

(No Model.)

3 Sheets—Sheet 1.

H. LOBDELL.

WATER POWER VESSEL PROPELLING MECHANISM.

No. 408,310.

Patented Aug. 6, 1889.

Fig. 2.

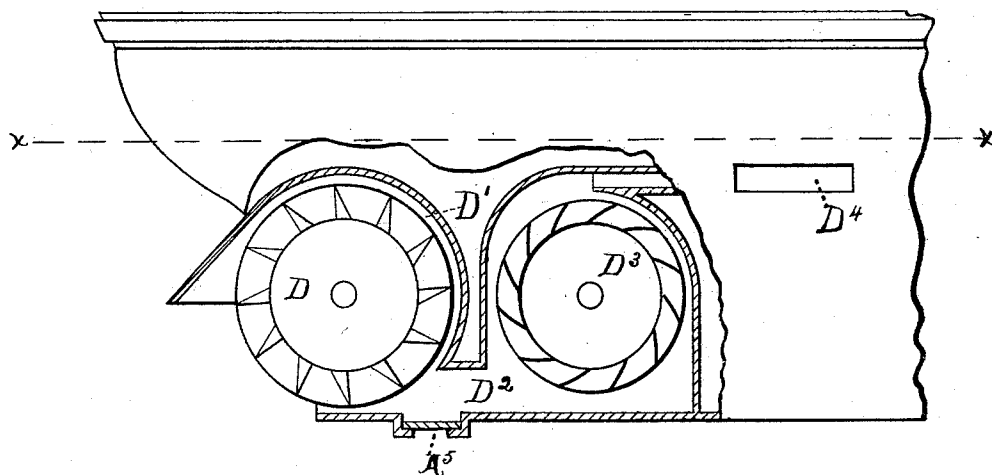
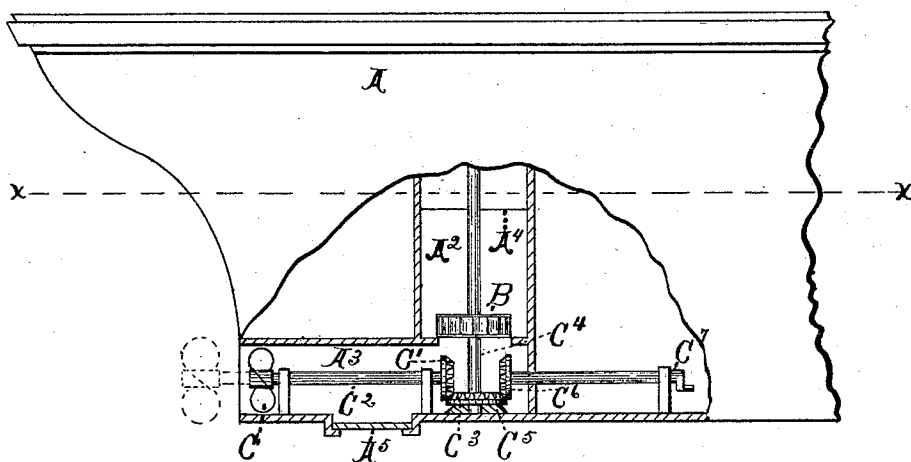


Fig. 1.



witnesses:

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Inventor:

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(No Model.)

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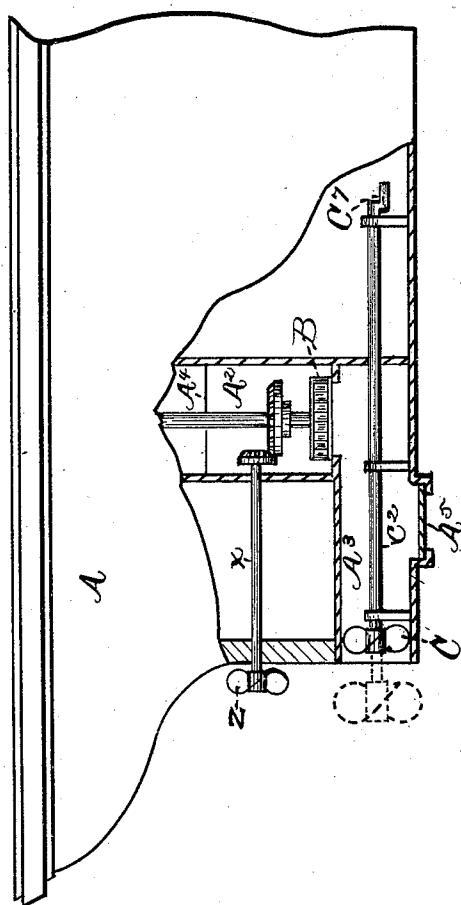
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Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY LOBDELL, OF TROY, NEW YORK.

WATER-POWER VESSEL-PROPELLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 408,310, dated August 6, 1889.

Application filed August 4, 1888. Serial No. 281,929. (No model.)

To all whom it may concern:

Be it known that I, HENRY LOBDELL, a resident of the city of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Vessel-Propelling Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

My invention relates to improvements in vessel-propelling mechanism; and it consists of the novel construction and combination of parts hereinafter described, and pointed out in the claims.

Figure 1 of the drawings is a side elevation, partly in section, of the rear end of a vessel, showing my improved mechanism. Fig. 2 is a similar view showing a modified form of construction. Fig. 3 is a top plan view of the construction shown in Fig. 1, a portion of the upper covering being broken away to show the propelling mechanism. Fig. 4 is a view similar to that shown in Figs. 1 and 2, showing a preferred form of construction.

In the propulsion of steam-vessels by means of a screw or paddle-wheel it is well known that a considerable body of water is displaced and forced to the rear of the vessel. By making use of a wheel which can be wholly submerged the displacement of water can be made to take place at a considerable distance below the surface of the water. By placing the propelling-wheel at or within the mouth of a case or water-trunk leading to the submerged level of the wheel, from a level near the surface of the water, I am able to confine the displacement of water to the interior of the case or trunk and produce a gravity flow therein from a higher level of supply to a lower level of discharge.

The main object of my invention is to produce and utilize such gravity flow of water as an assisting or auxiliary power in the propulsion of vessels.

I have shown in Figs. 1 and 3 a portion of

a vessel A, provided with two water-trunks or passage-ways leading from a higher point or level A⁴ of supply to a lower level of discharge through the trunk A³. The surface of the water in which the vessel floats is indicated by the broken lines *xx* in Figs. 1 and 2. At a cross-center of the vessel is provided a well A', Fig. 3, open to the water beneath the vessel and communicating at its upper end with the penstocks A², each containing a turbine water-wheel or motor B, and located on opposite sides of the well. The penstocks open and exhaust into the trunks or water-ways A³ in the bottom of the vessel, one on each side, as indicated by the dotted lines in Fig. 3. These water-ways each form an inclosing-case for the propelling wheel or screw C.

The screw and motor may be connected with each other, as shown in Fig. 1, by gear-wheel C', fixed upon the screw-shaft C², to engage with the gear-wheel C³, fixed upon the motor-shaft C⁴, rotary in the step C⁵, and with a steam-engine, (not shown in the drawings,) as by the gear-wheel C⁶, fixed upon the crank-shaft C⁷, or preferably as shown in Fig. 4, wherein the motor-shaft is shown connected to an independent shaft X, carrying an additional screw-propeller Z.

It will be observed that a continuous water-way is formed through the wheel-inclosing case and trunk leading thereto from the well A', over bench A⁴, through the motor and penstock.

The mode of operation of my invention is as follows: Power is applied in any well-known manner, as through crank-shaft C⁷, to operate the propelling screw-wheel C by imparting thereto a rotary movement. Such movement forces the water in the wheel-inclosing case and water-way A³ out and to the rear of the wheel and against the outside water, thus giving the vessel a forward movement, and at the same time establishing a gravity flow of water from a higher level over the bench A⁴, down penstocks A², through motor B, and out through the trunk A³, past the screw-wheel. I utilize the power developed from such gravity flow of water by passing the water through the motor B and connecting the motor preferably with an independent shaft X, carrying an additional or supplementary screw Z, Fig. 4; or I may con-

nect the motor B with the propelling-wheel C by gear-wheels C' and C³, Fig. 1, as before explained. The auxiliary power thus developed is proportioned to the difference of level between the points of supply and the location of the turbine or motor.

I have shown a gate A⁵ in the bottom of the wheel-inclosing case, through which the propelling-wheel may draw its supply of water directly from the outside when desired.

I do not wish to limit myself to the use of any particular kind of vessel-propelling wheel or auxiliary motor for utilizing the gravity flow, as any of the well-known forms of vessel-propelling wheels may be employed.

I have shown in Fig. 2 a paddle-wheel D, instead of a screw, for propelling the vessel. When such a form of propelling-wheel is employed, it is preferable to inclose the same in an air chamber or case D', having the lower part project and engage with the water in the water-way D², leading from the motor. When the wheel is so inclosed, it can be operated upon any required submerged level.

The auxiliary motor may be an overshot wheel D³, in which case the water enters the water-way preferably from a side inlet D⁴, passes along the way D⁵ to the overshot wheel, and thence to the propelling paddle-wheel, by which it is forced outward and to the rear. I have not shown any connection between the wheels D and D³, nor any motive power for actuating wheel D, as it is obvious that any of the well-known devices may be employed. The turbine motor B is also shown with the case removed.

The shaft C² may be extended and the main screw-wheel secured to its end, as indicated by dotted lines in Fig. 1.

The inlets of the penstocks A² may be from the sides of the vessel, as indicated by dotted lines at A⁶ in Fig. 3, instead of from the well A'.

Inasmuch as the motor, when set in motion by the gravity of water passing through it, develops a force which may be applied to any purpose, it will be a force auxiliary to the

steam-engine, when applied as shown in Fig. 1, until the full nominal speed of the motor is accelerated by the operation of the engine force. To obtain the best results it is only necessary, therefore, to properly proportion the respective capacities of motor and engine, or their relative rates of speed, by adjustment of the relative sizes of their connecting-gears, when connected as in Fig. 1. When the forces developed by the motor and engine are applied independently of each other, as in Fig. 4, a greater steam than motor energy may be utilized without detriment to either force. The gate A⁵ will furnish any water required for a more perfect displacement by the propelling wheel or screw in giving motion to the vessel, that no draft may be made on the motor.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a vessel, the combination, with a water way or trunk below the water-line of the vessel, having supply and discharge openings leading from a higher to a lower level, of a water-displacing and vessel-propelling wheel or screw located in or near the discharge-opening and operative by suitable power, and a water-motor located in said water way or trunk.

2. In a vessel, the combination, with a water way or trunk below the water-line of the vessel, having supply and discharge openings leading from a higher to a lower level, of a water-displacing and vessel-propelling wheel or screw located in or near the discharge-opening and operative by suitable power, a water-motor located in said water way or trunk, and an auxiliary vessel-propelling screw or wheel connected to and actuated by such motor.

In testimony whereof I have hereunto set my hand this 1st day of August, 1888.

HENRY LOBDELL.

Witnesses:

GEO. A. MOSHER,
CHAS. L. ALDEN.