 19 and the differential housing 23, thus moving the pinion 28 out of engagement with the driving gear 27 and bringing the squared rear end 26 of the section 14 of the drive shaft into operative engagement with the socket 31 carried by the forward end of the propeller shaft 29. With the parts arranged as described, when the motor 5 is started, a direct drive to the propeller shaft will be obtained and the propeller will be caused to rotate, thus enabling the vehicle to travel on the surface of the water, the hulls 6 and 7 providing the buoyant means for maintaining the vehicle on the surface of the water.

It will thus be seen from the foregoing description, that a combined land and water vehicle has been provided which may be readily converted, and will furthermore be positive in its operation whether it is used on land or water.

It will also be seen from the foregoing description, that a combined land and water vehicle has been provided which will be very inexpensive, yet strong and durable.

While I have shown the preferred embodiment of my invention, it is to be understood that various changes in the size, shape, and arrangement of parts may be restored to without departing from the spirit of the invention and the scope of the appended claims.

Having thus described the invention, what I claim as new is:

1. A land and water vehicle comprising a wheeled frame, a pair of hulls supported below the same and longitudinally thereof, a drive shaft, means whereby the drive wheels of the vehicle are actuated when the vehicle is on land, a propeller shaft, a propeller thereon, and means for operatively connecting said propeller shaft with said drive shaft when the vehicle is on water, said means simultaneously cutting out the actuation of the drive wheels by the drive shaft.

2. A land and water vehicle comprising a wheeled frame, a pair of hulls supported

below said frame and longitudinally thereof, a drive shaft including forward and rear sections operatively connected together at their adjacent ends, said rear section being adapted for slidable movement, means whereby the drive wheels of the vehicle are actuated when the vehicle is on land, a propeller shaft, a propeller thereon, and means for moving the rear section of the drive shaft into operative engagement with the propeller shaft when the vehicle is on water, said movement of the rear section of the drive shaft simultaneously cutting out the operation of the drive wheels.

3. A land and water vehicle comprising a wheeled frame, a pair of hulls supported below said frame and longitudinally thereof, a drive shaft including forward and rear sections operatively connected together at their adjacent ends, said rear section being adapted for slidable movement, means whereby the drive wheels of the vehicle may be actuated when the vehicle is on land, a propeller shaft, a propeller on the outer end thereof, a socket member on the forward end of the propeller shaft, and means for moving the rear section of the drive shaft rearwardly whereby the rear end of the rear section of said drive shaft is moved into operative engagement with the socket member carried by the propeller shaft whereby the propeller shaft is actuated when the vehicle is on water, said means simultaneously cutting out the operation of the drive wheels.

4. A land and water vehicle comprising a wheeled frame, a pair of hulls supported below said frame and longitudinally thereof, a drive shaft including forward and rear sections operatively connected together at their adjacent ends, said rear section being adapted for slidable movement, means whereby the drive wheels of the vehicle may be actuated when the vehicle is on land, a propeller shaft, a propeller on the outer end thereof, a socket member on the forward end of the propeller shaft, and means for moving the rear section of the drive shaft rearwardly whereby the rear end of the rear section of said drive shaft is moved into operative engagement with the socket member carried by the propeller shaft whereby the propeller shaft is actuated when the vehicle is on water, said means comprising a pivoted lever, the lower end thereof being operatively associated with the forward end of the rear section of the drive shaft, the operation of the drive wheels being simultaneously cut out when the propeller shaft is actuated.

5. A land and water vehicle comprising a wheeled frame, a pair of hulls supported below said frame and longitudinally thereof, a drive shaft including forward and rear sections operatively connected together at their adjacent ends, said rear section being adapted for slidable movement, means whereby the drive wheels of the vehicle may be actuated when the vehicle is on land, a propeller shaft, a propeller on the outer end thereof, a socket member on the forward end of the propeller shaft, and means for moving the rear section of the drive shaft rearwardly whereby the rear end of the rear section of said drive shaft is moved into operative engagement with the socket member carried by the propeller shaft whereby the propeller shaft is actuated when the vehicle is on the water, said means comprising a pivoted lever, the lower end thereof being operatively associated with the forward end of the rear section of the drive shaft, means for holding the lever in adjusted position, the operation of the drive wheels being simultaneously cut out when the propeller shaft is actuated.

In testimony whereof I affix my signature.

LOUIS COPES.