

(No Model.)

J. C. WALKER.
HYDRAULIC PROPULSION OF VESSELS.

No. 480,533.

Patented Aug. 9, 1892.

Fig. 1.

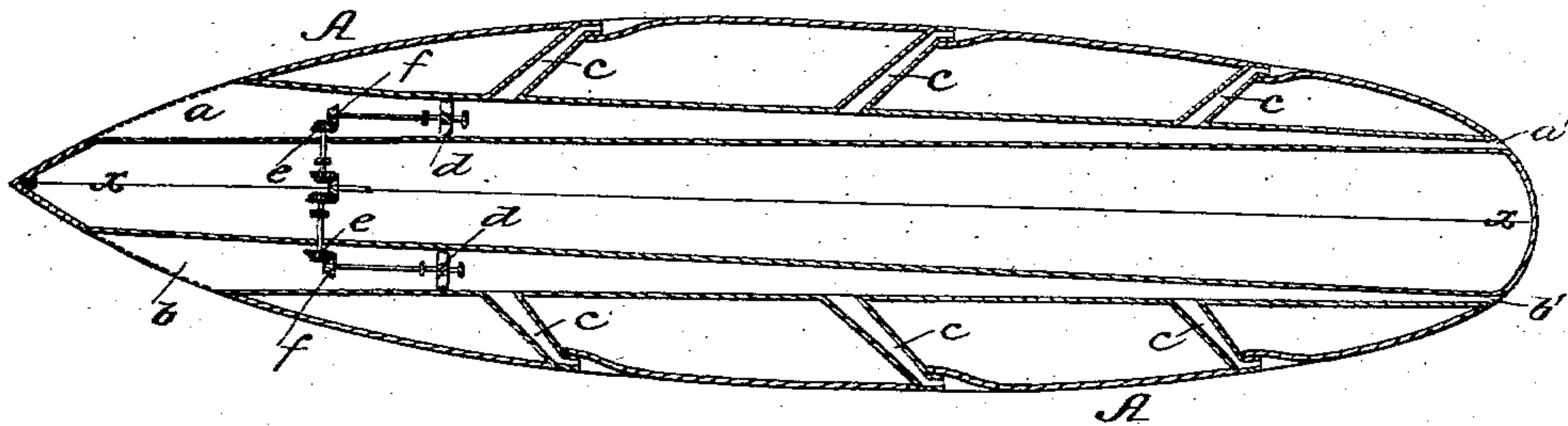


Fig. 2.

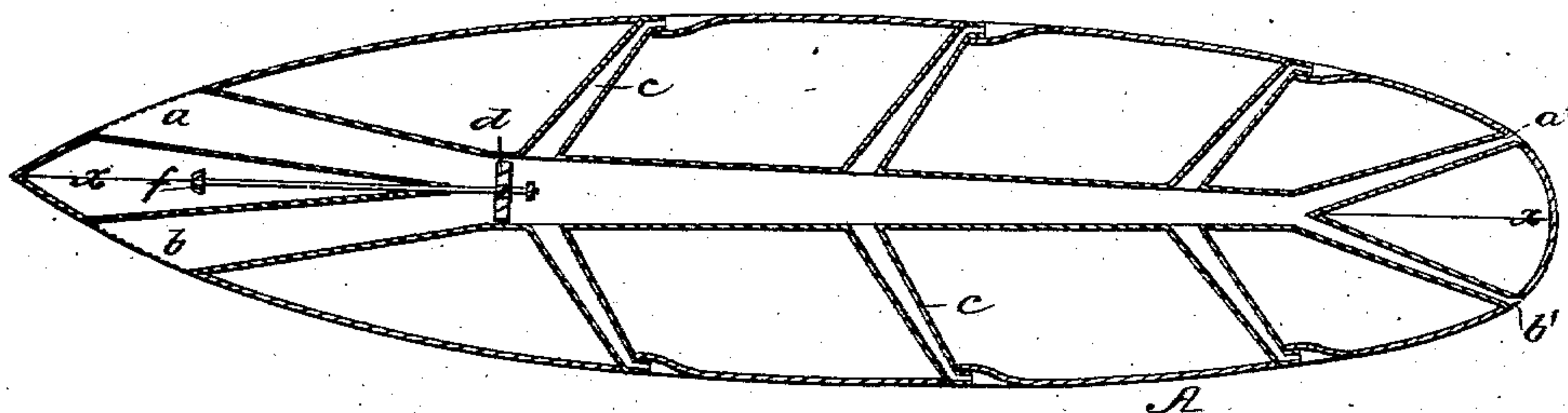
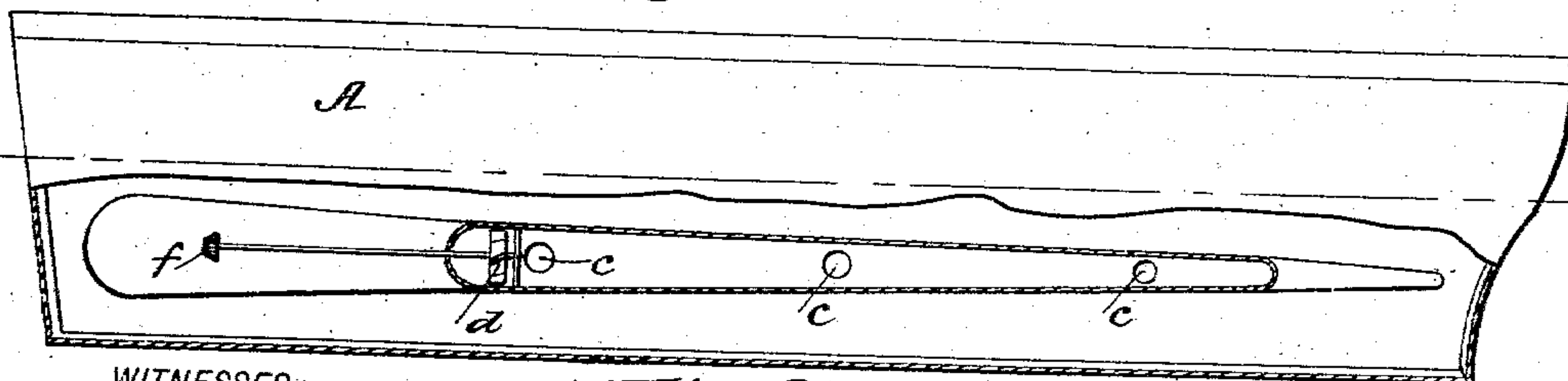


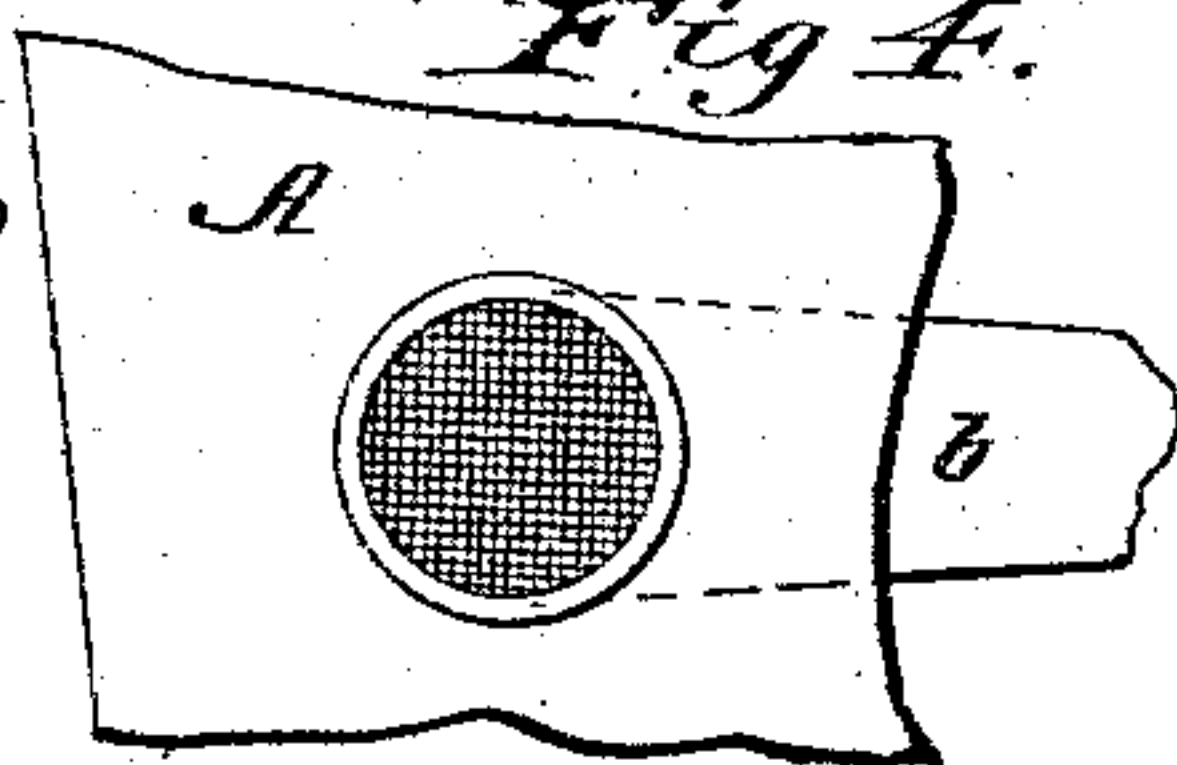
Fig. 3.



WITNESSES:

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Fig. 4.



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HYDRAULIC PROPULSION OF VESSELS.

SPECIFICATION forming part of Letters Patent No. 480,533, dated August 9, 1892.

Application filed April 1, 1892. Serial No. 427,416. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. WALKER, residing at Waco, McLennan county, in the State of Texas, have invented a new and useful Improvement in Hydraulic Propulsion of Vessels, of which the following is a specification.

The object of my invention is to provide an improved means for the application of the jet principle in the hydraulic propulsion of vessels; and it consists in the combination, with the hull of the vessel, of one or more main or trunk tubes arranged longitudinally to the vessel and of tapering shape, largest at its front end, which is open, and provided along its length with a series of nozzles opening along the side of the vessel in rearward direction, and one or more propeller-wheels arranged within the main tube and adapted to suck water in at the front and force it out through the numerous nozzles in the form of jets against the surrounding water, as will be hereinafter more fully described.

Figure 1 is a sectional plan view taken on the level of the tube. Fig. 2 is a similar view showing a modification of my invention in which a single trunk-tube is used. Fig. 3 is a vertical central longitudinal section of Fig. 2, and Fig. 4 is a detail.

In the drawings, A A represent the hull of the vessel, which may be of any desired or approved construction, and $x x$ is its keel-line. On each side of the keel-line and some distance below the water-line are arranged the two longitudinal trunk-tubes $a a'$ and $b b'$, one on each side of the middle line of the vessel. These tubes are tapered in form throughout their length, and their largest ends, which are in front, open into the water at the bow of the boat through screens or latticed guards (shown in Fig. 4,) which prevent the entrance of fish, logs, or any other drift which might choke and obstruct the tubes. These trunk-tubes terminate at the stern in a comparatively small nozzle a' and have extending along their sides branch pipes, which also terminate in the open water along the side in a series of nozzles $c c c$, directed rearwardly. The object in making the main trunk-tubes tapering and largest at the front is to furnish all the nozzles with a sufficient and equal supply of water. Thus the cross-

section at the front end is sufficient to supply all the rear and lateral discharges, while the diminution of the cross-section to the rear is made adequate only to the needs of the nozzles in rear of any particular point. By this means all of the nozzles are supplied equally and a uniform and maximum velocity is given to all the jets issuing from said nozzles.

Within each tube is arranged a propeller-wheel d , which sucks the water in through the forward open end of the tube and drives it forcibly to the rear through the nozzles, of such form and construction as shall be best adapted for these double purposes. These propeller-wheels are driven from a gear-wheel f , which receives its motion from the engine by any suitable connecting-gear and imparts its motion to the propellers either through bevel-gears $e e$ in Fig. 1 or directly, as in Fig. 2.

I prefer to use the two independent trunk-tubes $a a' b b'$, as shown in Fig. 1; but as a modification I may unite the trunks from a point near their ends into a single central main trunk, as in Figs. 2 and 3, preserving, however, the same tapering form and relative arrangement of the cross-section to the number and size of the discharge-nozzles.

In making use of my invention the propelling effect is made available in several different ways. In the first place, the sucking action of the propeller in the front ends of the tubes takes away the water, which would be a factor of resistance, and by the pull exerted upon the same converts it into available force for propelling the vessel. In the second place, the propeller compresses the water in the rear of it in the tube and by the leverage thus exerted upon that water adds to the forward movement, and, third and most important, the compressed water issuing in numerous small jets at the sides and rear of the vessel causes a reactionary effect on the nozzle and the vessel that gives a very efficient and powerful motive power for propelling the vessel forward.

By means of the double tubes shown in Fig. 4 and suitable arrangement of gearing and valves one set of nozzles may be used independently of the other to facilitate steering, or one set of nozzles may be arranged for forward movement and the other for backward movement.

I am aware that wheels have been arranged in channels for the propulsion of vessels and that the principle of jet-propulsion is also old in itself, and I therefore make no broad claim to these features.

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

1. The combination, with the hull of a vessel, of a longitudinal trunk-tube made of tapering shape in cross-section, largest at its front end, and opening at the bow and provided along its sides with a series of lateral branches terminating in nozzles, and means for establishing a high-pressure current within the tube, substantially as shown and described.

2. The combination, with the hull of a vessel, of a longitudinal trunk-tube made of tapering cross-section, largest at its front end,

and opening at the bow and provided along its sides with a series of lateral branches terminating in nozzles, a propeller-wheel arranged in the front end of said trunk-tube, and gears for rotating it, substantially as shown and described.

3. The combination, with the hull of a vessel, of the two tapering trunk-tubes *a a'* and *b b'*, made largest at the front end and opening at the bow, said tubes being arranged upon opposite sides of the center line and having lateral branches terminating in nozzles, the suction and propeller wheels *d d'*, arranged in the larger front ends of said tubes, and gears *e f* for rotating them, substantially as shown and described.

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Witnesses:

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