S. C. Richards.

Pneumatic Propeller.

No. 85,027. Patented Dec. 15, 1868.

Fig: 1.

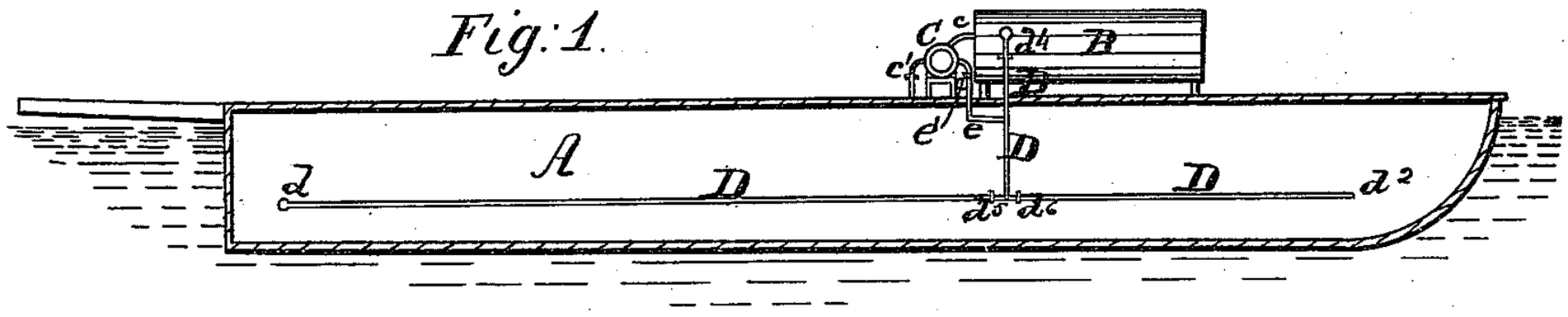


Fig: 2.

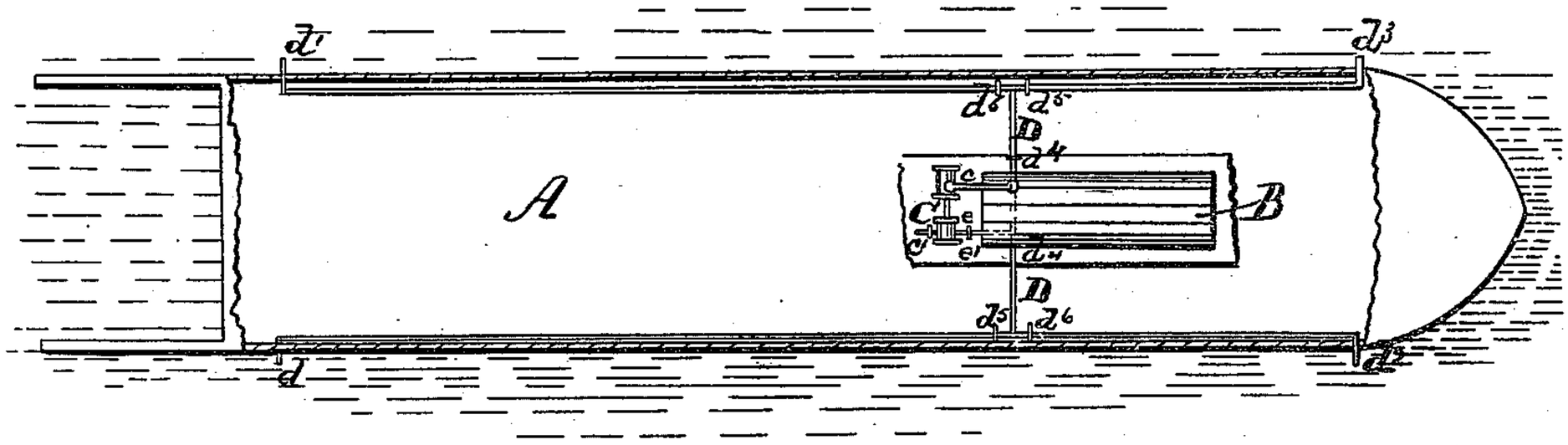
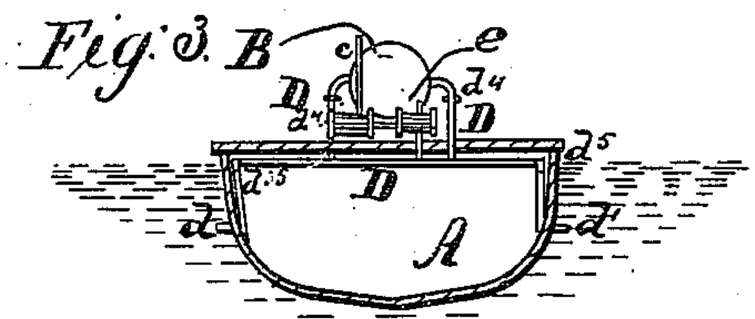


Fig: 3.



Witnesses

Geo. P. Kenthel Jr.

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S. C. RICHARDS, OF ST. LOUIS, MISSOURI.

Letters Patent No. 85,027, *dated December* 15, 1868.

IMPROVEMENT IN STEERING-APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, S. C. RICHARDS, of the city of St. Louis, in the county of St. Louis, and State of Missouri, have made certain new and useful Improvements in Apparatus for Steering Vessels; and I do hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention is in the application of the surplus or exhaust steam, either directly or in the application of the power of surplus or exhaust steam, through proper force-pumping engines, to produce currents of steam acting, at the opposite ends and on different sides of a vessel, upon the water without, to steer said vessel.

To enable those skilled herein to make and use my said apparatus, I will describe the same in its general construction and operation, referring herein to—

Figure 1 as a longitudinal sectional elevation;

Figure 2, as a top plan, with parts of the deck of the vessel removed to show the piping.

Figure 3 is a transverse sectional elevation.

In the application of my said invention, the same will be found best adapted to the usual form of stern-wheel steamboats with high-pressure engines, common upon the western rivers, although my said invention is in nowise limited to said class of vessels. I have, therefore, represented, by

A, the hull of a stern-wheel steamboat.

B represents the boiler or battery of boilers; and

C, the usual force-pump, which may be the pump usually used for supplying the boilers A with water, or a common form of force-pump, such as is used for extinguishing fires on boats.

In the application of steam direct for steering, I use the pipes D, proceeding from the battery A, and running to the ends of the vessel having the end openings d d^1 d^2 d^3.

In said pipes D, I arrange the stop-cocks or valves d^4 near the boilers, so that the passage for steam may be shut off entirely, or opened from one or more boilers, at pleasure.

At d^5, I arrange a further stop-cock or valve, and similarly one at d^6.

In order to bring the power derived from the impact of steam flowing out at the ends d, d^1, d^2, and d^3, against the water surrounding the vessel properly to bear, the pilot or engineer opens the valve or both valves d^1, and the valves d^5, (d^6 being closed.) The impact of the discharged steam-volume at the nozzles or openings d d^3 will then act at a great leverage upon the body of the vessel, to turn the same in one direction.

Similarly, by closing the valve d^5 and opening d^6, the impact of the discharged steam acts at d^1 and d^2 to turn the vessel in the reverse direction.

If but one valve, d^5, or one valve, d^6, be opened, the discharge at one opening, d or d^1, or d^1 or d^2, will still be sufficient to exert a great power in turning the vessel.

It is further well known that, in the use of the ordinary high-pressure engine, the steam is exhausted into the air.

My said improvement relates to the use of said exhaust steam for steering vessels, in the following manner:

B represents the usual steam-drum, (into which the exhaust steam is discharged after it leaves the cylinder,) The pipes connected therewith, as above described, and their valves, will enable the operator to apply the steam, thus ordinarily wasted, for propulsion or steerage, in the manner indicated.

It is moreover apparent that the steam, as discharged against the water through the nozzles d, d^1, d^2, and d^3, will be useful by its impact, but that a quick condensation of said steam will take place, thus creating a partial vacuum, and to fill this partial vacuum more exhaust steam will press forward, thereby aiding (instead of impeding) the exhaust action; but, furthermore, the water about the nozzle will also rush to fill the vacuum aforesaid, and a current-pressure thus arises against the sides of the vessel, aiding the steerage.

The use of exhaust steam, therefore, is a peculiarly valuable feature of my said invention.

In vessels where the under deck is used for cabins, the pipe D may be used for heating such cabins, as it is filled with steam, and can be easily and successfully arranged to accomplish such object.

I am aware that vessels have been steered by the use of a current of water forced through pipes from different points of a vessel, and impinging against the water surrounding the vessel, and thus causing the vessel to be moved in the direction contrary to the direction of the current of water.

I am also aware of the use of a current of steam, smoke, and other products of combustion, impinging upon or against the water, for the purpose of propulsion, by a special construction of devices adapted to such purpose.

I lay no claim to the use of such agents for such purpose, nor to the particular method by which such agents have heretofore been applied, as my arrangement of devices and method of application are believed to be entirely different from those heretofore used, it being more simple in its application, and consequently more efficient, when applied in the manner and by the means I have devised.

Having thus fully described my invention,

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

The combination of the steam-cylinder or drum B with pipes D, stop-valves d^5 d^5, end-nozzles d, d^1, d^2, and d^3, when constructed and arranged to operate substantially in the manner and for the purpose specified.

S. C. RICHARDS.

Witnesses:

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M. RANDOLPH.