

(No Model.)

G. H. POND.
BUOYANT PROPELLER.

No. 424,076.

Patented Mar. 25, 1890.

Fig. 1.

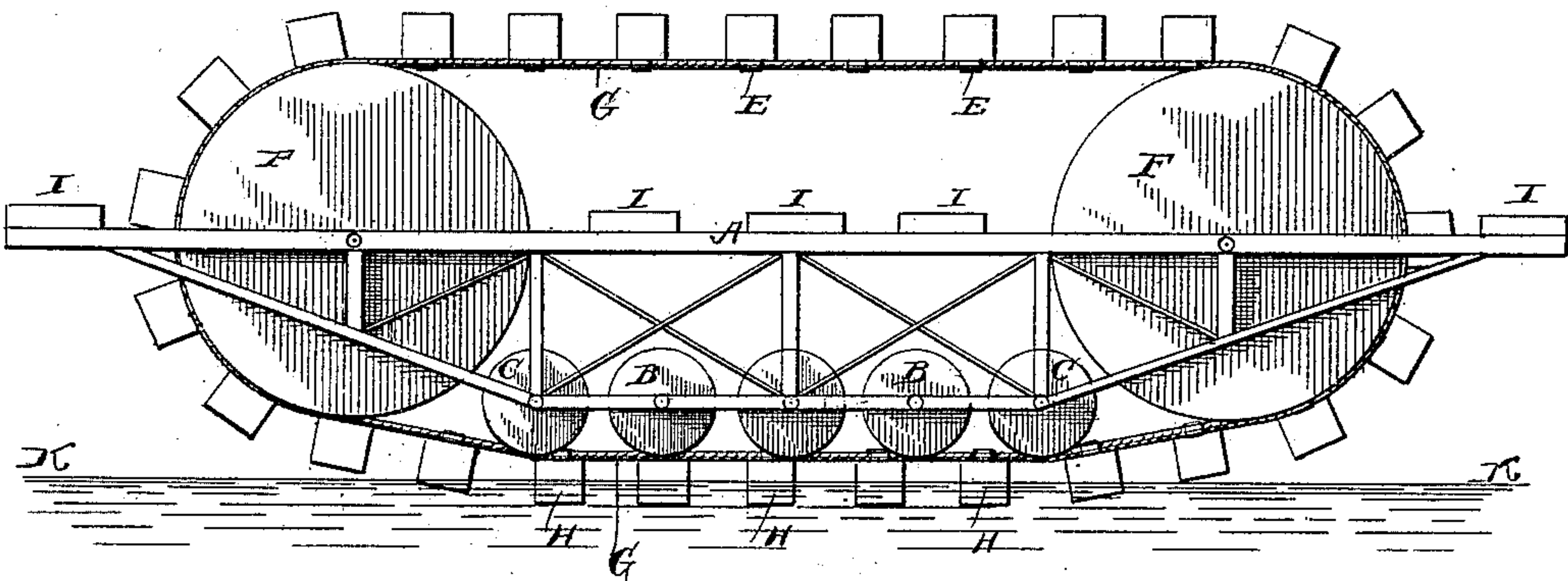


Fig. 2.

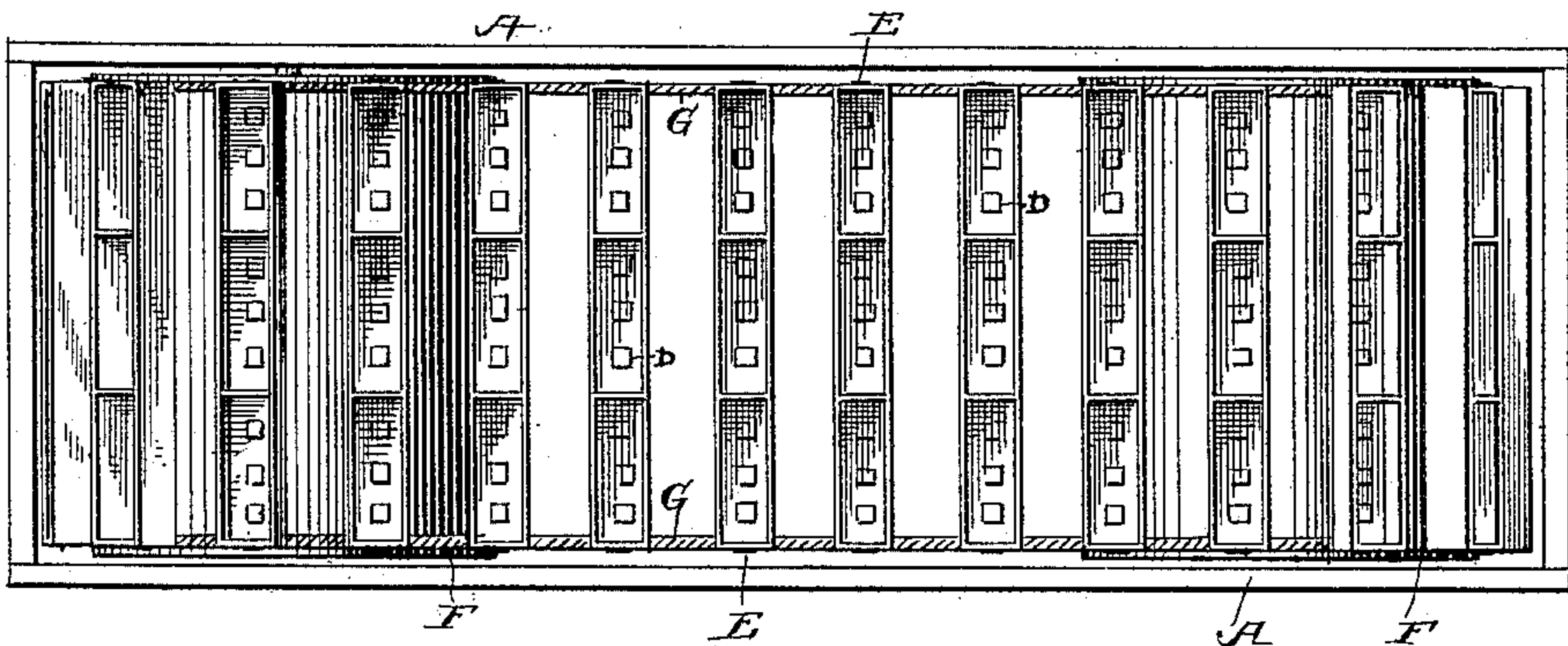


Fig. 3.

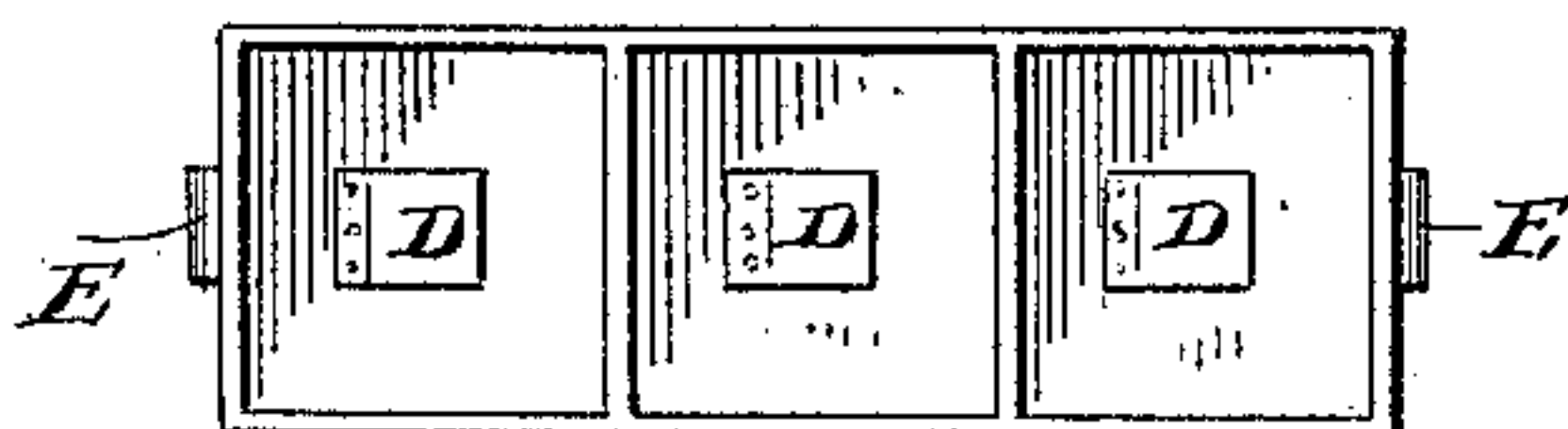


Fig. 4.

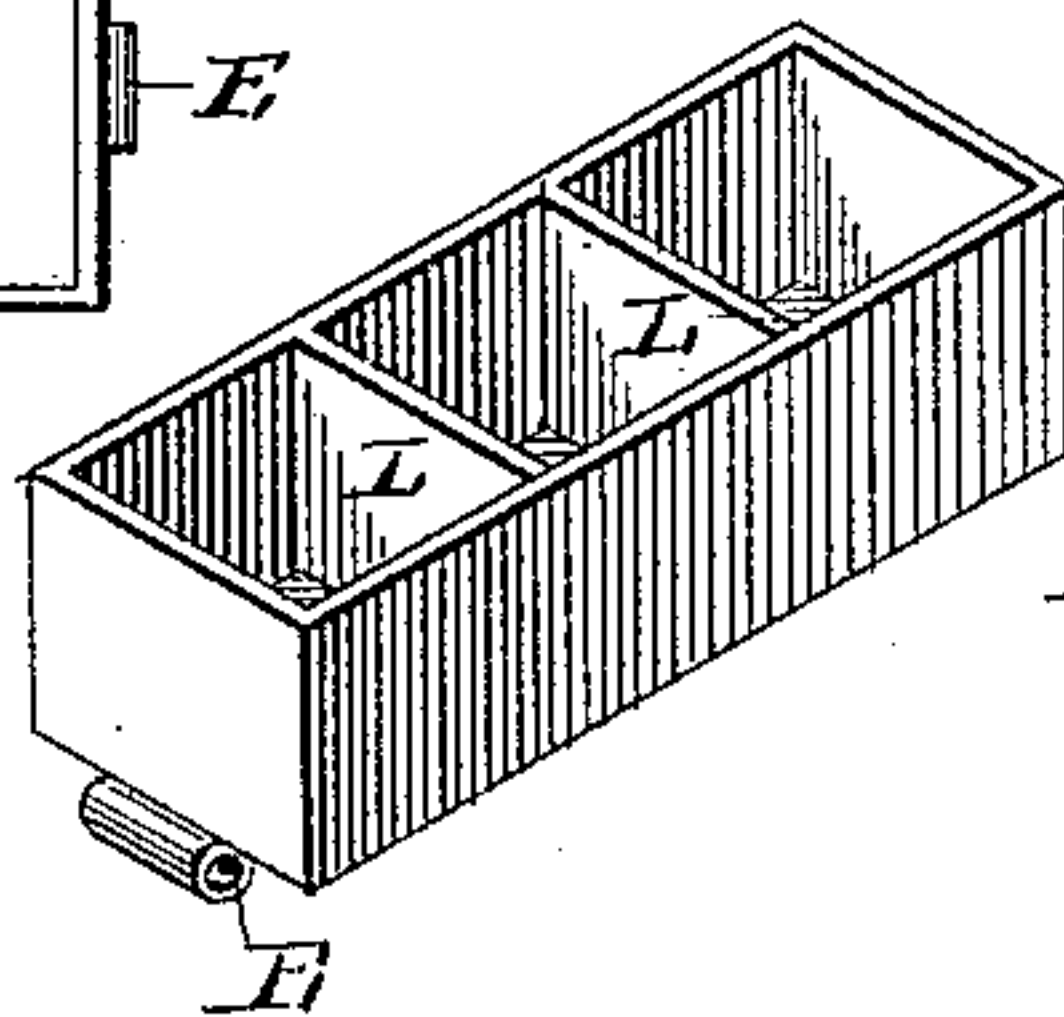


Fig. 5.



WITNESSES

N. W. Hoffman
E. L. White

INVENTOR

G. H. Pond

UNITED STATES PATENT OFFICE.

GOLDSBURY H. POND, OF RUTLAND, VERMONT.

BUOYANT PROPELLER.

SPECIFICATION forming part of Letters Patent No. 424,076, dated March 25, 1890.

Application filed December 21, 1885. Serial No. 186,263. (No model.)

To all whom it may concern:

Be it known that I, GOLDSBURY H. POND, a citizen of the United States, residing at Rutland, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements in the Construction of Vessels; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The nature of my invention relates to an improvement in the mode of constructing water-craft, so that such water-locomotive or carriers of freight and passengers shall move over the water without friction and with but little resistance to their movements either forward or back.

The object of my invention is to improve the speed of water-crafts by constructing them in such a way that there can be but the slightest amount of friction from the water; also, to do away with a large part of the resistance there must necessarily be to a vessel with large displacement; also, to construct a water-craft that will move over the water upon its surface on air.

To carry my invention into effect I first construct a series of box-like buckets with one side open, as illustrated in the drawings making a part of this specification, in which—

Figure 1 is an end view showing the arrangement of all the parts. Fig. 2 is an elevation of either the bottom or top. Fig. 3 is an inside view of the bucket and valve D. Fig. 4 is a perspective view of the bottom and inside of the bucket and the sleeve E. Fig. 5 is a view of the top of the bucket, the sleeve E, and the valve D.

The buckets are made like a box with one side open and constructed of iron strongly riveted together and calked or soldered, so as to be air and water tight when placed in the water the open side down, holding a certain amount of air confined and compressed therein, having compartments arranged in squares formed by the partition L, strengthening them, and for a further purpose hereinafter described. The valve D is an air-

valve for the free ingress of air in case it is required. After a series of these buckets are made and tested for tightness they are arranged equidistant on two or more wire ropes, as shown at G G, Figs. 1 and 2. The wire ropes are passed through the sleeve E E at each end of the bucket and are fastened there. After the wire ropes have all the buckets required arranged and fastened on them they are stretched around the water-tight drums F F, arranged in the frame A A, and over the friction-rollers B B and the tighteners or rollers C C, and have their ends joined together in the usual way, forming an endless arrangement of the ropes with the buckets attached. It is then ready for use upon the water. In constructing a water-craft with these buoy-buckets two or more series like the one illustrated in Figs. 1 and 2 are required, one upon each side for a small craft, and for a larger craft three are arranged like the runners of an ice-boat, and for a still larger one enough buckets are added to attain the required buoyancy. The rollers C are placed below the level of the bottom of the drums F F for the purpose of continuing the inclination of the endless belts and their attached buckets after they leave the drums. When in use, these buoy-buckets rest upon the water with the open side down, and they are placed upon the water with the edges of the open side in line with it, as shown at H H, Fig. 1, confining a body of air within the bucket in the manner usual in a diving-bell or in a section of a dry-dock (the water forming the bottom of it) with a corresponding buoyancy. When the craft is in motion, the buckets do not move through the water, but are held nearly stationary by it until they begin to be lifted by the forward movement of the drums. They then move up and forward to the forward drum and down upon the water in a feathering inclination made by the position of the tighteners C C, and when fully in the water confine air above its surface within the buckets or compartments, preventing it from escaping from either end, as would be the case in a largely-inclined position of the bucket or in rough water.

As the craft moves along, the buckets are picked up at the stern end one by one by the drum F and are drawn out of the water with-

out resistance or friction, the weight of the bucket being more than balanced by the elasticity of the air confined therein, which throws the bucket up and the water in the opposite direction as the bucket rises. In order to guard against any leaking out of the confined air, causing a "suction" and a lifting of water with the bucket, each compartment is provided with a valve D, which in such a case lets in air freely into the compartment of the bucket as the water leaves it, preventing any resistance from its retention. These buckets or a single side thereof arranged transversely to and connected with the ropes act as friction devices when in the water to hold the adjacent parts of the ropes stationary, or as nearly so as practicable, until they are lifted by the movement of the drums as they move to a position over them, this holding function being independent of the function of the air-cushion in the bucket. With respect to this holding function, the buckets or the separate transverse sides thereof may be termed "cross-boards."

The drums F F are made water-tight, so that if they should ever be required to float a part or the whole of the craft they could do so. In constructing a craft for navigating the water two of the series are arranged side by side and as far apart as may be required for room and connected together by the stringers I I. On these timbers the floor is laid, which can be occupied by passengers, freight, machinery, and power to propel it over the water.

Any number of these series can be fastened together in couples the same way and an odd one added at the stern for the purpose of steering, arranged the same as the runners on an ice-boat.

The large drums F F never touch the water, except as herein described; neither do the tighteners or the friction-rollers. The buoyancy of the buckets is calculated, so as to float the craft on the water-line K, Fig. 1.

When the craft is in motion, the only resistance and friction of the water to impede its progress and use up the power is the lowering of the buckets into the water and taking them out again, which is not more than sim-

ply dipping a thin blade into the water and then directly out again without moving it in any other direction.

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

1. A water-craft composed of a frame and drums and endless ropes, with box-buckets open on one side fastened upon the endless ropes, which pass around the drum at the extreme ends of the frame, and as the drums are turned on their journals the open box-buckets on the ropes move over the drums down into the water open side down, confining a layer of air therein, adding to their buoyancy, as herein set forth and described.

2. In a water-locomotive, air-containing buckets or compartments, each having an open side, and means for directing said buckets open side downward between the main body of said locomotive and the upper layer of water and presenting the open side thereto, in combination with a drum and with ropes passing around said drums and carrying the buckets, substantially as described.

3. In a water-locomotive, a frame having drums journaled therein, endless ropes or bands passing around said drums and provided with air-containing buckets, each having an open side, and mechanism for moving said bands and for presenting the open sides of said buckets at an angle to the surface of the water below the drums, substantially as described.

4. In a water-locomotive, a frame and drums journaled therein supporting endless ropes or bands provided at intervals with cross-boards or parts extended across and secured to the ropes and rollers in a plane below the drums, which hold the bands and cross-boards at an inclination to the water-level after they leave the drums, substantially as described.

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

GOLDSBURY H. POND.

Witnesses:

E. L. WHITE,

JOHN E. STUCHELL.