(No Model.) 2 Sheets—Sheet 1.

C. J. MENGES.

MEANS FOR PROPELLING VESSELS.

No. 457,426. Patented Aug. 11, 1891.

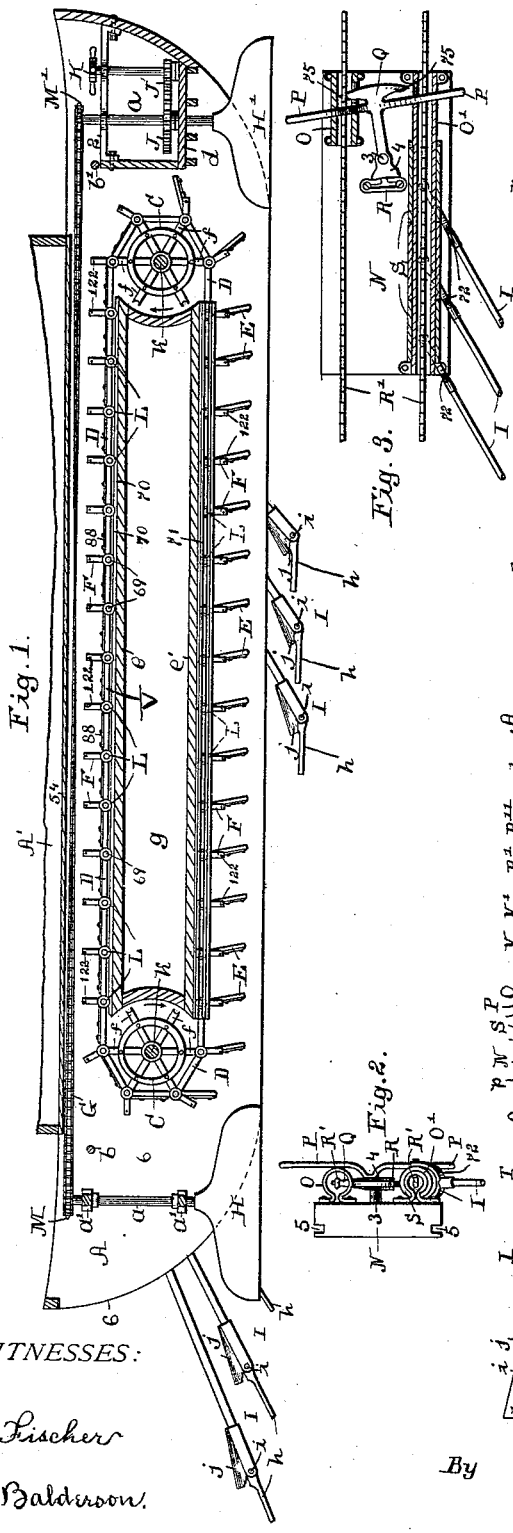

Fig. 1.

Fig. 3.

Fig. 2.

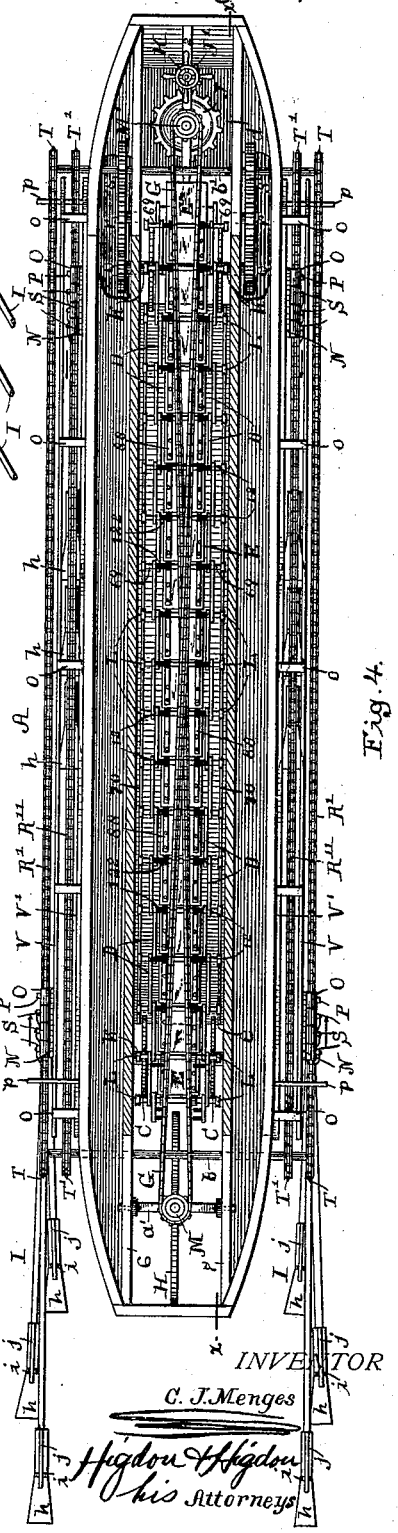

Fig. 4.

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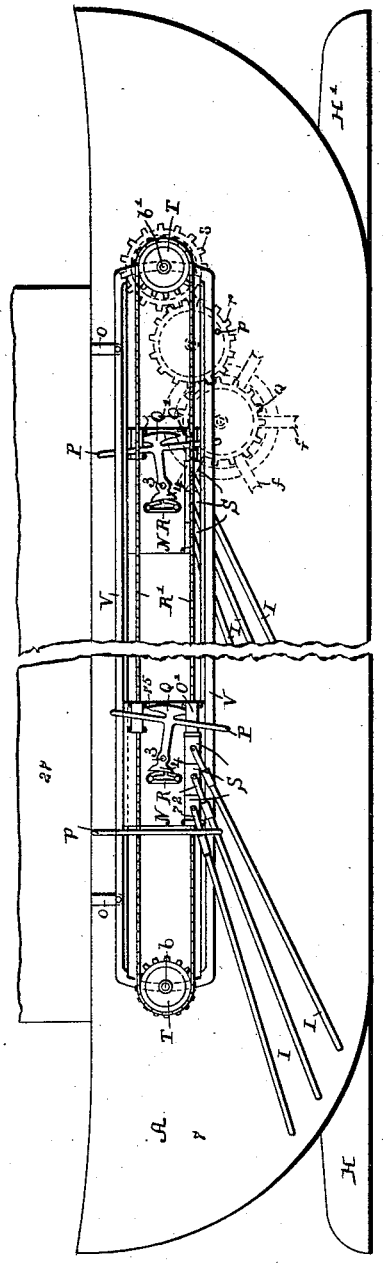

Fig. 5.

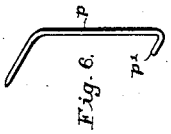

Fig. 6.

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UNITED STATES PATENT OFFICE.

CHARLES JOSEPH MENGES, OF KANSAS CITY, MISSOURI.

MEANS FOR PROPELLING VESSELS.

SPECIFICATION forming part of Letters Patent No. 457,426, dated August 11, 1891.

Application filed August 15, 1889. Serial No. 320,842. (No model.)

To all whom it may concern:

Be it known that I, CHARLES JOSEPH MENGES, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Means for Propelling Vessels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to hydraulic motors as applied for the propulsion of vessels; and it consists in a certain novel construction and arrangement of parts, as fully described hereinafter and claimed.

In the drawings, Figure 1 is a sectional view on the line *x x* of Fig. 4, showing a vessel provided with my motor. Fig. 2 is a detail view showing the end of one of the grooved blocks which carry the oars. Fig. 3 is a side elevation of the same, partly in section. Fig. 4 is a plan view of the vessel, partly broken away. Fig. 5 is a side view, partly broken away. Fig. 6 is a detail view of one of the trip-pins.

A represents a steamboat having a central longitudinal open space, in which, near its ends, are mounted vertical power-wheels C C, having shafts *k k*, said wheels being provided with radial arms *f*, the outer ends of which are concaved or notched to engage transverse bars 69 of the sprocket-chain V. These bars are connected together at regular intervals by the links D, which carry uprights F at their forward ends, said uprights being provided with horizontal stop-pins 122, against which hinged paddles E, which are carried by said chain, bear when the paddles are encountered by the current of the stream in which the boat is being navigated. Parallel tracks 70 71 are arranged adjacent to the upper and lower ends of the chain, respectively, on which operate rollers L, mounted on the bars 69. By hinging the paddles to the chain in the manner described they are permitted to assume a vertical position when below the chain and a horizontal or a folded position when above the chain, and they are also caused to leave the water in a vertical position, thereby preventing back-pressure thereon by the latter.

In shallow streams I employ oars I I, the lower hinged ends *h* of which are adapted to push against the bottom of the stream when the oars are pushed rearwardly, and the upper ends of the latter are hinged to the sliding sleeves S, which are loosely mounted on hollow tubes O′, that are secured to sliding grooved blocks N, whereby the lower ends of the oars are enabled to adapt themselves to the uneven surface of the river-bed. The hinged ends or wings *h* are pivoted at *i* to the oars in such a position as to bear against fin-shaped strips *j* to limit their backward movement.

The oars receive their motion from chains R′ R″, which operate on sprocket-wheels T T′, mounted on shafts *b b′*, said shaft *b′* being provided with gears *s*, which mesh with gears *r*, which in turn mesh with gears *q*, that are mounted on the shaft *k* of power-wheel C. A trip-lever Q is mounted on the block N and is provided at its free end with a cross-head, the ends of which are adapted to engage alternately with the upper and lower portions of the chains R′ R″, whereby when they are engaged with the upper portions of said chains the blocks N are carried forward, and when engaged with the lower portion they are carried rearwardly. The trip-levers are provided with arms P P, which engage pins *p* at the end of each stroke to reverse the position of the levers, and a spring R engages the rear concaved end of the lever to hold it in engagement with the chain until released or tripped by the arms P. Thus the blocks which carry the oars are alternately carried forward and backward the entire length of the vessel, and when they are carried backward the oars engage in the bed of the river and thereby assist in pushing the vessel forward.

From the above it will be seen that the action of the current on the paddles carried by the chain when the vessel is headed upstream operates the oars automatically, thereby partially overcoming the resistance of the current and assisting the motive power used to propel the vessel.

To insure the perfect operation of the blocks N, I provide them with grooves 5 to travel on tracks V V′.

In Figs. 7 and 8 are shown propellers 37, which are provided with paddles 38 and 41. Paddles 38 are pivoted at 39 to the rim of the

wheel, and stop-pins 40 are arranged to engage the inner ends of said paddles when the latter are in operative positions, whereby they may fold against the wheel when raised from the water. Paddles 41 are secured to the rim by means of pins 43, and are loosely mounted thereon to enable them to present their flat sides to the water when therein and to turn edgewise when leaving the same. The propeller-shaft is mounted in the rear ends of the arms 34, which are pivoted at intermediate points and are connected at their ends to adjusting-screw 35, having sprocket-wheels 36 on their upper ends, which are connected for simultaneous operation by the sprocket-chain 64. These sprocket-wheels are provided with handles 62 to enable them to be rotated to elevate or depress the front ends of the arms 34, and thereby adjust the propellers to the desired height. An arm 47 is mounted at its upper ends on the propeller-shaft 60, and carries at its lower end a sprocket-wheel 48, which engages a horizontally-disposed chain 49, which is secured in any suitable manner at its ends, and is arranged beneath the surface of the water in the path of the vessel. A guide-roller 87 depends from the lower end of the arm 47 and bears against the under side of the chain 49 to hold the latter in contact with the sprocket-wheel 48. A sprocket-wheel 45 on the shaft of the wheel 48 is connected to a sprocket-wheel 44 on the propeller-shaft by means of a chain 46, whereby the rotation of the propeller is communicated to sprocket-wheel 48, which travels along the chain and thereby moves the vessel forward.

The power-wheel C carries a sprocket-wheel 30, which is connected to crank-wheel 39 by the chain 31, and the crank-wheel is connected to a sprocket-wheel 99 on the propeller-shaft by the chain 90, whereby the rotation of said power-wheel is communicated to the propellers.

To enable the propeller-wheels to be raised or lowered independently of sprocket-wheel 48 I employ an adjusting-arm 55, which is pivoted at its lower end to the arm 47 and passes at its upper forked end through slots in the projecting strips 58, the extremities of said forked ends being engaged by nuts 56.

A steam-engine provided with steam-chest 20 and vertical cylinders 25 is also employed, and above the same on a suitable frame 26 are mounted three pulleys 24, which are connected by means of a cable 22, which passes around their peripheries, and the upper ends of the piston-rods 21, which operate alternately, are slotted to enable said cable to pass therethrough. The movements of the piston-rods oscillate the central pulley 24, causing it to turn through a half-revolution at each stroke, thereby rotating the crank-wheels 32, which are connected to the central pulley by crank-rods 28.

H H′ represent rudders, which are mounted on vertical shafts *a* at the opposite ends of the vessel in bearings *a*′, and the upper ends of said shafts are provided with sprocket-wheels M M′, which are connected together for simultaneous operation by the chain G. The forward shaft carries a gear-wheel J, which meshes with a gear-wheel J′, that is carried by the shaft of the pilot-wheel K.

Having thus described my invention, I claim—

1. A hydraulic motor having power-wheels C, an endless chain traveling on said wheels and carrying pivoted paddles, the endless chains R′ R″, connected to said power-wheels, and sliding blocks N, connected to said chains and carrying oars, substantially as specified.

2. The herein-described motor, consisting of power-wheels C, an endless chain V, carrying paddles, chains R′ R″, sliding block N, carrying a trip-lever Q to engage said chains, and the oars pivotally connected to said blocks and having hinged lower ends, substantially as specified.

3. In a motor for propelling vessels, power-wheels C, an endless chain traveling on said wheels carrying paddles, chains R′ R″, guides *v* on the side of the vessel, sliding block operating therein, a trip-lever on said block adapted to be engaged by the last-mentioned chains, and oars pivoted to said blocks, substantially as described.

4. In a motor for propelling vessels, power-wheels C, an endless chain operated thereby, uprights carried by the links of said chain, paddles pivoted to the chain and adapted to bear against the uprights to limit their movement, endless chains R′ R″, and sliding blocks, carrying oars, working in guides on the side of the vessel, substantially as described.

5. In a motor for propelling vessels, power-wheels C, an endless chain carrying paddles operated thereby, chains R′ R″, sliding blocks on the sides of the vessel, means for securing the blocks to the chains, oars carried by the blocks, fin-shaped strips on the lower ends of said oars, and wings *h*, hinged to the ends of the oars and adapted to bear against said strips to limit their movement, substantially as described.

6. In a motor for propelling vessels, power-wheels C, an endless chain carrying paddles operated thereby, chains R′ R″, sliding blocks working in guides on the sides of the vessel, guides on said blocks, means for connecting the blocks with the chains R′ R″, sliding sleeves operating on the last-mentioned guides, and oars pivoted to said sleeves, substantially as described.

7. In a motor for propelling vessels, wheels C, an endless chain carrying paddles operated thereby, chains R′ R″, a sliding block working in guides on the sides of the vessel, guides on said block, a trip-lever pivoted to the block, arms P on said levers, sliding sleeves operating on guides on the block, oars pivoted to said sleeves, and pins to engage arms P, substantially as described.

8. The combination, with a block working in guides on the sides of the vessel, oars secured thereto, and a trip-lever, of chains adapted to engage said trip-lever to operate the block, substantially as described.

9. The combination, with an endless chain carrying paddles, of chains R′ R″, sliding blocks working in guides on the sides of a vessel, oars pivoted to sliding sleeves working in guides on the block, a trip-lever adapted to be engaged by the chains, and a spring to hold the lever in contact with the chains, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES JOSEPH MENGES.

Witnesses:
F. G. FISCHER,
R. A. BALDERSON.