

No. 624,318.

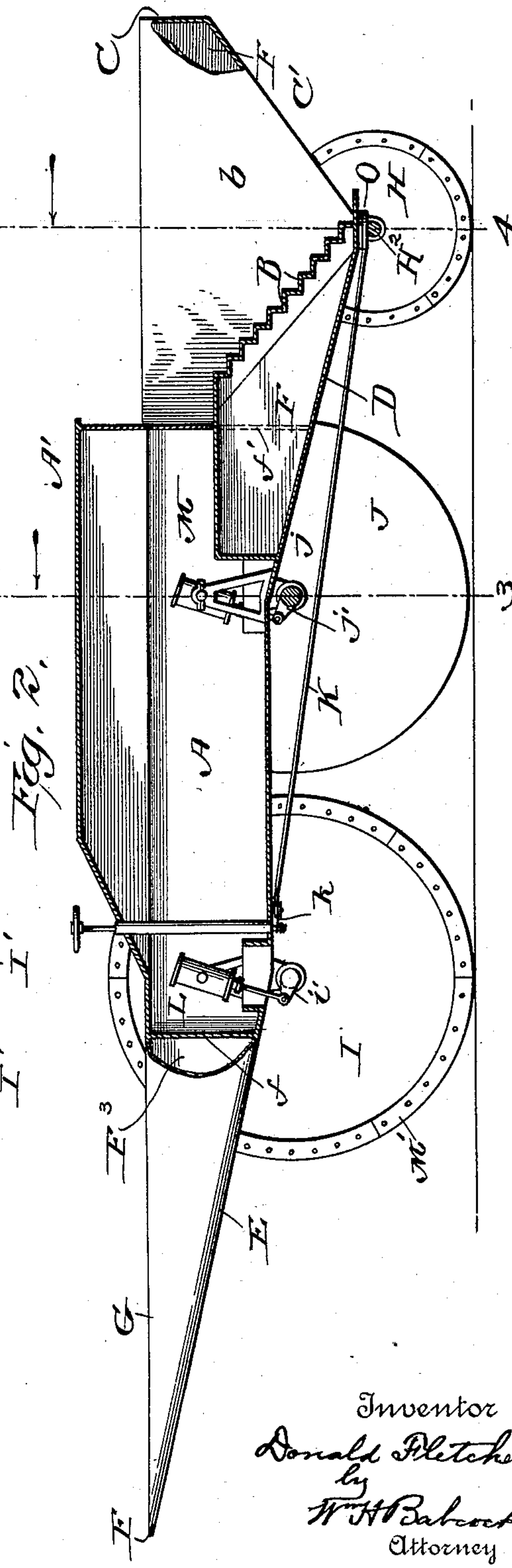
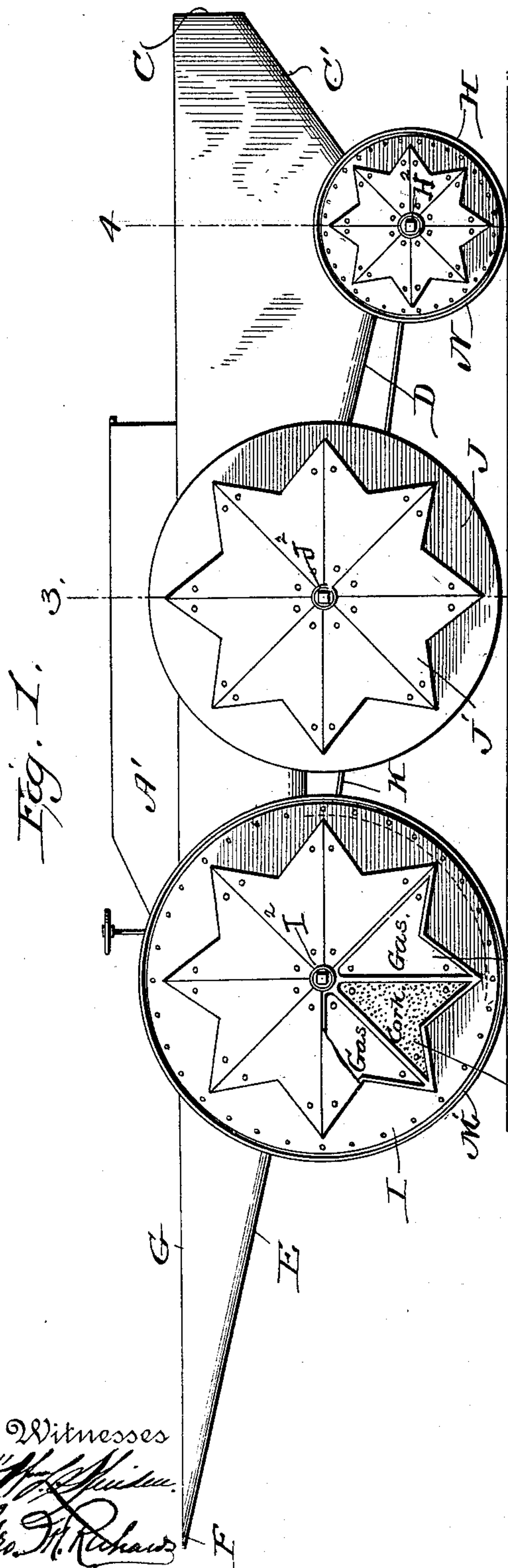
Patented May 2, 1899.

D. FLETCHER.
STEAMBOAT.

(Application filed Apr. 20, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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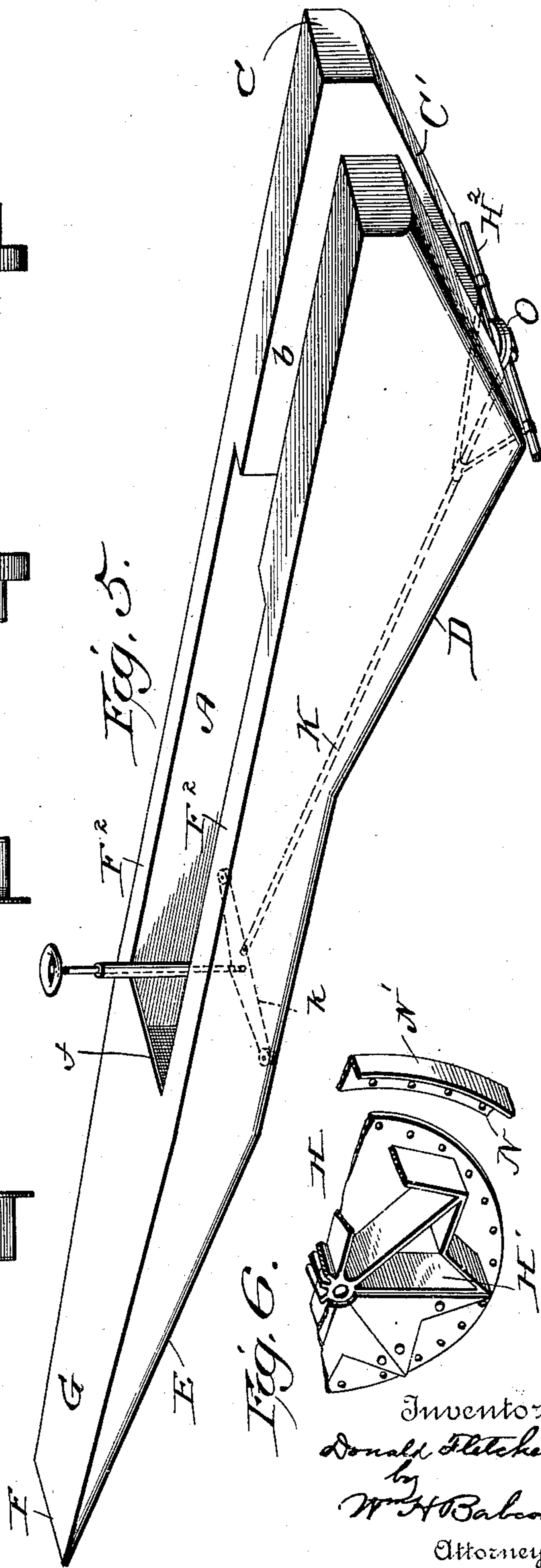
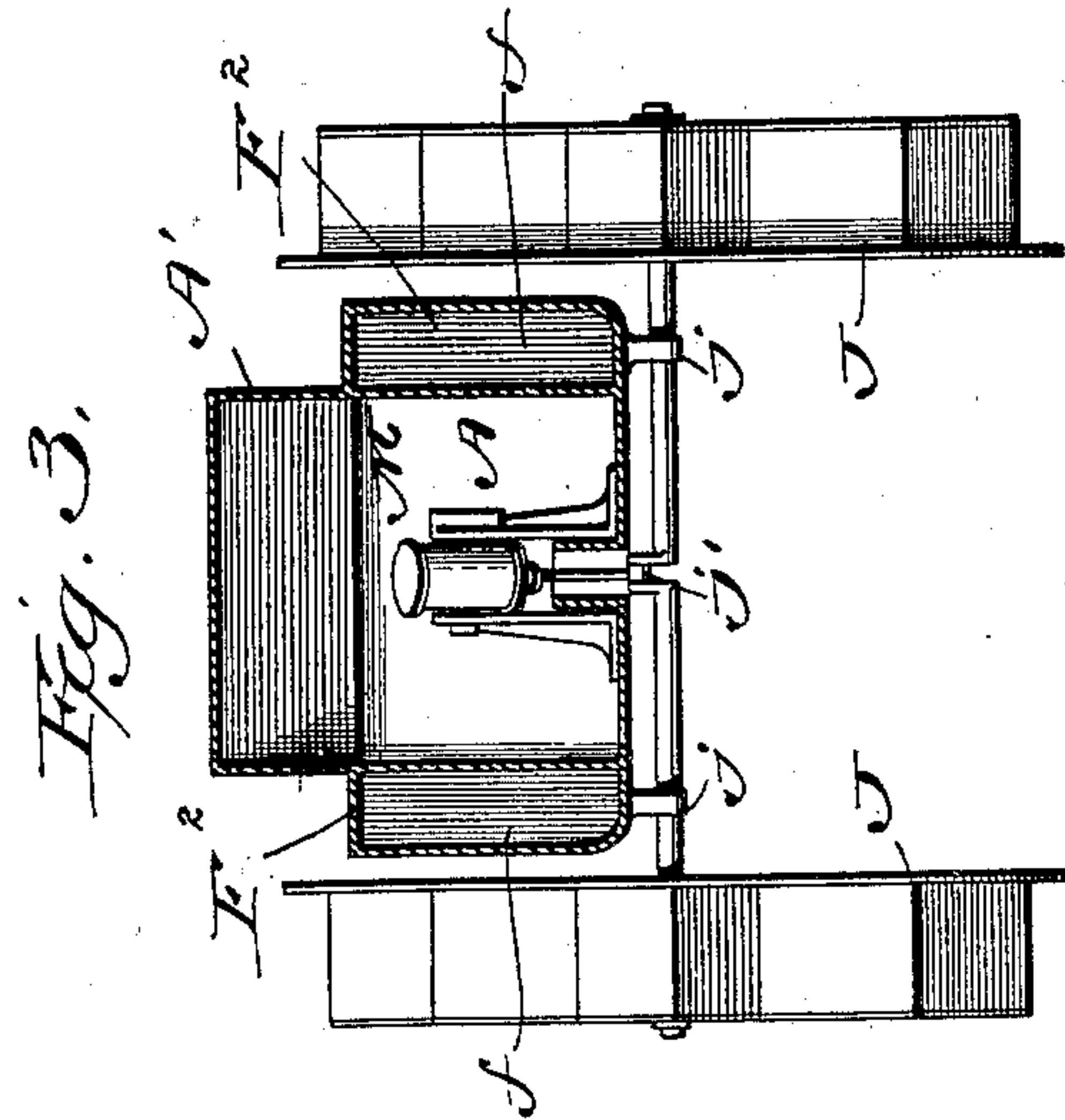
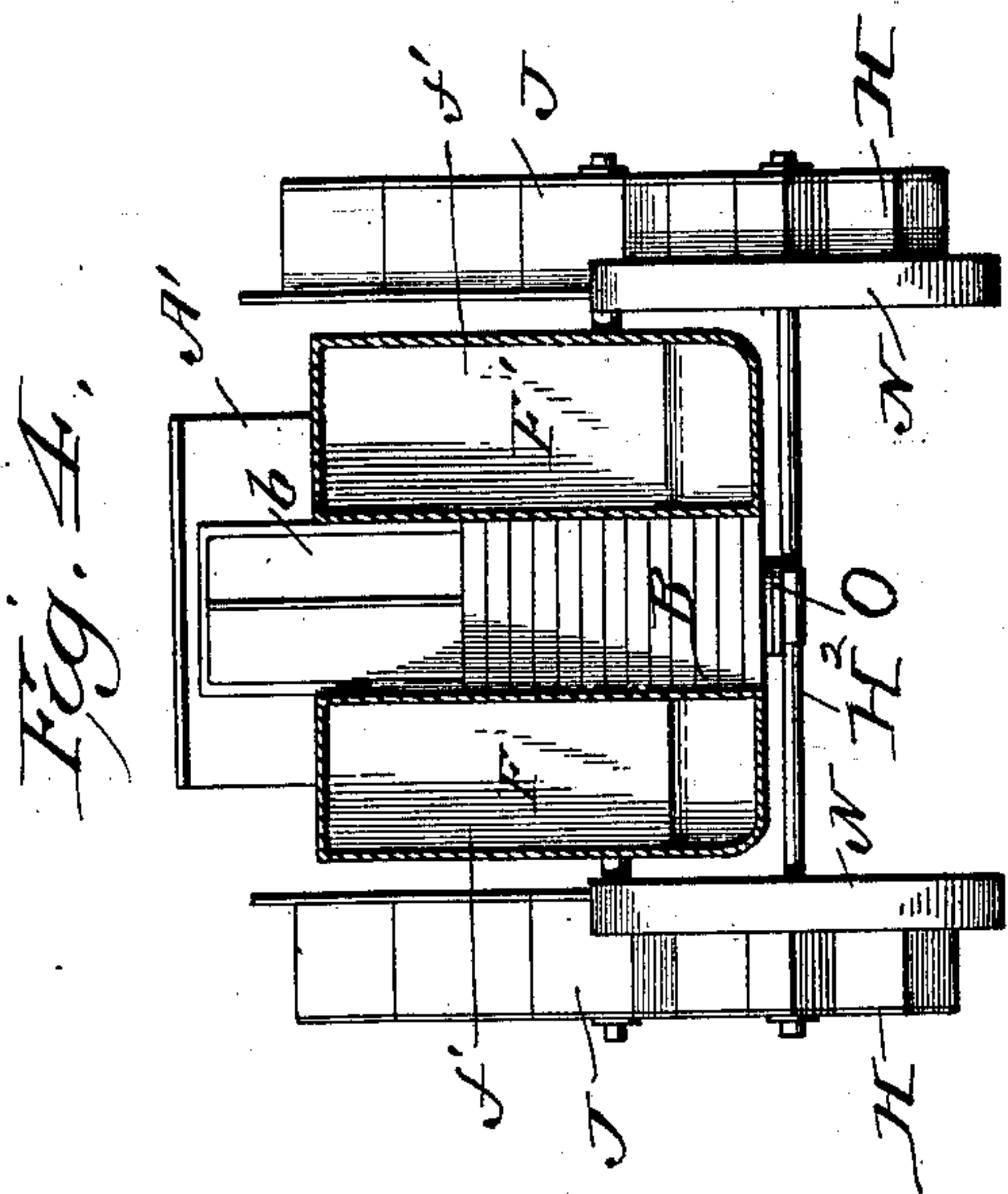
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

DONALD FLETCHER, OF NEW YORK, N. Y.

STEAMBOAT.

SPECIFICATION forming part of Letters Patent No. 624,318, dated May 2, 1899.

Application filed April 20, 1898. Serial No. 678,252. (No model.)

To all whom it may concern:

Be it known that I, DONALD FLETCHER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Steamboats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to paddle-wheel steamboats, and has for its objects to make them conveniently capable of running on land, to increase their buoyancy in order that the entire hull or nearly all of it may be supported above the water, to improve the general internal and external construction of the hull with the view of lessening resistance by causing the hull to rise above the surface under propulsion, and to facilitate steering by means equally available for allowing the turning of the boat when run on land as a vehicle.

To these ends my invention consists in the construction and combination of parts hereinafter particularly set forth and claimed.

In the drawings, Figure 1 represents a side elevation of a small steamboat embodying my invention. Fig. 2 represents a vertical longitudinal section of the same. Fig. 3 represents a transverse section on the line 3 3 of Figs. 1 and 2. Fig. 4 represents a similar view on the line 4 4 of Figs. 1 and 2. Fig. 5 represents a perspective view of the hull alone, and Fig. 6 represents a detail view of one of the wheels with the tire separated.

The hull of this boat, which is preferably about the size of an ordinary steam-launch or small torpedo-boat, has a central inner space A, Fig. 5, covered by a raised casing A' to form a cabin, from which steps B for ingress and exit lead downward through a space b, open at its rear end, which vertically bifurcates the stern C'. The upper part of this stern is vertical. The lower part C' is inclined forward and downward as to its rear face, ending at the lowest of the steps B, normally the lowest part of the said hull. From this point the bottom of the said hull extends forward and upward in an incline D nearly to the middle of the length of the hull. From the end of this incline the said bottom extends straight forward parallel with the deck, mak-

ing the middle part of the hull equal throughout. From a point under the forward end of the cabin the said bottom extends upward and forward in an incline E, meeting the deck G to form a bow F of chisel-edge form. The boat is keelless; but the sides are rounded inward and downward toward a central longitudinal line.

The interior of the hull, excepting the spaces A and b, is divided into water-tight compartments for air or some more buoyant gas, hydrogen being preferred. The air or gas compartment of the bow F³ is divided by vertical partitions f from two similar compartments F² at the sides of the hull, and these again by similar partitions f' from the two stern-compartments F F'. These compartments may of course be further subdivided.

The boat is steered by a pair of steering-wheels H, turning at the sides of the stern on the ends of an axle H², which is mounted on a fifth-wheel O, like that of an ordinary wagon, just under the lowest of the steps or stairs B and at the lowest point of the hull. From this axle tiller-ropes K or other suitable connections extend to a tiller k at the forward end of the cabin.

Each wheel H consists of a disk of metal having bolted to its face a series of radial compartments H', indented in their broad outer faces in order that at the junction of the two compartments a projecting triangular point or star-ray may be formed to serve as a paddle.

I designates the two forward driving-wheels, and J a second similar pair amidship. The wheels of these pairs are much greater in diameter than the wheels H, but they have the same construction, the compartments I' and J' of these wheels corresponding to the compartments H' of the smaller pair. These compartments are of hollow sheet metal, every second one being filled with cork, as shown in Fig. 1, while the intervening ones remain air-cells or air-compartments only, or, preferably, contain some lighter gas. The alternating arrangement of cork-compartments and gas-compartments will insure a moderate buoyancy at every point of the wheel, even if any or all of the gas-compartments should be punctured so as to leak, since the cork-compartments will still be available. So long as the compartments are all in condition for serv-

ice the boat will be lifted more effectually by the composite alternating series than by one composed of or filled with cork alone. Thus I secure the combined advantages of a certain moderate lightness, with a higher degree of lightness in ordinary conditions. This would be unattainable by a wheel provided with cork-filled compartments alone or with gas-filled compartments alone. These two pairs of driving-wheels are mounted, respectively, on shafts I² J² and turn therewith, said shafts being mounted in bearing-brackets *i* and *j*, attached to the bottom of the hull. Cranks *i'* and *j'* are formed in these shafts and allow them to be operated independently by small naphtha-engines L and M within the lower part of the space A.

To enable the boat to run on dry land as a vehicle, I bolt to the peripheral part of each wheel I a circular flange, forming a peripheral tire M', this tire being at right angles to the vertical plane of the part of the said flange through which the fastening-bolt is passed. The small steering-wheels H are likewise provided with similar flanges N, forming tires N'. When it is desired to transport the boat over land, these flanges are put on, if not in place already, and the boat becomes a vehicle driven by its engine L and front wheels I, which then become the rear wheels. It is guided and turned like any ordinary vehicle by means of the steering-wheels H and their fifth-wheel. The amidship-wheels J do not come in contact with the ground. When it is to be used again as a boat, the tires may be removed from wheels H and I, or they may be retained for service in shoal waters and on sand-bars. The wheels H serve for transportation only when they can touch bottom. In deeper water their sole function is that of steering. The peculiar shape of the paddle-blades, presenting an operative downward face inclining forward from a radial plane, insures a strong lifting action as each paddle-wheel revolves. The exceeding lightness of the paddle-compartments H' I' J' and the great amount of closed gas-space in the hull, the arrangement of the wheels H I J, with their axes below the bottom of the hull, and the inclined surfaces of that bottom upward from stern to bow ending in a chisel edge and lifted by the resistance of air and water all combine to make the boat ride upon the water instead of cutting through it, so that the obstructive resistance is slight, and in practice a surprising speed is attained. In backing the incline C' of the stern is acted on by the resistance of the water to lift the boat.

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

1. A paddle-wheel consisting of a disk of metal and a circular series of buoyant compartments bolted to the face thereof and fitting together substantially as set forth.

2. A paddle-wheel for a steamboat provided

with paddle-blades which are made up of alternating gas-compartments and cork-filled compartments substantially as set forth.

3. A paddle-wheel for steamboats, consisting of a metallic disk and a series of alternating gas-compartments and cork-filled compartments bolted thereto, these compartments forming the blades or paddles of the wheel substantially as set forth.

4. A steamboat provided with paddle-wheels having detachable tires for running on land substantially as set forth.

5. A steamboat having two pairs of wheels provided with removable tires adapted to travel either on land or on water, one of the said pairs being connected to the hull by a fifth-wheel and having steering attachments substantially as set forth.

6. A steamboat provided with three pairs of wheels, the pair at the stern being adapted to turn as on a fifth-wheel, and this pair as well as the pair near the bow being provided with removable tires for running on land, in combination with means for turning the axle of the steering-wheels as aforesaid, and engines for rotating the shafts of the two propelling pairs of wheels substantially as set forth.

7. A hull having a bow of chisel form and rearward and downward inclines E and D, in combination with its paddle-wheels, that part of the bottom of the hull to which the shaft of the rear wheels is attached being lower than the middle part of the bottom substantially as set forth.

8. A hull having a bifurcated stern, a central space for occupancy communicating with the passage or space between the bifurcations, gas-compartments in the latter and gas-compartments in the sides and bow substantially as set forth.

9. A hull having a bifurcated stern and a stairway for ingress and exit extending down between the bifurcations to the lowest part of the hull, in combination with propelling-wheels having their axes below the bottom of the said hull, this bottom being provided with faces that are upwardly inclined, in order that the boat may be lifted by propulsion and the means of entrance and exit kept above water substantially as set forth.

10. A hull having an inclined bottom and consisting of buoyant compartments except a central space and exit-passage, in combination with paddle-wheels having paddle-blades composed of buoyant compartments, the shafts or axles of said wheels being arranged below the bottom of the said hull, and the above features of construction combining to keep the said hull on the surface during propulsion substantially as set forth.

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

DONALD FLETCHER.

Witnesses:

ROBERT C. BALDWIN,
S. C. KIMBERLY.